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SPECIFICITY OF DYSFUNCTIONAL BELIEFS IN PERSONALITY DISORDERS: PSYCHOMETRIC CHARACTERISTICS OF THE POLISH TRANSLATION AND MODIFIED VERSION OF THE PERSONALITY BELIEFS QUESTIONNAIRE (PBQ)

The present analyses focused on the adaptation of the *Personality Beliefs Questionnaire* (PBQ) – a tool measuring beliefs specific to personality disorders. Two Polish versions of the PBQ were developed: a translation of the original version consisting of 126 items, and a modified version comprised of 124 items (the scale for borderline personality was made diagnostically independent; the scale for schizotypal personality was added, and the items were assigned to the scales not only on the basis of their content but also on the basis of factor analysis results). For both versions, indicators of measurement reliability and validity were obtained based on results from more than 1,600 subjects. The data showed that the scales of both versions demonstrated acceptable reliabili-

ty in terms of both internal consistency and temporal stability. The values of convergent validity of the scales in both versions were comparable (correlations with scales of the SCID-II questionnaire for Structured Clinical Interview for DSM-IV Axis II and TALEIA-400A: **T**est for **A**xia**L** **E**valuation and **I**nterview for Clinical, Personnel, and Guidance **A**pplications, assessing personality disorders), but scales of the modified PBQ version showed better discriminant validity (its internal structure also was very clearly confirmed by the results of confirmatory factor analysis). Insufficiently high convergent validity was found for both PBQ versions, including high intercorrelations among scales. Therefore, the discussion emphasized that although the PBQ allows for the identification of specific beliefs in personality disorders, it is not a diagnostic equivalent for tools assessing disorders per se.

INTRODUCTION

Cognitive models of personality underscore the importance of core beliefs or basic schemas, which are cognitive representations of life experiences reflecting the way in which individuals interpret incoming information and influencing their emotional reactions and behaviors (Beck et al., 1990, 2004; Polish edition 2005). Dysfunctional beliefs formed by early life experiences may therefore trigger and/or maintain specific emotional reactions and behaviors and ultimately lead to the development of chronic dysfunctional behavior patterns. For this reason, core beliefs (schemas) reflecting the perceptions of oneself, other people, and life events are considered as central cognitive factors of personality disorders (Beck et al., 1990). Personality disorder is defined as "[an] enduring pattern of inner experience and behavior that deviates markedly from the expectations f 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, 2013, pp. 646–647).

The identification of dysfunctional beliefs has theoretical importance for more than just the cognitive conceptualization of personality disorders. Schemas typical for personality disorders (as opposed to syndromal clinical disorders) are characterized by more pervasive activation (and therefore influence other systems – behavioral, emotional, attentional, and memory; Alford & Beck, 1997). The identification of schemas is also extremely important for cognitive psychotherapy, which assumes that the modification of cognitive contents and processes that generate or support dysfunctional reactions may lead to desired changes in

the individual's functioning (Popiel & Pragłowska, 2008). Because of the durability and extent of dysfunction and suffering occurring in persons with personality disorders, the identification of specific cognitive structures – beliefs – is of major importance from the theoretical and clinical points of view (Popiel & Pragłowska, 2006, 2008). Starting from the assumption of cognitive specificity, Beck and Beck (1991) developed one of the first tools to investigate beliefs in personality disorders: the *Personality Beliefs Questionnaire (PBQ)*. This questionnaire was designed to assess disorders on the basis of the subjects' dysfunctional beliefs about themselves and the nature of their social world, taken as core indicators of the disorder.

The PBQ was developed on the basis of a theoretical approach (see Zawadzki, 2006); specific beliefs were identified on the basis of symptoms of personality disorders described in DSM-III-R (APA, 1987) and clinical knowledge (a list of core beliefs was presented in Beck et al., 1990). In comparative analyses in clinical groups, the psychometric properties of scales were determined, including their usefulness in the diagnosis of personality disorders (Beck, 2001; Butler, Brown, Beck, & Grisham, 2002). Analyses of the internal structure of the PBQ items (Fournier, DeRubeis, & Beck, 2012), as well as an overall assessment of its psychometric characteristics and diagnostic value were undertaken only recently (Bhar, Beck, & Butler, 2012).

The original instrument allows for the diagnosis of core beliefs characteristic of 10 personality disorders out of 11 recognized by DSM-III-R (1987): paranoid, schizoid, antisocial, passive-aggressive, histrionic, narcissistic, avoidant, dependent, obsessive-compulsive, and borderline. Schizotypal personality disorder was not included because the authors of the PBQ assumed that this disorder was characterized by "peculiarities in thinking rather than an idiosyncratic content" (Beck et al., 1990, p. 21). Each of the nine distinct scales of the PBQ contains 14 items with five-point Likert response continua, reflecting the degree to which the person agrees with a particular statement (from *totally* to *not at all*). The Borderline Personality Disorder scale does not have its own separate set of items but rather shares items with other scales (see Butler et al., 2002). The authors hypothesized that the beliefs characteristic for borderline personality disorder are nonspecific and overlap with other disorders (Beck et al., 1990). In summary, the PBQ contains 126 items, grouped to correspond to each personality disorder, except the borderline personality disorder, with the schizotypal personality disorder omitted altogether. The PBQ has become one of the basic tools for assessing the cognitive components of personality disorders, also being a source of inspiration for the development of further tools (e.g., Arntz, Dreessen, Schouten, & Weertman, 2004).

Recent analyses, however, revealed diagnostic shortcomings of the PBQ, including ambiguous internal structure, high intercorrelations between scales, or their deficits of convergent and discriminant validity (Bhar et al., 2012; Fournier et al., 2012). Some of these problems may arise from the failure to apply factor analysis in the construction of the inventory, resulting in psychometrically insufficient evidence of the specificity of beliefs to particular disorders. Arguably, other shortcomings resulted from the lack of diagnostic distinctness of the Borderline Personality Disorder scale and the omission of schizotypal personality disorder.

The main aim of the analyses undertaken in this study was to produce a Polish translation of the PBQ from the original English version so that it can be used in Poland, where instruments for diagnosing personality disorders are few (see First, Gibbon, Spitzer, Williams, & Benjamin, 2010) and where there are no methods at all for testing the hypothesis regarding the specificity of beliefs in personality disorders. Due to the defects of the original PBQ, we decided – in addition to performing a simple translation, for which psychometric analyses were conducted – to introduce substantive changes, leading to a modified version of the PBQ. The modifications included creating an independent scale for diagnosing Borderline Personality Disorder, adding a scale for Schizotypal Personality Disorder, and selecting items for scales based on the results of factor analysis (i.e., not solely based on theoretical and psychometric analyses carried out separately for particular scales). The purpose of these changes was to obtain clearer evidence of the specificity of beliefs for personality disorders, to reduce scale intercorrelations, and to improve the convergent and discriminant validity of the scales. Taking into account the unclear factorial structure of the PBQ scales as well as cross-cultural considerations, we extended the original pool of items to include cultural equivalents and limited it to empirical cognitive indicators of disorders. The result was a modified version of the PBQ, whose psychometric characteristics we compared to those of a simple translation of the original version.

METHOD

Samples

A total of 1,619 subjects participated in the PBQ construction and validation study (sample C-V; Table 1) – to increase the response variability, the sample consisted of healthy persons and individuals diagnosed with mental disorders

(including personality disorders). The data were collected from several research projects and combined into one group. Subgroup C-V A includes data collected in the PBQ pilot study (with the TALEIA-400A questionnaire additionally used) of 227 non-hospitalized persons, randomly recruited in several provinces of Poland. The analysis also included data from 200 subjects from a study on different demographic and clinical groups. Moreover, this group was supplemented with data from two groups of traffic accident participants: 305 subjects (Group C-V B from several provinces of Poland) who entered treatment for post-traumatic disorders (for the analysis, we utilized only data obtained before the treatment, including the data from the SCID-II) and 887 persons (C-V C) examined twice with a one-year interval (for the whole Group C-V, only data from the first PBQ study were included in the analysis). Analytical and construction work was carried out on data collected in the whole group, and validation analyses were carried out in C-V groups: A and B. The factor solution was also tested in a group of 1,425 subjects (Group V), examined in the "PTSD: Diagnosis, Therapy, Prevention" program using a modified version of the PBQ: the pilot study carried out in a group of 276 traffic accident participants and the main study on a sample of 300 traffic accident participants, 303 flood victims, 300 firefighters on active duty, and 250 students of a noncommissioned fire brigade officer school. Reports containing missing data were not included in the analysis.

Table 1
Demographic Characteristics of the Investigated Samples

Sample	Analyses performed: instruments applied	N	Gender	Age: range	Age: M (SD)
C-V A	Construct validity: both PBQ versions & TALEIA-400A	227	143 F / 84 M	20-80	38.34 (14.94)
C-V B	Construct validity: both PBQ versions & SCID-II	305	227 F / 78 M	18-82	37.33 (12.98)
C-V C	Temporal stability: both PBQ versions	887	337 F / 550 M	18-66	36.43 (13.48)
C-V total	Basic psychometric indices and exploratory & confirmatory factor analysis:	1619	748 F / 871 M	18-88	36.89 (13.84)
V	Confirmatory factor analysis: Modified PBQ version	1425	501 F / 924 M	17-87	36.29 (13.15)

Note. The dominant education level in all groups was high school and university education (around 2/3 of the total number of subjects).

Polish adaptations of the PBQ

The PBQ questionnaire had been presented in the Polish literature previously (Leahy, 2008, pp. 277–283), but only in the form of the translation of items, without an analysis of its psychometric properties. In the adaptation undertaken in this study, we used the existing translation of the original items and carried out an additional professional translation. Based on a group discussion of the wording of the items (see Drwal, 1990), we obtained the final version, which was subjected to psychometric analyses. In view of the possible specificity of cultural beliefs, we added several new "experimental" items to each scale – Polish equivalents of the original indicators (especially for the Borderline Personality Disorder scale, to make it independent from other scales). We also introduced separate beliefs for schizotypal personality disorder (increasing the total number of items in the PBQ to 215), using the SPQ inventory as a model (Raine, 1991). In the original version, items in the questionnaire were grouped according to particular disorders, and we retained this order in the Polish version (with items for the Schizotypal Personality Disorder scale grouped at the end of the inventory). In order to identify the specificity of beliefs corresponding to each personality disorder, we subjected the data obtained in the study to exploratory factor analysis. We started from the analysis of the 126 items constituting the translation of the PBQ (raw scores, PC, Cattell scree test, Oblimin). The analysis showed a strong first component with an eigenvalue of 29.58 (23.5% of variance explained; points of discontinuity of eigenvalues at 1/6/9), with six factors identifiable in terms of content (passive-aggressive, obsessive-compulsive, narcissistic, histrionic, schizoid, and paranoid personality disorders). However, many items demonstrated a loading on the first component or loadings on several components. Similar results were obtained after the addition of "experimental" items – for 215 items, the analysis showed a strong first component with an eigenvalue of 47.73 (22.2% of variance explained; points of discontinuity of eigenvalues at 1/5/7), again with a significant loading of several items on the first component and loadings on several components. In order to control the general factor that can blur the specificity of the item contents, we performed further analyses on ipsatized data (Gorsuch, 2015, p. 333). For 126 items of the translated PBQ, we obtained a solution similar to that obtained for the raw scores. For 215 PBQ items, Cattell's scree test suggested the need to extract 11 factors corresponding to personality disorders. In further steps, the number of items was reduced to 10–12 for each factor due to the convergent loadings (acceptable primary loading on the appropriate factor), while eliminating those

items that showed high secondary loadings on other factors along with low primary loading on the proper factor. The result was a significant reduction in the number of items in the PBQ scales. The solution has been verified using the principal axis method. In the final step, factor analysis was carried out on the raw scores (PAF, Cattell scree test, Oblimin), which demonstrated the invariance of the obtained solution. This revised PBQ version, limited to 124 items and described in this paper as the Polish modified PBQ version, was subjected to comparative analyses with the translation of the original version.

Instruments applied for the validation of the PBQ

To test the validity of both PBQ versions, we used two questionnaires pertinent to personality disorders: TALEIA-400A (sample C-V A) and SCID-II (sample C-V B). The TALEIA-400A inventory (**T**est for **A**xia**L** **E**valuation and **I**nterview for Clinical, Personnel, and Guidance **A**pplications; version A with 400 items) serves for the diagnosis of mental and personality disorders, according to DSM-IV and ICD-10 (Boncori, 2007). It contains three validity scales, eight scales investigating disorders, and ten scales designed to assess personality disorders: paranoid, schizoid, schizotypal, antisocial, borderline, histrionic, narcissistic, avoidant, dependent, and obsessive-compulsive. The Polish translation of TALEIA-400A was developed by Anna Puchtińska and Lucia Boncori, but in this study we used only the results on scales diagnosing personality disorders[1]. The second instrument applied to validate the PBQ was the SCID-II inventory – a supplemental form that goes with the clinical interview (First et al., 2010). This questionnaire is a screening instrument designed for diagnosing (by interview) of the twelve personality disorders recognized by the DSM-IV, including passive--aggressive and depressive disorders (the latter was not included in the validation analysis).

RESULTS

The analysis of the results of scales of the Polish PBQ simple translation started with the calculation of item-total correlations for the items based on ipsatized and raw scores (after the failure of the use of exploratory factor analysis). The results showed a significant reduction in the values of the discriminatory

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[1] TALEIA-400A was used in the presented studies with the consent of the Authors: Professor Lucia Boncori and Anna Puchtińska and Publisher of the original version: Aleteia Publ.

power coefficients for ipsatized data in comparison with raw scores (for 20 items, the item-total correlation was below .20; for 52 items, it was lower than or equal to .30), which suggests that, to large extent, these items measure the overall factor but insufficiently reflect the cognitive specificity of specific personality disorders (this refers particularly to the Borderline Disorder scale, which does not contain its own items). The data obtained are synthetically presented in Table 2 (the detailed data for the PBQ translation items are available from the authors).

Table 2
Item-Total Correlations for the Items of the Polish Translation of the Personality Beliefs Questionnaire (PBQ)

Scales of the translated PBQ	No. of items	Raw scores: range of CITC	Raw scores: median of CITC	Ipsatized scores: range of CITC	Ipsatized scores: median of CITC
Avoidant personality disorder	14	.38–.61	.51	.20–.46	.34
Dependent personality disorder	14	.31–.65	.58	.14–.46	.38
Passive-aggressive personality disorder	14	.33–.63	.52	.10–.40	.29
Obsessive-compulsive personality disorder	14	.44–.73	.59	.17–.60	.45
Antisocial personality disorder	14	.35–.66	.55	.03–.41	.29
Narcissistic personality disorder	14	.49–.75	.64	.22–.58	.41
Histrionic personality disorder	14	.40–.70	.59	.14–.50	.31
Schizoid personality disorder	14	.44–.64	.53	.17–.47	.39
Paranoid personality disorder	14	.55–.78	.69	.28–.57	.45
Borderline personality disorder	14	.42–.58	.52	-.08–.32	.18

Note. CITC – corrected item-total correlation.

We subjected the data for this version (only the raw scores) to confirmatory factor analysis using parcels of items (two parcels with randomly selected items for each of the 10 scales: for 14 items in the scale only the split-half parceling was possible for all scales, with the assumption of the equivalence of the parcels and the continuity of the measurement scale) using the RML method (due to the deviations of scores from normal distribution; Konarski, 2009). This procedure was introduced as an equivalent of item-level analysis, since this would require the application of estimates using correlation matrices (ordinal response scale) and a sample significantly larger than that obtained in the study. This model showed an acceptable fit: Satorra-Bentler $\chi^2 = 1437.52$, $df = 125$, $p < .01$, RMSEA = .081, CFI = .982, GFI = .905, SRMR = .041; see Schermelleh-Engel, Moosbrugger,

& Müller, 2003). However, the orthogonal model assuming the saturation of all packages with the general factor and 10 specific factors (separate for each of the two parcels corresponding to a disorder) indicated incorrect estimates for borderline personality disorder and an unacceptable fit (Satorra-Bentler $\chi^2 = 3704.80$, $df = 150$, $p < .01$, RMSEA = .121, CFI = .952, GFI = .747, SRMR = .092), also when it was assumed that both personality parcels showed only loadings on the general factor (Satorra-Bentler $\chi^2 = 3877.89$, $df = 152$, $p < .01$, RMSEA = .123, CFI = .950, GFI = .749, SRMR = .089). These results suggest that the simple PBQ translation exhibits a significant diagnostic limitation: it does not make it sufficiently possible to determine the specificity of disorders due to the strong influence of the general factor, especially in the case of the Borderline Personality scale. These results prompted us to apply an alternative solution – to search for the cognitive specificity of personality disorders and depart from the theoretical and criterion-oriented strategy of PBQ development, used in the original studies, in the direction of the inductive approach (Zawadzki, 2006). It should be noted that other recent studies have attempted to carry out factor analysis (exploratory and confirmatory) of the items of the nine PBQ scales (excluding the Borderline Personality scale), but they did not yield a clear structure (Fournier, DeRubeis, & Beck, 2012). The authors obtained only seven factors, because the items of the Dependent and Avoidant as well as Antisocial and Narcissistic Personality scales formed two joint factors. It seems that this effect may be due to the strong intercorrelation of PBQ scales; for this reason, in these analyses we tried to control the impact of the general factor by conducting preliminary analyses on the ipsatized data.

For ipsatized data of the modified final PBQ version, secondary loadings for four items were arithmetically higher than loadings on the respective factors (with their substantial convergent validity reflected by the magnitude of primary loadings). For the raw data, this number rose to nine items (4 for the Histrionic Personality scale). We did not shorten the scales any further because this would lead to a very significant reduction in the number of items of the Histrionic Personality scale (leaving only six items) and, consequently, a too significant narrowing of the examined contents of beliefs. The obtained results also indicated a reduction of the item-total correlation for ipsatized data in comparison to raw data, but the coefficients obtained were lower than .30 only for five items (none below .20). These results indicate that, despite the impact of the general factor of personality disorders loading, it is possible to select a set of beliefs that reflect the cognitive specificity of particular disorders. The data obtained for this version of the PBQ are synthetically presented in Table 3 (for the results of the factor analysis, only primary – convergent – loadings are shown, excluding correla-

tions with factors (structure matrix); only the findings obtained in the analysis of raw data have been presented; detailed data for the items of the modified version are available from the authors).

Table 3
Item-Total Correlations and Factor Loadings for the Items of the Polish Modified Version of the Personality Beliefs Questionnaire (PBQ)

Scales of the modified PBQ version	No. of items	Raw scores: range of CITC	Raw scores: median of CITC	Ipsatized scores: range of CITC	Ipsatized scores: median of CITC	Raw scores: range of factor loadings	Raw scores: median of factor loadings
Avoidant personality disorder	12	.49–.67	.53	.30–.44	.34	.27–.51	.38
Dependent personality disorder	12	.57–.75	.65	.34–.61	.47	.48–.77	.48
Passive-aggressive personality disorder	12	.50–.67	.59	.28–.47	.32	.41–.73	.51
Obsessive-compulsive personality disorder	12	.57–.76	.64	.41–.66	.51	.52–.82	.66
Antisocial personality disorder	12	.51–.68	.60	.31–.47	.38	.24–.56	.43
Narcissistic personality disorder	12	.59–.78	.69	.36–.61	.51	.46–.67	.65
Histrionic personality disorder	10	.48–.71	.64	.21–.53	.40	.24–.56	.39
Schizoid personality disorder	10	.43–.60	.54	.29–.49	.37	.32–.70	.46
Paranoid personality disorder	12	.63–.78	.72	.36–.57	.49	.47–.71	.64
Borderline personality disorder	10	.55–.70	.64	.35–.54	.45	.27–.57	.43
Schizotypal personality disorder	10	.58–.70	.63	.41–.57	.49	.41–.75	.60

Note. CITC – corrected item-total correlation. Modified version contains 53 new items (which is 43% of the total 124, remaining 57% being original items); when the added scale of schizotypal personality is excluded, there are: 43 out of 12/10, respectively) (35%) and 65% are original items (the number of new items are the highest in Dependent and Borderline Personality scales: 7 out of 12/10, respectively). Correlations among scales of both versions were higher than .90 (the highest ones for paranoid = .97 and narcissistic personality = .96), except schizoid (.89) and borderline personality (.77). Eigenvalues (before rotation) for raw scores: 29.52, 7.30, 6.54, 4.21 3.63, 3.11, 2.77, 2.41, 2.05, 1.97 and 1.75 (the whole model explained 52.64% of variance; PAF).

We also performed a confirmatory factor analysis of the data for this version, using parcels of items (two parcels with randomly selected items for each of the 11 scales) and using the RML method (Konarski, 2009). This model showed an acceptable fit: Satorra-Bentler $\chi^2 = 957.27$, $df = 154$, $p < .01$, RMSEA = .057, CFI = .988, GFI = .940, SRMR = .031 (Schermelleh-Engel et al., 2003). Similarly, an acceptable fit was found in the case of the orthogonal model assuming the saturation of all parcels by the general factor and 11 specific factors (distinct for each of the two parcels corresponding to a particular disorder): Satorra-Bentler $\chi^2 = 2542.97$, $df = 187$, $p < .01$, RMSEA = .078, CFI = .966, GFI = .933, SRMR = .077 (maintaining the correct estimation of both specific and general factor loadings ranging from .44 to .77). We verified these models on the data obtained in the V sample for parcels of items. Acceptable fit was obtained both for the model with 11 latent variables: Satorra-Bentler $\chi^2 = 693.47$, $df = 154$, $p < .01$, RMSEA = .0496, CFI = .994, GFI = .946, SRMR =.025, as well as the for the model assuming the saturation of all parcels by the general factor and 11 specific factors: Satorra-Bentler $\chi^2 = 1870.81$, $df = 187$, $p < .01$, RMSEA = .079, CFI = = .981, GFI = .951, SRMR = .058 (maintaining the correct estimation of both specific and general factor loadings ranging from .32 to .85). These results indicate that the modified PBQ version enables isolating the cognitive specificity of disorders, with a smaller influence of the general factor, and confirms the rationale for controlling the general factor in the applied procedure of extracting beliefs specific to particular personality disorders.

In the final step, we performed a comparative analysis of the psychometric indices for both PBQ versions: measurement reliability coefficients (internal consistency), test-retest stability coefficients, and correlations with scales of TALEIA-400A and SCID-II for raw data only. These results are shown in Table 4.

Both versions are characterized by acceptable and comparable reliability, both in terms of internal consistency and in terms of test-retest stability, even though the scales of the modified PBQ are shorter (see Schuerger, Zarella, & Hotz, 1989). With comparable convergent validity (correlations with tools examining corresponding personality disorders), the scales of the modified version showed definitely better discriminant validity (especially with regard to the SCID-II inventory: discriminant validity – that is, convergent correlations higher than correlations with scales assessing other disorders – was found for four simple translation scales and for eight scales of the modified version).

Table 4

Psychometric Characteristics of the Polish Translation and Modified Version of the Personality Beliefs Questionnaire (PBQ)

PBQ scales: translation	Alfa Cronbacha (sample C-V)	Temporal stability (sample C-V C)	Correlations with scales of TALEIA-400A (sample C-V A)	Correlations with scales of SCID-II inventory (sample C-V B)
Avoidant personality disorder	.85	.57*	.45* (.45* SCH)	.39*(.34* SCD)@
Dependent personality disorder	.88	.60*	.36* (.36* PA/SCH)	.39* (.33* SCH)@
Passive-aggressive personality disorder	.86	.53*	–	.35* (.41* PA)
Obsessive-compulsive personality disorder	.90	.51*	.43* (.31* NA)@	.19* (.32* NA)
Antisocial personality disorder	.87	.60*	.37* (.44* PA/NA)	.16* (.41* NA)
Narcissistic personality disorder	.91	.53*	.55* (.51* HT)@	.45* (.28* PA)@
Histrionic personality disorder	.88	.54*	.52* (.54* NA)	.29* (.43* NA)
Schizoid personality disorder	.87	.46*	.22* (.32* NA)	.29* (.21* NA)@
Paranoid personality disorder	.93	.65*	.52* (.43* SCH)@	.44* (.45* SCH)
Borderline personality disorder	.86	.66*	.49* (.58* PA)	.40* (.44* SCD)
Schizotypal personality disorder	–	–	–	–

PBQ scales: travesty	Alfa Cronbacha (sample C-V)	Temporal stability (sample C-V C)	Correlations with scales of TALEIA-400A (sample C-V A)	Correlations with scales of SCID-II inventory (sample C-V B)
Avoidant personality disorder	.86	.60*	.39* (.41* SCH)	.38* (.31* SCD)@
Dependent personality disorder	.91	.61*	.45*(.38* PA/SCH)@	.43* (.29* P-A)@
Passive-aggressive personality disorder	.88	.54*	–	.36* (.39* NA)
Obsessive-compulsive personality disorder	.92	.54*	.43* (.23* NA)@	.16* (.26* PA)
Antisocial personality disorder	.89	.63*	.50* (.50* BD)	.20* (.42* NA)
Narcissistic personality disorder	.92	.54*	.54* (.51* NA)@	.43* (.24* PA)@
Histrionic personality disorder	.88	.59*	.59* (.59* NA)	.41* (.39* NA)@
Schizoid personality disorder	.83	.47*	.23* (.28* OC)	.27* (.14* NA)@
Paranoid personality disorder	.93	.65*	.53* (.44* PA)@	.46* (.42* SCH)@
Borderline personality disorder	.89	.57*	.50* (.55* PA)	.45* (.43* P-A)@
Schizotypal personality disorder	.89	.58*	.35* (.41* NA)	.50* (.35* PA)@

Note. * – correlation coefficient significant at $p < .05$ (two-tailed test). @ – demonstrated discriminant validity (in parentheses we have indicated the scales of TALEIA-400A and SCID-II for which the highest correlations with other PBQ scales were obtained). Abbreviations: SCH – schizotypal personality scale, SCD – schizoid, BD – borderline, PA – paranoid, NA – narcissistic, HT – histrionic, P-A – passive-aggressive, and OC – obsessive-compulsive.

Another issue, however, is the low convergent validity of PBQ scales, for both the translation and the modified version (average correlations around .40 with TALEIA-400A scales and slightly below this value for SCID-II), not partic-

ularly satisfactory in the context of the high intercorrelation of PBQ scales (an average of approximately .50 for the translation and approximately .40 for the modified version, with an average of .35 for both instruments applied in the validation study). This result seems to be typical for scales assessing personality disorders based on beliefs: average correlations around the value .35 were also found for PBQ, PDQ-R, and MMPI-PD inventories (with the intercorrelation of about .40 among PBQ scales; Trull, Goodwin, Schopp, Hillebrand, & Schuster, 1993), as well as other cognitive measures of personality disorders – PDBQ (see Arntz et al., 2004).

DISCUSSION

The development of cognitive psychology has naturally stimulated a search for cognitive schemas specific to various disorders. As noted by Fournier et al., (2012, p. 795), this is important not only for the theoretical perspective on personality pathologies, but also for therapeutic practice, because "[the] identification of dysfunctional beliefs may not only aid in case conceptualization but also may provide unique targets for psychological treatment." The development of the original version of the PBQ inventory, as well as other inventories for studying personality disorders, which aimed to identify beliefs corresponding to each of the clinical manifestations of the disorders, solves this problem only partially. It turned out that the scales of multidimensional instruments demonstrate a strong impact of the general factor common to all disorders (which is reflected also in the psychometric characteristics of the Polish translation of PBQ). The use of factor analysis in the procedure of PBQ adaptation, which resulted in the modified version, gave us an opportunity to identify specific beliefs for disorders. Of course, the adoption of mixed theoretical-inductive strategy in lieu of the theoretical one (see Zawadzki, 2006) resulted in a content abridgment of the pool of items identifying particular disorders. In this sense, the items making up the modified PBQ scales do not correspond to all the symptoms of various personality disorders. On the other hand, the applied procedure has limited the impact of the general factor and enabled the separation of key indicators for individual disorders. In psychometric terms, it led to a reduction of intercorrelations among PBQ scales and improved their discriminant validity, with comparable convergent validity. Admittedly, ipsatization is criticized (see Fisher & Milfont, 2010), but in our analyses it served only to obtain a preliminary solution, justified by the necessity to control the saturation of items with the general factor. The high con-

vergence of the obtained results with the analysis on raw data shows that this procedure does not lead to a distortion of the structure of PBQ items.

These results suggest that the aim of this paper – to introduce a procedure making it possible to capture the specificity of beliefs for particular personality disorders – has been achieved, and that the evidence based on the results of the factor analysis is methodologically stronger than the evidence based solely on indicators of the internal structure of items of particular scales. Other procedural issues, introduced in the analysis and leading to a modified version, are of secondary importance in this case, but we would like to address them too. In the adaptation process, we also introduced new "experimental" items, which were essential for the development of Schizotypal Personality and Borderline Personality scales. The omission of the Schizotypal Personality scale would indeed result in a practical outdating of inventory adaptation, as this disorder is still a recognized diagnostic construct (APA, 2013) and constitutes a personality risk factor for schizophrenia (Raine, 1991). Moreover, there are other multidimensional instruments in which this disorder is diagnosed separately (see Arntz et al., 2004). The scale measuring borderline personality, as proposed in the original form, was a composite scale that did not contain its own items. The disadvantages of this approach are psychometrically obvious – due to the overlap of items with other scales, it becomes the scale most saturated with the general factor. Moreover, it will play the role of a scale diagnosing the general factor, and therefore it is not diagnostically independent. For this reason, when developing a modified Polish version of PBQ, we aimed to extract a set of specific indicators for borderline personality. Finally, for this version of PBQ, we included cultural equivalents of original items. This procedure has its disadvantages (see Drwal, 1990), because it leads to the replacement of original items with new ones, specific to a given culture, and may lead to a deviation of the validity of the modified scales in comparison to the translated ones. However, the comparative analysis of the validity of both types of scales did not show that such distortion actually took place (and nor did the comparison with the data obtained for the original version). In cross-cultural psychology, modified scales are sometimes treated as the optimal forms of cultural adaptation, still preserving the identity of the assessed construct despite the modification (Drwal, 1990). We therefore decided that it was acceptable to include "experimental" PBQ items – not just for the Borderline Personality and Schizotypal Personality scales. In this context, we treat the modified version of PBQ as an "experimental version."

Good psychometric characteristics, however, do not mean that the modified version of PBQ is free from diagnostic flaws. In fact, the applied procedure has

only diminished but not fully eliminated the drawbacks of the inventory. As we noted previously, the high intercorrelations of measurement scales constitute a common problem of instruments diagnosing personality disorders, especially those for diagnosing personality disorders based on beliefs (Widiger & Trull, 1992). One of the solutions enabling the reduction of intercorrelations among scales and improving their convergent and discriminant validity is the procedure of grouping the items, applied in these inventories (Schriesheim, Kopelman, & Solomon, 1989), making it easier for subjects to identify and distinguish the specific contents of items. The authors of the original version of the PBQ (Beck & Beck, 1991) also adopted this kind of structure with grouped items, which has been preserved in the Polish adaptation. Additionally, the procedure based on factor analysis made it possible to reduce the intercorrelations among PBQ scales – which is evident in the comparison of translated and modified Polish versions. This has been achieved through the elimination of items loaded by the general factor and the isolation of specific diagnostic items for particular disorders, together with the elimination of diagnostic redundancies. In fact, however, this diagnostic disadvantage during the process of PBQ adaptation was only reduced, not eliminated. It is not about the high correlation of scales examining disorders, because the actual co-occurrence of personality disorders in individuals should be considered, but about their excessively high intercorrelations (equal to correlations illustrating their convergent validity). The Polish translation of PBQ and the modified version share diagnostic faults with the original PBQ as well as with other instruments assessing personality disorders on the basis of beliefs.

Finally, instruments that "diagnose" personality disorders based on beliefs generally do not have high convergent validity. In this respect, both the simple Polish translation and the modified version of the PBQ seem to retain the defects of the original PBQ and other such diagnostic tools. For these scales, correlations about .40 with other measures, including noncognitive indicators of personality disorders, are usually obtained. Such coefficients were also obtained in the present study – they do not indicate a deficit of validity in the Polish versions, but rather illustrate the more general phenomenon of reduced diagnostic usefulness of research instruments based solely on cognitive characteristics. Therefore, the full assessment of personality should consider also the patterns of emotional reactions and behavior patterns specific to particular disorders. In this sense, the PBQ does not offer a fully valuable assessment of personality disorders equivalent to other diagnostic tools using more comprehensive indicators of disorders. We believe that the PBQ may only offer the "diagnosis" of specific beliefs in personality disorders, which has considerable theoretical importance in itself and

adds significant value to therapeutic practice. Modification of the core beliefs (cognitive schemas) is considered one of the central mechanisms of change – responsible for clinical improvement achieved through cognitive therapy (Wenzel, Chapman, Newman, & Brown, 2006) and its close derivation known as schema therapy (Arntz & van Genderen, 2016; Young, Klosko, & Weishaar, 2003). The confirmation of this hypothesis requires studies on the effectiveness of therapy by means of instruments that enable a valid "diagnosis" of beliefs (Forster, Berthollier, & Rawlinson, 2014), and both versions of the PBQ may be successfully used for this purpose. The choice of the version, either faithful to the original one or experimental, we eventually leave to the researcher.

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