

# Psychometric properties of the Spanish version of the self-report Personality Diagnostic Questionnaire-4+ (PDQ-4+) in psychiatric outpatients

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We examined the psychometric properties of the Spanish version of the self-report Personality Diagnostic Questionnaire-4+ (PDQ-4+) in a sample of 437 psychiatric outpatients. Psychometric properties were assessed through internal consistency analysis, exploratory factor analysis (EFA) and concurrent validity. Results indicate that the Spanish version of the PDQ-4+ has moderate internal consistency, which was acceptable for 7 of the 12 self-report scales. The factor structure roughly replicated the DSM-IV clusters. The presence of Personality Disorders was associated with the character dimensions of the Temperament and Character Inventory (TCI).

*Propiedades psicométricas de la versión española del autoinforme Personality Diagnostic Questionnaire-4+ (PDQ-4+) en pacientes psiquiátricos ambulatorios.* Este estudio examina las propiedades psicométricas de la versión española del autoinforme Personality Diagnostic Questionnaire-4+ (PDQ-4+) en una muestra de 437 pacientes psiquiátricos ambulatorios. Se han evaluado sus propiedades psicométricas mediante análisis de consistencia interna, análisis factorial exploratorio (AFE) y validez concurrente. Los resultados indican que la versión española del PDQ-4+ tiene una consistencia interna moderada, siendo aceptable para 7 de las 12 escalas autorreportadas. La estructura factorial replica aproximadamente los clusters del DSM-IV. La presencia de Trastornos de Personalidad está asociada a las dimensiones de carácter del Inventario de Temperamento y Carácter (TCI).

Intense controversy exists regarding the best-suited method for assessing the Personality Disorders (PDs) contained in the DSM taxonomy. DSM-based self-report are among the most widely used instruments in the assessment of PDs, but they have weaknesses as well as strengths (McDermutt & Zimmerman, 2005; Segal & Coolidge, 2003; Widiger & Samuel, 2005). Their strengths include satisfactory internal reliability, replicability, convergence, and the availability of normative data (Widiger & Samuel, 2005). What is more, their use in clinical settings is relatively cheap (Aboraya, 2009). Among their weaknesses, it has been claimed that self-reports grossly overdiagnose and are useful only as screenings (Hyler, Skodol, Kellman, Oldham, & Rosnick, 1990). However, this statement makes no sense in the absence of an external criterion for validating diagnosis. For example, the benchmark position of interviews is undermined by the finding that 60% of personality problems seen in clinical practice are under-threshold according to DSM-based interviews (Westen & Arkowitz-Westen, 1998) and by the suggestion that they underdiagnose compared with expert consensus (Pilkonis et al., 1995). Furthermore, the convergence between self-reports and DSM-based interview scores is poor (Duijsens, Bruinsma, Jansen, Eurelings-Bontekoe, & Diekstra,

1996; Guy, Poythress, Douglas, Skeem, & Edens, 2008; Perry, 1992; Zimmerman, 1994). Finally, there is continuing debate on whether the DSM taxonomy for Personality Disorders (PD) should be substituted by a dimensional alternative, and what this alternative might be (Widiger, Livesley, & Clark, 2009; Widiger & Trull, 2007). Nevertheless, Cloninger and colleagues have argued that the two classification systems (categorical and dimensional) are related; their studies revealed that all PDs are associated with lower scores on the Self-Directedness and Cooperativeness character domains, and that PD clusters present notably high scores on temperament dimensions (Cloninger, Svrakic, & Przybeck, 1993; Svrakic, Whitehead, Przybeck, & Cloninger, 1993).

A review of the literature suggests that the *Personality Diagnostic Questionnaire-4+* (4<sup>th</sup> revision; PDQ-4+; Hyler, 1994), a self-report developed by Hyler to assess DSM-IV PDs is, by virtue of its design, better equipped than other instruments to clarify some of these questions. First, it closely fits the DSM personality disorder descriptors, as each item literally reflects a single DSM-IV diagnostic criterion. Second, the PDQ-4+ is not merely a screening tool, but an independent and well-validated instrument in its own right. As a result, it has been strongly recommended for brief screenings (Widiger & Samuel, 2005). Originally developed from the PDQ-R (Hyler, Skodol, Kellman, Oldham, & Rosnick, 1992), it is 99-item self-report measure on which items are answered using a yes/no format. PDQ-4+ measures ten official DSM-IV PDs (Paranoid, Schizoid, Schizotypal, Antisocial, Borderline, Histrionic, Narcissistic, Avoidant, Dependent and Obsessive-Compulsive) and the two PDs proposed in DSM-IV Appendix B:

Negativistic (Passive-Aggressive) and Depressive PDs. Its total score is used as an index of overall personality disturbance, with scores under 20 ruling out PD, those between 20 and 30 requiring further assessment, and those above 30 signaling probable PD diagnosis (Hyler, 1994). In common with its previous versions (PDQ and PDQ-R), the psychometric properties of the PDQ-4+ have been shown to be satisfactory, both in its original version (Hyler, 1994) and in its adaptation to other languages and cultures (Fossati et al., 1998; Kim, Choi, & Cho, 2000; Wilberg, Dammen, & Friis, 2000; Yang et al., 2000). However, few studies to date have examined the correlation between PDQ-4+ scores and Cloninger's model of *Temperament and Character Inventory* (TCI; Cloninger, Przybeck, Svrakic, & Wetzel, 1994) (Hyun Ha, Jo Kim, Abbey, & Kim, 2007; Miller, Campbell, Pilkonis, & Morse, 2008).

The main objective of this study was to analyze the psychometric properties and the internal consistency ( $\alpha$ ) and factorial structure (Exploratory Factor Analysis) of the Spanish version of the PDQ-4+ questionnaire. A second objective was to compare two assessment systems and to evaluate the concurrent validity of the PDQ-4+ and the scales of the Temperament and Character Inventory (TCI).

Method

Participants

The sample consisted of 437 psychiatric outpatients consecutively attended at the Psychiatry Service of a General Teaching Hospital in Barcelona, Spain. Exclusion criteria were psychosis, cognitive disorders, mental retardation, substance dependence disorder, or severe concomitant medical illness. Patients were assessed with the PDQ-4+ self-report. Of the total sample, 366 subjects also completed the TCI questionnaire. Subjects with incomplete or missing questionnaires were excluded. The study was approved by the hospital's ethics committee. All patients agreed to participate voluntarily and provided written informed consent after receiving a complete explanation of the study.

The mean age of participants was 32.3 years (SD 10.9; range 17-82 years), and 225 (51.5%) subjects were men. In all, 75.9% (n= 332) patients received at least one DSM-IV axis I diagnosis; the most frequently diagnosed DSM-IV axis I disorders were anxiety disorders (n= 215; 64.8%) and mood disorders (n= 184; 55.4%).

Materials

The *Personality Diagnostic Questionnaire-4+* (PDQ-4+) has been partly described above. The self-report was translated into Spanish by two of the authors (NC and RT), and then back-translated by a bilingual psychologist. The team agreed on a final version which was then approved by the original author. Preliminary findings on the psychometric properties of the Spanish version have been published elsewhere (Calvo, Caseras, Gutiérrez, & Torrubia, 2002). The version's internal consistency (Cronbach's alpha) for all personality disorders ranged from .34 to .73 (PDQ-4+ total score .93) (Calvo et al., 2002; Calvo, 2007).

The *Temperament and Character Inventory* (TCI; Cloninger et al., 1994) is a 240-item questionnaire that measures Cloninger's seven-factor personality model: four temperament (Harm Avoidance, Novelty Seeking, Reward Dependence, and Persistence), and three character dimensions (Self-Directedness,

Cooperativeness, and Self-Transcendence). The Spanish version has shown adequate psychometric properties: Cronbach's alpha coefficients for dimensions  $\geq .65$  (exception Persistence with .49), and the factor structure (Promax) replicated the original version (Gutiérrez et al., 2001).

Data analysis

SPSS version 15.0 was used for analysis. The psychometric properties of Self-reported PDQ-4+ scales were analyzed with prevalences and dimensionally (mean and standard deviation), using the DSM-IV thresholds. The internal consistency of the PDQ-4+ self-report scales was examined through Cronbach's alpha coefficients ( $\alpha$ ) for individual disorders, clusters, and total score. In order to explore the underlying structure of the scale, an Exploratory Factor Analysis (EFA) was conducted based on principal components extraction and Promax rotation. Successive extractions of two to five factors were examined, and the best solution chosen based on parallel test, simple structure, and interpretability. Concurrent validity was tested by means of Pearson's *r* coefficients between the PDQ-4+ scales and the TCI dimensions.

Results

Descriptive analysis

Table 1 presents the prevalences and means of the PDQ-4+ scales, clusters and PDQ-4+ total score. Obsessive-compulsive, Depressive, Avoidant and Borderline PDs were the most prevalent (>40%), and the mean number of criteria met was over 3.5. The total prevalence of PDQ-4+ was over 80% and the mean total PDQ-4+ score was 35.1 (SD 14.5).

	%	N	Mean	(SD)
Paranoid	35.2	154	2.7	(2.0)
Schizoid	14.6	64	2.0	(1.5)
Schizotypal	27	118	3.2	(2.1)
Antisocial	3.9	17	1.4	(1.4)
Borderline	41.2	180	4.0	(2.2)
Histrionic	14.6	64	2.6	(1.7)
Narcissistic	13.3	58	2.4	(1.8)
Avoidant	49	214	3.5	(2.0)
Dependent	21.3	93	2.6	(2.2)
Obsessive-Compulsive	60.2	263	3.9	(1.7)
Depressive	52.2	228	4.3	(2.0)
Negativistic	24.3	106	2.5	(1.6)
Cluster A	47.8	209	7.9	(4.4)
Cluster B	49.7	217	10.3	(5.4)
Cluster C	75.7	331	10.1	(4.5)
PDQ-4+ Total Score	84.7	370	35.1	(14.5)

Internal consistency and Factor analysis

Regarding internal consistency, seven scales reached  $\alpha$  coefficients of .60 or above. Mean  $\alpha$  was .61, ranging from .41 (Obsessive-compulsive) to .73 (Avoidant) (Table 2, left).

Results for the factor analysis of the PDQ-4+ disorders (excepting Depressive and Negativistic, which do not belong to any cluster) (EFA) are presented in Table 2 (right). A three-factor solution accounted for 65.2% of the overall variance and was theoretically interpretable. Factor 1, accounting for 41.9% of the explained variance, was defined by Antisocial, Histrionic, and Narcissistic PDs. Factor 2 explained 12.5% of variance and was chiefly loaded by Schizoid, Schizotypal, and Paranoid PDs. Factor 3 accounted for 10.7% of variance and was defined by Dependent and Avoidant PDs, with Antisocial loading negatively. Paranoid, Borderline and Obsessive-compulsive PDs did not belong unequivocally to a sole factor. Congruence coefficients with the theoretical three-cluster DSM-IV structure (assuming «1» for loading and «0» for non-loading disorders) (Guadagnoli & Velicer, 1991) were .86, .89, and .79 for clusters A, B and C respectively.

Concurrent validity PDQ-4+ - TCI

Table 3 reports the Pearson's correlations of the PDQ-4+ individual PDs, clusters, and total score with the TCI dimensions. The three clusters showed specific association patterns with temperament: Cluster A with Harm Avoidance (.41) and negatively with Reward Dependence (-.36); Cluster B with Novelty seeking (.39); and Cluster C with Harm Avoidance (.64). Individual disorders followed the same pattern as their corresponding cluster.

In addition, Schizoid and Avoidant PDs were negatively associated with Novelty Seeking, and Obsessive-compulsive PD was the only disorder positively related to Persistence. Self-directedness (between -.27 and -.71) and Cooperativeness (between -.11 and -.51) character scales were related negatively, and Self-transcendence positively, both to the three clusters and to nearly all individual disorders. The PDQ-4+ total score showed a notably high correlation (-.73) with Self-directedness.

Discussion

The current study analyzed the psychometric properties of the Spanish version of the PDQ-4+ self-reports. The PDQ-4+ appeared to have moderate screening properties for the diagnosis of Personality Disorders in this population. Our findings suggest that the prevalences obtained with the PDQ-4+ are within the expected range in clinical samples. For example, 83.4% of patients had at least one PD, which is consistent with the results of previous studies ranging from 83% to 91% (Fossati et al., 1998; Wilberg et al., 2000). The mean of 3.29 diagnoses for subject is also within the expected range, in view of previous Italian and Norwegian studies reporting 4.27 and 4.00 respectively (Fossati et al., 1998; Wilberg et al., 2000). The most prevalent diagnoses were Obsessive-compulsive, Avoidant and Borderline PDs, in agreement with Hyun Ha et al., (2007). In accordance with previous authors (Fossati et al., 1998; Wilberg et al., 2000) we found that the PDQ-4+ reported multiple diagnoses and higher prevalence rates of PDs. Compared with structured interviews, this reflects a high false positive rate and a poor ability to establish differential diagnosis (Davison et

*Table 2*  
Cronbach's alphas and factor structure of the PDQ-4+ scales after Promax rotation (n= 437)

	$\alpha$	EFA (Promax rotation)			
		F1	F2	F3	$h^2$
Paranoid	.69	<b>.35</b>	<b>.49</b>	.08	.57
Schizoid	.55	-.16	<b>.94</b>	-.13	.72
Schizotypal	.64	.09	<b>.70</b>	.19	.70
Antisocial	.62	<b>.89</b>	.14	<b>-.41</b>	.76
Borderline	.66	<b>.34</b>	<b>.33</b>	.28	.56
Histrionic	.54	<b>.78</b>	<b>-.34</b>	.29	.73
Narcissistic	.56	<b>.73</b>	.06	.06	.63
Avoidant	.73	-.26	.26	<b>.84</b>	.76
Dependent	.71	.07	-.15	<b>.90</b>	.77
Obsessive-Compulsive	.41	<b>.31</b>	<b>.32</b>	.17	.41
Depressive	.69	-	-	-	-
Negativistic	.54	-	-	-	-
Cluster A	.79				
Cluster B	.82				
Cluster C	.79				
PDQ-4+ Total Score	.92				
% Variance		41.9	12.5	10.7	

*Table 3*  
Pearson's correlations between self-reported PDQ-4+ scores and Cloninger's TCI dimensions (n= 366)

PDQ-4+	Harm Avoidance	Novelty Seeking	Reward Dependence	Persistence	Self-Directedness	Cooperativeness	Self-Transcendence
Paranoid	.28**	.03	-.20**	.06	<b>-.46**</b>	<b>-.47**</b>	.24**
Schizoid	<b>.30**</b>	-.21**	<b>-.53**</b>	.03	-.27**	<b>-.39**</b>	-.05
Schizotypal	<b>.40**</b>	-.12*	-.24**	.08	<b>-.44**</b>	<b>-.38**</b>	<b>.30**</b>
Antisocial	-.11*	<b>.46**</b>	-.18**	-.14	<b>-.40**</b>	<b>-.39**</b>	.20**
Borderline	<b>.40**</b>	.22**	-.06	-.03	<b>-.62**</b>	<b>-.30**</b>	.23**
Histrionic	.13*	<b>.33**</b>	.26**	.00	<b>-.42**</b>	-.16**	.29**
Narcissistic	.11*	.20**	-.01	.05	<b>-.41**</b>	<b>-.42**</b>	.27**
Avoidant	<b>.69**</b>	-.25**	-.07	-.03	<b>-.58**</b>	<b>-.31**</b>	-.01
Dependent	<b>.53**</b>	-.07	.10	-.10	<b>-.67**</b>	-.24**	.05
Obsessive	.25**	-.11*	-.08	.28**	<b>-.37**</b>	-.25**	.23**
Depressive	<b>.61**</b>	-.18**	.07	.14**	<b>-.58**</b>	-.11*	.08
Negativistic	<b>.40**</b>	.10*	-.11*	-.07	<b>-.56**</b>	<b>-.42**</b>	.14**
Cluster A	<b>.41**</b>	-.11*	<b>-.36**</b>	.07	<b>-.50**</b>	<b>-.51**</b>	.24**
Cluster B	.21**	<b>.39**</b>	.01	-.04	<b>-.63**</b>	<b>-.42**</b>	<b>.33**</b>
Cluster C	<b>.64**</b>	-.19**	-.01	.04	<b>-.71**</b>	<b>-.34**</b>	.10*
PDQ-4+ Total	<b>.48**</b>	.07	-.13*	.03	<b>-.73**</b>	<b>-.50**</b>	.28**

\*  $p < .05$ ; \*\*  $p < .01$ ;  $r \geq .30$  are in boldtype

al., 2001; Fossati et al., 1998). Our findings and those of previous authors suggest that the PDQ-4+ may be a useful screening tool to detect the presence of PDs, but cannot distinguish precisely between them.

Overall, we found moderate evidence of internal reliability. Our findings were consistent with those reported for its predecessor, the PDQ-R (Hyler & Rieder, 1987), and for the Italian (Fossati et al., 1998), Chinese (Yang et al., 2000), Korean (Kim, Choi, & Cho, 2000) and Norwegian versions of the PDQ-4+ (Wilberg et al., 2000). However, it is worth noting that no studies report excellent  $\alpha$  coefficients: the means average .60 to .65 (Chabrol, Rousseau, Callahan, & Hyler, 2007; Fossati et al., 1998; Wilberg et al., 2000; Yang et al., 2000).

For its part, EFA yielded a three-factor structure for individual disorders. This solution is in disagreement with the one found for the PDQ-4+ in a non-clinical sample (Chabrol et al., 2007), but is not directly comparable to other studies which included a different number of PDs (Yang et al., 2000), factorized individual criteria (Mihura, Meyer, Bel-Bahar, & Gunderson, 2003), or used earlier versions of the instrument (e.g. Hyler, Skodol, Kellman, Oldham, & Rosnick, 1990). In contrast, our solution shows acceptable congruence both with the theoretical A, B and C clusters of the DSM (.86, .89, and .79 respectively) and with the structure that emerges from meta-analyzing a wide range of instruments (.93, .92, and .87; O'Connor, 2005). Other studies have also reported that Paranoid, Borderline, and Obsessive-compulsive disorders do not fit this three-factor structure well: whereas the Borderline and Paranoid PDs do not usually load unequivocally in a sole factor, Obsessive PDs form a separate fourth factor that our data are not able to reproduce (Austin & Deary, 2000; O'Connor, 2005).

Finally, our findings of concurrent validity between the PDQ-4+ PDs questionnaire and TCI dimension scales were consistent with previous studies in clinical and nonclinical samples (Cloninger, 2000; Cloninger, Svrakic, & Przybeck, 1993; Hyun Ha, Jo Kim, Abbey, & Kim, 2007; Svrakic, Whitehead, Przybeck, & Cloninger, 1993; Svrakic et al., 2002). Those authors suggest that all PDs are associated with lower scores on the Self-directedness and Cooperativeness character domains. To a lesser degree, high Self-transcendence appears as a core feature of all PDs (see Gutiérrez et

al., 2008 for a review). Among other results, high scorers on cluster A are temperamentally non-affiliative and aloof (low Reward Dependence), cluster B subjects are impulsive, need change and stimulation, and have difficulty tolerating boredom (high Novelty Seeking), and cluster C subjects are cautious and fearful (high Harm Avoidance). As expected (Cloninger, 2000), Harm Avoidance featured to a certain extent in all PDs. Our results confirm that PDs are a combination of character and temperament scores. The Self-directedness and Cooperativeness character dimensions were found to be powerful predictors of the presence and severity of all PDs. The combinations of temperament dimensions can be used as screening tool for each individual PD.

In summary, our study of the Spanish version of the PDQ-4+ self-report shows moderate reliability (internal consistency) and acceptable validity. Drawbacks such as moderate reliability or suboptimal factor structure are widespread across all DSM-based tools (questionnaires or interviews), suggesting a flawed underlying model rather than defects in the instrument itself (Livesley & Jang, 2000; Perry, 1992; Widiger & Trull, 2007). This highlights the fact that instruments cannot be better than the model they operationalize; therefore, improving our instruments further necessarily entails reexamining our taxonomy (Clark, Livesley, & Morey, 1997).

This study presents some limitations. The sample was recruited from a psychiatric outpatients setting, and so the results cannot be generalized to Spanish clinical samples. Future research should investigate the reliability (i.e. test-retest reliability) and convergent and discriminant validity with other categorical and dimensional methods.

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