

# Screening borderline personality disorder: The psychometric properties of the Persian version of the McLean screening instrument for borderline personality disorder

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**Background:** Screening for personality disorders through reliable instruments is of high importance for clinical and preventive purposes. Examining the psychometric properties of measures in societies with diverse cultures can improve their external validity. This research is specifically aimed to studying psychometric properties of the McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD) in a sample of Iranian men serving military service. **Materials and Methods:** The Persian version of the MSI-BPD was prepared through forwarding translation, reconciliation, and back-translation. A sample of 254 soldiers was selected through the convenience sampling method in Tehran and completed a set of questionnaires, including the MSI-BPD, The Deliberate Self-harm Inventory (DSHI), Borderline Personality Scale (STB), Cognitive Flexibility Inventory (CFI), and Self-Compassion Scale (SCS) Short-Form. The construct validity of the MSI-BPD was assessed using confirmatory factor analysis and divergent and convergent validity. Internal Consistency and test-retest reliability (2 weeks'interval) were used to evaluate the reliability. Data analysis was conducted using LISREL (version 8.8) and SSPS (version 22) software. **Results:** MSI-BPD and its subscales were found to be valid and reliable measures, with good internal consistency and good test-retest reliability among soldiers. In terms of convergent validity, MSI-BPD and subscales showed a significant positive correlation with self-report measures of DSHI and STB. MSI-BPD and subscales showed negative correlation with SCS Short-Form and CFI, thus demonstrated a good divergent validity. The results of this study also provide support for both one-factor and two-factor models of the MSI-BPD. **Conclusion:** The MSI-BPD showed good validity and reliability, making it a useful measure to Screening borderline personality disorder in the Iranian population. Screening offers a means of identifying persons for more detailed evaluation for early intervention and for research. The MSI-BPD is an efficient instrument suitable for screening purposes among soldiers.

**Key words:** Borderline personality disorder, factor analysis, psychological tests, psychology military, psychometrics

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## INTRODUCTION

McLean Screening Instrument for Borderline personality disorder (MSI-BPD) is characterized by a pervasive pattern of instability in interpersonal relationships, self-image, affect, and impulse control.<sup>[1]</sup> There are no specific epidemiological studies available, however, it is speculated that, a BPD is occur in 1%–2% of the general population and is more common among twins

and women.<sup>[1]</sup> BPD usually emerges during adolescence and is related with severe morbidity.<sup>[2]</sup> The prevalence of BPD in men is 5.6%.<sup>[3]</sup> Individuals with BPD seem to have higher than expected rates of affective and impulsive disorders,<sup>[4]</sup> substance-related disorders and antisocial characteristics,<sup>[5]</sup> some types of Axis II disorders,<sup>[6,7]</sup> and impulse-spectrum disorders.<sup>[8]</sup> Approximately 10%–26% of people with BPD have a history of suicide attempt.<sup>[9,10]</sup> They have a history of conflicts in

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behavioral, emotional, cognitive, and interpersonal areas which lead to grave consequences in personal, familial, and social contexts.<sup>[11]</sup> Based on a study on military personnel, people with a history of self-injury score higher in BPD as well as other personality disorders.<sup>[12]</sup> Mental disorders are very common among military personnel and are a major reason for leaving the military. The most common mental disorders that lead to leaving the service are personality disorders. Cluster B (antisocial personality disorder, BPD, histrionic personality disorder, and narcissistic personality disorder) personality disorders, especially BPD, are highly prevalent among soldiers.<sup>[13]</sup> Moreover, studies show that there is a significant correlation between BPD and suicide attempt among soldiers.<sup>[14]</sup> Nearly 70% patients with BPD are reported to attempt suicide at several time in their life and 5%–10% successfully completes the suicide, both rates are very higher than the general population.<sup>[15]</sup> Therefore, screening of people before entering the military service and during their service is important in the diagnosis and preventive treatment.<sup>[16]</sup> Etiology, hospital admission criteria, and diagnostic instruments are the topics often discussed.<sup>[17]</sup> The complexity of BPD lead us to use standard instruments to complete general clinical evaluations.<sup>[18]</sup> Current structured interviews and instruments are usually long and time-consuming, limiting their application in the general clinical population.<sup>[19]</sup> A self-report instrument provides a valid assessment of borderline personality characteristics that is more effective than a clinical interview in assessing experiential symptoms such as feelings of emptiness and identity distortions.<sup>[20]</sup> These instruments are short and easy to use in clinical practice, save time and are more applicable in other care and research settings, reduce defensive responses, and have better psychometric properties due to the standardization in larger samples. Such brevity and facility make them better choices for screening, although they should only be used as diagnostic instruments. It is preferred for marking individuals for further comprehensive diagnosis.<sup>[20,21]</sup> The MSI-BPD is the first screening scale for BPD<sup>[21]</sup> based on DSM-IV and DSM-5. This scale was created to provide a valid and reliable scale that was easy for the implement for an initial assessment of BPD. Before this questionnaire, the Diagnostic Personality Questionnaire was the only screening method available, although it was not specific to BPD that led to high false-positive and low specificity. The MSI-BPD is a ten-item screening questionnaire with yes and no answers, with appropriate psychometric properties in adolescents and adults.<sup>[21]</sup> Using MSI-BPD in various studies with clinical and non-clinical populations as a screening instrument for BPD has showed good validity and reliability,<sup>[22-24]</sup> that is why in recent years, it is adjusted and standardized in other languages.<sup>[25-27]</sup> It has been widely used to screen for BPD in other cultures.<sup>[19,21,22,28,29]</sup> This questionnaire is used in both clinical and

non-clinical samples.<sup>[19,28,29]</sup> Investigating the psychometric properties of this scale in societies with diverse cultures can improve its external validity.<sup>[30]</sup> Therefore, considering the prevalence and consequences of BPD and lack of a reliable and valid scale in Persian, there is a need for a valid screening instrument for BPD. The present study is aimed at filling this gap by investigating the psychometric properties of the Persian version of the MSI-BPD in a sample of Iranian soldiers.

## MATERIALS AND METHODS

### Participants and sampling

The current research design was factor analysis. The population of this study included all the conscripts serving their military service in the Islamic Republic of Iran's Army in Tehran in 2018 and 2019. The recommended sample size for the confirmatory factor analysis is nearly 200.<sup>[31]</sup> A total of 300 soldiers were recruited by the convenient sampling method. Forty-six participants who did not complete the questionnaires were excluded from the study. The method of this study was completed by a questionnaire. The participants were all male, aged between 18 and 30, had sufficient knowledge of the Persian language and were willing to participate in the study. All individuals were required to fill out set of self-report questionnaires. To control the effect of arrangement and fatigue, questionnaires were provided according to different arrangements. Inclusion criteria: Satisfaction with research, literacy, age under 45 years. Exclusion criteria: non-cooperation in the study and intellectual disability. This study was approved by the Ethics Committee of AJA University of Medical Sciences (1397.043).

### Measures

#### *The Persian version of the McLean screening instrument for borderline personality disorder*

MSI-BPD is a screening tool created to measure the construct of BPD. The MSI-BPD is a 10-item questionnaire that scores as a disjunction (true-false).<sup>[21]</sup> MSI-BPD contains an item for each one of the first eight criteria of the DSM-IV and DSM-5 for BPD and two items for the ninth criterion of paranoia/dissociation.<sup>[19]</sup> The original version of the borderline personality screening scale has a high level of sensitivity (0.81) and specificity (0.85), where 7 is the excellent cutoff score. The test-retest reliability was also reported to achieve a precise level of reliability (Spearman's  $\rho = 0.72$ ,  $P < 0.0001$ ).<sup>[21]</sup>

The comparability between the Persian version of MSI-BPD and the original MSI-BPD has been validated by translation and back-translation procedures. The MSI-BPD was first translated into Persian independently by four Ph. D. candidates in clinical psychology. Next, the Persian

MSI-BPD was back-translated by a bilingual individual, and the back-translated version was reviewed by other bilingual people. The final version of Persian MSI-BPD was also compared to the original version by two bilingual clinical psychologists.

### The deliberate self-harm inventory

This scale comprised of 17 items about different ways people hurt themselves (such as tattooing, breaking bones, cutting, and burning). In this questionnaire, participants are asked to respond to a series of yes/no questions about types of self-harm behaviors. The Deliberate Self-Harm Inventory (DSHI) is significantly correlated with other self-harm scales, and it has good psychometric properties,<sup>[32]</sup> and is widely used in previous studies.<sup>[32,33]</sup>

### Borderline personality scale

This scale consists of 24 items made to measure the patterns of borderline personality and in yes/no question form. It has three subscales of hopelessness, impulsivity, and dissociation. The test-retest reliability was reported 0.61. The alpha coefficient was reported 0.80.<sup>[34]</sup> In a study performed on a sample of clinical patients with BPD, it showed acceptable divergent validity and construct validity.<sup>[35]</sup> The Persian version of Borderline Personality Scale (STB) is reported to have desirable psychometric properties.<sup>[36]</sup>

### Self-compassion scale short-form

This scale contains 12 items. Participants rate their agreement based on a five-point Likert scale of 1 (nearly never) to 5 (nearly always). This scale measures three bipolar components in 6 subscales, including self-compassion versus self-judgment, mindfulness versus over-identification, and common humanity versus isolation.<sup>[37]</sup> The results of studying the psychometric properties of this scale in the Iranian population support the three-factor structure of self-compassion in a non-clinical sample.<sup>[38]</sup>

### Cognitive flexibility inventory

This 20-item scale is created to assess the cognitive flexibility, which enables individuals to challenge and replace maladaptive thoughts with more adaptive ones. The Cognitive Flexibility Inventory (CFI) can be used in both clinical and non-clinical samples. It can also be used to assess the individual's progress in developing flexible thinking in CBT for depression and other mental disorders. The CFI demonstrated the adequate levels of validity, reliability, and internal consistency.<sup>[39]</sup> The Persian version of STB had excellent psychometric properties.<sup>[40]</sup>

### Statistical analysis

Data analysis was performed using the Statistical Package for the Social Sciences Statistics version. 22.0 (IBM SPSS Statistics for Windows, version 22.0. Armonk, NY: IBM

Corp, Chicago, USA, 2013). Test-retest reliability, internal consistency, convergent validity, and divergent validity of the Persian version of the MSI-BPD were calculated. Internal consistency was calculated using Cronbach's alpha. A Cronbach's alpha value between 0.70 and 0.95 demonstrates good internal consistency.<sup>[41]</sup> Test-retest reliability was measured with intraclass correlations coefficient (ICC). An intraclass correlation (ICC)  $\geq 0.70$  identifies acceptable reproducibility of a measure.<sup>[41]</sup> Divergent validity and convergent validity were assessed with Pearson correlations. All reported significance values were two-tailed. In all tests,  $P \leq 0.05$  was considered statistically significant.

The construct validity of the MSI-BPD was evaluated using structural equation modeling. The one-factor and two-factor structures of the MSI-BPD, as suggested in the original version, were tested with LISREL software (version 8.8, Jöreskog K, Sörbon D. Lisrel for Windows 8.80. 2006. Scientific Software International: Lincolnwood, IL.). The model parameters were calculated using maximum likelihood. Confirmatory factor analysis indicators are more accurate when the sample is larger than 250.<sup>[42]</sup> The evaluation of a model is based on a number of fit indices. The normal Chi-square should be less than 3 for an appropriate model.<sup>[43]</sup> The root means a square error of approximation (RMSEA) should be  $< 0.08$  for appropriate fit.<sup>[42]</sup> The comparative fit index (CFI) ranges from 0 to 1 with the values of 0.90 or greater expressive of good fitting models.<sup>[31,42]</sup>

Normed Fit Index (NFI)  $\geq 0.90$  is indicative of good fitting models.<sup>[31]</sup> Non- NFI or TLI  $\geq 0.90$  is expressive of good fitting models.<sup>[31]</sup> The standardized root means square residual ranges from 0 to 1, and the values of 0.08 or less are desired.<sup>[31,42]</sup> Incremental Fit Index  $\geq 0.90$  is expressive of good fitting models.<sup>[31]</sup> The goodness of fit index (GFI) and adjusted GFI, which adjusts for the number of parameters, were estimated, ranging from 0 to 1 with the values of 0.90 or greater, expressing a good fitting model.<sup>[44]</sup>

## RESULTS

### Description of the sample

The present study was conducted on a total of 254 soldiers, with the age range of 18–30 years. The mean and standard deviation of age scores, respectively, are (25.71 and 3.86). The mean and standard deviation MSI-BPD are (4.03 and 2.6.9). Demographical features include marital status: 216 single individual (85.03%), 38 married individual (14.9%). Educational status: 88 B. Sc. individual (34.64%), 96 Diploma individual (31.88%), and 70 not achieving diploma individual (27. 55%).

Inter-correlation among McLean screening instrument for borderline personality disorder subscales

Correlations among the MSI-BPD subscales are shown in Table 1. The MSI-BPD subscales were found to correlate significantly ( $n = 254$ ).

**Internal consistency**

Internal consistency was calculated with the total sample of 254 ( $n = 254$ ). For the total sample, the Persian version of the MSI-BPD demonstrated a good internal consistency ( $KR-20 = 0.74$ ).

**Test-retest reliability**

Test-retest reliability was calculated for the MSI-BPD total and the two subscales while using a sample of 31 soldiers who completed the MSI-BPD again after 2 weeks. The results showed good test-retest reliability across the MSI-BPD with significant ICC between Time 1 and Time 2 scores ( $ICC = 0.92$ ).

**Convergent and divergent validity of McLean screening instrument for borderline personality disorder**

The convergent validity of the MSI-BPD was calculated by

**Table 1: Correlations among the 10-item McLean screening instrument for borderline personality disorder subscales**

	Borderline	Impulsivity-emotionality	Cognitive symptom
Borderline	1		
Impulsivity-emotionality	0.94**	1	
Cognitive symptom	0.81**	0.59**	1

\*\*Correlation is significant at 0.01 level

**Table 2: Convergent and divergent validity of the McLean screening instrument for borderline personality disorder and subscales**

Scale	MSI-BPD total score	Impulsivity-emotionality	Cognitive symptom
STB	0.78**	0.74**	0.63**
DSHI	0.54**	0.60**	0.53**
Self-compassion	-0.60**	-0.56**	-0.50**
CFI	-0.43**	-0.40**	-0.35**

\*\*Correlation is significant at 0.01 level. MSI-BPD=McLean screening instrument for borderline personality disorder; STB=Borderline personality scale; DSHI=The deliberate self-harm inventory; SCS=Self-compassion scale Short-Form; Self-esteem Scale; CFI=Cognitive flexibility inventory

examining the relationship between MSI-BPD total score and its subscales with scores on self-report measures of STB and DSHI. As expected, the results demonstrated positive, significant correlations between the MSI-BPD and its subscales with STB and DSHI ( $P < 01$ ).

To evaluate the divergent validity of MSI-BPD, we examined the association between the MSI-BPD and two theoretically less related constructs, naming Self-compassion and CFI. As expected, we found negative and significant correlations between MSI-BPD and these two scales ( $P < 0.01$ ) [Table 2].

**Confirmatory factor analysis**

CFA was used to assess the construct validity of MSI-BPD and determine the fit of the factor structures obtained by Soler and colleagues. Based on the results of MSI-BPD, the one-factor and two-factor models were tested. Fit indices of one-factor and two-factor models are shown in Table 3. The results show that the one-factor and two-factor models fitted the data well. The figure of the factor structure of the two models can be seen in Figures 1 and 2.

**DISCUSSION**

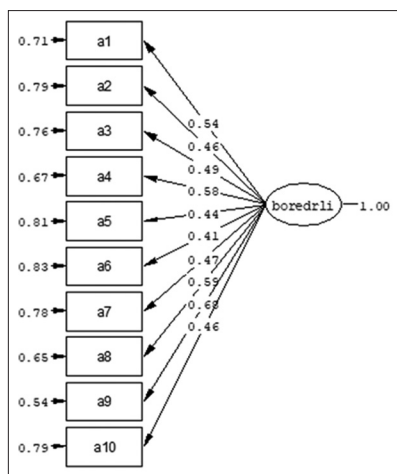
BPD is a prevalent psychiatric disorder that is often overlooked in the treatment settings. BPD is a complicated and serious psychiatric disorder affecting nearly 0.7%–5.9% of the general population.<sup>[45]</sup> BPD is underdiagnosed in clinical settings and practice. One approach toward improving diagnostic identification is the use of screening instruments. Therefore, the present study seeks to assess the psychometric properties of the Persian version of MSI-BPD among a sample of Iranian men serving military service. The results showed that the one-factor and two-factor models fit the data. The results of the examination of these factor structures of MSI-BPD are consistent in both non-clinical and clinical samples.<sup>[19,21,22,28,29,46]</sup> MSI-BPD also demonstrated good internal consistency, and it concurs with previous studies.<sup>[19,22,28,46]</sup> The MSI-BPD and its subscales were found to correlate significantly. Test-retest reliability over 2 weeks with a sample of 31 soldiers yielded significant ICC for the MSI-BPD. The STB and DSHI were used to evaluate convergent validities of MSI-BPD. According to the results, it was revealed that MSI-BPD and its subscales had a positive, significant correlation with STB. These results are consistent with other studies.<sup>[47,48]</sup> Therefore, when individuals experience negative emotions such as

**Table 3: The goodness of fit indices for one -factor and two-factor models of McLean screening instrument for borderline personality disorder**

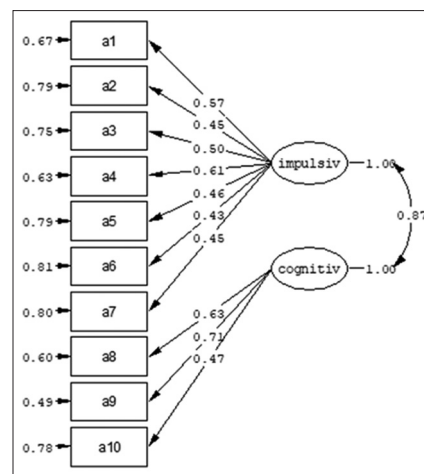
Fit indices	$\chi^2$	df	$\chi^2/df$	RMSEA	IFI	CFI	SRMR	GFI	NFI	NNFI (TLI)	RFI	AGFI
One-factor	106/92	35	3.05	0.08	0.92	0.92	0.06	0.92	0.88	0.89	0.85	0.88
Two-factor	97/63	34	2.87	0.08	0.92	0.92	0.06	0.93	0.89	0.90	0.85	0.88

RMSEA=Root means a square error of approximation; IFI=Incremental fit index; CFI=Cognitive flexibility inventory; SRMR=Standardized root means square residual; GFI=Goodness of fit index; NFI=Normed fit index; NNFI=Non-NFI; TLI=Tucker Lewis index; RFI=Relative fit index; AGFI=Adjusted goodness of fit index





**Figure 1:** Construct validity of the one-factor of the Persian Version of McLean Screening Instrument for Borderline Personality Disorder



**Figure 2:** Construct validity of the two-factor of the Persian Version of McLean Screening Instrument for Borderline Personality Disorder

anxiety, stress, depression, blaming themselves, or solving interpersonal problems, the probability of committing Symptoms of Borderline Personality among these people is very high. MSI-BPD and subscales had a positive and significant correlation with DSHI. These results are consistent with other studies.<sup>[48-50]</sup> Self-mutilation is an ineffective strategy to deal with various symptoms of BPD (hopelessness, impulsivity, dissociation). Therefore, when people experience negative emotions such as stress, anxiety, depression or interpersonal problems, they turn to self-mutilating behaviors. People with BPD are more likely to commit self-mutilating acts to pacify their emotions.<sup>[51]</sup>

The results showed that MSI-BPD and subscales had a negative and significant correlation with self-compassion<sup>[52-54]</sup> and Cognitive Flexibility.<sup>[55,56]</sup> Self-compassion can be seen as an emotional strategy in which negative feelings are viewed consciously and creates a sense of shared human experience in the individual. People with high self-compassion are less likely to judge themselves negatively, and they are mindful about negative experiences. However, BPD patients who do not consciously deal with painful events blame themselves and consider themselves the only ones who suffer the most from the problems.<sup>[57]</sup> The results of the CFA supported the application of both one-factor and two-factor structures in an Iranian sample of soldiers.

This research has the following limitations: First, all scales included in this study were self-report tools. Therefore, correlations may have been inflated by common method variance. Second, BPD was measured by a self-report scale and not verified by an assessment from a mental health professional. Third, the study sample was limited to subjects with certain demographic characteristics: They were all serving their military service and were mostly single, young males. This hinders generalization of the results for the general population. The sample is not diverse enough to

serve as a normative reference in clinical decision-making. Thus, the psychometric properties of the MSI-BPD should be assessed in other communities and related sample groups (such as people with general population and clinical setting). Furthermore, in the present research, a short period of time and a small sample size were used for test-retest reliability. Thus, future studies are required to study test-retest reliability in longer periods of time and larger sample sizes. Find the cut-off point for this screening tool in the Iranian society.

## CONCLUSIONS

The Persian version of MSI-BPD showed good and reliable validity for screening BPD in the Iranian population. Moreover, the study adds to the literature on the cross-cultural validity of this measure, therefore, providing more support for the generalizability of the relation between BPD and some previously studied psychopathologies. Personality disorder has its origins in childhood and adolescence. Screening offers a means of identifying persons for more detailed evaluation for early intervention and for research. It has been widely used to screen for BPD in other cultures. It is recommended to use MSI-BPD in other studies.

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## Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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