

## TURKISH VALIDITY AND RELIABILITY STUDY OF THE SOCIAL HEALTH SCALE

### Sosyal Sağlık Ölçeğinin Türkçe Geçerlilik ve Güvenirlik Çalışması

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#### ABSTRACT

**Objective:** The study aims to establish the validity and reliability of the Social Determinants of Health Scale in Turkish.

**Material and Methods:** The study sample consisted of 434 university students, with data collection accomplished using the Social Health Scale. The research employed exploratory factor analysis, confirmatory factor analysis, and correlation analyses. The validity and reliability of the scale, values for CR, AVE, and Cronbach Alpha were calculated.

**Results:** Exploratory factor analysis results indicated that the Social Health Scale consists of four distinct dimensions: general social health, risky social behaviors, economic dimension, and isolation. The structure validity and model fit values of the scale were determined to be satisfactory.

**Conclusion:** The results of the study confirmed the validity and reliability of the Turkish version of the Social Health Scale, which comprises 14 items and four dimensions. This tool may be used to evaluate the social health levels of university students.

**Keywords:** Health, university students, social determinants, social health of students

#### ÖZ

**Amaç:** Bu çalışmada amaç sağlığın sosyal belirleyicileri ölçeğinin Türkçe geçerlilik ve güvenilirliğini yapmaktır.

**Gereç ve Yöntemler:** Çalışmaya 434 üniversite öğrencisi katılmıştır. Veri toplama aracı olarak sosyal sağlık ölçeği kullanılmıştır. Araştırmada açıklayıcı faktör analizi, doğrulayıcı faktör analizi ve korelasyon analizleri gerçekleştirilmiştir. Ölçeğin geçerlilik ve güvenilirliği için CR, AVE ve Cronbach Alpha değerleri hesaplanmıştır.

**Bulgular:** Sosyal sağlık ölçeğinin açıklayıcı faktör analizi sonucunda genel sosyal sağlık, riskli sosyal davranışlar, ekonomik boyut ve soyutlanma olmak üzere dört farklı boyutta dağılım gösterdiği görülmüştür. Ölçeğin yapı geçerliliği ve model uyum değerlerinin iyi düzeyde olduğu görülmüştür.

**Sonuç:** Sosyal sağlık ölçeğinin Türkçe versiyonunun, geçerli ve güvenilir olduğu sonucuna ulaşılmıştır. Sosyal sağlık ölçeği Türkçe versiyonu 14 madde ve dört boyuttan oluşmaktadır. Üniversite öğrencilerinin sosyal sağlık düzeylerini değerlendirmek amacıyla bu ölçek kullanılabilir.

**Anahtar Kelimeler:** Sağlık, üniversite öğrencileri, sosyal belirleyiciler, öğrencilerin sosyal sağlığı



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## INTRODUCTION

In contemporary academic discourse, the multifaceted nature of health has garnered considerable attention. It is no longer solely equated with the absence of disease but is rather perceived as an intricate amalgamation of physical, psychological, and social facets. Within this spectrum, social health is delineated as the proficiency of individuals and broader communities to coexist harmoniously with their milieu. University scholars represent a pivotal demographic within the young adult category, warranting critical investigation regarding their health behaviors. Empirical studies focusing on the social health behaviors of these students are instrumental in shaping policies and initiating interventions targeting young adult health. Given the myriad challenges students grapple with during their seminal university tenure, explorations into their social health behaviors assume paramount importance at both micro (individual) and macro (societal) scales. Conforming to the World Health Organization's paradigm, social health is construed in the context of both individuals and collectives being adept at actualizing their aspirations, addressing their requirements, and acclimatizing to their surroundings (1). The domain of social health incorporates a plethora of determinants including, but not limited to, social support, social capital, and intricate social networks. The latter has empirically been established as playing a cardinal role in fostering health and holistic well-being (2). Social health behavior, in essence, embodies the proactive measures and strategies espoused by individuals to enhance or sustain their health. Such strategies encompass practices like consistent physical activity, adherence to a nutritious diet, maintaining a structured sleep cycle, and abstaining from tobacco consumption. Notably, university students may find it challenging to perpetuate these health behaviors owing to the dual pressures of academic rigor and social commitments. This realization has catalyzed an augmentation in research centered on university students' social health behaviors in recent epochs (3-11). Chen et al.'s inquiry delved into the potential

correlations between sustained social support and long-term health, specifically examining its implications for sleep quality and overarching health (12). The research outcomes underscored a positive nexus between robust social support and both optimal sleep patterns and general health. In a related study, Gao et al. probed the interrelation between psychological well-being and social support within a cohort of Chinese university students, elucidating that robust social support acts as a buffer, fortifying mental health (7). Extending this narrative, Huang and Wang embarked on a longitudinal study, extrapolating that fortified social support invariably amplifies the quality of life experienced by university students (8). In a detailed empirical investigation, Lipson et al. scrutinized the heterogeneity present in mental health outcomes and treatment uptake among students enrolled in various U.S. higher education institutions. Their findings underscored pronounced disparities in both mental health manifestations and treatment engagement across distinct universities (4). Delving into a related facet, Stallman and Ohan executed a comprehensive systematic review exploring the interventions for anxiety disorders among university students. Their synthesis of the extant literature identified cognitive behavioral therapy as a potent intervention strategy for alleviating anxiety symptoms within this demographic (5). Venturing into a socio-cultural perspective, Yu et al. embarked on an examination of the nexus between active social involvement and health appraisal among students in Chinese tertiary institutions. Their empirical evidence indicated that an active engagement in social activities concomitantly enhances positive health perceptions among these students (9). In addition, research has shown that social health is associated with various positive outcomes, such as increased life satisfaction, low stress levels, and improved mental health (13,14). In the context of university students, social health is particularly related to academic achievement and persistence (15). Studies indicate that social support from peers, family, and faculty is important in promoting students' academic achievement and helping

them cope with academic stress (16,17). Furthermore, social networks and social capital can provide students with valuable resources, such as information about job opportunities or academic programs, which can facilitate their transition to the workforce or graduate education (18). Social health behavior is a complex and multifaceted construct that has received increasing attention in the field of public health in recent years. In particular, university students are considered to be a population that is more vulnerable to poor social health outcomes. Studies have shown that university students are at risk of engaging in behaviors that can negatively impact their social health, such as unhealthy eating habits, lack of physical activity, and substance use. For example, a study conducted by Arnett found that university students reported higher rates of alcohol use and risky sexual behavior compared to their non-university attending peers (19). A study conducted by Maloney et al. found that perceived social norms were a significant determinant of excessive drinking behavior among university students, highlighting the importance of social influence in shaping social health behaviors (20). Interventions centered on enhancing social health behaviors have gained traction in the academic setting, particularly among university students. However, the efficacy of these initiatives can be heterogeneous. To illustrate, research spearheaded by Anderson et al. elucidated that a comprehensive intervention, characterized by personalized feedback mechanisms combined with social norm messaging, yielded discernible success in mitigating alcohol consumption and its adverse repercussions among university attendees (21). In summation, the dynamics of social health behaviors in the university student cohort present a matter of paramount public health significance. The intricate interplay between personal predispositions and the surrounding milieu accentuates the imperative for multifaceted intervention strategies that resonate with the distinct characteristics of this demographic. The current body of scholarly work accentuates that social health stands as an indispensable pillar within the broader framework of health and holistic well-being.

This is especially pertinent for university students, given the transitional and formative nature of their academic and social experiences. Hence, it becomes crucial to formulate and authenticate social health evaluative metrics that proficiently gauge the repercussions of interventions tailored to amplify social health within the university milieu.

This study aims to provide a measurement tool for examining the social health attitudes and behaviors of university students in Turkey by testing the validity and reliability of the social health scale developed by Johnson et al. in Turkish (22).

## MATERIALS AND METHODS

### *Population and sample of the research*

The population of this study consists of 11,457 students who are enrolled in xxx between 2022 and 2023. To determine the sample size, a confidence level of 95% and a margin of error of 5% were considered for a population size of 11,457. The calculated sample size was at least 385. Data were obtained from 434 students who participated voluntarily in the study. It was decided that this number was sufficient to represent the main population. The sampling method used in the study was convenience sampling. This method was preferred due to its ease, low cost, and ability to collect data quickly (23). Of the students who participated in the study, 66.4% (n=288) were female and 33.6% (n=146) were male. It was observed that 34.8% (n=151) of the students were in the health departments, and 65.22% (n=146) were in other different departments. In addition, regarding their economic status, 3.9% (n=17) stated that they were in very poor condition, 9.7% (n=42) were in poor condition, 65.4% (n=284) were in moderate condition, 18.2% were in good condition, and 2.8% (n=12) were in very good condition. It was found that 47.7% (n=207) of the students were in the first year, 33.4% (n=145) were in the second year, 12.0% (n=52) were in the third year, and 6.9% (n=30) were in the fourth year. Regarding their places of residence during their education, 65.2% (n=283) stayed in government dormitories, 3.2% (n=14) stayed in private dormitories,

10.4% (n=45) stayed in student housing, 3.2% (n=14) stayed in apartments, 15.4% (n=67) stayed with their families, and 2.5% (n=11) stayed in other different places.

#### *Data collection tools*

The data was collected via an online survey. The survey consisted of two parts; the first part included a demographic information form, and the second part included the social health scale. *Demographic Information Form:* This section was created by the researchers. It included five statements to determine the students' gender, grade level, department, income level, and place of residence during their education process.

*Social Health Scale:* The LIFESCREEN-C (TLS-C), is an 18-item self-report social health screening tool to assess college student's non-medical social health needs such as food insecurity, college student risky behaviors, stress, and health-promoting behaviors. The TLS-C includes three subscales: general social health needs (GSHN; 4 items), college student social health needs (CSHN; 11 items), and promotive social health factors (PSHF; 3 items). The TLS-C is dichotomous with a '1-Yes or 0-No' scale and to get a total score, the GSHN and the CSHN scales are summed, with higher scores indicating a higher severity of need. The PSHF scale indicates positive social health behaviors such as exercising and spirituality, and a high score on this scale indicates more positive social health behaviors (22).

#### *Adaptation process of the scale*

Permission was obtained from Kaprea F. Johnson via email for the Turkish adaptation of the Social Health Scale. The original version of the scale was in English and various steps were followed in its translation into Turkish. As the first step, the scale was translated into Turkish by the researcher and three academics who were proficient in English. These translations were compared and the translation that best expressed each item was selected. In the second step, the translated scale was administered to 37 students to examine its comprehensibility. Based on the data obtained, corrections were made to some items of the scale, and the scale was then ready for the administration phase.

#### *Data analysis*

The data collected within the scope of the study were coded using the SPSS 25 package program. Initially, missing data screening was performed for the data, and no missing values were found. Exploratory factor analysis and confirmatory factor analysis were conducted to test the structural validity of the scale. For the convergent validity of the scale sub-dimensions, CR and AVE values were examined, and Cronbach's alpha value was examined for reliability. Fit values were also checked for construct validity. Correlation analysis was conducted to determine the relationship between the sub-dimensions of the scale. The SPSS 25 and Amos 24 package programs were used for data analysis.

After the research objectives and data collection tools were determined, the ethical compliance of the study was ensured by applying to the Scientific Research and Publication Ethics Committee of the Artvin Çoruh University. The committee approved the ethical compliance of the study on 31.01.2023 with the approval number E-18457941-050.99-80533. The survey was conducted both online and face-to-face between 01.02.2023-10.03.2023. The research process was carried out following the principles of the Helsinki Declaration.

## **RESULTS**

In the research, first of all, explanatory factor analysis was conducted regarding the social health scale. The data obtained are given in Table 1.

According to the given information, it has been decided that the data set is suitable for factor analysis due to the KMO value of the scale being greater than 0.70 and the p-value of Bartlett's Test of Sphericity being less than 0.05. It has also been determined that the sample size is sufficient (23). Furthermore, it has been observed that the originally three-dimensional social health scale, which has been translated into Turkish, shows a distribution of four dimensions. It has been found that the factor loadings of the scale items are greater than 0.500, indicating that the items explain the corresponding dimensions.

**Table 1:** Exploratory factor analysis for the social health scale

No	General Social Health	Risky Social Behaviors	Economic Dimension	Isolation
S1	0.649			
S2	0.513			
S3	0.536			
S4	0.672			
S6	0.665			
S9		0.529		
S10		0.787		
S11		0.686		
S12		0.640		
S14			0.858	
S15			0.884	
S5				0.536
S8				0.740
S18				0.500

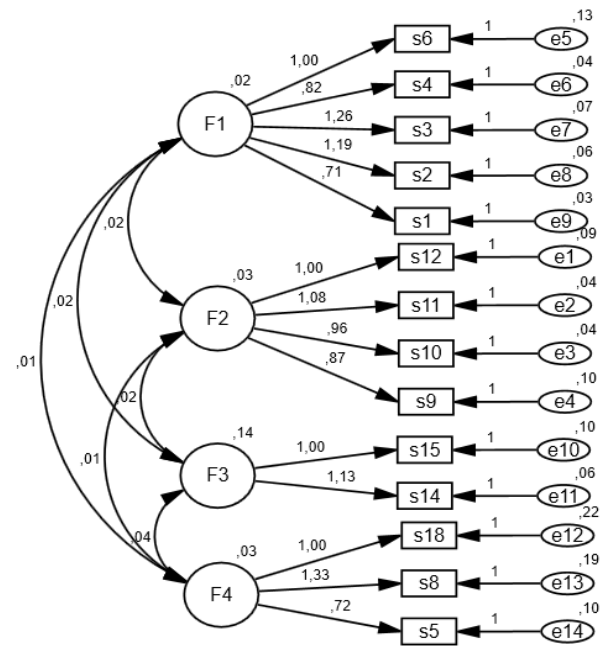
**Evaluation Criteria** Extraction Method: Principal component analysis.  
Rotation Method: Varimax with Kaiser normalization.  
KMO: 0.766  
Bartlett's test of sphericity: (Approx. chi-square: 1072.732 df: 91 p:0.000).  
The eigenvalue is 7.312 and the explained variance is 52.214%.

Additionally, since the explained variance ratio is greater than 50.0%, it has been accepted that the dimensions represent the scale.

The items coded S7, S16, and S17 in the original scale were excluded from the Turkish version of the scale due to their factor loadings being less than 0.500. Additionally, item S13 was excluded from the scale because it showed distribution in two dimensions. As a result, the original English version of the scale with 18

items and 3 dimensions was reduced to a Turkish version with 14 items and 4 dimensions. The dimensions of the scale were named after a concept that represents the items grouped under each dimension.

To test whether the dimensions obtained from the exploratory factor analysis were internally consistent, a confirmatory factor analysis was conducted at the first level. The Amos output of the model is given in Figure 1.



**Figure 1:** Amos output of confirmatory factor analysis of Social Health Scale

**F1:** General social health **F2:** Risky social behaviors  
**F3:** Economic dimension **F4:** Social isolation.

The analysis conducted on the model presented in Figure 1 evaluated the goodness of fit indices of the model. Table 2 shows the lower and upper limits of some goodness of fit measures as well as the goodness of fit indices obtained from the scale.

**Table 2:** The goodness of fit indices for the social health scale model

Index Type	Model Fit Criterion	Good Fit	Acceptable Fit	Model	Result
Absolute Fit Indices	X <sup>2</sup> /df	x <sup>2</sup> /df ≤ 3	x <sup>2</sup> /df ≤ 5	1.921	Good Fit
	GFI	0.90 ≤ GFI ≤ 1	0.85 ≤ GFI < 0.90	0.958	Good Fit
	RMSEA	0 < RMSEA ≤ 0.05	0.05 < RMSEA ≤ 0.08	0.046	Good Fit
	RMR	0 < RMR ≤ 0.05	0 < RMR ≤ 0.08	0.007	Good Fit
Increasing fit indices	CFI	0.95 ≤ CFI ≤ 1	0.90 ≤ CFI < 0.95	0.934	Acceptable Fit
	IFI	0.95 ≤ IFI ≤ 1	0.90 ≤ IFI < 0.95	0.936	Acceptable Fit
	TLI	0.95 ≤ TLI ≤ 1	0.90 ≤ TLI < 0.95	0.916	Acceptable Fit

Source:(24).

When Table 2 is examined, it can be seen that the values of CMIN, GFI, RMSEA, and RMR are in the range of perfect fit, while the values of CFI, IFI, and TLI are in the range of acceptable fit. Accordingly, it can be expressed that the factor structures of the four-dimensional social health scale are in harmony. In other words, the scale provides evidence of construct validity. Table 3 presents the factor loadings, standard errors, C.R values, and p values of the variables included in the scale.

**Table 3:** Regression weights

Variables	Dimensions	Estimate	S.E.	C.R.	P
S12 <---	F2	1.000			
S11 <---	F2	1.082	0.125	8.657	***
S10 <---	F2	0.962	0.115	8.383	***
S9 <---	F2	0.870	0.127	6.834	***
S6 <---	F1	1.000			
S4 <---	F1	0.822	0.140	5.884	***
S3 <---	F1	1.262	0.208	6.073	***
S2 <---	F1	1.187	0.194	6.112	***
S1 <---	F1	0.712	0.124	5.743	***
S15 <---	F3	1.000			
S14 <---	F3	1.133	0.152	7.481	***
S18 <---	F4	1.000			
S8 <---	F4	1.332	0.333	4.001	***
S5 <---	F4	0.719	0.195	3.686	***

The results of the confirmatory factor analysis conducted in the scope of the study are presented in Table 3. When the values are examined, it can be seen that the estimated coefficients ( $p > 0.500$ ), standard error ratios, C.R values ( $C.R > 1.96$ ) at 99% confidence level, and p-values ( $p < 0.01$ ) for the observed variables are at acceptable levels. It was found that all t-values were greater than 1.96, indicating that the relationships between latent and observed variables were significant. Table 4 provides the CR, AVE, and Cronbach's alpha values of the sub-dimensions of the scale.

**Table 4:** CR, AVE, and Cronbach alpha values of scale sub-dimensions

Dimensions	CR (Composite Reliability)	AVE (Average Variance Extracted)	Cronbach Alpha a
General Social Health	0.746	0.373	
Risk Behaviors	0.759	0.445	0.722
Economic Dimension	0.879	0.551	
Isolation	0.623	0.362	

When Table 4 is examined, it can be seen that the general Cronbach Alpha value of the social health scale is 0.772. Since this value is between  $0.70 \leq \alpha < 1.00$ , it is decided that the scale is significantly reliable. According to Hair et al., when the AVE value is less than 0.50 but the CR is greater than 0.60, the construct validity is still achieved. Therefore, it can be stated that the sub-dimensions of the scale have construct validity and reliability (25).

To determine whether there is a significant relationship between the sub-dimensions of the social health scale in the study, a correlation analysis was conducted. According to the findings, all correlations between sub-dimensions were found to be statistically significant, with correlation coefficients ranging from 0.190 to 0.429. When evaluating the correlation coefficients, it can be concluded that there is no multicollinearity problem, as the tolerance values for all variables calculated are below 0.10 and the VIF values are below 10 (26).

## DISCUSSION

According to the findings obtained in the study, it has been confirmed that the Turkish version of the social health scale developed by Johnson et al. has a good level of reliability and validity (22). These results demonstrate that a scale is an appropriate tool for measuring university students' social health behaviors in Turkey. It was observed that the distribution of the sub-



dimensions of the scale and its structural validation were ensured through exploratory factor analysis and confirmatory factor analysis. Furthermore, the CR, AVE, and Cronbach Alpha values obtained from the scale's sub-dimensions also indicate that the scale is valid and reliable.

In the research, the KMO test was conducted to determine whether or not to use exploratory factor analysis. The KMO test ascertains correlations between variables and the appropriateness of factor analysis (23). It is anticipated that the KMO test value will fall between 0 and 1. As the obtained KMO value approaches 1, it is understood that the application of factor analysis is suitable for the scale (25). It has been observed that the KMO value for the Turkish version of the Social Health Scale is appropriate for factor analysis. Johnson et al. found in their study on American students that the KMO value was at a sufficient level (22).

In the study, it was observed in the exploratory and confirmatory factor analysis that the factor loads were greater than 0.50 and are considered adequate within the scope of the literature (24). In the study where the original version of the scale was developed, Johnson et al. determined that the item load values were at an adequate level (22).

In the research, it was identified that the model fit values align very well and that the new version is structurally consistent (27). Johnson et al. stated in their study that model fit values respectively; a CFI greater than 0.95 ( $>0.95$ ), a RMSEA less than .06 ( $<0.06$ ), a WRMR less than .90 ( $<0.90$ ), or no significant chi-square value ( $>0.05$ ) are all indicators of a good model fit (22).

The original scale consists of three subscales, however, in this study, four subscales have emerged. According to Kline and DeVellis, changes in the number of dimensions of a scale can often occur due to the discovery of different sub-dimensions of the measured concept or the combination of conceptually similar dimensions (28,29). Therefore, the number of dimensions of a scale can differ in different languages and cultures, and it does not pose a problem.

The general social health dimension of the scale's subscales includes basic needs such as housing, food, and hygiene in daily life. The risky social behaviors subscale includes expressions that carry serious harm such as alcohol, sexuality, and drug use. The economic dimension includes statements that question the person's financial situation during university life. The isolation subscale covers questions that express situations such as stress, bad internet use, and inability to establish friendships.

It is anticipated that the Social Health Scale, which has been introduced into the Turkish literature through this study, will contribute more to the literature with further research. Additionally, it is expected that examining the social health behaviors of immigrants, health department students, and students from different departments will provide different insights. The information obtained through the scale is important in terms of providing ideas for social and health policies aimed at young people and presenting evidence-based information.

However, there are some limitations to this study that should be acknowledged. First, the sample size was relatively small compared to the total population, which may limit the generalizability of the findings. Second, the study only assessed the validity and reliability of the scale in the Turkey population, and further research is needed to determine its applicability in other cultural and linguistic contexts. Finally, the study did not assess the sensitivity of the scale to changes over time, which may limit its usefulness in longitudinal studies.

In conclusion, the present study provides evidence for the validity and reliability of the translated scale in the Turkey population. The findings of this study have important implications for researchers and practitioners interested in measuring the construct of interest in the Turkey context. Further research is needed to determine the applicability of the scale in other cultural and linguistic contexts and to assess its sensitivity to changes over time.

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*Ethics Committee Approval:* The study protocol was approved by the Artvin Çoruh University Clinical Research Ethics Committee (Date: 31.01.2023, Number: E-18457941-050.99-80533).

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