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Psychometric Properties of the Turkish Version of the Fear of Falling Scale for Older Adults: A Validity and Reliability Study

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Abstract

Objective

This study was conducted to determine the validity and reliability of the Turkish version of the "Fear of Falling Scale for Older Adults" (FFSO), developed by Lee and Tak (2025), which comprehensively evaluates the fear of falling in older adults.

Methods

This methodological study was conducted with 278 individuals aged 65 and over. The language equivalence of the scale was tested using the translation-back translation method, and its content validity was evaluated based on the opinions of 11 experts (Davis Technique). Confirmatory Factor Analysis (CFA) was applied to assess construct validity. For reliability analyses, Cronbach's Alpha internal consistency coefficient, item-total correlations, and test-retest (ICC) methods with a 30-day interval were utilized.

Results

The Scale Content Validity Index (S-CVI) was determined to be 0.99. Analyses indicated high sampling adequacy (KMO = 0.917; $p < 0.001$). CFA results showed that the original 21-item, four-factor structure (Unpredictability, Fragility, Vigilance, Fear of Suffering Harm) exhibited a high level of fit with the Turkish sample (X^2/df = 2.30, RMSEA = 0.074, CFI = 0.96, TLI = 0.96). The total Cronbach's Alpha value of the scale was 0.919, with sub-dimension values ranging between 0.720 and 0.901. Furthermore, the test-retest reliability coefficient (ICC = 0.995) proved that the invariance over time is remarkably strong.

Conclusion

The Turkish version of the Fear of Falling Scale for Older Adults (FFSO-T) is a valid and reliable measurement tool for the Turkish elderly population. It is recommended that the scale be used in clinical practice and academic research to analyze the fear of falling in older adults through its psychosocial dimensions.

Trial registration

Not applicable.

Introduction

The world population is aging at an unprecedented rate; it is expected that the global population will reach approximately 10 billion by 2050 and that older individuals will constitute a significant part of this population [1]. This demographic transformation is not only a numerical increase, but also a complex process that needs to be managed for health systems. Along with the aging population, the prevalence of geriatric syndromes such as frailty, depression, and loss of physical function is increasing; this situation both threatens individual quality of life and brings severe burdens to the global health economy [2, 3]. Among the geriatric syndromes in question, falls are accepted as one of the leading causes of morbidity and mortality. Falls triggered by the decrease in physiological reserves and losses of balance are devastating events that can result in hip fractures, long-term hospitalizations, and even death[4]. However, the effect of falls is not limited only to physical injuries. Even the event of a fall or just the perception of fall risk creates a severe psychological trauma and loss of confidence in the older individual, preparing the ground for the condition defined as "fear of falling" in the literatüre [2].

Fear of falling is evaluated today as a public health problem at least as common and dangerous as the fall itself. This fear, which is seen at rates varying between 21% and 85% in older adults living in the community, can emerge whether there is a history of falling or not [5]. Fear of falling leads to a "vicious cycle" that causes older individuals to restrict their daily activities, and this restriction causes muscle atrophy, loss of balance, and ultimately, ironically, an even further increase in the risk of falling. Therefore, fear of falling is not only a result but also a strong predictor of future falls.

In order for this risk to be managed, first of all, the level of fear must be accurately determined. However, when the current literature is examined, it is seen that the measurement tools used (for example, the Falls Efficacy Scale-International [FES-I]) generally focus on measuring "fall efficacy," which expresses the individual's self-confidence while performing certain activities [6]. Yet, the concepts of lack of confidence and anxiety are distinct psychological processes. An individual may trust their physical capacity but still experience intense anxiety due to environmental uncertainties or a sense of vulnerability. Existing scales may remain insufficient in fully reflecting these dimensions of subjective fear, worry, and ecological vigilance felt by older people. To fill this gap, the Fear of Falling Scale for Older Adults (FFSO) developed by Lee and Tak (2025) handles the fear of falling not only as an activity-based confidence problem, but as a multidimensional structure such as "anxiety regarding unpredictable falls," "worry about personal vulnerability," "increased vigilance towards the environment," and "worry about potential harm." This modern approach offers the opportunity to analyze the emotional state of the older individual more comprehensively. In this context, our study aims to examine the validity and reliability of the Turkish form of the FFSO scale, to bring in a culturally compatible and specific measurement tool that can be used in evaluating the fear of falling of older individuals living in Turkish society.

Methods

Desing

The research is a methodological study.

Participants and Sample

The study sample consisted of older individuals who applied to the outpatient and inpatient clinics of Erzurum City Hospital between February and May 2025. The researcher collected the data through one-on-one and face-to-face interview techniques.

Inclusion and Exclusion Criteria

The inclusion criteria for the study were: (a) being aged 65 years or older, (b) being open to communication, (c) having no diagnosed cognitive impairment that would prevent answering the questions (Standardized Mini-Mental Test score ≥ 24), and (d) volunteering to participate in the research.

The exclusion criteria were: (a) having severe hearing or vision loss that prevents communication, (b) having a severe psychiatric or neurological disorder diagnosed by a physician, and (c) declining to continue the interview at any stage.

Sample Size and Selection

In the literature, it is stated that for scale development or adaptation studies, the sample size should be 5 to 10 times the number of items in the scale. [7] Since the Fear of Falling Scale for Older Adults (FFSO) used in this study consists of 21 items, the targeted minimum sample size was determined as 210 people.

Within the scope of the study, a total of 308 older individuals were reached. As a result of the preliminary interviews, 20 people did not agree to participate in the survey, 5 people could not answer the questions asked, and 5 people stated that they wanted to withdraw while the study was continuing. In this direction, a total of 30 people were excluded from the study due to the specified exclusion criteria, and the study was completed with 278 older individuals who met the inclusion criteria.

Data Collection Tools

The data collection tools of the study consisted of the “Sociodemographic Information Form” and the “Fear of Falling Scale for Older Adults - FFSO.”

Personal Information Form:

This form, created by the researchers, contains questions aimed at determining the descriptive characteristics of older individuals and the factors that may be associated with falling. In the form, participants' age, gender, educational status, marital status, place of residence, income level, health insurance, and occupational status were questioned. In addition, information regarding the presence of

chronic diseases, regular medication use, the status and number of falls in the last year, and the status of having balance/walking problems was also collected through this form.

Fear of Falling Scale for Older Adults (FFSO): It was developed by Lee and Tak (2025) to evaluate the fear of falling in older individuals.[8] The scale consists of 21 items and has four sub-dimensions. The sub-dimensions are as follows: "Uneasiness caused by unpredictable falls" (Items 1–4), "Worry about one's own vulnerability" (Items 5–7), "Increased attention and vigilance regarding the environment" (Items 8–12), and "Worry about potential harm after falling events" (Items 13–21).

The scale uses a 5-point Likert-type rating. Each item is scored as "Never (1)", "A little (1)", "Moderately (3)", "Frequently (4)", and "Very much/Strongly agree (5)". The total score that can be obtained from the scale ranges between 21 and 105. It is concluded that as the score obtained from the scale increases, the individual's level of fear of falling also increases. The reliability of the original version of the scale was evaluated with the Cronbach's Alpha coefficient, and it was reported to range between 0.835 and 0.965 for the total score and all factors [8].

Adaptation Process

The adaptation of the Fear of Falling Scale for Older Adults (FFSO) into Turkish and the cross-cultural adaptation study were carried out in three stages.

First stage (Translation, expert opinion, and creation of the pre-application form)

The original English form of the scale was translated into Turkish in the first stage by two independent language experts proficient in both English and Turkish. The resulting Turkish form was sent to a panel consisting of a total of eleven experts including nine nursing experts with doctoral degrees in the fields of Public Health Nursing (3), Psychiatric Nursing (2), Internal Medicine Nursing (3), and Child Health and Diseases Nursing (1) who are proficient in English and Turkish, one Turkish language expert, and one Sociology expert to identify inadequate expressions and inconsistencies in the translation. The Content Validity Index (CVI) was calculated in accordance with the evaluations received from the experts. As a result of the analysis, no items were removed from the scale since there were no items with a CVI value below 0.80. In line with the expert suggestions, phrasing corrections were made in some items, and then the form was back-translated into English by two different language experts. After the back-translation process, it was confirmed through item-by-item comparisons made by an expert (the third author) that there was no significant conceptual or linguistic difference between the original scale and the back-translated English text. After these stages were completed, the pilot application form of the scale was created.

Second stage (Pilot application)

The pilot application was conducted to test the comprehensibility of the scale items by the target audience and to perform preliminary reliability analyses. In this stage, 30 older individuals who met the

inclusion criteria were reached. As a result of the item analysis performed on the pilot application data, it was determined that the item-total correlation values of all items were above 0.30. Additionally, the Cronbach's Alpha internal consistency coefficient calculated for the entire scale was found to be above 0.70. Since these values are considered sufficient in the literatüre. [9–11], no items were removed during the pilot stage, and the main application stage was initiated with the scale form consisting of 21 items.

Third stage (Main application)

In the main application stage, fundamental analyses regarding the validity and reliability of the scale were performed. Data were collected by the researcher using a one-on-one and face-to-face interview technique, and the study was completed with 278 older individuals who met the inclusion criteria. Confirmatory Factor Analysis (CFA) was applied to test the structural validity of the scale. The fit indices obtained as a result of the analysis were compared with the reference values specified in the literature [12, 13], and it was observed that the four-factor original structure of the scale was confirmed for the Turkish form.

To evaluate the invariance of the scale over time (test-retest reliability), the scale was re-administered 30 days later to 30 participants randomly selected from those who participated in the main application. 30 days was preferred, taking into account the 15–30 day time interval recommended in the literature for test-retest applications. [10, 14] The consistency between the two measurements was evaluated by calculating the Intraclass Correlation Coefficient (ICC).

Statistical Analysis

Data were analyzed using SPSS 27 and the LISREL program. To determine whether the scales showed a normal distribution, Skewness and Kurtosis values were examined (within the range of + 2 and − 2), and histogram graphs were observed. Item-total correlation values of the scale items and total Cronbach's alpha values were examined. The suitability of the data set and sample size for analysis was determined by the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity. A KMO value above 0.60 and a significant Bartlett's test of sphericity indicate sample adequacy and the suitability of the data set for analysis [15]. To ensure the structural validity of the scale, the data were transferred to the LISREL software package, and fit indices (Relative Chi-Square Index (CMIN/DF), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Residual (RMR)) were examined. A CMIN/DF value less than 5, an RMSEA value less than 0.08, a CFI value greater than 0.90, SRMR and RMR values less than 0.08, and a TLI value greater than 0.90 indicate that the fit indices of the scale are acceptable [12, 13, 15, 16]. To determine the reliability of the scale, Cronbach's alpha coefficients and McDonald's Omega reliability analysis results were examined. A reliability coefficient above 0.60 indicates that the scale is reliable [17]. Additionally, the retest method was used to determine the invariance of the scale over time [15].

Ethical Considerations

Permission for the study was obtained from a University Ethics Committee. Official permission was obtained via email from the owner of the scale regarding the adaptation of the scale used in the study into Turkish. The research was conducted in accordance with the principles of the Declaration of Helsinki.

Results

The majority of the participants were in the 65–74 age group (73.4%), female (56.1%), and married (82.7%). The most common education level was primary education (28.8%). Of the participants, 48.2% were employed, and 48.6% had a history of falling within the past year. The rate of injury due to falling was 44%. It was found that 63.3% of the individuals used 1–3 regular medications, 43.5% had a chronic disease, and 58.6% had visual problems. Regarding activities of daily living, 43.5% of the participants were completely independent. The rate of those experiencing concerns about balance was 36.7%. Additionally, 57.6% of the participants stated that they were active within the home, and 73.4% evaluated their living environment as safe against falls (Table 1).

Findings Related to Validity

Content Validity

In the study, the item-level content validity index (I-CVI) was found to be between 0.91 and 1.00, and the scale-level content validity index (S-CVI) was determined to be 0.99.

Construct Validity

Before conducting construct validity, the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity were performed to check the adequacy of the sample size and the suitability of the data set for analysis. The KMO value was determined to be 0.917. Bartlett's Test of Sphericity was found to be significant (x^2=2353.466; p = 0.000). To demonstrate the validity of the existing 21-item, 4-factor structure, CFA analysis was conducted without performing EFA. As a result of the CFA analysis, it was observed that the factor loading values ranged between 0.490 and 0.830, and the 4-factor structure was confirmed (Table 1).

Table 2
Mean, Item-Total Correlation Coefficients, and CFA Factor Loading Results

Scale Items	Mean ± SD	Corrected Item-Total Correlation	Factor Loadings			
			F1	F2	F3	F4
Item 1	2.71.± 0.67	0.487	0.700			
Item 2	2.73 ± 0.62	0.321	0.570			
Item 3	2.85 ± 0.70	0.436	0.650			
Item 4	2.78 ± 0.69	0.366	0.580			
Item 5	2.97 ± 0.81	0.546		0.620		
Item 6	2.88 ± 0.74	0.483		0.620		
Item 7	2.93 ± 0.79	0.626		0.720		
Item 8	2.93 ± 0.81	0.598			0.670	
Item 9	3.15 ± 0.93	0.554			0.620	
Item 10	2.93 ± 0.74	0.460			0.510	
Item 11	3.11 ± 0.91	0.588			0.640	
Item 12	3.04 ± 0.86	0.609			0.660	
Item 13	3.18 ± 0.93	0.671				0.710
Item 14	3.15 ± 0.91	0.728				0.790
Item 15	3.08 ± 0.88	0.748				0.830
Item 16	3.18 ± 0.93	0.617				0.720
Item 17	3.18 ± 0.92	0.623				0.760
Item18	3.09 ± 0.90	0.593				0.660
Item19	3.11 ± 0.93	0.670				0.750
Item20	3.03 ± 0.86	0.626				0.670
Item21	2.86 ± 0.77	0.455				0.490

Confirmatory Factor Analysis

According to the results of the analysis conducted, the CFA fit index values were obtained as follows: x^2=419.28, df = 182 ($p < 0.05$), X2/df = 2.30, RMSEA = 0.074, CFI = 0.96, SRMR = 0.062, TLI = 0.96, RMR =

0.043, and AIC = 517.28 (Table 3). The PATH diagram created during the confirmatory factor analysis is shown in Fig. 1.

Table 3
Confirmatory Factor Analysis Results

Fit criteria	Found	Appropriate	Acceptable	Sonuç
x^2/df (**CMIN/DF**)	2.30	< 2	< 5	Perfect fit
RMSEA	0.074	< 0.05	< 0.08	Perfect fit
CFI	0.96	> 0.95	> 0.90	Perfect fit
SRMR	0.062	< 0.05	< 0.08	Acceptable Fit
RMR	0.043	< 0.05	< 0.08	Perfect fit
TLI	0.96	> 0.95	> 0.90	Perfect fit
AIC	517.28			

CFI: Comparative Fit Index; **RMSEA**: Root Mean Square Error of Approximation; **RMR**: Root Mean Square Residual; **SRMR**: Standardized Root Mean Square Residual; **TLI**: Tucker Lewis Index; **AIC**: Akaike Information Criterion.

Positive and statistically significant relationships were found between the sub-dimensions of the Fear of Falling Scale for Older Adults ($p < 0.01$). Correlation coefficients ranged from 0.335 to 0.673, indicating moderate to high levels of relationship between the sub-dimensions. The correlations of the sub-dimensions with the total score were determined to be at high and very high levels ($r = 0.616–0.909$, $p < 0.01$). These findings indicate that the sub-dimensions measure the same theoretical construct but possess distinguishable characteristics. Furthermore, it was observed that there was no multicollinearity problem between the factors.

Table 4
Correlation Values and Reliability Values

Scale and sub-dimensions	F1	F2	F3	F4	Total	α	McDonald's ω
F1	1					0.722	0.720
F2	r = 0.555**	1				0.689	0.693
F3	r = 0.527**	r = 0.633**	1			0.803	0.806
F4	r = 0.335**	r = 0.560**	r = 0.673**	1		0.899	0.901
Total	r = 0.616**	r = 0.767**	r = 0.866**	r = 0.909**	1	0.919	0.919

**Correlation is significant at the 0.01 level (2-tailed); F: Factor; F1, Uneasiness caused by unpredictable falls; F2, Anxiety about one's own fragility; F3, Increased awareness and alertness regarding the environment; F4, Anxiety about potential harm after falling events.

Findings Regarding Reliability

The internal consistency of the Fear of Falling Scale for Older Adults was evaluated using Cronbach's alpha and McDonald's omega coefficients. While the Cronbach's alpha values for the sub-dimensions ranged between 0.689 and 0.899, the McDonald's omega values were found to be between 0.693 and 0.901. The total internal consistency coefficient of the scale was calculated as 0.919 for both alpha and omega. These results indicate that the scale and its sub-dimensions possess adequate to high levels of internal consistency.

Table 5
Test-retest results and mean scores (n = 39)

Scale and sub-dimensions	Scale Score Means		Analysis Results				ICC
	First Implementation X ± SD	Second Implementation X ± SD	r	p	t	p	
F1	10.76 ± 1.58	10.84 ± 1.74	0.982	.000	-1.356	0.183	0.989
F2	9.10 ± 1.78	9.00 ± 1.67	0.934	.000	1.000	0.324	0.965
F3	15.51 ± 2.70	15.53 ± 2.71	0.998	.000	-1.000	0.324	0.999
F4	28.74 ± 6.74	29.05 ± 6.69	0.985	.000	-1.638	0.110	0.992
Total	64.12 ± 10.44	64.43 ± 10.35	0.908.	.000	-1.374	0.177	0.995

**Correlation is significant at the 0.01 level (2-tailed); F: Factor; r: Pearson Correlation Coefficient; t: Paired sample t-test; F1, Uneasiness caused by unpredictable falls; F2, Anxiety about one's own fragility; F3, Increased awareness and alertness regarding the environment; F4, Anxiety about potential harm after falling events; ICC: Intraclass Correlation Coefficient.

Table 5 presents the test–retest results of the scale applied to a sample of 30 individuals with a 15-day interval. No statistically significant difference was found between the mean scores of the first and second applications ($p > 0.05$). Test–retest correlation coefficients were found to be high and positive ($r = 0.908–0.998$), and ICC values were determined to be in the range of 0.965–0.999. The ICC value for the total scale was 0.995, indicating that the scale and its sub-dimensions possess a perfect level of temporal reliability.

Discussion

This study was conducted to determine the psychometric properties of the Turkish version of the "Fear of Falling Scale for Older Adults" (FFSO), developed by Lee and Tak (2025), in order to comprehensively evaluate the fear of falling in older adults. Although there are various tools (FES-I, etc.) in the literature to measure the fear of falling, the FFSO scale is unique in that it addresses not only the action dimension of the fear of falling but also its psychosocial dimensions, such as unpredictability, fragility, and potential harm. The fact that approximately half of the elderly participants (48.6%) experienced a fall within the last year and 36.7% had balance concerns indicates that the sample is a risky group in terms of fear of falling and is suitable for the psychometric testing of the scale.

In scale adaptation studies, content validity is the most fundamental indicator of the extent to which items represent the phenomenon intended to be measured and their cultural appropriateness [18]. In this study, to ensure the content validity of the FFSO-T, opinions were obtained from a multidisciplinary panel of 11 people, which is above the number of experts recommended in the literature [19]. As a result of the analysis conducted with the Davis technique, I-CVI values were found to be 0.91-1.00, and the S-CVI value was determined to be 0.99. Considering that values above 0.80 in the literature are accepted as sufficient for content validity [20], and given the similar high values in the original scale development study [8], it was observed that the scale items exhibited complete linguistic and conceptual alignment for Turkish culture. Although some adaptation studies [21] required item removal due to cultural differences, the fact that no items were excluded in this study proves that the universal quality of the scale is preserved in the Turkish sample. KMO and Bartlett's tests are utilized to determine the adequacy of the sample size achieved in scale adaptation processes [15]. In our study, obtaining a KMO value of 0.917 indicates that the sample size is at an "excellent" level for factor analysis [22, 23]. The 21-item, four-factor theoretical structure proposed in the original study [8] was directly tested in our research using Confirmatory Factor Analysis (CFA). The fit indices obtained as a result of the CFA (X^2/df /df = 2.30, RMSEA = 0.074, CFI = 0.96, SRMR = 0.062, TLI = 0.96) prove that the model is within the "perfect" fit range [12]. Interestingly, the fact that the fit indices of the Turkish version were found to be statistically stronger than the values reported in the original study (CFI = 0.91, RMSEA = 0.096) reveals that the

theoretical structure of the scale is quite robustly validated in the Turkish older adult population. Furthermore, the fact that factor loadings ranged from 0.490 to 0.830 confirms that the power of the items to represent their respective sub-dimensions is well above the threshold values recommended in the literature [24]. On the other hand, the fact that the correlation coefficients between the sub-dimensions of the scale (r = 0.335–0.673) remained below the critical threshold of 0.85 indicates that each factor represents a different psychosocial aspect of the fear of falling and possesses discriminant validity [25]. This situation proves that the FFSO-T is capable of analyzing the fear of falling in older adults in detail through unique, non-overlapping sub-dimensions.

In the internal consistency analyses, the Cronbach's alpha coefficient calculated for the FFSO-T total score (0.919) showed parallelism with the findings of the original study (0.97). In reliability analysis, it is recommended to examine McDonald’s omega (ω) values, which measure the contribution of items to the factor and structural consistency more precisely, in addition to Cronbach's alpha coefficient [26]. In our study, the McDonald’s ω value for the total scale was determined as 0.919, while it ranged between 0.693 and 0.901 for the sub-dimensions. The high values of both alpha and omega coefficients confirm that the internal consistency of the scale is quite strong and that it is free from measurement errors [27, 28]. Additionally, the fact that the item-total correlation coefficients ranged between 0.321 and 0.748 confirms that each item is highly correlated with the scale as a whole [29].

In the test-retest analysis conducted to test the invariance of the scale over time, the intraclass correlation coefficient (ICC) was determined to be 0.995, proving that the FFSO-T is an error-free and stable tool for measuring the fear of falling in older individuals in Türkiye [30]. The absence of a significant difference between the two applications (with a 30-day interval) ($p > 0.05$) confirms that the scale's temporal stability is at a perfect level and that the items are consistently understood by the target audience [14].

In conclusion, the Turkish version of the "Fear of Falling Scale for Older Adults" (FFSO), developed by Lee and Tak (2025), has preserved the theoretical structure of the original form and proved to be a valid and reliable tool in the Turkish older adult sample. This scale will enable the measurement of fear of falling in older adults in clinical practices and research in Türkiye, not only focusing on 'action' but also through psychosocial dimensions such as unpredictability, fragility, and potential harm.

Limitations

Some limitations should be taken into consideration when evaluating the results of this study. First, the fact that the research was conducted in a single center is the most fundamental limitation of the study. This situation may restrict the socio-demographic diversity of the sample and make it difficult to generalize the findings to the entire elderly population across Türkiye. Second, the data are based on the self-reports of the participants. Finally, this study is cross-sectional in nature. Consequently, it remains limited in terms of monitoring the change in fear of falling over time or the long-term effects of fear developing after a fall.

Conclusıon

In this study, the FFSO, which was adapted into Turkish culture, was determined to be a valid and reliable measurement tool consisting of four sub-dimensions and 21 items, exhibiting a high level of compatibility with Turkish culture. The findings obtained from the study demonstrated that the Turkish version of the scale exhibits complete psychometric alignment with the original structure and even provides more substantial evidence than the original form in terms of goodness-of-fit indices.

The FFSO-T is a comprehensive scale that evaluates the fear of falling in older individuals not only through physical activities but also through psychosocial dimensions such as unpredictability, fragility, and potential harm. This scale is a valuable and practical tool for clinical practices and field studies to analyze the fear of falling in detail and to identify high-risk groups. The FFSO-T can be safely utilized by geriatric nurses, physiotherapists, and other healthcare professionals in planning interventions for the fear of falling, evaluating the effectiveness of implemented treatment or education programs, and improving clinical outcomes aimed at enhancing the quality of life of older adults.

Declarations

Ethics approval and consent to participate

Approved by the Erzurum Technical University Scientific Research and Publication Ethics Committee (Date: 13.11.2025, Decision No: 2025-ETÜ-0051). Institutional permission was also obtained from Fırat University Hospital.All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments.Written informed consent was obtained from all individual participants included in the study. Participants were informed that their participation was voluntary and that they could withdraw at any time without any consequences. All methods were carried out in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable.

Availability of data and materials

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

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

GBT contributed to conceptualization, methodology, investigation, and writing the original draft.

EB contributed to methodology and writing – review and editing.

BCK contributed to formal analysis, visualization, and writing – review and editing.

All authors read and approved the final manuscript**.**

Trial registration

Not applicable.

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Table 1

Table 1 is available in the Supplementary Files section.

Figures

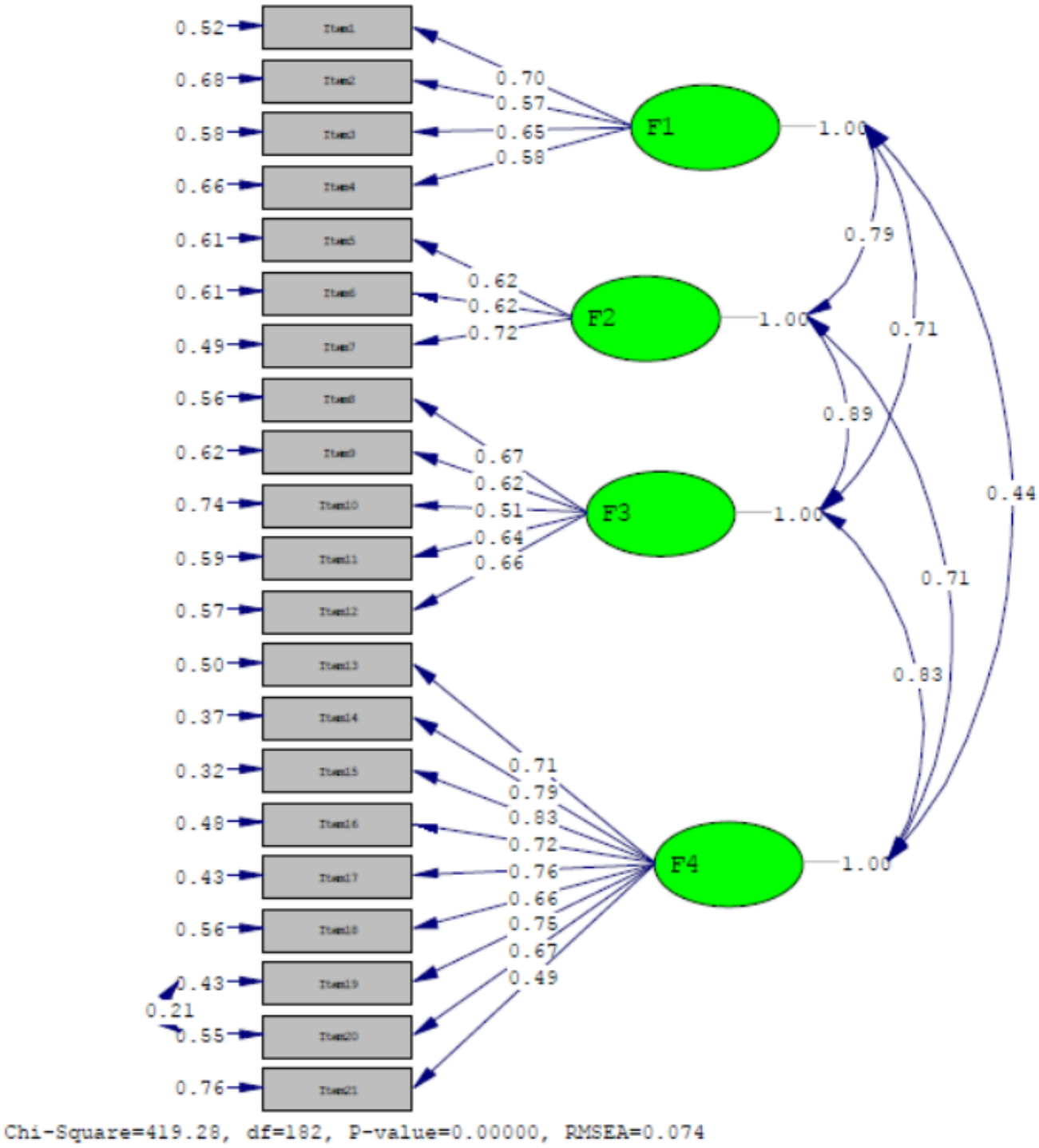


Figure 1

PATH Diagram Regarding the Factor Structure of the Scale

Supplementary Files

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- Table1.docx