

Araştırma makalesi

Research article

Validity and Reliability of the Work-Family Balance Scale
among Turkish AcademiciansZehra GÖK METİN¹, Edagül DURMAZ², Esra AKI³

ABSTRACT

Aim: The aim of this study is to adapt the Work-Family Balance Scale to Turkish and test its validity and reliability.

Material and Methods: This methodological study was conducted with 134 academicians. The data were collected through an online survey using the Academician Information Form and the Work-Family Balance Scale. The scale was finalized and back-translated following expert opinions. Confirmatory factor analysis was carried out for the construct validity, and content validity was performed. Test-retest and Cronbach alpha internal consistency coefficient was used for the reliability.

Results: The Cronbach's α coefficient of the scale was found as 0.89. The test-retest analysis of the study was conducted with 42 participants, and no significant difference was found between the test-retest reliability ($t= 1.126, p=0.197$). Pearson's correlation coefficient was also found ($r=0.83, p<0.001$). The content validity index was 0.94. According to factor analysis, the factor loads ranged from 0.64 to 0.87. The explained variance was found to be 68.70%, and the structure of the scale was one-dimensional and consistent with the original version. The model's comparative fit indexes, χ^2/SD (2.29) (<2), and GFI (0.95) (>0.90) were found between acceptable.

Conclusion: The scale was valid and reliable for Turkish academicians, and the results should be confirmed in different employee groups.

Keywords: Academician, occupational health, scale, validity, work-family balance

ÖZ

Türk Akademisyenlerde İş-Aile Dengesi Ölçeği'nin Geçerlik ve Güvenirliği

Amaç: Bu araştırmanın amacı, İş-Aile Dengesi Ölçeği'nin Türkçe'ye uyarlanarak geçerlik ve güvenirliliğinin test edilmesidir.

Gereç ve Yöntem: Bu metodolojik araştırma 134 akademisyen ile yürütülmüştür. Veriler, online anket yolu ile Akademisyen Bilgi Formu ve İş-Aile Dengesi Ölçeği-Türkçe kullanılarak toplanmıştır. Uzman görüşü alınarak İş-Aile Dengesi Ölçeği-Türkçenin son hali verilmiş ve geri-çeviri yapılmıştır. Dil ve kapsam geçerliği yapılan ölçeğin Türkçe versiyonunun yapı geçerliği için doğrulayıcı faktör analizi yapılmıştır. Ölçeğin güvenirliliği için test-tekrar test ve Cronbach alfa iç tutarlılık katsayısı kullanılmıştır.

Bulgular: Ölçeğin Cronbach alfa değeri 0.89 olarak belirlenmiştir. Çalışmanın test-tekrar analizi 42 katılımcı ile yapılmış ve iki ölçüm arasında anlamlı bir fark olmadığı bulunmuştur ($t= 1.126, p=0.197$). Test-tekrar test güvenirliliği için Pearson korelasyon katsayısı sonucu ($r=0.83, p<0.001$) bulunmuştur. Kapsam geçerlik indeksinin 0.94 olduğu hesaplanmıştır. Faktör analizine göre, faktör yükleri 0.64-0.87 arasında değişmektedir. Açıklanan varyans %68.70 olarak bulunmuş, ölçeğin yapısının tek boyutlu ve orijinaliyle tutarlı olduğu görülmüştür. Karşılaştırmalı uyum indekslerinin, χ^2/SD (2.29) (<2) ve GFI (0.95) (>0.90), kabul edilebilir düzeyde olduğu görülmüştür.

Sonuç: İş-Aile Dengesi Ölçeği'nin Türk akademisyenlerde geçerli ve güvenilir bir araç olduğu belirlenmiştir. Ölçeğe yönelik sonuçların farklı çalışan gruplarında doğrulanmalıdır.

Anahtar kelimeler: Akademisyen, iş-aile dengesi, iş sağlığı, ölçek, geçerlik

¹Doç.Dr., Hacettepe Üniversitesi Hemşirelik Fakültesi İç Hastalıkları Hemşireliği Anabilim Dalı, Ankara, Türkiye, e-mail: zehragok85@hotmail.com, Tel: 0312 305 1580, ORCID: 0000-0003-0311-9982

²Bil.Uzm., Hacettepe Üniversitesi Sağlık Bilimleri Enstitüsü, İş Sağlığı Programı, Ankara, Türkiye, e-mail: edadurmzz@gmail.com, Tel: 0543 673 2848, ORCID: 0000-0001-7463-3933

³Prof.Dr., Hacettepe Üniversitesi Sağlık Bilimleri Fakültesi, Ergoterapi Bölümü, Ankara, Türkiye, e-mail: esraaki@hotmail.com, Tel: 0312 305 2051, ORCID: 0000-0002-5806-6518

Geliş Tarihi: 03 Mart 2022, Kabul Tarihi: 03 Ocak 2023

Atıf/Citation: Gök Metin Z, Durmaz E, Akı E. Validity and Reliability of the Work-Family Balance Scale among Turkish Academicians. Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi 2023;10(1):60-69. DOI: 10.31125/hunhemsire.1273044

INTRODUCTION

The interest in work-family balance (WFB) started in the 1970s to define the balance between working and individual life¹. Work-family balance was first stated as a low conflict between work and family duties² or a combination of lower work-family conflict and higher work-family-enrichment. In the following years, researchers tried to figure out a new concept for WFB^{3,4}. WFB was determined as “the extent to which individuals are equally engaged and equally satisfied with work and family roles” by Greenhouse et al. (2003)⁵. Carlson et al. (2009) also described WFB as the “accomplishment of role-related expectations that are negotiated and shared between an individual and his or her role-related partners in the work and family domains”, thus emphasizing the aspects of social roles and the responsibilities in work and family life of WFB⁴.

Looking at a wider perspective, the researchers’ interest in WFB has led to some developments in measurement tools aimed at describing the association between family and work domains, including work-family conflict⁵, spillover⁶, segmentation, enrichment⁷, and facilitation⁸. Within the years, WFB has gained a more holistic perspective, comprising both work and family domains in which people have the capacity to meet individuals’ roles in working life and family successfully.

Work-family balance shows how working and family life affect each other, both positively and negatively⁹⁻¹². Previous studies examining WFB have highlighted that a lack of WFB or greater work-family conflict may deteriorate the comfort, health status, well-being, and quality of life of individuals¹³⁻¹⁵ and reduce performance and productivity at the workplace. More recently, some authors have also reported that continuing balance between work and family life is an important part of better mental well-being¹⁶⁻¹⁸. Additionally, a better balance between work and family life may improve individuals’ happiness^{16,17}.

There have been major changes in the demographic, cultural, and social structure of countries nowadays, even a pandemic crisis emerged at the end of 2019⁹⁻²¹. A respiratory disease known as COVID-19 was described, and several measures, such as quarantines, confinement, and social distancing, were applied in the affected countries²². In this context, these measures obligated some worker groups to make the transition to teleworking model²³, which brings workers higher psychosocial risks, and occupational stress^{24,25}. Furthermore, teleworking causes significant difficulties between special and working life^{24,26} due to the lack of control over working hours and family attention at home affecting WFB, especially among academicians²⁷. Following the closures of government and private higher education institutions, most academicians faced significant challenges reorganizing their daily schedule based on teleworking conditions, immediately learning to adjust to available technology and online courses²⁸⁻³⁰. In addition, current studies have highlighted that the effect of teleworking during the COVID-19 pandemic among academicians has caused more anxiety and stress, workload, exhaustion, and even burnout³¹⁻³⁴.

To date, WFB’s adaptation has been conducted in only five countries, including China, Egypt, Germany, Italy, and the USA, and only a few have been in the Turkish context³⁵. Moreover, measurement tools that assess WFB independently, merely evaluating the balance between working life and family dynamics, have been rarely utilized in the literature. At this point, Carlson et al. (2009) stand out due to more focus on the social domain than the psychological one, thus allowing the WFB scale to gain greater objectivity in WFB’s assessment. After the publication of its development study, the WFB scale became one of the well-known and used scales that assess the work-family balance by the researchers⁴. The WFB scale seems more reasonable due to focusing on the work-family interface, containing only six items, and its easy application³⁶.

Despite this increasing interest³⁵, WFB is relatively under-researched with respect to concepts such as work-family conflict, work-family balance, and work-family enrichment in an academic context. To date, there have been various measurement tools, called namely “The Work-Family Conflict Scale”, “Family-Work Conflict Scale”, and “Work-Life Balance Scale”³⁵, and tested in different populations, including Indian women and Turkish people working in the Ministry of National Education. So additional studies are needed to verify its added value regarding competing and well-established constructs. Therefore, a valid and reliable measure of WFB is warranted, being essential for both scholars and professionals to make the most of this construct both in the family and in the work-study and practice contexts. From a practical point of view, implementing WFB support tools would allow universities to support and help academicians as well as their families to find a balance that would echo not only on well-being, and individual and family satisfaction but also on institutional variables, including performance, commitment, and job satisfaction, among the others.

Aim

The aim of this study is to adapt the Work-Family Balance Scale to Turkish and test its validity and reliability analyses.

MATERIAL and METHODS

Study Design

This methodological study aimed to adapt the WFB-TR scale and test it for validity and reliability in Turkish.

Study Sample

The study sample consisted of volunteer academicians actively working in public and private universities in Turkey. Academicians’ willingness to participate in the study was set as the inclusion criterion. We determined the sample size of at least 10 participants per item to perform factor analysis on WFB-TR³⁷. Finally, the study was conducted with 134 academicians (public:80, private:54). Academicians who reported not voluntarily were excluded.

Data Collection Tools

Academician Information Form: This form consisted of 17 socio-demographic and work-life variables, including age, sex, education status, marital status, income level, presence of children, children’s numbers, children’s age, presence of

caring older/patient/handicapped relatives, smoking status, alcohol status, presence of comorbidities, employed institution, academic title, total working time, presence of teleworking in the last six months, and working hours per week^{29,34}.

Work-Family Balance Scale: The WFB scale includes six items (“I do a good job of meeting the role expectations of critical people in my work and family life”, etc.) and uses a 5-point Likert scale from 1= completely disagree to 5 = completely agree. Each item covers a reference to the expectations or negotiation of roles, and each item shows the expectations of an external party, such as co-workers or family members from an individual. The average of all items is taken, and the scale score is calculated. There is no reverse item for scoring. The Cronbach alpha in the original version was reported as 0.934⁴.

Data Collection

Before data collection, each academician had to read and send informed consent, which invited them to voluntarily participate in the study without pay, compensation, or any conflict of interest. The online survey link was generated using Google Forms, and the invitation link was sent to academicians through e-mail or/and WhatsApp Messenger Groups.

On clicking the URL link, academicians were directed to the invitation letter containing a brief introduction on the background, objective, procedures, voluntary nature of participation, declarations of anonymity and confidentiality, notes for filling in the questionnaire, and contact details of the study investigators were provided to the participants to get informed consent. To obtain the consent of the participants, the question “do you agree to participate in this survey” was asked at the bottom of the first page. Only the ‘yes’ answer led to the next page of the survey.

Question styles on the survey included single-choice, multiple choices, and Likert scales. The participants could have options to complete the survey via a computer, tablet, or cell phone. Academicians were requested to complete all survey questions before passing the next section. Academicians would return the questions and revise their responses. The survey was available for seven weeks, from July 13 to August 30, 2021, to allow enough time for academicians to complete it. We did not use additional strategies, including reminders or alternating survey mailings, to encourage the participants. Multiple survey entries were prohibited. Academicians completed the survey at their convenience, and survey completion took a minimum of 8 min and a maximum of 12 min. The survey data were stored in a password-protected computer. The participants completed the academician information form and the WFB scale, which has been explained in detail below.

Data Analysis

Electronic survey data from 134 participants were downloaded into Statistical Package for the Social Sciences (SPSS version 23; IBM, Armonk, New York). The normality assumptions of the numerical variables were tested with Kolmogorov Smirnov. Descriptive statistics (mean, standard

deviation, percentage) were used to define the sample characteristics.

To define the internal consistency of the scale, Cronbach’s α value was determined. Prior to subjecting the scale to EFA, the KMO test of sample sufficiency and Bartlett’s test of sphericity were calculated. The factor structure of the WFB-TR was identified using principal factor analysis. CFA was performed using the SPSS Amos 23.0 version to evaluate construct validity. Fit indices were chosen, including χ^2 , the CFI, the GFI, the AGFI, and the RMSEA, that minimize the likelihood of errors (Type I and Type II).

A paired-sample t-test and Pearson’s correlation coefficient analysis was performed for test-retest reliability. Confidence intervals (CIs) were set at 95%, and the statistical significance level for all the tests was considered at a p-value of $p < 0.05$.

Validity

Language Validity

During the cross-cultural adaptation period, we followed Beaton et al. guidelines³⁸ that consisted of forward translation, synthesis of translation, back-translation, review by an expert panel, and pilot pretesting. Three native Turkish-speaking research professionals independently translated the WFB into Turkish (forward translation). Afterward, the final translated version of the consensus was prepared by a fourth individual by agreeing on three translations. Then, two native English-speaking translators spoke both Turkish and English at the native level and were blinded to the WFB scale, and a back-translation procedure was performed to save the meanings of scale items. After making necessary modifications, comparisons, and consultations, the study investigators combined the appraisals of the translation equivalence into a consensus document. The back-translated English form was shared with the original authors.

Content Validity

According to previous studies in the literature, content experts’ number is a minimum of three, whereas Grant and Davis³⁹ have recommended that the experts’ number depends on the desired level of expertise and variety of knowledge. In this study, the expert committee consisted of a methodologist and three bilingual professionals with experience in working life and WFB. Once this version of the scale was complete, it was sent to get expert opinions from twelve academicians with at least a doctorate degree in health sciences. The experts evaluated the items on the scale based on their clarity and cultural convenience and shared their opinions by e-mail. The experts evaluated the initial version of WFB-TR using a content validity index by rating each item from 1 to 4, wherein 1=not relevant, 2=somewhat relevant, 3=quite relevant but requires minor alteration, and 4=very relevant³⁹. The committee investigated the source and back-translated the WFB-TR considering the semantic, idiomatic, experiential, and conceptual aspects of all items. According to Grant & Davis (1997), the content validity index can be calculated by counting the answers either ‘3’ or ‘4’ by all the experts and dividing these numbers by the total number of items³⁹. The

measure can be considered acceptable if this score is greater than 0. Later, WFB-TR was checked for grammatical differences, expressions in the target language, and the meaning of similar words or expressions to represent the testing population. Then, WFB-TR was piloted on a sample of 10 academicians from the target setting. Each participant completed and understood all scale items. Subsequently, a revised version of WFB-TR was adapted, and the validity and reliability phase were initiated.

Construct Validity

To define the sample size adequacy for performing factor analysis, we first used the Keizer-Mayer-Olkin (KMO) index. Then, Bartlett's test of sphericity was chosen to examine the suitability of factor analysis and to investigate whether the variables were correlated with each other. To explore the factor structure, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were performed⁴⁰. For the factor structure of the WFB-TR, principal component factor analysis was used. Exploratory factor analysis aims to decrease the number of variables and reveal new structures based on the relation between the variables. The eigenvalue is the sum of squares of factor loads of each factor, and an increase in this value also increases the variance explained by the related factor⁴⁰. To rate the model compatibility in the CFA and structural equation model (SEM), fit indices including χ^2 (chi-square test)/SD, the comparative fit index (CFI), the goodness of fit index (GFI), Adjusted the Goodness of Fit Index (AGFI) and RMSEA were calculated⁴¹⁻⁴³.

Reliability

Internal Consistency

The Cronbach's alpha coefficient was calculated to determine the internal consistency of the total scale of the WFB-TR.

Item-Total Correlations

This phase presented information on the extent of the relation of the scale items. The mean values of correlation coefficients between items and the total scores of correlation coefficient averages were calculated.

Test-Retest

The response stability of the scale was tested by sending a new google form link to academicians selected by lottery from among the participants who responded to the first application at a different time interval (five days later). Forty-two participants were involved in the test-retest phase. A paired-sample t-test and Pearson's correlation analysis were performed for test-retest reliability. Confidence intervals (CIs) were set at 95%, and the statistical significance level for all the tests was considered at a p-value of $p < 0.05$.

Ethical Considerations

The study was reviewed and approved by the Ethics Committee of Hacettepe University (Date: June 22, 2021, Approval Number: 1530816) and performed according to the Helsinki Declaration. Volunteer academicians were requested to sign a written informed consent. The participants could withdraw from the study without explanation and were not expected to pay for anything. Participant data were collected using a password-protected

online application. IP addresses, location data, and contact information were not requested from the participants, and all responses were anonymous.

Limitations

As regards the study limits, the generalizability of the current study is limited due to the sampling method used in the study. The participants working at public and private universities in Turkey were recruited using the convenience sampling method. Thus, future research should test the applicability of the results to distinct Turkish populations and multiple centers in other institutions.

Researchers could address this limitation by conducting their study with a more rigorous design. Another potential problem could be that the data were self-reported, which may result in bias. Further studies might focus on what are the mediating factors that influence WFB. The results need to be interpreted carefully regarding generalizing our results since the present study focused on academicians, who mostly work during the COVID-19 pandemic under teleworking conditions. Future studies would attempt to verify our findings among different employees who work shifts or in part-time roles.

Longitudinal analyses may help to see what social, cultural, and economic changes may affect WFB status in the academy and working life. Besides, research is warranted to reveal changes in personal life and better provide its' effects on work-family balance and determine effective strategies for improving work-family balance, career satisfaction, family, and well-being.

RESULTS

Sample Characteristics

In Table 1, data on the participants' individual and working characteristics were given. The sample consisted of 134 academicians who worked in public (n=80) and private universities (n=54). The mean age of the participants was 37.26 (SD= 8.56) years and ranged from 24 to 66 years. The mean duration of total working time was 11.03 (SD=8.75) years. As for sex, 116 were women (86.6%) and 18 men (13.4%), and 95 of those (70.9%) were married. Regarding educational status, 87 individuals (64.9%) held a Ph.D. degree. Of the participants, 56.0% had a moderate-income level. Most participants were employed in Health Sciences Faculty (44.8%) and Nursing Faculty (30.6%). As for the academic degree of individuals, 14.9% was associated professor, 17.9% was assistant professor, and 29.9% of those were research assistants. Sixty-four percent of the academicians reported working in an academy for 1-10 years. A significant majority of the participants (70.1%) used teleworking model within the last six months. While 55.2% of the respondents reported working 40 hours per week, 33.6% stated working 41-60 hours per week. More than half of the participants (53.7%) had a child. The average number of children was 1.42 (SD = .601). Children's ages ranged between 0-12 months (6.0%) and 1-+ years old (11.2%). Only 13 individuals (9.7%) reported taking care of older-patient or disabled relatives. Most of the study participants reported not having a comorbid disease. The reported

comorbidities (19.6%) were Hashimoto’s Thyroiditis (3.7%), coronary artery disease (2.2%), Familial Mediterranean Fever (2.2%), joint disorder (2.2%), multiple problems (1.5%), hypertension (1.5%), diabetes mellitus (0.7%), other conditions (celiac disease, etc.), respectively. Among the participants, 82.8% reported not using cigarettes and alcohol.

Table 1. Socio-demographic Characteristics (n=134)

Characteristic	n (%)
Age (years) (Mean±SD) (Min-Max)	37.26 (8.56) (24-66)
Working time (Mean±SD) (Min-Max)	11.03 (8.75) (1-40)
Children number (Mean±SD) (Min-Max)	1.42 (.601) (1-3)
Gender	
Female	116 (86.6)
Male	18 (13.4)
Educational level	
Continuing post-graduate education school	29 (21.6)
Master of scientific	18 (13.5)
Doctorate	87 (64.9)
Marital status	
Married	95 (70.9)
Single	39 (29.1)
Income level	
Low	10 (7.5)
Moderate	75 (56.0)
High	49 (36.5)
Employed department	
Health sciences	60 (44.8)
Nursing	41 (30.6)
Medicine	10 (7.5)
Pharmacy	5 (3.7)
Engineering	4 (3.0)
Other	14 (10.4)
Academic title	
Professor	17 (12.7)
Associate Professor	20 (14.9)
Assistant Professor	24 (17.9)
Doctor, Research Assistant	18 (13.4)
Research Assistant	40 (29.9)
Lecturer	15 (11.2)
Total working time	
1-10 years	87 (64.9)
11-20 years	27 (20.2)
21-30 years	15 (11.2)
31-40 years	5 (3.7)
Distance working in the last six months	
Present	94 (70.1)
Not present	40 (29.9)
Working hours/ per week	
40 hours	74 (55.2)
41-60 hours	45 (33.6)
61 -+ hours	15 (11.2)

Validity

The experts made several changes in the phrases and sentence syntax of the scale items during the translation and adaptation period. The related changes included expressions “to negotiate or exchange ideas” for item 1, “do well” for item 3, and “expressly or explicitly” for item 6. The

modifications were more for items 1 and 6. As a result, the 10 participants in the pilot study reported that all the items were clear and understandable. Twelve experts evaluated the WFB-TR using the Davis technique and sent their evaluation forms to the investigators. Then we calculated the content validity index ranging between 0.87-1.0 and found the content validity index as 0.94. These parameters indicated high content validity; no items were removed from the scale.

Factor Structure of WFB-TR

Exploratory Factor Analysis and Item Characteristics

The KMO sampling adequacy test was calculated as 0.861 ($\chi^2=503.508$, $p < .001$), and Bartlett’s sphericity test was found to be <0.001 , indicating that sampling was adequate for factor analysis. The statistical significance of this test also showed that the correlation matrix was appropriate (Table 2).

Table 2. The Sampling Adequacy for the WFB-TR

Kaiser-Meyer-Olkin measure of sampling Adequacy		0.861				
Bartlett's test of sphericity	Approx. Chi-Square df Sig.	503.508 15 <0.001				
Initial Eigenvalues and total variance explained						
Item	Eigenvalues	Variance%	Cumulative %	Total	% Of Variance	Cumulative %
1	4.025	67.086	67.086	4.025	67.086	67.086
2	0.799	13.310	80.397			
3	0.404	6.739	87.136			
4	0.305	5.085	92.221			
5	0.275	4.591	96.811			
6	0.191	3.189	100.00			

Abbreviation: WFB: Work-family Balance

As the factor load of the items of the WFB-TR was observed to range from 0.61 to 0.87, none of the items were excluded from the scale. The eigenvalue of the first item on the scale was above 1, contributing to the total variance of 67.08%. Based on the data obtained from the screen plot graph, together with the eigenvalue and variance percentages, the WFB-TR was determined to be suitable for a single-factor structure (Fig. 1).

Confirmatory Factor Analysis

AMOS 23.0 version was used to confirm the factors obtained by EFA. First, asymmetry and kurtosis values (-1.5 and +1.5) were calculated to check the normal distribution of the scale items. Thus, CFA results provided that all items of WFB-TR loading on the same factor fit the structure developed initially by Carlson et al. (2009)⁴ (Table 3). The modification indices recommended the inclusion of errors between items in the covariance model (Fig. 2). Item loadings were found between 0.52 and 0.87. The fit indexes, including $\chi^2=2.295$, $df=8$, $RMSEA=0.099$, $CFI=0.97$, $GFI=0.95$, and $AGFI = 0.88$ were satisfactory based on the estimated model of WFB-TR. Therefore, a single-factor model was suggested with the inclusion of these correlated errors.

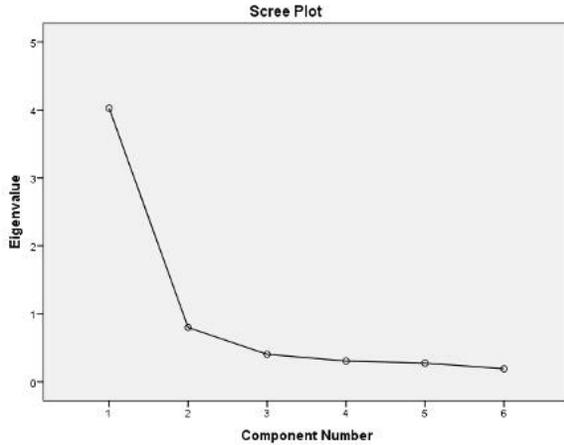


Figure 1: Scree Plot Graphic of the WFB-TR

Table 3. Confirmatory Factor Analysis of the WFB-TR

Item	M (SD)	Factor Loading
1) I am able to negotiate and accomplish what is expected of me at work and in my family (İş yerinde ve ailemde benden beklenen konular hakkında fikir alışverişinde bulunabilirim ve yerine getirebilirim)	4.35 (0.651)	0.613
2) I do a good job of meeting the role expectations of critical people in my work and family life (İş ve aile hayatımda önemli olan insanların benimle ilgili rol beklentilerini karşılama konusunda iyiyim)	3.93 (0.796)	0.851
3) People who are close to me would say that I do a good job of balancing work and family (Bana yakın olan insanlar, iş ve aile yaşamımı dengelemede iyi olduğumu söylerler)	3.72 (0.945)	0.822
4) I am able to accomplish the expectations that my supervisors and my family have for me (Yöneticilerimin ve ailemin bana dair beklentilerini karşılayabilirim)	3.92 (0.700)	0.877
5) My co-workers and members of my family would say that I am meeting their expectations (İş arkadaşlarım ve aile üyelerim beklentilerini karşıladığımı söylerler)	3.93 (0.737)	0.879
6) It is clear to me, based on feedback from co-workers and family members, that I am accomplishing both my work and family responsibilities (Bana göre, oldukça açık ki, iş arkadaşlarımdan ve aile bireylerimden aldığım geri bildirimlere göre hem işime hem de aileme dair sorumluluklarımı yerine getiriyorum)	3.84 (0.821)	0.843

Abbreviation: M: Mean, SD, Standard Deviation.

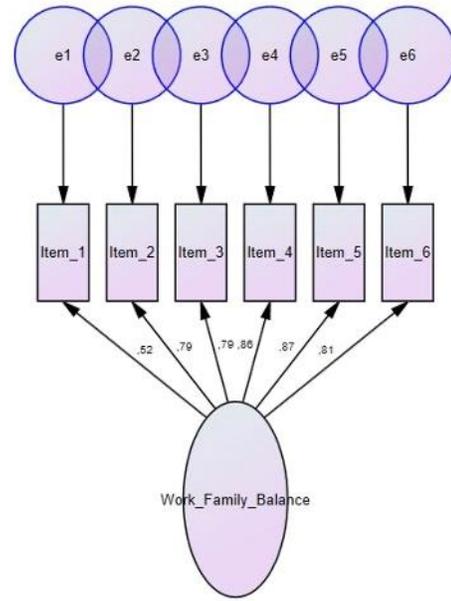


Figure 2: Path Diagram of WFB-TR

Internal Consistency

The reliability of the scale, Cronbach's α value for the entire scale, was found as 0.89. The item-total correlation ranged between 0.59 and 1.0. The Cronbach's α for the item total ranged between 0.86 and 0.90 if any item of the scale was deleted (Table 4).

Table 4. The Reliability Results of the WFB-TR

Item	M (SD)	Item-total correlation	Cronbach alpha
1	4.35 (0.651)	1.00	0.909
2	3.93 (0.796)	0.596	0.872
3	3.72 (0.945)	0.594	0.882
4	3.92 (0.700)	0.732	0.869
5	3.93 (0.737)	0.658	0.867
6	3.84 (0.821)	0.593	0.873

Abbreviation: WFB: Work-family Balance
Cronbach's α value for the entire scale=0.89, 95% CI (Min Max=0.86-0.92)

Test-Retest Reliability

The paired-sample t-test results utilized for determining the test-retest reliability value are presented in Table 5. For the retest phase, we included 31.3% of the sample (n=42) and sent a different Google form link five days after the first application. The mean and standard deviation scores of test-retest phases were 23.70 \pm 3.81 and 23.85 \pm 2.96, respectively. There was no significant difference between the total scores of WFB-TR (t=-0.1311, p=0.197; 95% CI; p=0.171). Pearson's correlation coefficient value was calculated as r=0.83. The intraclass correlation coefficient value of test-retest reliability was found as 0.89 (95% CI; 0.89 to 0.92, p<0.001).

Table 5. Test-Retest Correlations for the WFB-TR with Sub-Sample of 42 Participants

	n	M	SD	t	p
Total test score	134	23.70	3.81	-1.311	0.197
Total retest score	42	23.85	2.96		
Paired-sample t-test				r = 0.83	<0.001
Pearson correlation test					

Abbreviation: Abbreviation: WFB: Work-family Balance
M: Mean, SD, Standard Deviation.
 $p < 0.001$

DISCUSSION

This study aimed to investigate the psychometric properties of the Turkish version of the WFB scale⁴. This scale, including six items, allows researchers to evaluate the “accomplishment of role-related expectations negotiated and shared between an individual and his or her role-related partners in the work and family domains”. It is also crucial to examine WFB in varying working populations, especially during the COVID-19 pandemic and teleworking conditions^{41,45-47}. Concerning WFB measurement, few scales are available^{42,43}, and among these scales, none of those have been validated in the Turkish context.

Some modifications, including “to negotiate or exchange ideas” for item 1 and “expressly or explicitly” for item 6, were performed to facilitate understanding of the scale among academicians during the cross-cultural adaptation process of the WFB-TR. This process of item refinement ensured the items' understanding by the participants. In the pretesting phase, the academicians did not report any difficulties regarding the understandability of the scale items.

The item-total score correlation of values in the current study was found to be between 0.59 and 1.0. Therefore, all items were saved in the scale. The item-total score correlation reached the recommended range and indicated good homogeneity. Overall, the Turkish version of the WFB included six items.

The reliability and validity studies of the WFB scale have been completed in German⁴⁸, Egypt⁴⁹, USA⁵⁰, Chinese⁵¹, and Italian³⁶ languages so far. In this study, the construct validity of the scale was investigated through CFA, and the WFB-TR was found to be valid and reliable. The construct validity analysis of the WFB-TR revealed a single factor with an eigenvalue of 1 and above, and all items were loaded on the same factor. As the eigenvalue increases, the explained variance per factor increases, and results show higher reliability⁵².

According to the literature, a scale accounting for at least 50% of total variances is accepted to be reliable⁵³. The explained variance rate was 74.9%, and all six items loaded at 0.77 or above on a single factor in the scale's original version⁴. Landolfi et al. (2020), who conducted an Italian version of the WFB scale on workers, stated that item loadings were also satisfactory, ranging between 0.64 and 0.8736. In our study, the explained variance was 68.70%,

and the WFB-TR scale's structure was one-dimensional and consistent with the original version⁴.

The model evaluation procedure, one of the most significant views of SEM, was also performed to test the validity and reliability of WFB-TR^{44,54}. The SEM model is interpreted based on varying fit indices^{41-43,53}. Fit indices often suppose that the test statistics follow either a central chi-square or a non-central chi-square distribution. Our analysis revealed that the chi-square distribution value of the WFB-TR was 2.295, GFI was 0.95, and RMSEA was 0.099. Previous studies have emphasized that the values of the chi-square distribution may be acceptable if they are between 2 and 554, and a value above 0.90 for GFI and AGFI above^{28,41-43}, and a RMSEA value less than 0.10 indicate a good fit^{41-43,51}. Considering the fit indices, the authors inferred that the WFB-TR does show relatively a good fit model^{55,57}.

Cronbach's α is a commonly used indicator of reliability⁴⁴. According to the literature, Cronbach's alpha coefficient needs to be between 0-1. The value $0.0 \leq \alpha < .40$ indicates that the scale is not reliable, $0.40 \leq \alpha < 0.60$ indicates the scale reliability is low, $0.60 \leq \alpha < 0.80$ means that the scale is quite reliable, and $0.80 \leq \alpha < 1.00$ shows that the scale is highly reliable scale”⁴⁴. The Cronbach's α value of WFB-TR was found as 0.89 and revealed high reliability, consistent with the findings of recently published studies, including the German, Chinese, American, and Italian versions. Fan (2018) and Wang et al. (2017) carried out China validation studies of the WFB scale and reported Cronbach's alpha values as 0.94 and 0.90, respectively^{51,55}. Krisor et al. (2015) in Germany and Omran (2016) in Egypt also acknowledged Cronbach's alpha values of 0.86 and 0.93, respectively^{8,49}. Similarly, Weinzimmer et al. (2017), defining the mediating effects of WFB for emotional intelligence and job performance, reported its' Cronbach's alpha value as 0.90 in the USA version⁵⁰. Landolfi et al. (2020) stated their Cronbach's alpha value as 0.90 and found WFB is valid and reliable in Italy. Considering the above literature analysis, these outcomes clearly show that the psychometric properties of the WFB scale are sufficient in different countries³⁶.

The test-retest analysis of WFB-TR was reliable ($r=0.83$, $p<0.01$). However, previous versions did not report any data on the test-retest reliability of the WFB scale. The intraclass correlation coefficient value of our study was also high (0.89), showing strong stability of the WFB-TR over time⁵⁶. These findings indicated that the WFB-TR demonstrated robust reliability in measuring WFB in academicians, even when reapplied at different times.

CONCLUSION

The literature on work-family balance is growing; thus, it is necessary to have tools available in different languages. This research made the novel contribution of studying the WFB-TR version in academicians for the first time during the COVID-19 pandemic. This scale may be used to identify WFB status among academicians. Scholars may also utilize the WFB-TR to measure the WFB status in larger sample sizes of other employed populations.

Further studies should adopt a multi-level approach to examine how cultural, regional, professional/occupational,

and organizational factors interplay with each other in influencing individuals' work-family balance and general well-being. Lastly, a greater understanding of WFB with a holistic perspective could provide the development of interventions and new measurement tools aimed at improving WFB not only for workers but also for their families and working places^{3,4}.

Etik Kurul Onayı (Kurul adı, tarih ve sayı no): Hacettepe Üniversitesi Etik Komite (Kabul tarihi ve numarası: 22.06.2021, E-35853172-000-00001635800)

Çıkar Çatışması: Bildirilmemiştir.

Finansal Destek: Yoktur.

Katılımcı Onamı: Akademisyenlerden bilgilendirilmiş onam alınmıştır.

Yazar katkıları

Araştırma dizaynı: ZGM, EA, ED

Veri toplama: ZGM, ED, EA

Literatür araştırması: ZGM, ED, EA

Makale yazımı: ZGM, EA, ED

Teşekkür: Bu araştırmaya katılan akademisyenlere teşekkür ederiz.

Ethics Committee Approval: Approval was obtained from Ethics Committee of Hacettepe University (Approval date and number: 22.06.2021, E-35853172-000-00001635800).

Conflict of Interest: Not reported.

Funding: None.

Exhibitor Consent: Informed consent was obtained from the academicians.

Author contributions

Study design: ZGM, EA, ED

Data collection: ZGM, ED, EA

Literature search: ZGM, ED, EA

Drafting manuscript: ZGM, EA, ED

Acknowledgement: We would like to thank the academicians who participated in this study.

REFERENCES

1. Hirschi A, Shockley KM, Zacher H. Achieving work-family balance: An action regulation model. *Academy of Management Review*. 2019;44(1):150-71.
2. Chung H, Van der Lippe T. Flexible working, work-life balance, and gender equality: Introduction. *Soc Indic Res*. 2020;151(2):365-81.
3. Rahman MM, Ali NA. Does work-family balance mediate the relationship between work-family conflicts and job satisfaction of academicians?. *J Community Psychol*. 2021;49(2):361-74.
4. Carlson DS, Grzywacz J, Zivnuska S. Work-family balance: Is balance more than conflict and enrichment?. *Hum Relat*. 2009;20:1-28.
5. Greenhaus JH, Collins KM, Shaw JD. The relation between work-family balance and quality of life. *Journal of Vocational Behaviors*. 2003; 63:510-31.
6. Gragnano A, Simbula S, Miglioretti, M. Work-life balance: weighing the importance of work-family and work-health balance. *Int J Environ Res Public Health*. 2020;17(3):907.
7. Greenhaus JH, Ziegert JC, Allen TD. When family supportive supervision matters: Relations between

multiple sources of support and work-family balance. *Journal of Vocational Behaviors*. 2012;80(2):266-75.

8. Wattoo MA, Zhao S, Xi M. High-performance work systems and work-family interface: job autonomy and self-efficacy as mediators. *Asia Pacific Journal of Human Resources*. 2020;58(1):128-48.
9. Talukder AMH. Supervisor support and organizational commitment: The role of work-family conflict, job satisfaction, and work-life balance. *J Employ Couns*. 2019;56(3):98-116.
10. Katou A. Examining the mediating role of work-family balance in the core self-evaluations-organizational performance relationship: a multilevel study. *Employee Relations*. 2022;44(1):136-55.
11. Rahman MM, Ali NA, Jantan AH, Dato'Mansor Z, Rahaman MS. Work to family, family to work conflicts and work family balance as predictors of job satisfaction of Malaysian academic community. *Journal of Enterprising Communities: People and Places in the Global Economy*. 2020;14(4):621-42.
12. Žnidaršič J, Bernik M. Impact of work-family balance results on employee work engagement within the organization: The case of Slovenia. *PLoS One*. 2021;16(1):e0245078.
13. Gragnano A, Simbula S, Miglioretti M. Work-life balance: Weighing the importance of work-family and work-health balance. *Int J Environ Res Public Health*. 2020;17(3):907.
14. Grzywacz JG, Butler AB, Almeida DM. Work, family, and health: Work-family balance as a protective factor against stresses of daily life. Marcus-Newhall A, Halpern, DF, Tan SJ, editors, *The changing realities of work and family: A multidisciplinary approach*. Wiley Blackwell; 2018.
15. Medina-Garrido JA, Biedma-Ferrer JM, Ramos-Rodríguez AR. Relationship between work-family balance, employee well-being and job performance. *Academia Revista Latinoamericana de Administración*. 2017;30(1):40-58.
16. Jiménez-Figueroa A, Gómez-Urrutia V. Incidence of subjective well-being and work-family balance in terms of work-family culture in workers of the Chilean judicial branch. *Revista Costarricense de Psicología*. 2021;40(1):23-36.
17. Nordenmark M, Almén N, Vinberg S. Work/family conflict of more importance than psychosocial working conditions and family conditions for mental wellbeing. *Societies*. 2020;10(3):67.
18. Presti AL, Molino M, Emanuel F, Landolfi A, Ghislieri C. Work-family organizational support as a predictor of work-family conflict, enrichment, and balance: Crossover and spillover effects in dual-income couples. *Eur J Psychol*. 2020;16(1):62-81.
19. Verhoef NC, De Ruiter M, Blomme RJ, Curfs EC. Relationship between generic and occupation-specific job demands and resources, negative work-home interference and burnout among GPs. *Journal of Management & Organization*. 2021;1-29.
20. Phelan A, Katz R, Gostin LO. The novel coronavirus

- originating in Wuhan, China: Challenges for global health governance. *JAMA*.2020;323(8):709-10.
21. Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. *Lancet*.2020;395:470-3.
 22. WHO Archived: WHO Timeline COVID-19. [Internet]. 2021 [Erişim Tarihi 10 Ağustos 2021]. Erişim Adresi: <https://www.who.int/news/item/27-04-2020-who-timeline-covid-19>
 23. Guyot K, Sawhill I. Telecommuting will likely continue long after the pandemic. *Brookings*. [Internet]. 2021 [Erişim Tarihi 10 Ağustos 2021]. Erişim Adresi: <https://www.brookings.edu/blog/up-front/2020/04/06/telecommuting-will-likely-continue-long-after-the-pandemic/>
 24. Bueno C. Teletrabajo y Salud Mental: Avances y Desafíos Más Allá de la Pandemia. [Internet]. 2021 [Erişim Tarihi 08 Ağustos 2021]. Erişim Adresi:https://www.ilo.org/santiago/publicaciones/reflexionestrabajo/WCMS_757609/lang--es/index.htm
 25. Tresierra CEV, Pozo ACL. Fatigue and mental workload among workers: About social distancing. *Rev Esp Salud Publica*. 2020;94:202010112.
 26. Palumbo R. Let me go to the office! An investigation into the side effects of working from home on work-life balance. *Int J Environ Res Public Health*. 2020;33:771-90.
 27. Thulin E, Vilhelmson B, Johansson M. New telework, time pressure, and time use control in everyday life. *Sustainability*.2019;11:3067.
 28. Ghasemi F, Zarei M, Heidarimoghadam R, Hosseini SM. Exploring unprecedented problems of academicians during the COVID 19 pandemic and their relationships with fatigue and mental health. *Gene Reports*. 2021;23:101098.
 29. Yılmaz Ince E, Kabul A, Diler I. The opinions of academicians on distance education during the COVID-19 pandemic. Sahin M. Shelley, editors, *Educational practices during the COVID-19 viral outbreak: International perspectives*; ISTES Organization, 2021.
 30. Karakuzu M, Canlı Z, Canlı B. Effects of lockdown period of the COVID-19 pandemic on Turkish academicians' academic writing productivity performance in ELT. *Turkish Online Journal of English Language Teaching*. 2020;5(3):179-94.
 31. Bulińska-Stangrecka H, Bagieńska A, Iddagoda A. Work-life balance during covid-19 pandemic and remote work: A systematic literature review. *Emerging trends and strategies for industry 4.0: during and beyond COVID-19*, 2021;59.
 32. Fisher J, Langulaire JC, Lawthom R, Nieuwenhuis R, Petts RJ, Runswick-Cole K, et al. Community, work, and family in times of COVID-19. *Community, Work & Family*. 2020;23(3):247-52.
 33. Schieman S, Badawy PJA, Milkie M, Bierman A. Work-life conflict during the COVID-19 pandemic. *Socius*. 2021;7:1-19.
 34. Sharma I, Khurape A. How academicians' journey mapping can bolster their transition from Pre-COVID–Post COVID?. *Test Engineering and Management*. 2020;83:3385-93.
 35. Ekinci H, Sabancı A. İş-Yaşam Dengesi Ölçeği'nin Türkçeye Uyarlanması: Geçerlik ve Güvenilirlik Çalışması. *Trakya Eğitim Dergisi*.2021;11(1):151-63.
 36. Landolfi A, Presti AL. A psychometric examination of the work-family balance scale. A multi-sample study on Italian workers. *Current Psychology*. 2020 (41):1-10:
 37. Anthoine E, Moret L, Regnault A, Sébille V, Hardouin JB. Sample size used to validate a scale: a review of publications on newly developed patient reported outcomes measures. *Health Qual Life Outcomes*. 2014;12(1):1-10.
 38. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*.2000;25(24):3186-91.
 39. Shrotriyia VK, Dhanda U. Content validity of assessment instrument for employee engagement. *SAGE Open*. 2019; 9(1): 2158244018821751.
 40. Black B, De Carvalho AG, Khanna V, Kim W, Yurtoğlu B. Corporate governance indices and construct validity. *Corporate Governance: An International Review*.2017;25(6):397-410.
 41. Tabachnick BG, Fidell LS. *Using multivariate statistics* (4th ed.). Needham Heights, MA: Allyn & Bacon; 2001.
 42. Cattell RB. The scree test for the number of factors. *Multivariate Behavioral Research*, 1966;1:245.
 43. Şimşek ÖF. *Yapısal eşitlik modellemesine giriş, temel ilkeler ve LISREL Uygulamaları*. Ankara: Ekinoks Yayınları; 2007. sf.44-9.
 44. Polit DF, Beck CT. The content validity index: are you sure you know what's being reported? Critique and recommendations. *RINAH*. 2006;29(5):489-97.
 45. Gu Y, Wang R. Job demands and work-family conflict in preschool teachers: The buffering effects of job resources and of job recovery experiences. *Current Psychology Advance Online Publication*.2019; 40:3974-85.
 46. Bellmann L, Hübler O. Working from home, job satisfaction and work-life balance—robust or heterogeneous links?. *Int J Manpow*. 2021;42(3):424-41.
 47. White JM. Work-family stage and satisfaction with work-family balance. *J Comp Fam Stud*. 1999;30:163-75.
 48. Krisor SM, Diebig M, Rowold J. Is cortisol as a biomarker of stress influenced by the interplay of work-family conflict, work-family balance, and resilience?. *Personnel Review*. 2015; 44(4):648-61.
 49. Omran SKA. Work-family balance dilemma among employed parents (An empirical study). *International Journal of Business and Economic Development*. 2016;4(1):31-46.
 50. Weinzimmer LG, Baumann HM, Gullifor DP, Koubova V. Emotional intelligence and job performance: The mediating role of work-family balance. *J Soc Psychol*. 2017;157(3):322-37.
 51. Fan P. Person-organization fit, work-family balance, and work attitude: The moderated mediating effect of supervisor support. *Social Behavior and Personality: An*

- International Journal. 2018;46(6):995-1010.
52. Büyüköztürk Ş. Factor analysis: Basic concepts and using to development scale. Educational Administration in Theory and Practice. 2002;32:470-83.
53. Yaşlıoğlu M. Factor analysis and validity in social sciences: Application of exploratory and confirmatory factor analyses. Istanbul University Journal of the School of Business, 2017;46(Special Issue):74-85.
54. Collier JE. Applied structural equation modeling using AMOS: Basic to advanced techniques. Routledge; 2020.
55. Wang M, Kwan HK, Zhou A. Effects of servant leadership on work-family balance in China. Asia Pacific Journal of Human Resources. 2017;55(4):387-407.
56. Ercan İ, Kan İ. Ölçeklerde güvenilirlik ve geçerlik. Uludağ Üniversitesi Tıp Fakültesi Dergisi. 2004;30(3):211-6.
57. Karasar N. Ölçme ve araçlarında aranan nitelikler. bilimsel araştırma yöntemi. 19. Baskı. Ankara: Nobel Yayın Dağıtım; 2009. s. 147-53.