Original Article

Psychometric properties of Persian version of test of personal intelligence (TOPI) in a sample of Iranian university students

Akbar Atadokht[1]; *Mehri Mowlaie[2]; Sajjad Basharpour[1]; Mozaffar Ghaffari[3]

[1]Associate professor of psychology, University of Mohaghegh Ardabili, Ardabil, Iran
[2]Ph.D. student in psychology, University of Mohaghegh Ardabili, Ardabil, Iran
[3]Assistant professor of psychology, Payame Noor University (PNU), Iran

Abstract

Introduction: Examining the divers dimensions of intelligence and constructing instruments related to assess it, is one of the most considerable issues in psychology. The aim of the present research was to examine the psychometric properties of Persian version of the test of personal intelligence in a sample of Iranian university students.

Materials and Methods: The statistical population of this descriptive-correlational study included total students of Mohaghegh Ardabili University in 2017-2018 academic years. Among them, three-hundred and seventy in a range from eighteen to thirty-three years with B.sc and M.sc degrees were selected as a sample group by simple random sampling method. They completed personal intelligence, social intelligence, emotional intelligence and cognitive emotion regulation questionnaires. Cronbach's alpha was used for examining internal consistency of the test and Pearson correlation coefficient for examining concurrent validity. Three psychologists' ideas were used for identifying content validity. Finally, confirmatory analysis was used by $AMOS_{18}$ for examining construct validity.

Results: Pearson correlation coefficients showed that among two factors, guiding choices with information of personality factor had the greatest correlation (r=0.70) with total scale. Also, the results of the present study showed that Persian version of the test of personal intelligence and its two factors have a proper validity (Cronbach's alpha = 0.86) in a student's population.

Conclusion: It is concluded form the results that Persian version of the test of personal intelligence is valid and reliable test to examine this dimension of intelligence.

Keywords: Personal intelligence, Reliability, Validity

Introduction

The concept of intelligence with a long history may be as old as human life span. In addition, it is known as a concept that has almost always been a subject of interest among researchers in terms of its dimensions, manifestations, features, and types (1). In the mid-twentieth century, it was also revealed that, apart from cold intelligence (cognition), there was another type of intelligence called social intelligence that could be much more effective (2) as well as a new type of intelligence called emotional intelligence (EI) (3), introduced at the same time. For the first time, personal intelligence was brought up by Gardner, who believed that this type of intelligence was comprised of two parts: intrapersonal intelligence and interpersonal intelligence. With the belief that reasoning and knowledge behind this intelligence did not have the same meanings, a new perspective on intelligence was addressed which was quickly accepted by numerous psychologists. Moreover, Gardner expanded the concept of intelligence beyond verbal and mathematical abilities towards musical talent, spatial relationships, intrapersonal and interpersonal knowledge, and the like. In addition, Mayer believed that intelligence would be of two types in general: a) cold and dry intelligence (cognition) and b) hot and emotional intelligence (cognition). In contrast to cold and dry intelligence (cognition), hot and emotional intelligence (cognition) could be employed in personal, emotional, and social information processing triggering positive and negative reactions in an individual and those around. It could also provide information that was likely to promote social competition and contribute to problem-solving. This type of intelligence included emotional intelligence (EI), organizational intelligence (OI), spiritual intelligence, moral intelligence,

social intelligence, and personal intelligence (4,5). In this regard, personal intelligence has been defined as the ability to reason about personality and personality-related information as well as the use of this information to guide individual behaviors and in general to put life in the right direction (6). Personal intelligence also refers to the capacity to think about personality and personality-related issues that can reinforce thinking as well as life plans and experiences that can be measured through psychological tools (7,8). Moreover, personal intelligence is a combination of EI and social intelligence that can be raised in hot topics such as personality, personality-related information, and feelings of pain (suffering) and pleasure (5,9). Mayer et al. (8) also claimed that personal intelligence was the same as personality intelligence that could be exploited to understand and characterize one's personality and that of others. Personal intelligence can also have four dimensions or categories; (1) the category of identification or recognition of personality-related information with four sub-categories of (a) recognition of internal motivations, (b) recognition of one's state of consciousness and that of others, (c) observation and understanding of others' comments and suggestions, and (d) reception and understanding of one's inner feelings and those of others (10-14); (2) the category of developing precise personality models consisting of two sub-categories of (a) formation of a personality model for oneself (15) and (b) formation of a personality model for others (7); (3) the category of selection guide using personality-related information including two sub-categories of (a) a selection guide for oneself and (b) a selection guide for others (16-18); (4) the category of organizing plans, goals, experiences, and lifestyle with the following three categories

of (a) setting equal goals and plans, (b) setting problematic or hard goals and plans, and (c) determining goals and plans causing conflicts in individuals (19-21). According to the theory of personal intelligence, this type of intelligence is a mental ability that can be used when reasoning about personality and personality-related issues. Moreover, it is reiterated that there are many commonalities between one's personality and those of others, so similar tools and instructions can be employed as personality is evaluated. Relying on the results of contemporary research in the domain of personality psychology, this theory seeks to introduce a new field of psychology helping humans to better understand their personality and those of others. It also emphasizes that individuals using personal intelligence in an optimal manner are always endowed with much more and better chances in life than other people, they can have suitable and desirable selections, and also demonstrate appropriate types of behaviors at different times and in different places. According to the results obtained in this domain, Mayer and Korogodsky (22) specifically designed a valid questionnaire

with three characteristics of consistency or reliability, utility, and generalizability to show that there was a new intelligence called personal intelligence that could be measured. According to these findings, it was argued that there was a new mental ability called personal intelligence that could be measured. In other words, one of the golden features of the variable of personal intelligence is its measurability (22). Therefore, based on evidence of conceptualizations and evaluations of different types of intelligence as well as the results concerning the validity and reliability of this tool, this questionnaire was developed as a self-report one for measuring personal intelligence which has been also used for research and clinical purposes in the Iranian society and within different groups. Since no tool had been developed so far for measuring personal intelligence in Iran, the purpose of the present study was to design and validate a short form of the Test of Personal Intelligence (TOPI) among Iranian university students. The result of some previous researches conducted on validity of TOPI in different samples are shown in Table 1.

Table 1. Cronbach's alpha and reliability coefficient of TOPI in different research groups

Research	Frequency	M(SD)	Alpha	Splitting
Mayer, Panter, Caruso (2012)	384	2.56(9.9)	0.84	0.81
Allen and Mayer (2013), (first study)	111	3.09(8.90)	0.84	0.83
Mayer, Panter, Caruso (2013)	354	2.21(9.75)	0.67	0.69
Allen and Mayer (2013), (second study)	158	2.95(8.87)	0.82	0.81
Moore (2013)	378	1.32(10.77)	0.68	0.41
Mayer and Skimmyhorn (first study)	1083	1.75(8.98)	0.53	0.52
Mayer and Skimmyhorn (second study)	58	1.97(8.95)	0.62	0.65

Materials and Methods

The present research was descriptive study with the aim of acquiring validity of the TOPI. The population the current research consisted of all students of University of Mohaghegh Ardabili. A total sample of three hundred and seventy (56.8 % female; 42.9 % male) students of B.Sc. and M.Sc. degrees of 2017-2018 academic years that were selected by random sampling method

(according to researches, the sample size was determined according to the adequacy of 5-10 subjects for each item). The age ranged from 18 to 33, with a mean of 21.95 (SD=2.76). Inclusion criteria included: age in range 18 to 35 years, not having psychiatric disorder, not using drug, and exclusion criteria included: age up to 35 and not tendency to counties cooperation in study. Personal intelligence test, emotional

intelligence questionnaire, social intelligence questionnaire and emotion regulation scale were used to collecting the data and assessing concurrent validity of the scale. Prior to testing, informed consent was obtained from the participants and their participation was anonymous and voluntary. For prepare the personal intelligence questionnaire, in order to study the linguistic validity, the 12-item personal intelligence test with a direct translation method to the English-Persian translation concept was developed by two of the professors in English who working in the field of psychology and it was translated separately. Then, comparing the text of two versions of the translation, a Persian version was prepared. In this step, the goal was to ensure that the questions of the questionnaire had no ambiguity, and when experts or different people read it, they could get a common understanding of their questions. In the next step, the reverse translation translates into a Persian-English translation by one of the professors in English who did not know the content of the initial questionnaire. In the last step, comparing two versions of Persian and English, the necessary amendments were made in Persian translation. All procedures were in according to the institutional ethical guidelines for research. The data were analyzed with AMOS 18 for factor analysis and SPSS for descriptive statistics.

Research instrument

A) Personal Intelligence Test: The 12-item Personal Intelligence Test (6) is composed of two sets of 6-item scales. The first six items are from the Forming Models section of the Test of Personal Intelligence Revised Form. The second six items are from the Guiding Choices section. A sample item is: "When younger, Sam remembered being cut from his baseball team and he felt the humiliation, and how he wondered if he had

practiced enough. Sam used this memory to help himself: a) recall that self-doubt just isn't helpful, b) perform well in a job interview, c) work harder to achieve a goal, d) cope with the challenges of shopping for sports equipment." This test has shown high reliability (6). Cronbach's alpha for this test, in the current study, was at .86.

B) Emotional Intelligence Questionnaire: This is a 33-item scale and is divided into three subscales: emotion regulation, using emotion assessing and emotion (23). The items were constructed using a Likert format scale of five alternatives for the responses with anchors of from 1: strongly disagree it is like me, 2: somewhat disagree this is like me, 3: neither agree nor disagree this is like me, 4: somewhat agree this is like me, and 5: strongly agree this is like me. Shat et al. (23) reported test-retest reliability of this scale as 0.78 in a sample of 28 students for 2 weeks intervals. Austin and Saklofske (24) achieved internal consistency by Cronbach's alpha for items from 0.84 to 0.90. Validity of this scale via assessing its correlation with related concepts follows as proper (25). Besharat (25) achieved Cronbach's alpha in a sample of 135 students as 0.88 and correlation coefficient as 42 in a two weeks intervals that indicate high test retest reliability of this scale.

C) Social Intelligence Questionnaire: This scale consists of 45 items of yes/no that its items are scored by zero and one and score of each subject varies from zero to 45. High score indicates high social intelligence (26). In Iran, Safarinia et al. (26) administered this scale on students and examining internal consistency showed that all of the items except 5, 10, 14, 16, 17, 26, 33, 39, and 40 have high correlation with total score. Cronbach's alpha was 0.78, two halves correlation was 0.76 and test retest was 0.75.

D) Cognitive Emotion Regulation Questionnaire: This scale is 18-item

instrument that assess emotion regulation strategies in response to threatening events and life stressor in five degree from 1 (never) to 5 (always). Self-blame, other-blame, rumination, catastrophizing, positive refocusing, planning, positive reappraisal, putting into perspective and acceptance are subscale of this scale (27). Minimum and maximum score for each subscale are 2 and 10 and high score indicates individuals high using if that emotion regulation. Psychometric properties of this scale are approving in foreign researches (27,28). Cronbach's alpha in a public population for subscales were assess from 0.67 to 0.89 (29). In other research (30), correlation coefficients between score of most of the participants (43 female and 36 male) in two sections of two to four intervals for subscales of the scale were r=0.57 to r=0.67. These coefficients were significant in P<0.001 level, also, test retest of this scale is approving in this study.

Results

Confirmatory factor analysis was used for construct validity by using AMOS 18. To estimate the model, the maximum likelihood method was used to examine the fit of the model from the Xi ($\chi2$), Chi square index of freedom (df/ $\chi2$), goodness index of fit (GFI), adaptive fit goodness index (AGFI), the fitting index of comparison (CFI), root mean square error (RMSEA) and residual average square (RMR) were used. If Xi is not statistically significant, the fit is very suitable, but since this index is often found in samples larger than 100 significant, it is not a suitable index for fitting the model. If the Chi square index of freedom is less than 3, it shows a very favorable fit (31). The CFI, GFI, and AGFI indices are closer to the number one, the goodness of fitting the model with the observed data is greater (31), and finally, the RMR and RMESA indices smaller than 0.08 represent a suitable fit for signification ; A model in which this index is 0.01 or more is poorly fitted (32).

Table 2. Persian version indices of confirmatory factor analysis of TOPI

	CFI	GFI	AGFI	RMR	RMSEA
Factor 1 (forming the model)	0.91	0.99	0.98	0.068	0.056
Factor 2 (guiding choice)	0.93	0.98	0.97	0.009	0.020

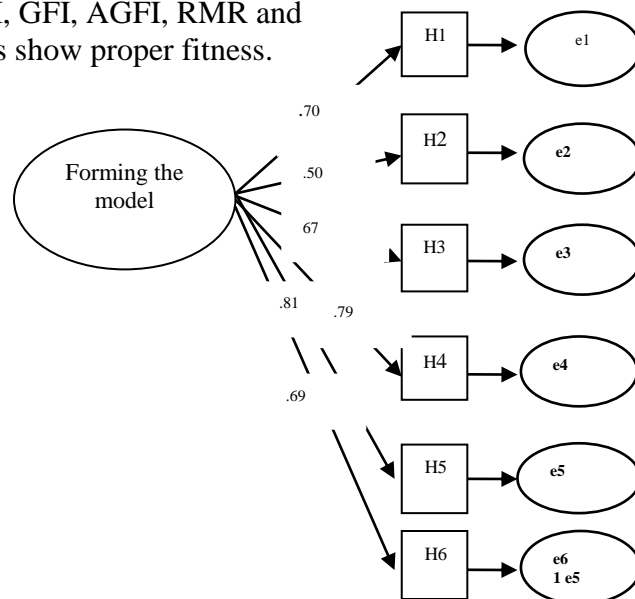The results of the CFI, GFI, AGFI, RMR and RMSEA indices show proper fitness.
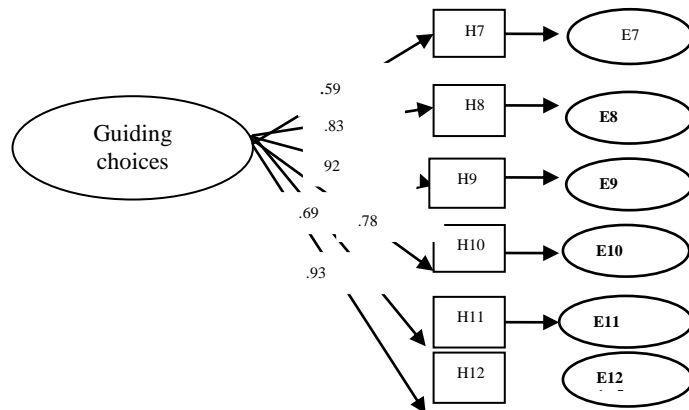

Fig 1. Estimated pathway for factor 1 of TOPI

Fig 2. Estimated pathway for factor 2 of TOPI

Cronbach's alpha for examining the reliability of the TOPI was used. The alpha coefficient for whole scale was 0.86, for factor 0.89 and for factor 2 was 0.91. These are indicating proper reliability. Also, Pearson correlation coefficient was used to examine the concurrent validity. The results of the correlation are shown in Table 3.

Table 3. Correlation coefficient of personal intelligence with emotional and social intelligence and emotion regulation strategies

Variables	(1)	(2)	(3)	(4)	(5)
(1) Personal intelligence	1				
(2) Emotional intelligence	0.71**	1			
(3) Social intelligence	0.39**	0.38**	1		
(4) Adaptive emotion regulation strategies	0.42**	0.36*	0.67**	1	
(5) Maladaptive emotion regulation strategies	-0.06	0.04	0.01	0.08	1

As seen in Table 3, personal intelligence has positively correlation with emotional intelligence (r=0.71, *P*<0.001), social intelligence (r=0.39, *P*<0.05), adaptive emotion regulation strategies (r=0.42, *P*<0.05). Also, there was not significantly correlation between personal intelligence with maladaptive emotion regulation strategies (r=-0.06).

Discussion

The increasing trend of psychological studies to conduct new research in the field of personality, intelligence, etc. has led to expanding its boundaries and it has also resulted in the development and normalization of psychological, intelligence, and personality tests. When a test is translated from one language into another one, its features and measuring qualities should be examined in terms of validity and reliability. Thus, the purpose of this study was to do a confirmatory factor analysis on the sub-scales of the short form of TOPI among Iranian university students. In this respect, the results of the psychometric data showed that the obtained alpha coefficients for both factors and the total factors were higher than 0.70 that were right for tests

used in research domains. Moreover, examining the internal consistency of the sub-scales revealed that the items of each sub-scale had the same role in the same sub-scale, and the alpha coefficient could be significantly increased in the event of crossing out an item. Therefore, there was no need to change or remove the items of the short form of the TOPI. This result is consistent with other researches (8,33). In order to investigate the concurrent validity of the questionnaire, the total correlation between the TOPI and Schutte Self-Report Emotional Intelligence Test (SSEIT) Questionnaire, Trait's Social Intelligence Questionnaire, and Cognitive Emotion Regulation Questionnaire (CERQ) by Garnefsky and Karachi were also examined and the results showed that the given variables were endowed with a significant correlation. This issue also provided evidence for confirming the concurrent validity of this 12-item questionnaire and this result is consistent with other studies (8).

Furthermore, the results of the confirmatory factor analysis showed that the structure of the questionnaire had an acceptable fit with the data as well as desirable factor validity. It also confirmed all the goodness of fit indices of the model for the sample and consequently the results were found to be consistent with the findings reported by Allen and Mayer (33). Moreover, the results of the confirmatory factor analysis indicated that the TOPI consisted of two factors. The first factor included shaping one's personality models and those of others. To explain this factor, it was argued that individuals do not usually have an accurate understanding of their own abilities in environments wherein performance criteria are clear, simple, and easily accessible such as fitness or punctuality. Other abilities like writing poetry and playing the violin

skillfully can also involve complex and multiple criteria for success. In these conditions, only those with a sense of competitiveness about their abilities can obtain such recognition. In other words, it is essential to have the minimum level of competition to recognize accurate evaluations of ones' behaviors and those of others (17). Thus, individuals lacking a sense of competitiveness are also incapable of knowing if they have good performance criteria or not. Another factor regarding one's own exact recognition can originate from the way people search for information from others. So, individuals with high self-recognition probably make use of advanced cognitive (heuristic) techniques to improve evaluations (7). The second factor verified by the factor analysis was the selection guide using the exact personality information. To account for this factor, it could be argued that people who are able to adapt their personality in harmony with the demands of the environment can operate much more than others in the given environments (8). Accordingly, individuals with high personal intelligence are much more likely able to use such information for their own life plans and those of others. For example, a person looking for a skill, making attempts to gain expertise, and dedicating enough time to accomplish a goal is endowed with a high level of personal intelligence compared to those who do not consider these types of information.

It is worth mentioning that some limitations of the research limit the generalizability of its results. First, the participants in this study included all students at the University of Mohaghegh Ardabili in 2017-18, so although there are no reasons for their significant difference with other students, however, in generalizing the results to other students, caution should be exercised. Second, in the present study due to the time

limit of respondents it was not possible to use the other variables questionnaire to study the validity of the TOPI. In order to examine the validity of the questionnaire simultaneously, it is suggested in the following studies that the relationship between the score of TOPI, Questionnaires of other psychological variables such as ethical intelligence, leadership styles, attachment styles and mindfulness are examined.

Conclusion

Evidence from this research suggests that the Persian version of the short form of TOPI in Iranian students is of prime importance and can be used by researchers and experts in the field of personality psychology, intelligence, social psychology and health. The results of this research are also applicable to all researchers in the humanities and governmental and nongovernmental organizations that deal with research in the field of human resources and management styles.

Acknowledgment

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