

Self-oriented and Socially Prescribed Perfectionism: The Psychometric Properties of the Persian Version of the Eating Disorder Inventory-Perfectionism Scale

Abstract

Background: Perfectionism is a key construct for understanding psychopathology. In societies with varying cultures, studying the psychometric properties of tools can help with their external validity. This research aimed at standardization and validation of the Eating Disorder Inventory-Perfectionism (EDI-P) scale in Iran. **Methods:** The Persian version of EDI-P was formed through forward translation, reconciliation, and back translation. A total of 302 students were selected using convenience sampling method and they completed a set of questionnaires, including the EDI-P, Weight Efficacy Lifestyle Questionnaire-Short Form (WEL-SF), Eating Attitude Test-16 (EAT-16), Self-esteem scale (SES), Difficulties in Emotion Regulation Scale-16 (DERS-16), and Self-compassion scale (SCS) Short Form. The construct validity of the EDI-P was assessed using confirmatory factor analysis and divergent and convergent validity. Internal consistency and test-retest reliability (2 weeks' interval) were applied to evaluate reliability. LISREL (version 8.8) and SPSS (version 22) software were used for data analysis purpose. **Results:** EDI-P scales and subscales were found to be a valid and reliable measure, with good internal consistency and good test-retest reliability in the nonclinical sample. Cronbach's alpha coefficient for the whole scale, socially prescribed, and self-oriented were found to be 0.74, 0.68, and 0.67, respectively. Test-retest reliability for the whole scale, socially prescribed, and self-oriented were found to be 0.88, 0.80, and 0.87, respectively. Convergent validity and divergent validity were good (Normed Fit Index [NFI] = 0.94, Incremental Fit Index = 0.95, root mean square error of approximation = 0.08, goodness of fit index = 0.97, Non-normed Fit Index [NNFI] = 0.91, and comparative fit index = 0.95). The results of this study provide support for the two-factor model of EDI-P. **Conclusion:** The EDI-P showed good validity and reliability and could be useful in assessing perfectionism in Iranian population. The EDI-P shows notable promise as a measure for use in eating research and clinical settings.

Keywords: Eating Disorder, perfectionism, Psychometrics, scale

Introduction

Perfectionism is an important psychological construct.^[1] It is a multidimensional personality trait that plays an important role in the etiology and persistence of psychopathology.^[2] Perfectionism is nowadays known as a transdiagnostic process which is an explanation for the comorbidity of disorders.^[3] Hewitt *et al.*^[4] believe that perfectionism is strongly associated with suicide. Perfectionism is not only correlated with anxiety, depression, and eating disorders, but also plays a causal role in these disorders.^[5] Perfectionism can prevent the successful treatment of many psychological disorders.^[6] Chang *et al.*^[7] showed that perfectionism is associated with eating disorders. Patients

with eating disorders and depression score higher on negative perfectionism.^[8] Studies show that negative perfectionism is associated with eating disorder.^[9] Subjects with eating disorders have lots of concerns about making mistakes, which is one of the components of perfectionism.^[10] Perfectionism can be an explanation for the development and persistence of various eating disorders, including anorexia nervosa, bulimia nervosa, and eating disorders not otherwise specified.^[2,11,12] The Eating Disorder Inventory-2 Perfectionism subscale^[13] has been used frequently in researches related to perfectionism and eating disorders. Originally, the Eating Disorder Inventory-Perfectionism (EDI-P) scale was created as a unidimensional

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measure of perfectionism. Nevertheless, it has been observed that the EDI-P measures beliefs regarding perfectionism in the intrapersonal and interpersonal fields, which correspond to the “self-oriented” and “socially prescribed” perfectionism dimensions, introduced in the Hewitt and Flett^[14] multidimensional model of perfectionism.^[15] The use of this tool is of great value in student populations due to the high prevalence of eating disorders in this population.^[16] Research shows higher prevalence of perfectionism in students compared to non-students.^[17] As far as we know, the psychometric properties of EDI-P have only been studied in one study by Lampard *et al.*^[18] In order to develop our study and for the evaluation of effective treatments for perfectionism associated with eating disorders, it is important to obtain reliable tools for measuring this construct. Also, normalization of perfectionism associated with eating disorders and its relationship with vulnerability to psychological problems has been conducted in societies with individualistic and distinctive cultures. Investigating the psychometric properties of this scale in societies with different cultures can help increase its external validity.^[19,20] It is a short tool that can be easily used in clinical practice. It saves time and can be used more fruitfully in other health and research settings. Given the psychological consequences of perfectionism and its role in the etiology, onset, and persistence of eating disorders, and the lack of a reliable and valid scale in Persian and its importance in clinical research and treatment, the present study aimed to evaluate the psychometric properties of the Persian version of EDI-P.

Materials and Methods

Sample

In the current research, we included undergraduate students from the University of Tehran (UT), studying in the 2018-2019 academic year. The recommended sample size for the confirmatory factor analysis is nearly 200.^[21] Confirmatory factor analysis is more appropriate and accurate when the sample size is more than 250 people.^[21] Thus, we recruited 340 nonclinical students via convenience sampling. We excluded 38 students due to their incomplete questionnaires. The anonymous participants were fluent in Persian language and consented to complete the self-report measures. Inclusion criteria in this study were being a student and satisfaction with participating in the study. Exclusion criteria were substance abuse and severe medical illness. The students were assured that they could leave the research at any time. All individuals were required to fill out both a demographic and a set of self-report questionnaires. This research was approved by the Ethics Committees of Iran University of Medical Sciences (IR.IUMS.REC 1396.9421521003).

Measures

EDI-P scale: The EDI-P is a six-item self-report measure of perfectionism (e.g., “I hate being less than best at things”) from the Eating Disorder Inventory-2.^[13] Items are ranked on a six-point scale. Responses are weighted in the range of 0-3 (“always” = 3; “usually” = 2; “often” = 1; and “sometimes,” “rarely,” or “never” = 0).^[13] Subscale scores are calculated by summing the item scores. Higher scores refer greater perfectionism.^[18] The EDI-P scale includes the dimensions of self-oriented and socially prescribed perfectionism. There are three items related to self-oriented perfectionism and three items related to socially prescribed perfectionism.^[18]

The comparability of EDI-P and the original EDI-P has been approved by precise translation and back-translation methods. Four PhD candidates in clinical psychology were selected to translate the EDI-P to Persian independently. Afterward, the Persian EDI-P was back-translated by an individual bilingual in Persian and English to validate the translation. Moreover, the back-translated version was reviewed by another bilingual person. Furthermore, two bilingual clinical psychologists compared the final version of Persian EDI-P to the original version.

Eating Attitude Test-16 (EAT-16): EAT-16 is one of the shortened versions of EAT-26. The EAT-16 use simple statements for assessing eating behaviors and thoughts. The 16-item EAT consists of the following factors: dieting, self-perception of body shape, food preoccupation, and awareness of food contents. Respondents rated their agreement according to a six-point Likert scale from “Never”^[1] to “Always.”^[5,22] This scoring scheme was carried out in other researches in nonclinical samples.^[22,23] EAT-16 has the advantage of having good psychometric properties.^[22,23] Cronbach’s alpha of this scale was 0.88 and test-retest reliability was 0.90.^[23]

Self-esteem scale (SES): The Rosenberg self-esteem scale is a 10-item questionnaire that assesses the global self-worth by evaluating the negative and positive feelings toward the self. Factor analysis indicated a single common factor. Participants rated their agreement based on a four-point scale from “strongly agree” to “strongly disagree.” This scoring system is carried out directly and reversely. The Rosenberg self-esteem scale showed good psychometric properties.^[24,25]

Weight Efficacy Lifestyle Questionnaire-Short Form (WEL-SF): This questionnaire was used to evaluate each person’s perceived ability for weight control by the following criteria: refraining to eat when confronted with negative emotions, availability of food, social pressure in this regard, physical discomfort, and/or positive activities. WEL-SF is an eight-item self-report scale. Items are rated within the [0,10] interval indicating the confident level. Therefore, the total score lies within the [0, 80] interval.

Higher score indicates higher self-efficacy to control eating behaviors. WEL-SF has good psychometric properties for assessing eating self-efficacy.^[26] Cronbach's alpha of the WEL-SF scale in Iranian society was 0.83.^[27] The Iranian version of WEL-SF showed good psychometric properties.^[27]

Difficulties in Emotion Regulation Scale-16 (DERS-16): DERS-16 consists of 16 items. Its purpose is to briefly measure the global difficulties in emotion regulation. Respondents ranked their agreement based on a five-point Likert scale from 1 (almost never) to 5 (almost always), stating to which extent each statement is valid. DERS-16 has been shown to have a good internal consistency ($\alpha = 0.92-0.94$), test-retest reliability ($\rho I = 0.85$), and convergent and discriminant validity. The range for the total score is 16-80, with greater scores indicating greater levels of emotion dysregulation.^[28] Cronbach's alpha of the DERS-16 scale in Iranian society was 0.74.^[29] The Persian version of DERS-16 showed excellent psychometric properties.^[29]

Self-compassion scale (SCS) Short Form: This scale contains 12 items. Participants are asked for their agreement based on a five-point Likert scale from 1 (nearly never) to 5 (nearly always). This scale measures three bipolar components in six subscales: self-compassion versus self-judgment, mindfulness versus over-identification, and common humanity versus isolation. The correlation of the short-form SCS with its long form was as high as 0.97, and test-retest reliability value was found to be 0.92.^[30] In Iran, the results support the three-factor structure of self-compassion in a non-clinical sample, with Cronbach's alpha of 0.78.^[31]

Statistical Analysis

Data were analyzed using the Statistical Package for the Social Sciences Statistics v. 22.0 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp, Chicago, USA, 2013). Internal consistency, convergent validity, divergent validity, and test-retest reliability of the Persian version of the EDI-P were examined. Internal consistency was roughly calculated using Cronbach's alpha. An alpha value between 0.70 and 0.95 asserts high internal consistency.^[32] Test-retest reliability was measured with Pearson's correlations and intraclass correlations coefficient (ICC). An ICC ≥ 0.70 asserts plausible reproducibility of a measure.^[32] Divergent validity and convergent validity were measured with Pearson's correlations. All reported significance values were two-tailed. In all tests, $P \leq 0.05$ was considered statistically significant.

The construct validity of the EDI-P was assessed using structural equation modeling (SEM). The four-factor structure of the EDI-P was tested with LISREL software (version 8.8) as recommended in the original version. The model parameters were approximated

using maximum likelihood. Confirmatory factor analysis indicators are more accurate with a sample larger than 250.^[33] The evaluation of a model is based on a number of fit indices, which are briefly explained here. For an acceptable model, the normal Chi-square is supposed to be less than 3.^[34] The root mean square error of approximation (RMSEA) should be <0.08 for plausible fit, with 0.05 or lower indicating a very good fitting model.^[33] The comparative fit index (CFI) ranges from 0 to 1, with values of 0.90 or greater indicating good fitting models.^[21,33]

Normed Fit Index (NFI) ≥ 0.90 is an indicant of good fitting models.^[21] Non-normed Fit Index (NNFI) or Tucker-Lewis index (TLI) ≥ 0.90 is indicative of good fitting models.^[21] The standardized root mean square residual (SRMR) lies in 0-1 interval and values of 0.08 or less are ideal.^[21,33] Incremental Fit Index (IFI) ≥ 0.90 is an indicant of good fitting models.^[21] The goodness of fit index (GFI) and adjusted goodness of fit index (AGFI), which are tuned for a number of parameters, were approximated, ranging from 0 to 1 with values of 0.90 or greater indicating a good fitting model.^[35]

Results

Description of the sample

The present research was carried out on a total of 302 university students, including 169 (56%) male and 133 (44%) female participants aged from 19 to 46. The mean (standard deviation) age of the participants in this study was 23.82 (4.57). Of the participants, 95.4% were in the age range of 19-30, 3.9% in the age range of 30-40 and 0.7% were in the age range of 40-50. Table 1 shows the mean and standard deviation of EDI-P and also the subscales.

Psychometric properties of EDI-P

Across all 302 subjects, scores on the EDI-P total ranged from a minimum score of 0 to a maximum score of 18. With regard to the minimum and maximum, only 3.6% of subjects achieved the bottom-most possible score and

Table 1: Mean and standard deviation of EDI-P subscales in female and male

Gender	n	Mean	SD
Perfectionism			
Female	133	8.0	4.19
Male	169	8.5	4.42
Socially prescribed			
Female	133	3.56	2.48
Male	169	3.58	2.57
Self-oriented			
Female	133	4.43	2.41
Male	169	4.71	2.58

EDI-P=Eating Disorder Inventory-Perfectionism, SD=Standard deviation

0.3% of subjects achieved the highest possible score of 18. Scores on the EDI-P subscales ranged from the bottom-most feasible score of 0 (self-oriented scale 6% and socially prescribed scale 13.9%) to the highest score of 9 (self-oriented scale 6% and socially prescribed scale 2.6%).

Internal consistency

Cronbach's alphas were calculated with the full sample [$n = 302$; see Table 2]. EDI-P subscales were found to have a good internal consistency.

Test-retest reliability

Test-retest reliability was calculated for the EDI-P and subscales while using a sample of 31 university students who completed the EDI-P a second time after an interval of 2 weeks. Results demonstrated high test-retest reliability across the EDI-P and all two subscales with significant Pearson's r and ICC between Time 1 and Time 2 scores (EDI-P total: $R = 0.79$, $ICC = 0.88$, $P < 0.01$; socially prescribed scale: $R = 0.67$, $ICC = 0.80$, $P < 0.01$; self-oriented scale: $R = 0.77$, $ICC = 0.87$, $P < 0.01$) [see Table 3].

Convergent and divergent validity of EDI-P

The convergent validity of the EDI-P was investigated by examining the relationship between EDI-P total scores and subscales with scores on self-report measures of EAT-16 and DERS-16. The results demonstrated the expected relationship between EDI-P, EAT-16, and DERS-16. Positive and significant correlations were found between EDI-P and its subscales with EAT-16 and DERS-16 ($P < 0.01$) [Table 4].

To evaluate the divergent validity of the EDI-P, we examined the association between the EDI-P and three theoretically less-related constructs, including self-compassion, self-esteem, and self-efficacy. As expected, we found negative and significant correlations between EDI-P and these three scales ($P < 0.01$) [Table 4].

Confirmatory factor analysis

To assess the construct validity of EDI-P and determine the fit of the factor and subscales' structure obtained by Lampard *et al.*,^[18] confirmatory factor analysis (CFA) was performed. Based on the results of EDI-P, the two-factor model was tested [Table 5]. The results of the fit indices for this model are presented in Figure 1. As it can be observed, the two-factor models fitted the data well. The results indicated a reasonable good fit.

Discussion

Eating disorders are common psychiatric disorders that cause psychosomatic and psychological dysfunction and also poor quality of life and even death. The present study aimed to assess the psychometric properties of the Persian version of EDI-P in a nonclinical population of students.

Table 2: Internal consistency (Cronbach's alpha coefficients) for the EDI-P score and two subscales

	Number of items	Cronbach's alpha
Perfectionism	6	0.74
Socially prescribed	3	0.68
Self-oriented	3	0.67

EDI-P=Eating Disorder Inventory-Perfectionism

Table 3: Means (standard deviations) and test-retest reliability of EDI-P and its subscales

	Time 1	Time 2	ICC	P
Perfectionism	7.38 (3.43)	7.32 (3.53)	0.88	<0.01
Socially prescribed	3.06 (2.12)	3.32 (1.97)	0.80	<0.01
Self-oriented	4.32 (2.48)	4.00 (2.28)	0.87	<0.01

EDI-P=Eating Disorder Inventory-Perfectionism, ICC=intraclass correlation coefficient

Table 4: Convergent and divergent validity of EDI-P

Scale	Perfectionism	Socially prescribed	Self-oriented
EAT-16	0.33**	0.35**	0.23**
DERS-16	0.30**	0.29**	0.21**
Self-compassion	-0.32**	-0.32**	-0.22**
Self-esteem	-0.12*	-0.17**	-0.36**
WEL-SF	-0.28**	-0.30**	-0.18**

DERS-16=Difficulties in Emotion Regulation Scale-16, EAT-16=Eating Attitudes Test-16, EDI-P=Eating Disorder Inventory-Perfectionism, WEL-SF=Weight Efficacy and Lifestyle Questionnaire-short form. *Correlation is significant at 0.05 level. **Correlation is significant at 0.01 level

The results showed that two factors, socially prescribed and self-oriented, had an acceptable fit. The results obtained are also consistent with the examination of the factor structure of EDI-P with a nonclinical and clinical sample.^[18,13] The normal Chi-square is supposed to be lower than 3 for an acceptable model.^[34] But in our study, χ^2/df was greater than 3 (4.54), which states a poor fit of the data to the original model. One of the reasons that the chi-square value is high is that the chi-square test is very sensitive to the sample size and can overestimate the lack of fit of the model along with the increase in the sample size and the constant number of degrees of freedom.^[36] Test-retest reliability over 2 weeks with a sample of 31 university students yielded significant ICC for EDI-P and subscales. EAT-16 and DERS-16 were used to evaluate convergent validity of EDI-P. Results revealed that EDI-P and subscales had a positive correlation with EAT-16. Results revealed that EDI-P and subscales had a positive correlation with EAT-16. These results are consistent with other studies. EDI-P and subscales had a positive correlation with DERS-16. These results are consistent with other studies.^[37-39] EDI-P and subscales had a positive correlation with DERS-16. Results revealed that EDI-P and subscales had a positive correlation with EAT-16. These results are consistent with other studies. EDI-P

Table 5: Goodness of fit indices for the two-factor model of Eating Disorder Inventory-Perfectionism

Fit indices	χ^2	df	χ^2/df	RMSEA	IFI	CFI	SRMR	NNFI	NFI	GFI	RFI	AGFI
Quantity	29.89	8	3/73	0.08	0.95	0.95	0.05	0.91	0.94	0.97	0.89	0.92

AGFI=adjusted goodness of fit index, CFI=comparative fit index, GFI=goodness of fit index, IFI=Incremental Fit Index, NFI=Normed Fit Index, NNFI=Non-normed Fit Index, RMSEA=root mean square error of approximation, SRMR=standardized root mean square residual, Relative Fit Index (RFI)

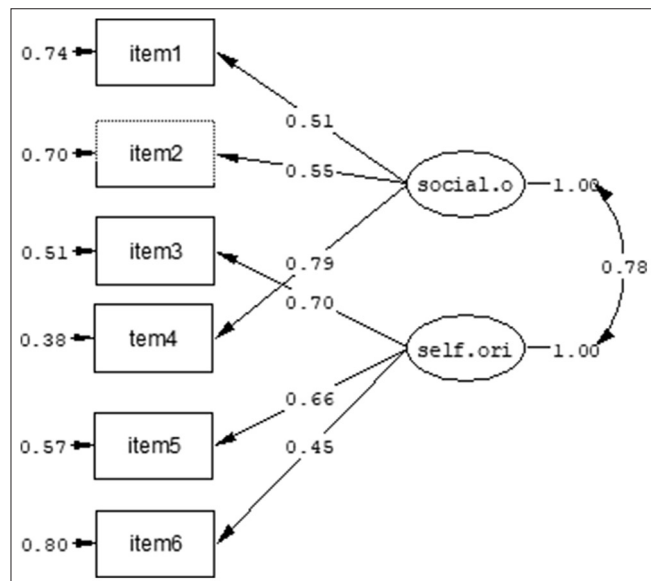


Figure 1: Construct validity of the Persian version of EDI-P. EDI-P = Eating Disorder Inventory-Perfectionism

and subscales had a positive correlation with DERS-16. These results are consistent with other studies.^[40,41] The results showed that EDI-P and subscales had a negative correlation with self-compassion,^[42,43] self-esteem,^[44,45] and eating self-efficacy.^[46,47] The results of the CFA supported application of the four-factor structure in an Iranian sample.

This research has some limitations which are as follows. First, all scales used in this study were self-report questionnaires. Hence, correlations may have been inflated by common method variance. Second, perfectionism was evaluated by self-report and not confirmed by an assessment from a mental health professional. Third, the study sample was limited to subjects with certain demographic characteristics: They were all university students and were more likely to be single, young, well educated, and male. This may lead to a problem of generalizing the results to the general population. The sample is not diverse enough to be merely relied on as a normative reference in clinical decision-making. In this research, a short time and a small sample size were used for test-retest reliability. Therefore, the psychometric properties of EDI-P should be assessed in other communities and affiliated sample groups. In the future, we will use longer periods of time and greater sample sizes for test-retest reliability. We will explore if this method is reliable across different populations.

Conclusions

The Persian version of EDI-P showed good and reliable validity to measure eating perfectionism in Iranian population. Also, the study supplements the literature on the cross-cultural validity of this measure. Therefore, it provides more support for the generalizability of the relation of eating perfectionism and some previously studied psychopathologies. The results of this paper add to the existing literature on the relevance of eating perfectionism that was measured by this questionnaire. EDI-P shows notable promise as a measure for use in eating research and clinical practice. It is recommended to use EDI-P in other studies. EDI-P is a valid screening measure in nonclinical samples.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflicts of interest

There are no conflicts of interest.

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