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ORIGINAL ARTICLE

Transcultural adaptation and validation of the Persian version of the Brief Emotional Intelligence Scale

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Background: Increasing the level of emotional intelligence (EI) is seen as a strategy for improving both relational quality and efficiency at work. As of today, there was no validated Persian brief instrument for evaluating EI. To fill this gap, this article was aimed to investigate the validity and reliability of the Persian version of the Brief Emotional Intelligence Scale (BEIS-10). **Materials and Methods:** A methodological cross-sectional study was conducted among 201 Persian-speaking individuals. These individuals were selected from different parts of Iran using the convenience sampling method. Translation of the BEIS-10 was conducted by employed forward–backward method. Internal consistency was evaluated by Cronbach's α, and for test–retest reliability, the intraclass correlation coefficient (ICC) was employed. The construct validity was investigated by confirmatory factor analysis (CFA). **Results:** The Persian version of BEIS-10 indicates a good test–retest reliability (ICC = 0.612, 95% confidence interval: 0.384 and 0.769) as well as internal consistency (Cronbach's alpha = 0.748, ranging from 0.359 to 0.868 for different domains). The construct validity was evaluated by CFA and five factors from ten items were confirmed and all goodness-of-fit-indices were in acceptable levels. **Conclusion:** The article concludes that the Persian version of BEIS-10 in five factors from ten items was a reliable and valid instrument for measuring EI in the general population. As well, the article was suggesting that the Persian version of BEIS-10 may stand as a suitable alternative to time-consuming tools for EI measurement since this scale appears to be time-saving and applicable to Iranian society.

Key words: Emotional intelligence, instrument development, psychometric, transcultural adaptation, validation

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INTRODUCTION

As a multidimensional concept, emotional intelligence (EI)[1] is often employed to describe adaptive interpersonal and intrapersonal emotional functioning.[2] In this regard, the concept includes competency to control own emotions through self-awareness, improving own emotions through self-management, understanding the effects of own emotions on others through empathy, and boosting own and others' morale through effective management of interpersonal relationships.[3] Furthermore, EI is defined as the ability to recognize, express, understand, manage, and employ/use emotions.[4] In literature, EI is seen as a factor that has the potential to help people to improve their positive attitudes, behaviors, and outcomes.

A review of the literature in the field of EI revealed that EI plays an important role in health care and health-care education, and higher EI is strongly related to more compassionate and empathetic patient care, higher degree of knowledge and skills, and better teamwork and relationship[5] There is a general agreement that

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higher levels of EI are beneficial for health professionals include physicians.[6] There are different validity, reliability, and measurable tools to EI assessment.[7] Meanwhile, an important issue in developing valid EI measurements[8] is to understand the main theoretical models of EI;[9] these models are the ability model,[10] the competency model,[11] the adjective model,[12] and the hybrid model.[13] Determining the ideal procedure for EI measurement may stand as complicated and challenging. In this regard, it is surely fruitful to take a different method of measuring into consideration. In measuring EI, there are three suggested methods to employ; they are either (a) performance-oriented test (ability based), (b) self-report method (report on self), or (c) observational method (observation–rating) or 360° feedback.[14,15] In Iran, inspired by these mentioned methods, there are approaches for measuring EI.[16-18] One of them is a Bar-On EI Questionnaire, consisting of five aspects, namely intrapersonal and interpersonal skills, stress control, adaptability, and general mood, as well as 15 subscales. The initial questionnaire contains 132 questions; however, in Iran, as a result of a modification process, the questionnaire is reduced to 90 questions. This questionnaire functions mainly as a "self-reporting questionnaire," employed to measure EI.[13,16] Another scale for measuring EI is Mayer, Salovey, and Caruso Emotional Intelligence Test (MSCEIT). The method is among other things, known as an intellectual ability test excitement for adults. This method is constituted of a questionnaire with 141 questions. However, as the case in the previous method, this method has also been subject to modification in Iran, resulting in a reduced questionnaire with 33 questions. MSCEIT provides 15 main scores constituted of a total EI score, two area scores, four branch scores including perceiving emotions, facilitating thought, understanding emotions, and managing emotions, and finally, eight task scores. In addition to these 15 scores, there are three supplemental scores.[19] The next scale for measuring EI is Cyberia-Shrink Emotional Intelligence Questionnaire. Once again, while the questionnaire in its original form contains 70 questions, it has been reduced to 33 questions. This questionnaire measures five components: self-awareness, self-control, self-motivation, social awareness, and social skills.[18] In addition, emotional competence inventory or Daniel Goleman's EI model that contains competencies of self-awareness, social awareness, self-management, social skills, and conflict management is discussed. It uses a 360°-feedback approach. This inventory was developed to assess the competence of EI and further emphasizes organizational performance.[20]

Finally, Schutte Self-Report Emotional Intelligence (SSREI-33) test was developed by Schutte *et al*. in 1998 based on the theoretical model of Salovey and Meyer's EI questionnaire. It is used to measure adolescents' EI.[21] This scale has 33 items and is very popular due to its shortness comparing to other EI assessment tools.[22] This led to questions regarding the utility of SSRI-33 measure.[23] Austin *et al*. added eight items to the 33 main questions and created a 41-item corrected scale that obtained higher psychometric indicators.[7] The Persian version of this 41-item scale has been evaluated and used in Iran.[24]

Davies, *et al*., using theory-driven method, tested the validity and reliability of SSEIT with a brief version of its Brief Emotional Intelligence Scale (BEIS-10). They wanted to establish whether BEIS-10 could serve as a more valid and efficient measure. The most important benefit of BEIS-10 is short and quick to be filled out such that at just 10 items and within 1 to 2 min, one can capture EI quickly, while maintaining acceptable psychometric properties. BEIS-10 is particularly useful for collecting data in population groups and under conditions in which time is an issue.[23] Various studies have shown that there are challenges in using EI tools. On the other hand, along with the growing interest in EI in different groups of society, the construction and standardization of new and shorter EI scales is necessary.

Therefore, the current study aimed at developing the Persian version of the BEIS-10 according to the guidelines for cross-cultural adaptation and evaluating its psychometric properties (test–retest reliability, internal consistency and construct validity) to reach the equivalent at a semantic, conceptual, and content level with the original version.[25]

SUBJECTS AND METHODS

This study is part of a PhD dissertation to perform criterion validity that was approved by the Bioethics Committee of Isfahan University of Medical Sciences (Project Number: IR.MUI.RESEARCH.REC.1397.455 and Grant number 397672). Permission for cross-cultural adaptation was obtained from the BEIS and SSRIT developers.

Study design and participants

This cross-sectional study was conducted from February 2020 to May 2020 among 201 Iranian general population selected in different cities of Iran using a convenience sampling method. Eligible people from the general population were invited to participate in the study by electronic link through WhatsApp, Linkedin, and E-mail. Inclusion criteria for participating in this study were being able to speaking the Persian language, be at least 18 years old, and having at least a diploma degree (12 years of formal education). Those participants who did not answer the main questions (items of BEIS-10) were excluded. After explaining the objectives of the study on the first page of the scale and obtaining written consent to participate in the study, the participants were requested to fill out the BEIS-10. The sample size was determined in regard to confirmatory factor analysis (CFA).[26] Singh *et al*. suggested that the N at least 200 is acceptable.[27]

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The Brief Emotional Intelligence Scale

Researchers from the University of Wolverhampton, Walsall, UK, developed and validated a brief EI scale, called BEIS-10. It includes 10-items rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), also includes five factors ranging from 2 to 10 and total score ranging 10–50.[23] This EI measurement scale is based on the SSREI[28] and the EI framework proposed by Salovey and Mayer.[29] In the UK population, the reliability of BEIS-10 was reported as an evidence of content validity, construct validity, and test–retest reliability. The test–retest reliability analysis of BEIS-10 was more moderate than expected for a stable construct. In addition, good construct validity was approved.[23]

Translation and cross-cultural adaptation

After obtaining permission from the initial developers (Devonport, Tracey) by E-mail to them, the "forward-backward" procedure was applied to translate the BEIS-10 from English into Persian (Iranian official language), according to the guidelines recommended by Beaton *et al*.[25] First, the original English instrument was translated into Persian by two professional translators, independently (forward translation). They were native Persian speakers but fluent in both the languages. Then, both of the translated versions with the original scale were compared by the current study's researchers and the mentioned translators to develop an acceptable forward translation. The Persian version of BEIS-10 was provided for translation into English by a bilingual translator who was blinded to the English version of that the original version. The researchers compared the translated English version with the original. Finally, necessary changes were made, and the provisional Persian version of BEIS-10 was provided. This prefinal Persian BEIS-10 was piloted by five experts in the EI field. They were asked to comment about the level of difficulty (difficulty in understanding items and words), the degree of relevancy (appropriateness and good relationship of items to the questionnaire) and ambiguity (possibility of misunderstanding items or not explaining the meaning of words), grammar, style of writing, the items and the ease of completing the scale (face validity). The translation quality, simplicity, and clarity of the questions were verified by the same five experts as mentioned above. Finally, adjustments were done by the researchers and were developed the Persian version of BEIS-10. The following changes were made in the process of translation and cross-cultural adaptation: we considered "I organize events so that others can enjoy" instead of "I arrange events others enjoy." In addition, we considered "When other people are not feeling well, I help them feel better" instead of "I help other people feel better when they are down," "In the face of obstacles, I help myself to keep my mood up" instead of "I use good moods to help myself keep trying in the face of obstacles," and "I can't tell how people are feeling by listening to the tone of their voice" instead of "I can tell how people are feeling by listening to the tone of their voice" because we thought for assessment EI in our society, we need the negative item(s).

Statistical analysis

Data analysis, i.e. psychometric properties of the Persian version of BEIS-10, including reliability (test–retest reliability and internal consistency and floor and ceiling effect) and validity (content validity and construct validity) were evaluated by using IBM SPSS for Windows, Version 16.0. Chicago, SPSS Inc. SPSS Inc. Released 2008 statistics 16 and Amos Graphics16.

Reliability

We recruited 50 persons who completed the BIES-10 for evaluating internal consistency and test–retest reliability. They were asked to complete the BIES-10 at 2 separate days with a 14-day interval that 43 persons of them completed. The first round of collected data was used for evaluating internal consistency. Test–retest reliability was assessed separately for each item and total score of instrument. Intraclass correlation coefficient (ICC) using two-way mixed model was used to evaluate the relative reliability for the total score of items. ICC ≥ 0.70 was considered as the evidence of excellent stability. Internal consistency was evaluated using Cronbach's α coefficient (>0.7: acceptable, >0.8: good, and > 0.9: excellent).[30] Furthermore, the floor and ceiling effects were investigated based on the relative frequency of samples that had the highest and lowest scores, the effect of ceiling and floor was judged, when the relative frequency was < 0.15, it was considered there was no ceiling and floor effect.[31]

Validity

We investigated two aspects of validity, including content validity (content validity ratio [CVR] and content validity index [CVI]), and construct validity was investigated by CFA.

Content validity

To calculate the CVR, the acceptable values of Lawshe table (for five-panel experts, 0.99) were used.[32,33] In CVI calculations, a score above 0.79 is adequate, between 0.79 and 0.70 is questionable (the need for review), and < 0.70 is unacceptable and should be eliminated.[23,33]

Construct validity

We conducted a CFA to investigate the five-factor structure of BEIS-10 with generalized least squares. The fit indices minimum value of the discrepancy function C divided by its degrees of freedom (CMIN/DF), root mean square error of approximation, parsimonious comparative fit index, root mean square residual, goodness-of-fit index, adjusted

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goodness-of-fit index, incremental fit index, Tucker–Lewis index, and comparative fit index were considered as acceptable model fitness.[34,35] Furthermore, quantitative and qualitative variables were expressed as mean standard deviation and number (percent), respectively. Additional data about gender, age group, education level, marital status, and job status were also collected.

RESULTS

Participants' characteristics

Two hundred and one samples were general population participated in this study, including 144 (71.6%) women and 57 (28.4%) men from 17 provinces. The majority of the participants (50.2%) were in the age group of under 30 years with mean 31.61 ± 8.214 years and in the age range of 18–60 years, married (61.7%), had a bachelor's degree (53.7%), and employed (56.2%) [Table 1].

Validity analysis

Content validity

The results of the CVR calculation showed that the value of this ratio for all items was 1, which is higher than the value recommended by the Lawshe Table (0.99). The calculated CVI was >0.79 in all items except for item 2. CVI was calculated for all items to be above 0.79 (except item 2), so it seemed necessary to remove this item from the BEIS-10; however, because of the high CVR value of Item 2, it was not removed either. The mean CVR and CVI value of the BEIS-10 was 1 and 0.89, respectively [Table 2].

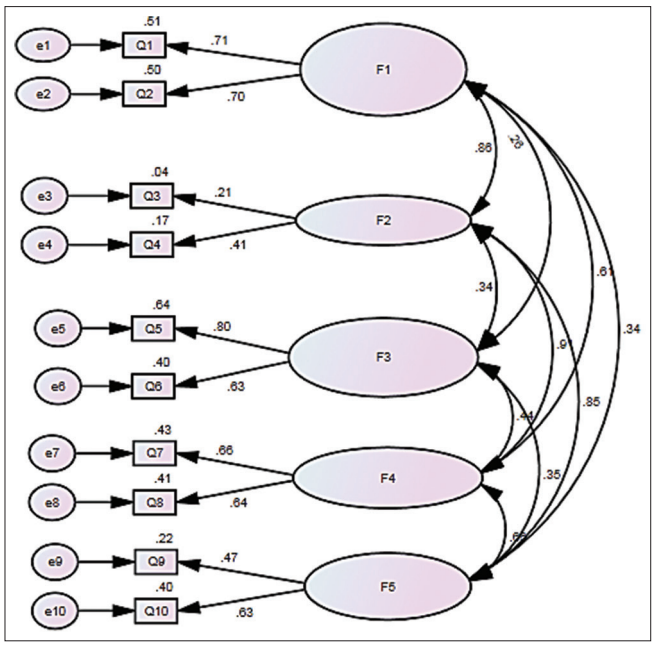

Figure 1: The results of CFA on Persian version of BEIS-10. F1: Appraisal of own emotions. Q1: I know why my emotions change. Q2: I easily recognize my emotions as I experience them. F2: Regulation of own emotions. Q3: I seek out activities that make me happy. Q4: I have control over my emotions. F3: Appraisal of others' emotions. Q5: I can't tell how people are feeling by listening to the tone of their voice. Q6: By looking at their facial expressions, I recognize the emotions people are experiencing. F4: Regulation of others' emotions. Q7: I organize events so that others can enjoy. Q8: When other people are not feeling well, I help them feel better. F5: Utilization of emotions. Q9: When I am in a positive mood, I am able to come up with new ideas. Q10: In the face of obstacles, I help myself to keep my mood up

Construct validity

Construct validity was evaluated by using CFA. To investigate the five-factor structure of BEIS-10, a CFA was performed based on Davies, *et al.*'s study[23] [Figure 1].

The results obtained from the CFA indicated a constructed validated instrument based on goodness-of-fit indices [Table 3], also all items loaded significantly on their respective factors [Table 4].

Table 1: Participant's characteristics

Variable	Frequency (%)
Gender	
Female	144 (71.6)
Male	57 (28.4)
Age group (years)	
>30	101 (50.2)
30-40	74 (36.8)
41-50	18 (9.0)
<51	8 (4.0)
Educational level	
Diploma (12 years of formal education)	19 (9.5)
Associate degree	13 (6.5)
BSc	108 (53.7)
MSc	40 (19.9)
PhD	21 (10.4)
Job	
Employed	113 (56.2)
Student	28 (13.9)
Housewife	29 (14.4)
Teacher	10 (5.0)
Faculty member	4 (2.0)
Other	17 (8.5)
Province	
Isfahan	78 (38.8)
Kermanshah	38 (18.9)
Tehran	28 (13.9)
Khuzestan	8 (4.0)
Fars	7 (3.5)
Markazi	7 (3.5)
West Azerbaijan	7 (3.5)
Khorasan Razavi	7 (3.5)
Gilan	4 (2.0)
kurdistan	4 (2.0)
East Azerbaijan	4 (2.0)
Lorestan	3 (1.5)
Hamedan	2 (1.0)
Chaharmahal and Bakhtiari	1 (0.5)
Kerman	1 (0.5)
Mazandaran	1 (0.5)
Bushehr	1 (0.5)

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Table 2: Content validity ratio and content validity index values of the scale items

Factor	Number	Items	CVR	CVI	Items that were finally confirmed
Appraisal of own emotions	Item 1	I know why my emotions change	1	0.8	✓
	Item 2	I easily recognize my emotions as I experience them	1	0.5	✓
Regulation of own emotions	Item 3	I seek out activities that make me happy	1	1	✓
	Item 4	I have control over my emotions	1	0.8	✓
Appraisal of others' emotions	Item 5	I can't tell how people are feeling by listening to the tone of their voice	1	0.8	✓
	Item 6	By looking at their facial expressions, I recognize the emotions people are experiencing	1	1	✓
Regulation of others' emotions	Item 7	I organize events so that others can enjoy	1	1	✓
	Item 8	When other people are not feeling well, I help them feel better	1	1	✓
Utilization of emotions	Item 9	When i am in a positive mood, I am able to come up with new ideas	1	1	✓
	Item 10	In the face of obstacles, I help myself to keep my mood up	1	1	✓
Mean			1	0.89	✓

CVR=Content validity ratio; CVI=Content validity index

Reliability analysis

Test–retest reliability

Test–retest reliability was evaluated by calculating the ICC statistics over a 2-week interval in a subsample of 43 people. The results are shown in Table 5. The ICC for the total score of BEIS-10 scale suggests strong test–retest reliability (ICC = 0.612, 95% confidence interval |: 0.384 and 0.769). All factors and all Items had an acceptable ICC value [Table 5].

Internal consistency

The Cronbach's alpha method was used to investigate the internal consistency of the BEIS-10. The Cronbach's alpha of the total scale was 0.748 (α: 0.359–0.868) in a sample of 43 people, which was an acceptable value. Cronbach's alpha for the five extracted factors was as: "Appraisal of own emotions" (0.529), "Regulation of own emotions" (0.721), "Appraisal of others' emotions" (0.868), "Regulation of others' emotions" (0.661), and "Utilization of emotions" (0.359) of the scale.

Ceiling and floor effect

The total ceiling effect calculated for scale was 31.55%. For each item, the calculated ceiling effect was between 21.4% and 46.8%. It was means this scale had a ceiling effect. Furthermore, the total floor effect calculated for scale was 1.25% and the calculated floor effect for each item was between 0.5% and 5.5%, indicating no floor effect [Table 5].

DISCUSSION

Due to the importance of the subject of EI, using the right tools to measure EI can helps people to know their level of EI. Knowing the level of EI can help planning to improve it. Planning to improve it can improve people's quality of life. Therefore, various scales have been proposed to measure EI, the Persian version of which is also available in Iran. The BEIS-10 scale is a valid and reliable brief scale for measuring EI, which is presented in this study for the first time in Iran with a Persian version. The findings of this study showed that the Persian version of this scale, in terms of validity and reliability, has the necessary features for use in Iranian society.

In the process of transcultural adaptation of this study, BEIS-10 was confirmed with the five factors and ten items, such as the main version[23] and the Canadian version.[36] These factors include appraisal of own emotions, regulation of own emotions, appraisal of others 'emotions, regulation of others' emotions, and utilization of emotions. Therefore, the information obtained from the use of this scale can lead to a comprehensive understanding and provide a person's EI. Similar to the current study in Canada, this scale was studied. In the present study, the ICC index, as a measure of test–retest reliability, for the total items of the BEIS-10 was 0.580, which is acceptable. Previously reported ICC for the total score of the Canadian version of BEIS-10 was 0.360.[36] Also in the current study, the Cronbach's alpha for the total score was 0.755, which was higher than the marginal Cronbach's alpha level of 0.64 in the main version in Davies study.[23] In this study, the psychometric properties (test–retest reliability, internal consistency, content validity, and construct validity) of the Persian version of BEIS-10 were evaluated. The results showed that it has good test–retest reliability and internal consistency. The test–retest reliability of all factors in the Persian version of the BEIS-10 was 0.294–0.591, which was superior to that reported for the Canadian version (0.19–0.46).[36] Except for the second factor, test–retest reliability of the Persian version of BEIS-10 was

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moderate to good. The Cronbach's alpha coefficient of 0.755 suggests acceptable internal consistency in our study; of course, in the Canadian version also it was reported 0.91.[36]

To the best of our knowledge, this scale, which is self-report and quick to complete, is the first brief fully validated scale to assess EI in Iran. Therefore, considering the availability of this relatively up-to-date, concise, and valid scale for the Iranian society, the following items are suggested: applying this tool in future research, carrying out studies in comparing this tool with other Persian EI tools in Iranian society, use of this scale by executive managers and supervisory experts in all departments and organizations in order to assess the current state of employees' EI, and perform interventions to improve EI based on the findings of using this scale.

However, the limitations of this study were that, if better conditions were provided, more comprehensive sampling could be performed to enhance the generalizability of results. Since this instrument has not been validated in other population, we are not able to compare our results with previous ones. The self-reported response from participants through electronic survey maybe has less reliability. Another limitation of this scale was the high ceiling effect. This may be due to the insufficient 5-point Likert for answering scale items, which in future studies, it is recommended to use 7- or 10-point Likert for answering each item. More studies with larger sample sizes are recommended.

Table 3: The fitting indices of fitted CFA model

Model fit indicators	Acceptable ranges	Fitted value
CMIN/DF	Good: <3, Agreement: <5	0.913
χ^2 *P*	>0.05	0.587
RMSEA	Good: <0.08, Nod good not bad: >0.08-0.1, Bad: >0.1	0.0001
PCFI	>0.5	0.556
RMR	<0.1	0.032
GFI	>0.9	0.977
AGFI	>0.8	0.950
IFI	>0.9	1.019
TLI	>0.9	1.042
CFI	>0.9	1.000

CMIN/DF=Minimum value of the discrepancy function C divided by its degrees of freedom; RMSEA=Root mean square error of approximation; CFI=Comparative fit index; PCFI=Parsimonious CFI; RMR=Root mean square residual; GFI=Goodness-of-fit index; AGFI=Adjusted GFI; IFI=Incremental fit index; TLI=Tucker-Lewis index

CONCLUSION

The BEIS-10 is a reliable and valid scale in Iranian society that can be used in the general population at least aged 18 years and with a diploma degree. Its structure is consistent with Iranian culture, which is well illustrated by the reliability and validity obtained for it in this study. Its advantages over other translated and standardized scales in Iran are its higher accuracy and shorter response time. Using the Persian version of this scale with the necessary scientific features, comprehensive information about the level of EI in Iranian society can be provided for stakeholders.

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Conflicts of interest

There are no conflicts of interest.

Table 4: Confirmatory factor analysis results

Items		Factors	Factor loadings
Item 6: By looking at their facial expressions, I recognize the emotions people are experiencing	<—	Factor 3: Appraisal of others' emotions	0.663
Item 5: I can't tell how people are feeling by listening to the tone of their voice	<—	Factor 3: Appraisal of others' emotions	0.746
Item 4: I have control over my emotions	<—	Factor 2: Regulation of own emotions	0.530
Item 3: I seek out activities that make me happy	<—	Factor 2: Regulation of own emotions	0.416
Item 2: I easily recognize my emotions as I Experience them	<—	Factor 1: Appraisal of own emotions	0.703
Item 1: I know why my emotions change	<—	Factor 1: Appraisal of own emotions	0.714
Item 8: When other people are not feeling well, I help them feel better	<—	Factor 4: Regulation of others' emotions	0.642
Item 7: I organize events so that others can enjoy	<—	Factor 4: Regulation of others' emotions	0.654
Item 10: In the face of obstacles, I help myself to keep my mood up	<—	Factor 5: Utilization of emotions	0.631
Item 9: When i am in a positive mood, I am able to come up with new ideas	<—	Factor 5: Utilization of emotions	0.468

All factor loadings were significant at *P*<0.001

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Table 5: Test- retest reliability and ceiling and floor effects of the Persian version of BEIS-10

	ICC	*P*	Ceiling effect	Floor effect
Factor 1: Appraisal of own emotions	0.541	0.0001		
Item 1: I know why my emotions change	0.530	0.0001	28.4	1.0
Item 2: I easily recognize my emotions as I experience them	0.372	0.006	25.4	0.5
Factor 2: Regulation of own emotions	0.466	0.001		
Item 3: I seek out activities that make me happy	0.680	0.0001	46.8	1.5
Item 4: I have control over my emotions	0.538	0.0001	32.0	0.5
Factor 3: Appraisal of others' emotions	0.402	0.003		
Item 5: I can't tell how people are feeling by listening to the tone of their voice	0.328	0.015	27.4	5.5
Item 6: By looking at their facial expressions, I recognize the emotions people are experiencing	0.296	0.026	21.4	1.0
Factor 4: Regulation of others' emotions	0.586	0.0001		
Item 7: I organize events so that others can enjoy	0.404	0.003	31.3	0.5
Item 8: When other people are not feeling well, I help them feel better	0.561	0.0001	42.8	0.5
Factor 5: Utilization of emotions	0.591	0.0001		
Item 9: When I am in a positive mood, I am able to come up with new ideas	0.303	0.023	42.8	0.5
Item 10: In the face of obstacles, I help myself to keep my mood up	0.550	0.0001	33.3	1.0
Total	0.612	0.0001	31.55	1.25
Total 95% CI	Lower: 0.384, Upper: 0.769			

ICC=Intraclass correlation coefficient; CI=Confidence interval

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