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Original Article

Validation of the Persian Version of the Life Balance Inventory in the Iranian Population

Naser Havaei[1], PhD; Babak Kashefimehr[1*], PhD; Ahmad Mohammadi[1], PhD; Mina Ahmadi Kahjoogh[1], PhD

[1] Department of Occupational Therapy, Faculty of Rehabilitation Sciences, Tabriz University of Medical Sciences, Tabriz, Iran.

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ABSTRACT

Background: Life balance is defined as having a satisfying pattern of activities or occupations that is sustainable and meaningful to a person within their current context and life conditions. It can be considered an important outcome in medical and rehabilitation services. The Life Balance Inventory (LBI) is a self-reported, comprehensive measure developed to evaluate life balance. This study aimed to translate and validate the LBI for the Iranian population.

Methods: This methodological and cross-sectional study included a sample of 150 healthy individuals and 93 people with mental illnesses. Validation procedures included content validity, discriminant validity (construct validity), test-retest reliability, and internal consistency assessment of the LBI.

Results: The Persian translation of the LBI demonstrated acceptable content validity. Discriminant validity showed significant differences in life balance between healthy individuals and those with mental disorders. Test-retest reliability ranged from 0.70 to 0.93 over a two-week interval. Internal consistency was strong, with a Cronbach's alpha of 0.88.

Conclusion: The LBI shows acceptable psychometric properties for use among Iranians. This questionnaire effectively discriminates between individuals with and without mental disorders. The Persian version of the LBI can be applied in various specialties and settings.

Introduction

Life balance (LB) is one of the core concepts of occupational science and an important counseling construct in occupational therapy. LB is defined as having a satisfying pattern of daily activities or occupations that is healthful, meaningful, and sustainable for an individual within their present life setting [1]. Other terms associated with life balance are also presented in the literature, such as happiness, life integrity, role balance, occupational balance, satisfaction with daily occupations, and balance between different aspects of life [2]. Although there is no consensus on the definition of life balance, much research has shown that balance can have either

[*] *Corresponding author:* Babak Kashefimehr, Department of Occupational Therapy, Faculty of Rehabilitation Sciences, Tabriz University of Medical Sciences, North 29 Bahman Street, Tabriz, Iran, **Email:** babakkashefi@yahoo.com, kashefimehrb@tbzmed.ac.ir; **Tel:** 00989144000469

positive or negative influences on health and well-being [3]. Activity or occupation patterns are modifiable, and health conditions affect them. A balanced life is linked to decreased stress as well as increased satisfaction with needs and overall well-being, thereby having positive effects on both mental and physical health [4]. Therefore, the concept of life balance can be considered a central outcome in medical-rehabilitation settings, encompassing both physiological and psychological attributes [5, 6].

The Life Balance Model (LBM) is a conceptual framework developed by Matuska and Christiansen (2008) that supports the concepts of life balance and imbalance. This model includes two main principles: congruence and equivalence, whose arrangement represents the configuration of activities. Congruence refers to the ratio between the time desired and the time spent on activities, while equivalence corresponds to satisfaction with the time spent completing activities that fulfill the following four basic needs: [1] physical health and safety, [2] rewarding interpersonal relationships, [3] challenges, commitment, and competence, and [4] meaning to one's life and positive personal identity. The original model (2008) also included a fifth need-based measure: "to organize their time and energy in ways that enable them to meet significant personal goals and renewal".

To accurately assess the impact of conditions on individuals' time use, it is necessary to employ valid tools. A detailed assessment of life balance also helps occupational therapists design treatment plans that are both meaningful and health-promoting for clients. Based on the life balance theoretical model, the Life Balance Inventory (LBI) was developed to measure activity configuration congruence and equivalence as central constructs that encompass life balance [1, 5, 6]. The LBI has been applied across various diagnoses, including mental disorders, multiple sclerosis, stroke, and obesity [7-9]. English, French, and Flemish versions of the LBI are available [6, 9-11]. Furthermore, the questionnaire has been reported to demonstrate acceptable validity and reliability for use in healthy populations in Turkey [12]. The cultural background of individuals influences life balance, and the validity and reliability of the LBI have not yet been evaluated in Iranian society. Investigating the psychometric properties of the LBI will enable accurate measurement of life balance within the target population. The purpose of this study was to translate and evaluate the reliability and validity of the LBI among Iranians.

Methods

In this methodological and cross-sectional study, 150 healthy individuals (Table 1) who were not diagnosed with any specific illness participated voluntarily. Inclusion and exclusion criteria required the absence of any diagnosed disease based on the participants' medical history, and written informed consent was obtained from all participants. This study was approved by the local ethics committee of Tabriz University of Medical Sciences (code: IR.TBZMED.REC.1401.992).

The procedure was done in three phases

After obtaining permission from the publisher of the questionnaire, the first phase involved translating the English version of the LBI into Persian. In the second phase, the content validity of the translated version was established. In the third phase, validation processes—including discriminant validity (as construct validity), test-retest reliability (with an interval of approximately two weeks between test administrations), and internal consistency of the LBI—were conducted.

For this purpose, demographic information was collected during routine visits to the subjects. The questionnaires were then completed by participants under the supervision of a specialized occupational therapist in a quiet room. This entire process was carried out over 18 months.

Translation process

According to language translation and cross-cultural adaptation guidelines (Beaton et al.), the translation procedure was conducted in a forward–backward manner by four native Persian speakers, following international standards. The backward translation was reviewed and approved by an additional authorized translator and an assistant professor of linguistic sciences.

Forward and backward translation involved selecting translators, engaging a review team, and pilot testing with the target population. The forward translators were academic associates proficient in translation, fluent in both the source and target languages, and well-informed about the purpose and intent of the instrument. The backward translators were equally qualified but were not acquainted with the original version of the instrument. Importantly, the translators worked independently and were blinded to each other's work.

The final version was prepared under the supervision of the corresponding author. Permission from the LBI developer was obtained for the backwardly translated versions. Minor revisions were made to the Persian version due to linguistic differences, to improve the simplicity and clarity of certain items.

Validation process

Fifteen academic members (5 occupational therapists, four speech therapists, and six psychiatrists) joined an expert panel in multiple sessions to assess the content validity of the LBI. The quantitative evaluation of content validity was performed by calculating the Content Validity Ratio (CVR) and Content Validity Index (CVI). Discriminant validity was established to evaluate the construct validity of the LBI. Test-retest and internal consistency methods were also employed

to assess the reliability of the Persian version of the LBI.

Sampling

The general population for the study was recruited through an online invitation announcement, and participants completed the questionnaire. A convenience sampling method was used to include 93 individuals diagnosed with mental health conditions (anxiety, mood, and personality disorders) who possessed sufficient cognitive ability to respond to the LBI (Table 1) to assess discriminant validity. The participants diagnosed with mental health conditions completed the questionnaire under the guidance of the ward's occupational therapist, and informed consent was obtained from the patients' guardians. The internal consistency of the LBI was determined using Cronbach's alpha coefficient (n = 150). Test-retest reliability was also evaluated at a 14-day interval (n = 30).

Instrument

The LBI was developed based on the life balance model framework. This inventory assesses the perceived similarity between how individuals want to spend their time across various activity categories and how they spend their time in those categories [6]. The questionnaire contains 53 items and requires two steps for administration. For each of the 53 activities, participants first identify the activities they do or want to do. Then, for each selected activity, the satisfaction level with the amount of real time compared to the desired time for the activity is rated on a five-point scale: *always less than I want, sometimes less than I want, about right for me, sometimes more than I want, always more than I want* [6, 9].

The validity of this questionnaire has been examined in different languages. The French version demonstrated its utility in helping occupational therapists conduct comprehensive assessments of clients [13]. Similarly, the Turkish version of the LBI has been shown to effectively evaluate different dimensions of life balance in individuals with multiple sclerosis [14].

Statistical analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS software, version 25; Chicago, IL, USA). P-values of less than 0.05 were considered significant. The content validity of the Persian version of the LBI was determined by calculating the CVR and CVI. Given the number of experts participating in this study (n=15), CVR values greater than 0.49 were deemed acceptable. Similarly, CVI values above 0.79 were considered acceptable [15].

The discriminant validity of the LBI was assessed by demonstrating statistically significant differences between healthy individuals and those with mental disorders (Wilcoxon signed-rank test). An intra-class correlation coefficient (ICC) was used to analyze the test-retest reliability. The ICCs were interpreted according to the Landis and Koch criteria: 0–0.20 as poor, 0.21–0.40 as fair, 0.41–0.70 as moderate, 0.71–0.80 as substantial, and 0.81–1.00 as almost perfect [16]. Internal consistency was evaluated using Cronbach's alpha. Alpha coefficients >0.6 were satisfactory for all domains [17].

Table 1: Demographic Information

Group	N	Sex		Age		
		Men	Femeil	MAX	MIN	Avrage
Healthy	150	52	98	25	19	20
		34.6%	65.4%			
Diagnosed	93	34	59	30	12	19.55
		36.55%	63.45%			

Table 2: CVR and CVI Values for LBI (n=15)

CVR (Necessity)	0.66 – 0.77
CVI (Clarity)	0.8 – 0.93
CVI (Simplicity)	0.86 – 0.93
CVI (Relevance)	0.93 - 1

Table 3: The Results of the Discriminant Validity for LBI

Question	Mean±SD (Healthy, n=150)	Mean±SD (Mental Disorder, n=93)	P Value
1	2.52±0.683	2.07±0.923	0.009
2	2.41±0.615	1.97±0.944	0.015
3	2.2±0.616	2.07±0.884	0.563
4	2.24±0.598	1.86±1.09	0.128
5	1.69±0.768	1.62±0.942	0.904
6	2.4±0.635	2.17±0.805	0.158
7	2.58±0.637	2.14±0.953	0.012
8	2.35±0.706	1.93±0.923	0.018
9	1.75±1.09	1±1.1	0.001
10	1.88±1.01	2.07±0.961	0.382
11	2.22±0.761	1.45±0.948	0.000
12	1.75±1.09	1.03±1.08	0.002
13	2.26±0.755	1.45±1.055	0.000

Question	Mean±SD (Healthy, n=150)	Mean±SD (Mental Disorder, n=93)	P Value
14	2.03±1.03	1.59±1.11	0.041
15	0.976±1.06	0.55±0.87	0.085
16	2.12±0.779	1.72±0.1.13	0.101
17	1.7±1.01	1.83±0.96	0.548
18	1.75±0.954	1.28±1.06	0.021
19	1.91±1.16	1.55±1.35	0.209
20	1.92±1.09	1.14±1.15	0.001
21	2.28±0.854	0.9±1.1	0.000
22	2.2±0.796	1.38±1.14	0.823
23	1.66±1.12	1.62±1.11	0.000
24	1.9±0.988	0.86±0.95	0.307
25	1.6±0.989	1.38±1.01	0.599
26	1.7±1	1.59±1.11	0.71
27	1.644±1.05	1.55±1.15	0.000
28	2.13±0.756	1.28±1.03	0.000
29	2.18±0.862	1.55±0.87	0.002
30	2.15±0.895	1.59±0.9	0.01
31	2.16±0.905	1.69±0.93	0.094
32	2.28±0.769	1.97±1.94	0.003
33	2.36±0.745	1.76±1.05	0.002
34	1.23±1.13	1.9±0.9	0.000
35	2.24±0.793	1.34±1.01	0.054
36	2±0.972	1.62±1.01	0.000
37	2.14±0.867	1.24±1.05	0.232
38	1.26±1.01	1.52±1.05	0.000
39	1.8±0.977	0.76±1.01	0.174
40	1.51±1.18	1.83±1.07	0.858
41	1.39±1.12	1.38±1.26	0.001
42	2.03±0.772	1.31±1.37	0.705
43	1.97±0.818	1.83±1.07	0.289
44	1.76±0.979	1.55±1.08	0.000
45	1.006±1.03	1.93±0.961	0.218
46	1.48±1.05	1.21±1.14	0.000
47	1.66±1.06	0.83±1.19	0.431
48	1.66±1.04	1.48±1.15	0.000
49	2.1±0.86	1.31±1.07	0.252
50	1.56±1.12	1.93±0.651	0.118
51	1.94±0.861	1.69±1.1	0.285
52	1.26±1.06	1.69±0.85	0.033
53	2.5±0.67	1.62±1.17	0.000
Total	101.526±18.766	81.55±23.57	0.000

Table 4: The Results of Test-Retest Reliability for LBI

Question	ICC
1	0.79
2	0.84
3	0.8
4	0.93
5	0.77
6	0.88
7	0.92
8	0.91
9	0.86
10	0.75
11	0.93
12	0.93
13	0.89
14	0.9
15	0.72
16	0.88
17	0.9
18	0.77
19	0.83
20	0.93
21	0.89
22	0.75
23	0.83
24	0.9
25	0.83
26	0.86
27	0.83

Question	ICC
28	0.9
29	0.92
30	0.81
31	0.88
32	0.78
33	0.78
34	0.88
35	0.92
36	0.91
37	0.71
38	0.71
39	0.84
40	0.9
41	0.88
42	0.93
43	0.77
44	0.82
45	0.91
46	0.91
47	0.87
48	0.86
49	0.7
50	0.79
51	0.93
52	0.8
53	0.91
Total	0.87

Table 5: The Results of Internal Consistency for LBI (n=150)

Item	Cronbach's Alpha
LBI	0.888

Results

After the translation phase and receiving approval from the developer of the LBI, content validity was confirmed by the panel of experts during three review sessions. The CVR and CVI results are presented in Table 2. One hundred and fifty healthy individuals and ninety-three persons with mental disorders of similar average ages completed the questionnaire to examine discriminant validity (as construct validity). The results are shown in Table 3.

Thirteen subjects participated in the evaluation of the test-retest reliability of the questionnaire. The results indicated stability in responses across all items of the questionnaire. The test-retest reliability ranged from 0.70 to 0.93 over two weeks (Table 4).

The internal consistency of the questionnaire was confirmed by the results of Cronbach's alpha in the evaluated subjects (n=150) (Table 5). The internal consistency was good (Cronbach’s alpha = 0.88), indicating that 88% of the observed score variance represents true score variance.

Discussion

The purpose of this research was to test the validity and reliability of the LBI in Iranian society and to investigate the distinction between healthy individuals and individuals with mental disorders. Culture can affect the balance of life and even lead to a different understanding of it [18, 19]. The perception of balance is individualized, and it is a complex concept [20]. Balance in life is also one of the core concepts in occupational therapy [21]. The tools used to measure life balance should have sufficient validity in the population being assessed.

To answer the research question, the content validity, discriminant validity, test-retest reliability, and internal consistency of the LBI were examined. Similar to the original version [6]The Persian version of the LBI demonstrated suitable content validity and effectively measured the concept of life balance among Iranians. In other words, the Persian translation of the LBI provides a comprehensive assessment of the concept of balance.

One of the objectives of this study was to compare the results of healthy individuals with those of individuals with mental disorders. The balance of life can be altered by various factors such as disorders or stressors [22, 23]. People with mental disorders, such as depression and anxiety, often experience problems in their occupational and time balance [3]. Individuals with schizophrenia also struggle with life balance [24] and require interventions and readjustment of their use of time. Accurately measuring these changes may help such individuals return to their normal lives.

When a tool demonstrates good discriminant validity, it can assist in achieving this goal. Discriminant validity in this study evaluated the ability of the LBI to show the impact of mental disorders on individuals' time balance across different activities. The results indicated that the life balance measured by the LBI was significantly different between healthy individuals and those with mental disorders. In other words, mental

disorders, as a source of stress, affect the balance of people's lives—an effect that can be measured with the LBI.

In examining the convergent validity of the French version of the LBI, results indicated that stress has a significant relationship with time balance [25]. The experience of stress among participants disrupted their life balance. The findings of this study, consistent with previous research, also show that different factors can influence an individual's life balance. In other words, the LBI demonstrates the ability to distinguish between different groups of participants. In this study, the quality-of-life balance differed significantly between healthy individuals and those with mental conditions.

The results of the test-retest reliability also demonstrated that the measurements based on the LBI are stable over time. There was an acceptable level of agreement between the test and retest scores of the LBI among Iranian participants. In previous studies, the test-retest reliability of this questionnaire was examined and confirmed in individuals with multiple sclerosis in European countries [26] and in people with stroke [27]. The findings of this study are consistent with the results reported for the Korean version of the LBI [28], which also demonstrated acceptable test-retest reliability. Similarly, another study assessed the test-retest reliability of the LBI in individuals with multiple sclerosis and found that the questionnaire reliably measures life balance over time [11].

Considering the good internal consistency of the LBI, it can be concluded that this questionnaire measures the concept of balance across almost all items. In the original version, the internal consistency of this questionnaire was reported to be good, which is similar to the findings of the present study [6]. In other words, all the items of the Persian version measure the concept of balance. In other studies, the internal consistency has also been acceptable, demonstrating that all items in this questionnaire measure life balance consistently in Persian as well as in other available languages (English, French, Flemish, and Turkish) [6, 9-11]. This questionnaire has also been reported to have acceptable validity and reliability for use in healthy populations.

It is recommended to measure the impact of interventions aimed at improving life balance using the LBI in future studies. In this way, occupational therapists can better report the effectiveness of their interventions on clients' lives. The development of tools aligned with the core mission of occupational therapy can further help document and validate occupational therapy services.

Conclusion

The present findings indicate that the LBI has suitable validity and reliability for use among Iranians. It can also distinguish between life balance in healthy individuals and those with mental disorders. The Persian version of the LBI can be utilized across various health-related disciplines for both clinical and research purposes.

Author Contributions

The responsible author developed the study design, while the responsible author and the third and fourth authors conducted data collection. The first author performed statistical analysis of the data, and the data interpretation was carried out collaboratively. The article was written following established academic principles by the responsible author, with contributions from all researchers involved.

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