



The Persian Version of the Personality Beliefs Questionnaire-Short-Form (PBQ-SF): A Psychometric Evaluation

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Abstract

The Personality Beliefs Questionnaire-Short Form (PBQ-SF) is the short-form version of PBQ (Beck and Beck in The personality belief questionnaire, 1991) and was developed by Butler et al. (Cogn Therapy Res 31(3): 357–370, 2007) to assess dysfunctional beliefs based on cognitive formulations of personality disorders. This study designed to examine the factor structure, internal consistency, and convergent validity of the Persian PBQ-SF in a sample of 502 university students in Iran ($M\ age = 23.22$, $SD = 4.99$, 56.6% women). Confirmatory factor analysis supported the proposed ten-factor model. The internal consistency of the Persian version of PBQ-SF ranged from .56 (Avoidant) to .81 (Histrionic), while MIC values indicated reliabilities in the acceptable range for all PBQ-SF factors. Also, expected associations between PBQ-SF factors (e.g., Narcissism and Antisocial) and external correlates (e.g., Disinhibition and Antagonism) supported the measure's convergent validity. The findings indicated that the Persian version of the PBQ-SF has sound psychometric properties and is a valid and reliable tool for assessing dysfunctional beliefs.

Keywords Personality disorders · Personality Belief Questionnaire-Short Form (PBQ-SF) · Dysfunctional beliefs · Factor structure · Confirmatory factor analysis · Persian version

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Introduction

The cognitive theory of personality disorders (PD) postulates that a distinct set of dysfunctional beliefs defines each PD. Based on this doctrine, cognitive therapy of PDs aims toward the identification and modification of such beliefs (Beck et al., 2003). In this regard, based on clinical experience and theoretical considerations, Beck and Freeman (1990) published an extensive list of dysfunctional beliefs stating that a particular set of dysfunctional beliefs characterizes each PD. Then, based on these identified dysfunctional beliefs, Beck and Beck (1991) developed the Personality Belief Questionnaire (PBQ) to assess the dysfunctional beliefs hypothesized to underlie the PDs. The PBQ contains 126 items (9 scales, 14 items per scale) that assess nine PDs, including avoidant, dependent, passive-aggressive, obsessive-compulsive, antisocial, narcissistic, histrionic, paranoid, and schizoid/schizotypal. Several studies have found sound psychometric properties for the PBQ (e.g., Beck et al., 2001; Butler et al., 2002; Nelson-Gray et al., 2004; Trull et al., 1993).

Later, Butler et al. (2007) developed a short-form of the measure (PBQ-SF), which is more suitable for clinical and research purposes. The study comprised of two separate stages. In the first stage, Butler et al. (2007) administered PBQ on 920 adult psychiatric patients and identified seven items with the highest item-total correlations for each set of 14 items of the PBQ scales. These items formed the shortened version of PBQ, namely, the Personality Belief Questionnaire-Short-Form (PBQ-SF). In the second stage of the study, the authors administered PBQ-SF, along with measures assessing depression, anxiety, psychosocial functioning, dysfunctional attitudes, neuroticism, self-esteem, and social support on a sample of 160 adult psychiatric patients who were carefully evaluated and diagnosed during admission. The results indicated a sound test-retest reliability (0.57 to 0.82), internal consistency (0.81 to 0.92), and validity for the measure. The PDQ-SF includes 65 items (7 items for each scale) and assesses the same PDs that the PDQ measures. Later, Butler et al., (2002; see also Bhar et al., 2008) recognized a set of 7 items (1 Avoidant scale item, 4 Dependent scale items, and 2 Paranoid scale items) to assess beliefs connected with Borderline Personality Disorder.

Since the introduction of PBQ-SF, a few studies have examined its psychometric properties in various cultures with both community and clinical samples. Findings from factor analysis have been relatively consistent and supportive of the originally proposed nine and ten-factor structure models (Bhar et al., 2008; Butler et al., 2007) of the PBQ-SF. For example, Leite et al. (2012) replicated the proposed ten-factor model with a Brazilian college sample. Similarly, Hernández and Vasquez (2015) conducted a series of CFAs to examine the factor structure of each PBQ-SF subscales separately, with the results showing that all dimensions were in the excellent fitness range. In another study, Ferrer et al. (2018) examined the psychometrics of the PBQ-SF with both non-clinical and clinical samples; their results supported the nine-factor model.

Overall, the internal consistency of the PBQ-SF factor scores was most often in the acceptable to an excellent range (e.g., Butler et al., 2007; Ferrer et al., 2018; Leite et al., 2012; Londoño et al., 2012). PBQ-SF scores were correlated

with other measures of general dysfunctional beliefs (e.g., Warpy Thoughts Scale (WTS) and Warpy Thoughts subscale-Relationship (WTS-Relationships)) (Ryan et al., 2015), supporting the criterion validity of the measure. In support of their convergent validity, PBQ scores were correlated with depression, anxiety, dysfunctional attitudes, neuroticism, self-esteem, psychosocial functioning (e.g., Butler et al., 2007; Park et al., 2016), and traits assessed by the Personality Inventory for DSM-5 (PID-5) (Hopwood et al., 2013a).

Notwithstanding, these studies have been conducted in Western countries, and it is unclear if the findings from Western samples are generalizable to Iran. There are meaningful differences between Eastern/Asian (e.g., Iran) and Western (e.g., Europe, USA) cultures concerning interpersonal relationships, cultural values, and social norms (Yokota, 2012), emotional expression (Tsai et al., 2006), and emotional arousal levels (Lim, 2016), which may influence the structure of measures assessing personality in Asian cultures (e.g., Iran). In this regard, dissociations of personality constructs under the influence of cultural differences have been demonstrated in several studies. For instance, the Big-Five Model did not yield a well-fit model in some Asian countries (e.g., Huang et al., 1997; Kunnel John et al., 2019; McCrae et al., 1996). Similarly, the Openness dimension of the NEO Personality Inventory was poorly replicated in a study with 24 different Asian cultures, including Iran (De Fruyt et al., 2009). Also, the five-factor structure model of the personality inventory for DSM-5 brief form (PID-5-BF), which is based on studies with Western cultures, was not replicated with Chinese samples. Instead, a six-factor model was found in which the Negative Affect domain was divided into two factors with the new factor, namely "Interpersonal Relationships," which was in line with the Big-Six Personality model in China, reflecting the humanistic ethic spirit of Chinese culture (Jianxin & Mingjie, 2006; Mei et al., 2017; Zhang et al., 2021). Chinese culture is similar to Iran in that both countries have a collectivistic culture where group harmony is valued over personal desires and ambitions, and people tend to conform to social expectations (For more information, see Ebrahimi et al., 2021; Elhami Athar & Ebrahimi, 2021; Shariat et al., 2010). Given the role of cultural differences in differing factor structure findings in the literature (e.g., PID-5-BF and NEO), the results from studies on the psychometrics of PBQ-SF in Western countries cannot be generalized to the Iranian population, and a separate study is needed to examine the factor structure, reliability, and validities of the PBQ-SF with Iranian sample.

In the present study, we examined the factor structure, reliability, and validity of PBQ-SF in a sample of 502 Iranian university students. First, to test the originally proposed factor structure of the PBQ-SF (Bhar et al., 2008; Butler et al., 2007), confirmatory factor analysis (CFA) will be performed. Then, the internal consistency of the measure will be examined using reliability indices values. Further, to test the convergent validity of the PBQ-SF, we examine the associations between PBQ-SF scores with traits assessed by the Personality Inventory for DSM-5 PID-5-BF. More specifically, it is hypothesized that PBQ-SF subscales would be (e.g., Avoidant, Antisocial, Narcissism, Borderline, etc.) associated positively with PID-5-BF scales (e.g., Negative Affectivity, Disinhibition, Antagonism, etc.) (e.g., Hopwood et al., 2013a, 2013b; Thimm et al., 2016).

Method

Participants

Participants were 18–40 years old university students ($n=502$, M age = 23.22, $SD=4.99$, 56.6% women) in Tehran city who were recruited between May 2019 to November 2019.

Procedure

The ethics committee of the Student Research Committee, University of Social Welfare and Rehabilitation Sciences, first approved this study (code number IR.USWR.REC.1399.128). Next, before beginning the study, research assistants explained the aims of the study to the participants and assured confidentiality to all participants; consequently, informed consent was obtained from the participants, and they were asked to complete PBQ-SF and PID-5-BF under the supervision of a specially trained research assistant (master-level Student). Inclusion criteria included being an undergraduate or graduate student and interest and willingness to participating in the study.

Measures

Personality Inventory for DSM-5-Brief Form (PID-5-BF)

Krueger et al. (2013) developed the PID-5-BF by extracting 25 items from the 220-item PID-5. PID-5-BF represents 21 of the 25 trait facets (facets not included: Restricted Affectivity, Rigid Perfectionism, Submissiveness, and Suspiciousness). Items of PID-5-BF are rated on a 4-point scale (0 = *very false or often false* to 3 = *very true or often true*), with higher scores representing greater dysfunction. Each of the five higher-order domains is represented by five items (Negative Affect: Items 8, 9, 10, 11, and 15; Detachment: Items 4, 13, 14, 16, and 18; Antagonism: Items 17, 19, 20, 22, and 25; Disinhibition: Items 1, 2, 3, 5, and 6; and Psychoticism: Items 7, 12, 21, 23, and 24). Elhami Athar and Ebrahimi (2021) supported the five-factor model of PID-5-BF in the Iranian community and clinical samples and reported acceptable internal consistencies for the measure in both groups. Cronbach's alpha and MICs for the PID-5-BF and its factors can be retrieved from Table 1.

Personality Beliefs Questionnaire-Short-Form (PBQ-SF)

PBQ-SF (Butler et al., 2007) is the short-form version of PBQ (Beck & Beck, 1991) and contains 65 items (rated on a 0–4 scale), which measure dysfunctional beliefs associated with Avoidant, Dependent, Passive-Aggressive, Obsessive–Compulsive, Antisocial, Narcissistic, Histrionic, Schizoid, Paranoid, and Borderline personality

Table 1 Descriptive statistics of PBQ-SF and PID-BF (n = 503)

Measures	Range	Mean (SD)	Skewness	Kurtosis	α	MIC
PBQ-SF						
Avoidant	0–21	9.04 (4.12)	.34	– .12	.56	.16
Dependent	0–24	7.50 (4.80)	.52	– .21	.71	.26
Passive-aggressive	0–35	12.55 (5.08)	.39	.47	.66	.22
Obsessive	0–28	12.52 (5.55)	.45	.18	.77	.33
Antisocial	0–23	7.75 (5.23)	.32	– .61	.74	.30
Narcissistic	0–25	9.46 (5.26)	.34	– .29	.75	.30
Histrionic	0–22	7.25 (5.41)	.39	– .73	.81	.39
Schizoid	0–28	12.22 (5.12)	.25	– .02	.69	.24
Paranoid	0–26	10.10 (5.00)	.29	– .19	.73	.29
Borderline	0–22	8.56 (4.09)	.49	.05	.55	.16
PID-5-BF						
Negative affect	0–16	6.66 (3.19)	.02	– .22	.62	.24
Detachment	0–16	5.04 (3.17)	.52	.25	.67	.29
Antagonism	0–16	4.68 (2.95)	.55	.33	.64	.24
Disinhibition	0–16	5.27 (3.04)	.33	– .09	.61	.24
Psychoticism	0–20	5.62 (3.25)	.23	.05	.59	.27

PBQ-SF Personality Beliefs Questionnaire-Short Form, *PID-5-BF* Personality Inventory for DSM-5-Brief Form, *SD* standard deviation, *MIC* mean interitem correlation

disorders. The nature and psychometric properties of the PBQ-SF have been reviewed previously.

Persian PBQ-SF

Two translators fluent in both English and Persian translated the original version of PBQ-SF from American English to Persian. Then, after matching together the Persian translations, they were provided to another translator to back translate. Repeated revisions were done to ensure translation accuracy. To examine the content validity of the PBQ-SF, we asked three specialists in clinical psychology and two specialists in psychiatry to review the translated version. Also, to determine face validity, a group of students was asked to complete the measure and report any concerns, questions, or misunderstandings about the accuracy of the sentences, response format, and/or sentence structure of the items. Based on the students' feedback, we revised the problematical statements to make them more straightforward and transparent.

Data Analyses

Descriptive information for all variables used in the present study is represented in Table 1. In the current research study, we used SPSS 18.0 (Meyers et al., 2013) to perform descriptive characteristics of the population and descriptive statistics of

measures. The frequency table and box plots were used to identify outlier data, and missing values were handled using the series mean method.

According to structural equation literature (e.g., Brown, 2015), when prior research has established the factor structure of a measure, the statistical method used in the later construct validation studies should be confirmatory factor analysis (CFA) rather than exploratory factor analysis (EFA). Therefore, to test the PBQ-SF ten-factor structure model, CFA was conducted through Lisrel 8.80 using the maximum likelihood estimator (Du Toit et al., 2001). Univariate normality was checked by the skewness and kurtosis statistics of each of the observable variables (i.e., measure's items), with the results indicating that all items were in the recommended skewness (± 3) and kurtosis ranges (± 10) (e.g., Chou & Bentler, 1995; Kline, 2015). Also, the relative multivariate kurtosis index as reported by the output from LISREL 8.80 was equaled to 1.05, which is less than 3, indicating that the data met the criteria of multivariate normality (Bentler, 1998). Model fit was assessed using the Tucker–Lewis index (TLI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). We considered RMSEA scores below 0.05 to indicate a good fit and scores between 0.05 and 0.08 indicating acceptable fit. A TLI and CFI score of 0.95 or above indicates excellent fit, and scores of 0.90 or more indicate a good fit (Bentler, 1990; Hu & Bentler, 1999). Two CFAs were conducted to examine the ten-factor model specified with the 65 items (observed variables) once with ten correlated latent factors and then with the latent factors assumed as uncorrelated.

The internal consistency of the PBQ-SF scores was investigated through Cronbach's α and mean inter-item correlation (MIC) values. Cronbach's alpha reliability coefficient ranges between 0 and 1. In contrast to α , MIC values are not dependent on the number of items in a scale. MIC values should be in the range of 0.15 to 0.50 to be considered acceptable (Clark & Watson, 1995).

Finally, to evaluate the convergent validity of the interpretation of the PBQ-SF factor scores, Pearson correlation coefficients were examined between the PBQ-SF scores and external correlates of interest (e.g., Negative Affectivity, Disinhibition, and Antagonism).

Results

Confirmatory Factor Analysis

The results of the CFAs showed that the model with ten uncorrelated latent factors did not yield adequate fitness [(CFI = 0.88, TLI = 0.87; RMSEA = 0.083; 90 percent confidence interval for RMSEA = (0.082–0.085)], while the ten-factor model of the PBQ-SF with ten correlated latent factors [(CFI = 0.92, TLI = 0.92; RMSEA = 0.067; 90 percent confidence interval for RMSEA = (0.066–0.069)] reached adequate fitness (Table 2). Notwithstanding the acceptable fitness for the ten-factor model of the PBQ-SF, the results indicated that items 43 and 31 did not load significantly on the Avoidant factor but loaded significantly on the Borderline factor. In the same vein, items 56 and 45 loaded negatively on the Borderline subscale but positively on the Dependent factor. Similarly, item 49 loaded negatively on the Borderline subscale

Table 2 PBQ-SF Item Loadings

Item	Factors									
	AVO	DEP	PAS	OBS	ANT	NAR	HIS	SCH	PAR	BOR
Avoidant										
Being exposed as inferior or inadequate will be intolerable	.53*									
I should avoid unpleasant situations at all cost	.43*									
I cannot tolerate unpleasant feelings	.46*									
Unpleasant feelings will escalate and get out of control	.07									
I should avoid situations in which I attract attention, or be as inconspicuous as possible	.21*									
Any signs of tension in a relationship indicate the relationship has gone bad; therefore, I should cut it off	.38*									
If people get close to me, they will discover the "real" me and reject me	.06									
Dependent										
The worst possible thing would be to be abandoned		.47*								
I need others to help me make decisions or tell me what to do		.42*								
I am needy and weak		.54*								
I am helpless when I'm left on my own		.91*								
I need somebody around available at all times to help me to carry out what I need to do or in case something bad happens		1.39*								
I must maintain access to him or her at all times		.51*								
I am basically alone—unless I can attach myself to a stronger person		.63*								
Passive aggressive										
I have to resist the domination of authorities but at the same time maintain their approval and acceptance									.40*	
Other: people are often too demanding										.32*
If I regard people as too bossy, I have a right to disregard their demands										.58*
Authority figures tend to be intrusive, demanding, interfering, and controlling										.53*

Table 2 (continued)

Item	Factors									
	AVO	DEP	PAS	OBS	ANT	NAR	HIS	SCH	PAR	BOR
Making deadlines, complying with demands, and conforming are direct blows to my pride and self-sufficiency			.45*							
Rules are arbitrary and stifle me			.50*							
If I follow the rules the way people expect, it will inhibit my freedom of action			.50*							
Obsessive-compulsive				.58*						
Flaws, defects, or mistakes are intolerable				.45*						
If I don't have systems, everything will fall apart				.63*						
It is important to do a perfect job on everything				.65*						
Details are extremely important				.57*						
It is necessary to stick to the highest standards at all times, or things will fall apart				.65*						
If I don't perform at the highest level, I will fail				.47*						
Any flaw or defect of performance may lead to a catastrophe										
Antisocial										
I should do whatever I can get away with					.61*					
We live in a jungle and the strong person is the one who survives					.36*					
If I want something, I should do whatever is necessary to get it					.62*					
People will get at me if I don't get them first					.59*					
I have been unfairly treated and am entitled to get my fair share by whatever means I can					.71*					
If I don't push other people, I will get pushed around					.50*					
Force or cunning is the best way to get things done					.42*					
Narcissism										
It's intolerable if I'm not accorded my due respect or don't get what I'm entitled to										.56*
Other people should recognize how special I am										.47*

Table 2 (continued)

Item	Factors									
	AVO	DEP	PAS	OBS	ANT	NAR	HIS	SCH	PAR	BOR
Only people as brilliant as I am understand me						.71*				
Since I am so superior, I am entitled to special treatment and privileges						.66*				
Other people should satisfy my needs						.33*				
Since I am so talented, people should go out of their way to promote my career						.51*				
I don't have to be bound by the rules that apply to other people						.59*				
Histrionic										
If I don't keep others engaged with me, they won't like me							.60*			
The way to get what I want is to dazzle or amuse people							.70*			
Unless I entertain or impress people, I am nothing							.65*			
It is awful if people ignore me							.64*			
I should be the center of attention							.61*			
In order to be happy, I need other people to pay attention to me							.57*			
If I entertain people, they will not notice my weaknesses							.61*			
Schizoid										
I enjoy doing things more by myself than with other people								.52*		
Relationships are messy and interfere with freedom								.67*		
It is important for me to be free and independent of others								.63*		
In many situations, I am better off to be left alone								.45*		
It's better to be alone than to feel "stuck" with other people								.34*		
My privacy is much more important to me than closeness to people								.57*		
What other people think doesn't matter to me								.29*		
Paranoid										
If people act friendly, they may be trying to use or exploit me										.60*

Table 2 (continued)

Item	Factors									
	AVO	DEP	PAS	OBS	ANT	NAR	HIS	SCH	PAR	BOR
Others will try to use me or manipulate me if I don't watch out									.63*	
Other people have hidden motives									.68*	
Other people will deliberately try to demean me									.47*	
If other people find out things about me, they will use them against me									.55*	
People will take advantage of me if I give them the chance									.54*	
I have to be on guard at all times									.51*	
Borderline										
I cannot trust other people										.44*
I can't cope as other people can										.56*
I have to be on guard at all times										-.53*
If people get close to me, they will discover the "real" me and reject me										.51*
Unpleasant feelings will escalate and get out of control										.70*
I am helpless when I'm left on my own										-.37*
I need somebody around available at all times to help me to carry out what I need to do or In case something bad happens										- 1.02*

PBQ-SF Personality Beliefs Questionnaire-Short Form, *PID-5-BF* Personality Inventory for DSM-5-Brief Form, *AVO* avoidant, *DEP* dependent, *PAS* passive aggressive, *OBS* obsessive-compulsive, *ANT* antisocial, *NAR* narcissism, *HIS* histrionic, *SCH* schizoid, *PAR* paranoid, *BOR* borderline

**T*-value ($P < .05$)

but had a significant high loading on the Paranoid factor. However, we did not modify the model based on these results because the modified model did not result in a significant increase in fit indices.

Internal Consistency and Correlations Between the PBQ-SF Scores

As shown in Table 1, the internal consistency of the modified PBQ-SF factor scores indicated alphas ranging from 0.56 (Avoidant) to 0.81 (Histrionic). Further, MIC values were indicative of acceptable internal consistency for all PBQ-SF factors (Table 1). Significant zero-order correlations were also found between the ten PBQ-SF factors scores (Table 1).

Convergent Validity

All PBQ-SF factor scores were positively correlated to Psychoticism. Also, except the Schizoid factor, the other nine subscales of PBQ-SF had significant positive correlations with Negative Affect. Similarly, nine dimensions of the PBQ-SF (excluding the Obsessive Compulsive subscale) were positively related to Detachment, Antagonism, and Disinhibition (see Table 3 for more information).

Table 3 Pearson correlation between PBQ-SF and PID-BF and intercorrelations among PBQ-SF subscales (n = 503)

	AVO	DEP	PAS	OBS	ANT	NAR	HIS	SCH	PAR	BOR
Measures										
Avoidant	1	–	–	–	–	–	–	–	–	–
Dependent	.56**	1	–	–	–	–	–	–	–	–
Passive aggressive	.26**	.32**	1	–	–	–	–	–	–	–
Obsessive	.26**	.20**	.34**	1	–	–	–	–	–	–
Antisocial	.45**	.46**	.33**	.23**	1	–	–	–	–	–
Narcissistic	.42**	.40**	.39**	.32**	.59**	1	–	–	–	–
Histrionic	.46**	.57**	.30**	.24**	.60**	.61**	1	–	–	–
Schizoid	.22**	.06	.36**	.29**	.28**	.31**	.07	1	–	–
Paranoid	.38**	.34**	.41**	.26**	.52**	.50**	.39**	.33**	1	–
Borderline	.65**	.76**	.32**	.21*	.55**	.49**	.56**	.25**	.57**	1
PID-5-BF										
Negative Affect	.34**	.43**	.12**	.15**	.20**	.26**	.33**	.07	.27**	.45**
Detachment	.33**	.35**	.17**	.04	.41**	.30**	.36**	.29**	.34**	.44**
Antagonism	.35**	.42**	.18**	.05	.54**	.47**	.51**	.14**	.39**	.47**
Disinhibition	.34**	.37**	.21**	.06	.30**	.32**	.29**	.17**	.30**	.38**
Psychoticism	.32**	.39**	.22**	.14**	.41**	.40**	.35**	.25**	.38**	.46**

PBQ-SF Personality Beliefs Questionnaire-Short Form, *PID-5-BF* Personality Inventory for DSM-5-Brief Form, *AVO* avoidant, *DEP* dependent, *PAS* passive aggressive, *OBS* obsessive-compulsive, *ANT* antisocial, *NAR* narcissism, *HIS* histrionic, *SCH* schizoid, *PAR* paranoid, *BOR* borderline

** $p < .001$

Discussion

This study aimed to examine the psychometric properties and factor structure of PBQ-SF with an Iranian university student sample. Our first aim was to test the ten-factor structure model of the PBQ-SF, and our results confirmed this model. However, our results indicated inconsistencies concerning the loading of a few items in the ten-factor model. For instance, while in the originally proposed ten-factor model of PBQ-SF, items 43 (“If people get close to me, they will discover the “real” me and reject me.”) and 31 (“Unpleasant feelings will escalate and get out of control.”) loaded on both Avoidant and Borderline factors, the current study results indicated that these items loaded significantly only on the Borderline subscale. In addition, in the ten-factor model, items 56 (“I need somebody around available at all times to help me to carry out what I need to do or in case something bad happens.”) and 45 (“I am helpless when I’m left on my own.”) loaded on both the Dependent and Borderline subscales, but our results indicated that these two items loaded negatively on the Borderline factor but significantly and positively on the Dependent factor. Finally, item 49 (“I have to be on guard at all times.”) loaded negatively on the Borderline subscale, while it had a significant positive loading on the Paranoid factor. Such inconsistencies indicate that the item structure of the PBQ-SF might require modifications, particularly for items with content that is theoretically consistent with a particular subscale (e.g., dependent vs. borderline). Future studies are recommended to examine the factor structure of the PBQ-SF in different cultures and samples. To date, we could not find a CFA study of the PBQ-SF to compare our results on the ten-factor model of the PBQ-SF. The only somewhat similar study to our work is the study by Hernández and Vasquez (2015) where the authors conducted a series of CFAs to examine the factor structure of each PBQ-SF subscales separately, with the results showing that all dimensions were in the excellent fitness range (i.e., TLI and CFI > 0.95, RMSEA lower than 0.08).

This study’s second goal was to examine the internal consistency of the PBQ-SF. The results showed when relying on Chronbach’s alpha as the index of internal consistency, the reliability of the PBQ-SF subscales was in the low to a good range. However, MIC values of all of the subscales were in the acceptable range, supporting the internal consistency of the PBQ-SF subscales. Our results concerning the internal consistency of the PBQ-SF are consistent with previous studies (e.g., Hernández & Vasquez, 2015; Butler et al., 2007; Ryan et al., 2015).

Our third goal in the current study was to examine the convergent validity of PBQ-SF dimensions with the PID-5-BF subscales. Strong conceptually significant associations were found between the BPQ-SF dimensions and PID-5-BF subscales. Echoing previous studies (e.g., Hopwood et al., 2013a, 2013b; Thimm et al., 2016), the Paranoid subscale was significantly associated with all PID-5-BF dimensions, while the Obsessive Compulsive subscale had significant positive association with Negative Affect and Psychoticism. Similarly, Avoidant, Antisocial, Narcissism, and Borderline dimensions of PBQ-SF had significant positive associations with all PID-5-BF subscales. More specifically, Narcissism and Antisocial dimensions were

more correlated with Antagonism than Negative Affect, which is consistent with the literature. These results support the convergent validity of the PBQ-SF scores.

Taken together, the findings of the present study concerning the factor structure, reliability, and convergent validity suggest that the Persian version of the PBQ-SF is a valid measure for assessing dysfunctional beliefs.

One of the limitations of the present study is using a non-clinical university student sample whose diagnostic status was not assessed, so the findings from the current study should not be generalized to other groups. Future studies could extend the results of the present study by including clinical samples, especially patients with personality disorders and comparing the results with a large community sample. Further, this study used only self-reported data, which may have involved a risk for untrue high correlations between measures. More reliable findings would be obtained if it was possible to administer informant-reports or clinician rating measures, such as the SCID-5-PD, which is the gold standard in psychiatric diagnosis of personality disorders and is regularly used in research settings (First et al., 2016).

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Authors' Contribution ET and AE: designed the study and drafted the manuscript. MEA: performed data analysis and reviewed/revised the manuscript. HSA, MT, and HM: gathered the data.

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Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethics approval The ethics committee of the Student Research Committee, University of Social Welfare and Rehabilitation Sciences, first approved this study (Code number IR.USWR.REC.1399.128).

Consent to participate Informed consent was obtained from all individual participants included in the study.

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