Sağlık Akademisyenleri Dergisi
http://dergipark.gov.tr/sagakaderg

Sağ Aka Derg, 2023; 10(4): 562-573

Research Article / Araştırma

Adaptation of the short multidimensional inventory lifestyle evaluation-confinement to Turkish: Validity and reliability study

Kısa çok boyutlu yaşam tarzı değerlendirmesi - izolasyon ölçeği Türkçe formu: Geçerlik ve güvenilirlik çalışması

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ABSTRACT

Objective: The aim of this study is to investigate the validity and reliability of the Short Multidimensional Lifestyle Assessment-Isolation (SMILE-C) Questionnaire, which was developed to evaluate lifestyle multidimensionally during COVID-19 pandemic, in the Turkish sample. **Method**: The research was carried out 345 university students who were able to access the internet between April 2021-February 2022. Participants filled in the inquiry forms sent to them online. The construct validity with Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis; convergent-discriminant validity with Average Variance Extracted (AVE), Composite Reliability (CR), Maximum Squared Variance (MSV), Average Shared Square Variance (ASV); internal consistency with Cronbach's α coefficient; test-retest reliability with intraclass correlation coefficient were evaluated. The Healthy Lifestyle Behaviors Scale-II (HPLP-II) and the International Physical Activity Questionnaire-Short Form (IPAQ-SF) were used to assess criterion validity. **Results**: Cronbach's α was 0.74 and ICC2.1 was 0.86. The EFA showed a six-factor model and four items loaded on more than one factor. The fit index values confirmed a good fit (Root mean square error of approximation=0.052; Goodness of fit index=0.940; Adjusted goodness of fit index=0.914; Comparative fit index=0.924; Normed fit index=0.901). A statistically significant positive correlation was found between the total SMILE-C score and the total HPLP-II score and all its sub-dimensions; the total IPAQ-SF score and the total SMILE-C score and the healthy lifestyle behavior sub-dimension($p<0.001$). AVE, CR, MSV, and ASV values supported the convergent-discriminant validity of the scale. **Conclusion**: The Turkish version of SMILE-C is a valid and reliable questionnaire that can assess lifestyle multidimensional manner.

Key Words:
Pandemic, Lifestyle, Validity, Reliability, COVID-19

Anahtar Kelimeler:
Pandemi, Yaşam Tarzı, Geçerlilik, Güvenilirlik, COVID-19

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DOI:
10.52880/sagakaderg.1265137

Received Date/Gönderme Tarihi:
14.03.2023

Accepted Date/Kabul Tarihi:
10.08.2023

Published Online/Yayımlanma Tarihi:
01.12.2023

ÖZ

Amaç: Bu çalışmanın amacı COVID-19 pandemi sürecinde yaşam tarzını çok boyutlu olarak değerlendirmek amacıyla geliştirilen Kısa Çok Boyutlu Yaşam Tarzı Değerlendirme-İzolasyon (SMILE-C) ölçeğinin Türk örnekleminde geçerlik ve güvenirliğini araştırmaktır. **Yöntem**: Araştırma Nisan 2021- Şubat 2022 tarihleri arasında interenete erişebilen 345 üniversite öğrencisinin ile gerçekleştirildi. Katılımcılar kendilerine gönderilen sorgulama formlarını çevirimiçi olarak doldurdu. Açımlayıcı Faktör Analizi (AFA) ve Doğrulayıcı Faktör Analizi ile yapı geçerliliği, ortalama açıklanan varyans (AVE), birleşik güvenirlik (CR), maksimum paylaşılan varyansın karesi (MSV), paylaşılan varyansın karesinin ortalaması (ASV) ile yakınsak-ıraksak geçerlik; Cronbach's α katsayısı ile iç tutarlılık, sınıf içi korelasyon katsayısı (ICC2.1) ile Test-tekrar test güvenilirliği değerlendirildi. Sağlıklı Yaşam Biçimi Davranışları Ölçeği-II (HPLP-II) ve Uluslararası Fiziksel Aktivite Anketi-Kısa Formu (IPAQ-SF) ölçüt geçerliliğini değerlendirmek için kullanıldı. **Bulgular**: Cronbach's α değeri 0.74 ve ICC2.1 değeri 0.86 idi. AFA, altı faktörlü bir model ve birden fazla faktöre yüklenen dört madde gösterdi. Uyum indeksi değerleri iyi uyumu doğruladı (Yaklaşık hataların ortalama karekökü=0.052; İyilik uyum indeksi=0.940; Düzeltilmiş iyilik uyum indeksi =0.914; Karşılaştırmalı uyum indeksi=0.924; Normlandırılmış uyum indeksi=0.901). SMILE-C toplam puanı ile HPLP-II 'nin toplam puanı ve tüm alt boyutları; IPAQ-SF toplam puanı ile SMILE-C toplam puanı ve sağlıklı yaşam davranışı alt boyutu arasında istatistiksel olarak anlamlı pozitif yönde bir ilişki saptandı ($p<0.001$). AVE, CR, MSV, ASV değerleri ölçeğin yakınsak-ıraksak geçerliğini destekledi. **Sonuç**: SMILE-C ölçeğinin Türkçe versiyonu yaşam tarzını çok boyutlu değerlendirebilen geçerli ve güvenilir bir ankettir.

Atıf | Reference : Kılıç, B.B., Mete, E., Kaygusuz Benli, R., Yasarer, O. & Yıldız Ozer, A. (2023). Adaptation of the short multidimensional inventory lifestyle evaluation-confinement to Turkish: Validity and reliability study. *Sağlık Akademisyenleri Dergisi*, 10(4), 562-573.

INTRODUCTION

Lifestyle has become multidimensional with many parameters such as tobacco use, alcohol consumption, stress management, family-social support, technology use-screen time in addition to nutrition, sleep habits, physical activity, and exercise (Firth et al., 2019). A healthy lifestyle is protective in reducing mortality and morbidity (Nyberg et al., 2020; Stanaway et al., 2018). Today, the emphasis on lifestyle changes and maintaining a healthy lifestyle is increasing considering the age and the burden of disease (American Diabetes Association, 2018; Piepoli et al., 2016; World Health Organization, 2020). According to the most complete information about the way people in Turkey live, many people have unhealthy lifestyles (Ünal et al., 2013).

The World Health Organization called COVID-19 a pandemic, and countries around the world tried to social isolation as much as possible to stop the virus from spreading. Changes in lifestyles have become inevitable due to all the policies implemented to reduce the spread of the virus and the pandemic that has been going on since 2019. The increase in time spent at home caused a decrease in physical activity and thus the emergence of unpleasant feelings such as unhappiness, dissatisfaction, stress, and nervousness (Balanza-Martinez et al., 2021; Qian & Jiang, 2022; Weinstein & Nguyen, 2020).

The original version of the Short Multidimensional Inventory Lifestyle Evaluation (SMILE) contains 43 items (Balanza-Martinez et al., 2021) and includes lifestyle sub-dimensions. There are 27 items in the Short Multidimensional Inventory Lifestyle Evaluation-Confinement (SMILE-C) version, which is the short form of SMILE, which questions the lifestyle during the pandemic and quarantine period. The psychometric study of this scale has been developed in English, Spanish, Portuguese, and Malaysian (Abdul Kadir et al., 2021; Balanza-Martinez et al., 2021; Giner-Murillo et al., 2021). Our study aimed to investigate the reliability and validity of SMILE-C in Turkish language. We think that translating SMILE-C into Turkish will make an important contribution to the literature by examining how people's lives have changed as a result of the COVID-19 pandemic in various ways.

METHOD

Translation and Cross-Cultural Adaptation

Firstly, permission to translate the SMILE-C into Turkish was obtained from Balanza et al (10), who developed the scale. In the process of translation of the questionnaire into Turkish and cross-cultural adaptation, used published guidelines (Beaton et al., 2000).

Step 1-Translation: Two separate translators who are proficient in English and are native Turkish speakers translated the scale's original form into Turkish.

Step 2-Synthesis: The created 2 Turkish translations, the original text, and the questionnaire's other validation studies were sent to other experts who knew English very well. As a result of the comparison made by the experts, the questionnaire was converted into a single Turkish translation and Translation Synthesis was created.

Step 3-Back Translation: The Turkish synthesis created was translated into English by two independent translators who are native speakers and can speak Turkish fluently. The translators had no medical knowledge and no knowledge of the original version of the questionnaire.

Step 4-Expert committee review: The expert committee created at this stage of the translation process is very important to achieve cross-cultural harmony. The committee consisted of 2 health professionals, 2 academics, and translators. The semantic; idiomatic; experiential and

conceptual equivalences between the Turkish translation and the original questionnaire was

evaluated by the committee. All translations of the questionnaire were reviewed by the board and created the prefinal version. The prefinal version was sent to Balanza via e-mail in order to understand how it has been translated into Turkish and to avoid any ambiguity that may occur.

Step 5-Pretesting: The questionnaire's preliminary version was tested by conducting a pilot study of 30 university student participants. The participants in the survey were asked to indicate whether the statements were understandable. Turkish translation was questioned in detail which items were not understood to improve it. The result of the pilot study, the 8th and 9th items were removed from the survey with the committee's suggestion because all participants gave the answer 'never' and that cannabis and drugs are forbidden in Turkey (Toprak et al., 2010).

Step 6-Submission and appraisal of all written reports by developer/committee: All translation processes, written materials, and pilot study results were evaluated in detail by the committee and the developer of the questionnaire. After the Turkish version of SMILE-C was reviewed for the last time, the translation period came to an end.

Study Protocol

The data were collected in this study with a simple random sampling method through an online survey

powered by Google Forms between April 2021–February 2022. The form contained the sociodemographic characteristics, information about COVID-19, and general health status and scales, which were SMILE-C, Health-Promoting Lifestyle Profile II (HPLP-II), and International Physical Activity Questionnaire Short Form (IPAQ-SF). To determine the test-retest reliability of the questionnaire, 15 days after it was originally sent, SMILE-C was resent to the participants via e-mail.

Sample Size Calculation

The subject-item ratio should be at least 5:1 to perform exploratory factor analysis for validity and reliability studies. However, there is a recommendation to use a 10:1 ratio in the literature (Osborne & Costello, 2004; Tabachnick & Fidell, 2018). Since there were 27 questions in the SMILE-C, our goal was to sign up a minimum of 135(27x5) people. Both exploratory factor analysis and confirmatory factor analysis may be performed on the sample size used in this investigation.

Participants

Healthy university students between the ages of 18-35, who are native Turkish speakers, who can use a phone, tablet, or computer with internet access, and who can fill out the online questionnaire on their own were included. Participants who did not complete the entire online form were excluded from the study. After taking the online informed consent, participants filled out the form.

345 volunteers participated in the study to evaluate the validity and internal consistency. The test-retest reliability measurements were completed with 160 participants. The flow diagram of the study is available in Supplement 1.

INSTRUMENTS

Smile-C

SMILE-C which is developed to evaluate how people's lifestyles changed during the COVID-19 epidemic consists of 7 domains (diet and nutrition, substance abuse, physical activity, stress management, restorative sleep, social support, and environmental exposures) and 27 items It is a 4-point Likert scale (1=Always, 2=Often, 3=Seldom, 4=Never). Items 3, 4, 5, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, and 26 are scored in reverse. A total score is calculated by summing all the calculated subscale scores. The better (healthier) the lifestyle, the higher the score (Balanza-Martinez et al., 2021).

Hplp-II

The HPLP-II was developed to measure the health-promoting behaviors of individuals concerning a healthy lifestyle. It consists of 52 items and 6 domains together with a 4-point Likert scale (1=Never, 2=Sometimes, 3=Often, and 4=Routinely). The total score of the scale gives the healthy lifestyle behaviors score (Walker & Hill-Polerecky, 1996). As healthy lifestyle behaviors increase, the total score obtained from the questionnaire increases. The Turkish version of the scale was used (Bahar et al., 2008).

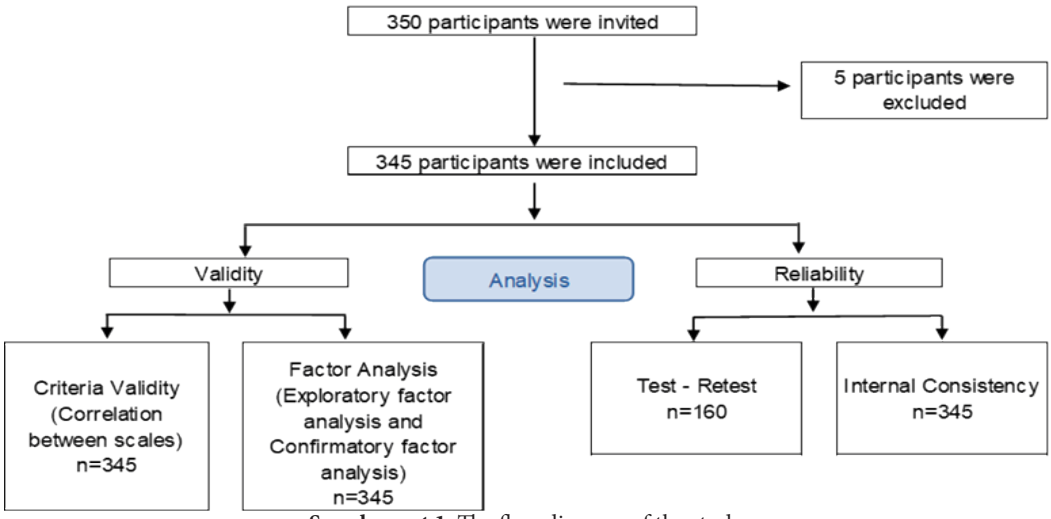
Ipaq-Sf

The IPAQ-SF is an objective scale used to determine the physical activity levels of individuals in the last 7 days (Craig et al., 2003). It consists of 4 domains: vigorous physical activity, moderate-intensity physical activity, walking, and sitting. It determines physical activity levels in the Metabolic Equivalent of Tasks (METs). İndividuals are classified as inactive (IPAQ-SF total score<600 METs-min/week), minimally active (600 METs<IPAQ-SF total score>3000 METs-min/week), and active (IPAQ-SF total score>3000 METs-min/week). The Turkish version of the questionnaire was used (Savcı et al., 2006).

STATISTICAL ANALYSIS

Data analysis was performed using the 'Statistical Package for Social Sciences' (SPSS) Version 26 (SPSS inc., Chicago, IL, ABD). The statistical significance level was accepted as $p<0.05$. Quantitative variables were expressed as mean±SD. The conformity of the data to the normal distribution was evaluated with the Kolmogorov-Smirnov and Skewness-Kurtosis normality tests. The Spearman correlation analysis was used in the statistical analysis since the data did not fit the normal distribution.

Exploratory factor analysis (EFA) and Confirmatory factor analysis (CFA) were performed for the construct validity. EFA is used to determine the sub-dimensions and factor distribution of measurement tools, while CFA is used to test whether these created models are confirmed in the studied sample (Akyüz, 2018; Özdamar, 2017). The Kaiser–Meier–Olkin (KMO) and Bartlett tests, as well as the Varimax rotation method, were used to determine the suitability of the data for factor analysis. The AMOS-26 Package program was used for CFA with fit index values (normal theory weighted least squares chi-square/degrees of freedom (ΔX2/df), Goodness of fit index (GFI), Adjusted goodness of fit index (AGFI), Comparative fit index (CFI), Normed fit index (NFI), root mean square error of approximation (RMSEA)),



Supplement 1. The flow diagram of the study

and to evaluate the criterion validity of SMILE-C, HPLP-II scale was used. Criterion validity is established by applying a similar scale to the same sample group (Doll et al., 1993). Convergent and discriminant validity analyses were also performed to evaluate the scale. Convergent analysis, which is one of these measurements, expresses the relationship of the items that make up the factors with each other and the factor they create. Discriminant analysis, on the other hand, is used to calculate the relationship of the items that make up the scale with other factors. AVE and CR values for convergent analysis; MSV and ASV values for discriminant analysis were calculated. While CR > AVE > 0.5 is expected for convergent validity; MSV<AVE, ASV<MSV, and the square root of AVE > inter-factor correlations are expected for discriminant validity (Yaşlıoğlu, 2017). In situations where AVE was < 0.5, the scale was considered to have convergent validity, provided that the CR was ≥

Table 1. Characteristics of participants (n=345)

		n	%	mean	SD	median	min	max
Age(years)	18-35	345		21.37	2.98	21	18	35
Gender	Male	94	27.2					
	Female	251	72.8					
Height(cm)		345				168	150	194
Weight(kg)		345				61	39	120
Marital Status	Married	11	3.2					
	Single	334	96.8					
Alcohol Drinking	Yes	114	33					
	No	231	67					
Smoking	Yes	108	31.3					
	No	237	68.7					
Have you had COVID-19?	Yes	85	24.6					
	No	260	75.4					
Have you lost a loved one due to COVID-19?	Yes	92	26.7					
	No	253	73.3					
Did you follow the social distancing rules?	Yes	322	93.3					
	No	23	6.7					
Have you been quarantined due to COVID-19?	Yes	138	40					
	No	207	60					
Have you quarantined yourself to avoid getting COVID-19?	Yes	255	73.9					
	No	90	26.1					

cm:centimeter, kg:kilogram, max: maximum, min:minimum, SD:standard deviation

0.7. (Fornell & Larcker, 1981). For internal consistency analysis, Spearman correlation coefficient and Intraclass Correlation (ICC2.1) analysis for test-retest were used to evaluate the reliability of the scale.

RESULTS

Demographic Data

The mean age of the 345 participants was determined as 21.37±2.98 years. 0.3% of the participants had hypertension, 0.6% eating disorders, 2% diabetes/prediabetes, 2.6% high cholesterol, 4.6% heart problems, 9.9% asthma/bronchitis/COPD, 12.5% musculoskeletal problems, and 16.5% psychological problems. 24.6% of the participants stated that they had COVID-19. While 93.3% of the participants stated that they followed the social distance rules during the pandemic process, the average number of days spent at home was calculated as 27.21±43.15 days (Table 1).

Constructive Validity

According to the EFA, the Kaiser-Meyer-Olkin (KMO) value was found to be 0.704. This value indicates that the sample size was sufficient (Field, 2013).

In the Bartlett Test of Sphericity, the $\chi 2$ statistic was determined as 1145.267, and this value was found to be statistically significant ($p<0.001$). Principal Component Analysis and Varimax rotation methods were used to obtain the most suitable model. Four items (items 12, 18, 19, and 20) were loaded on more than one factor, and three items (items 4, 23, and 25) with a factor load below 0.50 were excluded (Table 2). It is recommended that items with a factor load of less than 0.50 and items that are loaded on more than one factor with a difference of less than 0.10 should be excluded from the scale (Hattie, 1985; Izquierdo, 2014). EFA showed a six-factor scale model with Eigenvalues >1 was obtained that explained 59% of the total variance, consisting of 18 items. In the adapted Turkish version, the loading of the items into the factors differed from the original scale. Therefore, factors other than restorative sleep and social support were renamed. The factor loads of the items vary between 0.510 and 0.853 (Table 2).

The fit index values of the Turkish version were calculated in the context of CFA. The $\chi 2$ value was found to be significant ($\chi 2/df=1.626$; $p<0.001$) and other fit indices (RMSEA=0.052; GFI=0.940; AGFI=0.914; CFI=0.924; NFI=0.901) were found to be within acceptable values (Bentler & Bonett, 1980; Byme & Campbell, 1999; Marsh et al., 2006; Schermelleh-Engel, 2003). These fit index values indicate that the six-factor structure exhibited a good fit.

Criterion Validity

Statistically significant ($p<0.001$) and positive correlations were found between the total score of SMILE-C and the total score of HPLP-II and all its sub-dimensions (Table 3).

The relationship between SMILE-C and IPAQ-SF was evaluated. The factor of healthy living behaviors has been identified as one of the sub-dimensions of SMILE-C and includes items related to physical activity, healthy nutrition, and the use of appropriate physical and psychological strategies to cope with stress. A statistically significant ($p<0.001$) positive correlation was found between the total score of the SMILE-C and the healthy living behaviors factor and the total score of the IPAQ-SF (Table 3).

Participants were categorized into 3 groups according to their physical activity levels. A significant difference was found between the three groups ($p<0.05$). It was found that those with higher levels of physical activity had higher scores on SMILE-C total scores and the healthy living behaviors factor (Table 4).

Convergent-Discriminant Validity

Convergent Validity

CR and AVE values were 0.76 and 0.60 for the 'Bad eating habits' factor; 0.80 and 0.67 for the 'tobacco products and alcohol use' factor; 0.76 and 0.62 for the 'spiritual growth' factor; 0.80 and 0.58 for the 'restorative sleep' factor; 0.73 and 0.40 for the 'social support' factor; 0.80 and 0.46 for the 'healthy lifestyle behaviors' factor (Table 5).

Discriminant Validity

MSV and ASV values used to determine discriminant validity were calculated as 0.05 and 0.04 for the 'Bad eating habits' factor; 0.04 and 0.02 for the 'Tobacco products and alcohol use' factor; 0.29 and 0.22 for the 'Spiritual development' factor; 0.11 and 0.10 for the 'Restorative sleep' factor; 0.15 and 0.14 for the 'Social support' factor; 0.15 and 0.14 for factor 'Healthy living behaviors' (Table 5).

Reliability Analysis

Internal Consistency Reliability

The Cronbach's α coefficient was found to be 0.740, which is an acceptable level (Bland, 1997). The Turkish version of SMILE-C is a reliable scale. The item-total correlations of the scale ranged from 0.152 to 0.484. The item-total correlation test of 8 items (Items 1, 2, 6, 7, 10, 21, 22, and 24) on the scale was found to be below

Table 2. Results of Exploratory Factor Analysis

SMILE-C Item	Factor Load
Factor 1: Bad eating habits (Explained Variance:6.001)	
1. Do you consume processed foods (frozen foods such as pizza, French fries, pastries, deep-fried foods, and canned foods)?	0.78
2. Do you consume fast-food, high-calorie sweet or high- fat foods when you are stressed or upset?	0.78
Factor 2: Tobacco products and alcohol use (Explained Variance:6.798)	
6. Do you consume 4 alcoholic beverages for women, 5 or more for men in two hours at a time? (1 alcoholic beverage equals a glass of beer or a glass of wine or a single drink (rum, vodka, whiskey, tequila or gin))	0.78
7. Do you use tobacco products (cigarettes, electronic cigarettes, cigars, pipes, smokeless tobacco)?	0.85
Factor 3: Spiritual development (Explained Variance:7.542)	
13. Do you think your life has meaning?	0.77
14. Do you feel grateful for the life you have?	0.80
Factor 4: Restorative Sleep (Explained Variance:10.634)	
15. Do you sleep 7 or 9 hours every night?	0.78
16. Do you feel as rested as you should considering the amount of sleep you had?	0.73
17. Do you sleep regular hours?	0.77
Factor 5: Social support (Explained Variance:9.312)	
21. Do you have anyone you trust who listens to your problems or concerns?	0.53
22. Is there someone to help you with daily routine tasks (such as cooking, house cleaning, shopping)?	0.70
24. Do you take time to support people who matter to you?	0.62
5. Do you have your main meals with your family or friends?	0.67
Factor 6: Healthy living behaviors (Explained Variance:18.827)	
3. Do you eat healthy foods such as fresh fruits and vegetables, whole grains, legumes or nuts?	0.51
8. Do you exercise for at least 30 minutes per day (or 150 minutes per week)?	0.70
9. Do you make time for yourself to rest?	0.52
10. Do you take advantage of any strategies or psychological support to cope with stress? (Eg meditation, awareness or psychotherapy)	0.81
11. Do you benefit from any physical strategy (such as yoga, tai-chi, exercise) to deal with stress?	0.78
Kaiser-Meyer-Olkin:0.704	
Bartlett test of sphericity-Chi Square:1145.267	
p<0.001	
Total variance explained:59.115	
Questions Removed from the Scale	
4. Do you take care to have regular meals?	
12. Do you observe the requirements of a faith or religion?	
18. Do you take sleeping pills?	
19. Are you in contact with family or friends?	
20. Do you feel like you are part of a group of friends, community or society?	
23. Do you enjoy your leisure time?	
25. Do you spend the time before going to sleep on a computer / smartphone ?	

Table 3. The correlation between SMILE-C and HPLP-II

HPLP-II sub-dimensions	p	r=Correlation coefficient
Health Responsibility	<0.001*	0.433
Physical Activity	<0.001*	0.479
Spiritual Growth	<0.001*	0.578
Interpersonal Relations	<0.001*	0.338
Stress Management	<0.001*	0.593
Nutrition	<0.001*	0.437
Total Score of HPLP-II	<0.001*	0.642
The total score of IPAQ-SF	The total score of SMILE-C	Healthy living behaviors dimension of SMILE-C
p	<0.001*	<0.001*
r=Correlation coefficient	0.291	0.346

*: Spearman correlation, HPLP-II: Health-Promoting Lifestyle Profile II, IPAQ-SF: International Physical Activity Questionaire-Short Form, SMILE-C: Short Multidimensional Inventory Lifestyle Evaluation – Confinement.

Table 4. The comparison of total SMILE-C score and healthy living behavior-subdimension scores according to physical activity levels

	SMILE-C median (min-max)		Healthy Living Behaviors Sub-dimension mean(SD) median(min-max)	
IPAQ-SF		p*		p*
Inactive	50(36-65)	<0.05*	11.36(2.26)	0.001*
(n=119)			11(5-17)	
Minimally active			12.5 (2.65)	
(n=188)	51(35-67)		12(6-20)	
Active	52.5(41-63)		14.3 (2.87)	
(n=38)			14(8-20)	

*: Kruskal Wallis,

min:minimum, max: maximum, SMILE-C: Short Multidimensional Inventory Lifestyle Evaluation-Confinement, SD: standard deviation

Table 5. Evaluation of divergent-convergent validity and temporal consistency of Short Multidimensional Inventory Lifestyle Evaluation-Confinement

CR, AVE, MSV, ASV values of Short Multidimensional Inventory Lifestyle Evaluation-Confinement							
				CR	**AVE**	**MSV**	**ASV**
Bad eating habits				0,76	0,6	0,05	0,04
Tobacco products and alcohol use				0,8	0,67	0,04	0,02
Spiritual development				0,76	0,62	0,29	0,22
Restorative sleep				0,8	0,58	0,11	0,1
Social support				0,73	0,4	0,15	0,14
Healthy living behaviors				0,8	0,46	0,15	0,14
Temporal Consistency by Test-Retest Method of Short Multidimensional Inventory Lifestyle Evaluation-Confinement							
The total score of SMILE-C	Median	p*	r*	Cronbach's Alpha	$ICC_{2.1}$ (%95 Confidence Interval)	SEM	MDC
	(min-max)						
First evaluation	49	p<0.001	0.805	0.846	0.846	Şub.31	Mar.25
	(37-61)				(0.789-0.887)		
Second evaluation	51						
	(37-67)						

0.30. If the Cronbach alpha coefficient increases by more than 5% when the item is removed from the scale, that question should be removed from the scale (Özdamar, 2017). However, since there was no change in Cronbach's alpha value when these items were removed from the scale, it was decided not to remove the items.

Test-Retest (Test-Retest) Reliability

To assess temporal consistency, 160 participants were administered SMILE-C again 15 days later. The rate of participation in the second measurement was 46%. The correlation between the first and second applications was evaluated with the Spearman correlation coefficient, and the correlation coefficient was calculated as 0.805 (p<0.001). ICC2.1 was found to be 0.86, indicating that the temporal consistency of SMILE-C is good (Table 5).

DISCUSSION

This research sought to investigate the cross-cultural adaptation of SMILE-C questionnaire in Turkish society between 18-35 aged and to investigate its important psychometric properties. According to the results of the EFA, a model composed of 18 items with 6 factors was obtained. In contrast, the original version of the questionnaire consisted of 27 questions with 7 factors. Confirmatory factor analysis is a factor analysis used to determine the compatibility of the factors revealed by EFA with the factor structures determined by the hypothesis (Akyüz, 2018; Özdamar, 2017). The CFA results of the model consisting of 6 factors with 18 questions showed acceptable goodness of fit. In the newly formed model, the distribution of the items to factors differs. While in the original model, items 1, 2, 3, 4, and 5 were included in the diet and nutrition factor, in the revised model, items 3 and 5 were loaded onto another factor, and item 4 was removed from the questionnaire because of its low factor load. Items 1 and 2 questioned the consumption of ready-to-eat foods. Due to the changing lifestyle, working conditions, and limited time, it is thought that the tendency to fast food is related to unhealthy and inappropriate eating habits. This is true in Turkish society as well as in the rest of the world (Ertürk, 2018). The researchers named this factor "bad eating habits".

In SMILE-C items 6, and 7 were included under the substance use factor, and also there were 2 more questions questioning drug use. In the Malaysian validity of SMILE-C, alcohol use was excluded from the questionnaire because it did not fit their culture (Abdul Kadir et al., 2021). Due to the prohibition of drug use in the Turkish sample group and also based on the data of the pilot study, items for drug use were excluded (Toprak et al., 2010). Since the remaining items were about tobacco products and alcohol use, this factor was named "tobacco products and alcohol use".

In the original questionnaire, items 13 and 14 are included under the stress management factor, with an extra 4 items. In this study, only items 13 and 14 were included in this factor. This is because items 9 and 12 were excluded from the questionnaire as a result of the EFA, and items 10 and 11 were loaded on another factor. Since these items mostly contain questions about spiritual development, this factor was named "spiritual development". The items in the spiritual development factor of SMILE-C and the items in the spiritual growth factor of HPLP-II are similar, and the researchers named this factor considering this situation.

In this study, items 5, 21, 22, and 24 are loaded onto one factor. In the original form, items 21, 22, and 24 are under the heading of social support, and item 5 is under the heading of nutrition. Item 5 questioned whether people consume their main meals with their family or friends. In this study, this item was loaded on the social support factor dimension. In a study, it is noteworthy that in Turkish society, it is associated with social interaction activities such as being with family or friends, celebrating personal special days, having fun, and traditional celebrations of special days (Byme & Campbell, 1999).

Items 3, 8, 9, 10, and 11 were loaded on a single factor. The factor title was named "Healthy lifestyle behaviors" because it questioned healthy nutrition, physical activity, and physical and psychological strategies in coping with stress, similar to some subdimensions of the HPLP-II. Studies in the literature examine the relationship between healthy lifestyle behaviors and physical activity levels. A significant positive correlation between HPLP-II and IPAQ-SF scores in university students (Saldıran et al., 2019). Another study conducted on university students reported a moderate positive correlation between physical activity level and HPLP-II total score, physical activity, and stress management subscale scores (Kürkçüoğlu et al., 2020). In line with this research, we found a significant correlation between IPAQ-SF and the "healthy behavior lifestyle" subdimension of SMILE-C and SMILE-C total scores. On the other hand, a study, that determined the relationship between SMILE-C score and IPAQ-SF, wasn't found. Based on the results of our comparison between IPAQ-SF and SMILE-C, we can shed light on current literature research.

When the convergent validity of the scale was analyzed, it was found that the factors other than 'Social support' and 'Healthy living behaviors' met the condition CR > AVE, AVE> 0.50; It is seen that the AVE value of these two factors is less than 0.50, but the CR values are greater than 0.70. If the AVE value is less than 0.50 and the CR > 0.70, it can be said that the scale provides convergent validity because the acceptability of the questionnaire has been reported (Fornell & Larcker, 1981) and the other parameters of the scale meet the recommended values. In the discriminant validity analysis, it is seen that the calculated values meet the criteria of MSV<AVE and ASV<MSV. This is an indication that the scale provides discriminant validity.

Evidence that various modifications can be made to the scales in adapting the scales to different cultures and societies is seen in the studies in the literature (Mokhtarinia et al., 2022; Nunes et al., 2016; Oltra-Benavent, 2020). In this study, some modifications were made during the adaptation of SMILE-C to Turkish culture.

The limitation of our study is that it is in the population between the ages of 18-35 and does not include those who worked from home during the pandemic period, health workers, and the elderly population.

CONCLUSION

Turkish version of SMILE-C is a valid and reliable multidimensional questionnaire that can be used not only in the healthcare area but also in the social area as well as to evaluate people's lifestyle habits between the aged 18-35 during the COVID-19 pandemic. In addition, it has been shown that there is a correlation between physical activity level and the total score of SMILE-C and the healthy living behaviors sub-dimension. Future studies may focus on the evaluation of lifestyle changes during the pandemic. This may include lifestyle changes in infected patients, immunosuppressed individuals such as cancer, and in different age groups.

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Appendix 1

KISA ÇOK BOYUTLU YAŞAM TARZI DEĞERLENDİRMESİ ÖLÇEĞİ - İZOLASYON	*Her zaman*	*Sık sık*	*Nadiren*	*Hiçbir zaman*
Kötü beslenme alışkanlıkları				
1- İşlenmiş gıdaları (pizza, patates kızartması, hamur işleri, derin yağda kızartılmış gıdalar ve konserve gıdalar gibi dondurulmuş gıdalar) tüketiyor musunuz?	1	2	3	4
2- Stresli veya üzgün olduğunuzda fast food, yüksek kalorili tatlı veya yüksek yağlı yiyecekler tüketiyor musunuz?	1	2	3	4
Tütün ürünleri ve alkol kullanımı				
3- Bir seferde iki saatte kadınlar için 4, erkekler için 5 veya daha fazla alkollü içecek tüketiyor musunuz? (1 alkollü içecek, bir bardak bira veya bir bardak şaraba veya tek bir içeceğe (rom, votka, viski, tekila veya cin) eşittir)	1	2	3	4
4- Tütün ürünleri (sigara, elektronik sigara, puro, pipo, dumansız tütün) kullanıyor musunuz?	1	2	3	4
Manevi gelişim				
5- Hayatınızın bir anlamı olduğunu düşünüyor musunuz?	4	3	2	1
6- Sahip olduğunuz hayat için minnettar hissediyor musunuz?	4	3	2	1
Onarıcı uyku				
7- Her gece 7 veya 9 saat mi uyuyorsunuz?	4	3	2	1
8- Aldığınız uyku miktarı göz önüne alındığında kendinizi gerektiği kadar dinlenmiş hissediyor musunuz?	4	3	2	1
9- Düzenli saatlerde uyuyor musunuz?	4	3	2	1
Sosyal destek				
10- Sorunlarınızı veya endişelerinizi dinleyen güvendiğiniz biri var mı?	4	3	2	1
11- Günlük rutin işlerinizde (yemek pişirme, ev temizliği, alışveriş gibi) size yardımcı olacak biri var mı?	4	3	2	1
12- Sizin için önemli olan insanları desteklemek için zaman ayırıyor musunuz?	4	3	2	1
13- Ana öğünlerinizi aileniz veya arkadaşlarınızla mı yersiniz?	4	3	2	1
Sağlıklı yaşam davranışları				
14- Baklagiller veya kuruyemişler gibi sağlıklı yiyecekler yiyor musunuz?	4	3	2	1
15- Günde en az 30 dakika (veya haftada 150 dakika) egzersiz yapıyor musunuz?	4	3	2	1
16- Dinlenmek için kendinize zaman ayırıyor musunuz?	4	3	2	1
17- Stresle başa çıkmak için herhangi bir stratejiden veya psikolojik destekten yararlanıyor musunuz? (Örneğin meditasyon, farkındalık veya psikoterapi)	4	3	2	1