ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

DOI: 10.5336/medsci.2017-58132

Adaptation of the Scale for Health Promoting Schools to Turkish Society: A Validity and Reliability Study

Sağlığı Geliştiren Okullar Ölçeği'nin Türk Toplumuna Uyarlanması: Geçerlilik ve Güvenilirlik Çalışması

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Received: 25.09.2017
Received in revised form: 22.11.2017
Accepted: 07.12.2017
Available online: 04.04.2018

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This work was presented as an oral presentation at the First International Nursing Conference (16-18 March, Antalya) (ICON - 2017).

ABSTRACT Objective: This study is aimed at adapting the "Scale for Health Promoting Schools (SHPS)" to Turkish society in accordance with the directives of the World Health Organization (WHO) for health promoting schools in 1995 and at determining its validity and reliability. **Material and Methods:** The study was conducted methodologically in the Muratpaşa district of Antalya Province between October 2015 and January 2016. Out of a total of 4350 teachers, 1236 agreed to participate in the study. Two types of socio-demographic characteristics of teachers and SHPS were used. Confirmatory and exploratory factor analyses (CFA and EFA, respectively) were carried out using a principal component analysis with varimax rotation and Kaiser normalization to test its construct validity. We used Cronbach's alpha to examine the SHPS's reliability (internal consistency). **Results:** The CFA did not confirm the original factor model. EFA was performed in order to determine an applicable factor structure as the second stage of analysis. The Cronbach's alpha for the total scale was 0.95, and the subscale alpha coefficients ranged from 0.55 to 0.93. The subscales of the scale were redenominated as the school-community relationship and individual health skills, the school's physical environment, the health policies of the school, health services, the school's nutrition policies, the health system and class structure, and the disciplinary structure of the school. **Conclusion:** The SHPS was found to be valid and reliable, and its psychometric characteristics acceptable. SHPS can be used for comprehensively assessing the needs of schools and monitoring the progress of school health interventions.

Keywords: Health promotion; school health services; nursing methodology study; reproducibility of results

ÖZET Amaç: Bu çalışmanın amacı, Lee ve arkadaşları tarafından (2013) DSÖ'nün 1995 yılında sağlığı geliştiren okullar yönergelerine göre geliştirdikleri "Sağlığı Geliştiren Okullar Ölçeği (SGOÖ)'ni Türk toplumuna uyarlamak ve geçerlik ve güvenirliğini belirlemektir. **Gereç ve Yöntemler:** Bu araştırma, Ekim 2015 - Ocak 2016 tarihleri arasında Antalya İli Muratpaşa ilçesine bağlı tüm okullarda yapılan metodolojik tipte bir çalışmadır. Toplam 4350 öğretmenden 1236'sı çalışmaya dahil edilmiştir. Öğretmenleri tanıtan sosyodemografik özellikler ve SGOÖ olmak üzere iki form kullanılmıştır. Doğrulayıcı ve açıklayıcı faktör analizi (DFA ve AFA, sırasıyla), temel bileşenler analizi ile varimax döndürme yöntemi ve Kaiser normallik testi yapı geçerliğini test etmek için uygulanmıştır. SGOÖ'nün güvenilirliğini incelemek için Cronbach alfa kullanılmıştır (iç tutarlılık). **Bulgular:** DFA uyum indeksi değerlerinin orijinal modeli doğrulamadığı belirlenmiştir. AFA, analizin ikinci aşaması olarak uygulanabilir bir faktör yapısını belirlemek amacıyla yapılmıştır. Ölçeğin genel Cronbach alfa değeri 0,95 ve alt ölçeklerin alfa katsayıları 0,55-0,93 olarak bulunmuştur. Ölçeğin alt boyutları yeniden adlandırılarak; okul-toplum ilişkisi ve bireysel sağlık becerileri, okulun fiziksel çevresi, okulun sağlık politikaları, sağlık hizmetleri, okul beslenme hizmetleri, sağlık sistemi ve sınıf yapısı, okulun disiplin yapısı şeklinde isimlendirilmiştir. **Sonuç:** SGOÖ'nin geçerli ve güvenirli bir ölçüm aracı ve psikometrik özelliklerinin kabul edilebilir olduğu belirlenmiştir. SGOÖ, eğitim kurumlarının durumlarının değerlendirilmesinde ve okul sağlığı müdahalelerinin ilerlemesinin izlenmesinde kullanılabilir.

Anahtar Kelimeler: Sağlığın geliştirilmesi; okul sağlık hizmetleri; hemşirelik metodoloji araştırması; sonuçların tekrarlanabilirliği

The concept of the Health Promoting Schools (HPS) was first identified in the early eighties and has been advocated as an effective approach to promote health in schools.[1] The main objective of Health Promoting Schools Project (HPSP) is to ensure that all individuals in schools have a healthy life standard by bringing practices that protect the health of students into use and improving conditions.[2] HPS develop health promotion for the protection of everyone in the schools, enabling students and all school personnel to be deliberatively involved in the health promotion process, making the school's infrastructure and physical environment suitable for this concept, establishing close relationships with family and community, being based on adult education principles, developing cooperation to provide students, school staff, and families with preventive health services, supporting students, parents, and staff in taking personal responsibility in all relationships to develop their self-esteem, to learn, and to be healthy, caring about the learning process and learning experiences in education, as well as the content, and ensuring that out-of-school activities are considered as a part of developing health.[3]

The evaluation of HPS is a complex and a multi-factor concept. A process, carried out in more than one field, such as the curriculum, school environment, and community, is in question in this context.[4-5] Countries such as India, Korea, Taiwan, Austria, the Lao People's Democratic Republic,[9]China, Hong Kong, Australia, and the Netherlands have prepared comprehensive school health checklists for evaluating the health profiles and conditions of HPS, and they have determined criteria according to the countries.[6-13] Mukoma and Flisher (2004) evaluated HPS, reporting that problems could be revealed by determining the appropriate methods in schools and that studies had shown positive advances in HPS.[4]

In 1995, WHO provided a series of rules for schools that intended to gain the status of HPS. These rules include six fields:

1. School health policies
2. The physical environment of the school
3. The social environment of the school
4. School/community relationships
5. The development of personal health skills
6. School health services.[14]

A scale with a three-factor structure, i.e. health education, routine screenings and environmental conditions, and health protection, was developed by Küçüksüleymanoğlu (2009) in Turkey.[15] The opinions of students studying at schools within the scope of HPSP and those not included in the project about the health applications in their schools were compared by administering this scale. It was determined that there were significant differences between the opinions of students studying at schools that were and those that were not within the scope of HPSP concerning the sufficiency of health education, routine screenings and environmental conditions, and the health protection applications in their schools.[16]

Evaluations were based on six components of HPS used to contribute toward comprehensively assessing the needs of schools and monitoring the progress of interventions about school health. The scale developed by Küçüksüleymanoğlu to evaluate HPS is not adequate because it does not include all the components.[15] The purpose of this study is thus to adapt the "Scale for Health Promoting Schools (SHPS)", which was developed by Lee et al. in accordance with the directives of WHO for HPS in 1995, to Turkish society, and to determine its validity and reliability.[5]

MATERIAL AND METHODS

STUDY DESIGN

The study was conducted methodologically in order to test the validity and reliability of SHPS in Turkey.

PARTICIPANTS

The study was conducted in all primary schools (39), secondary schools (35), and high schools (25) in the Muratpaşa district of Antalya Province between October 2015 and January 2016. The popu-

lation of the study consisted of all public schools (99) affiliated with the District National Education Directorate of Muratpaşa. A sampling method was not used in the study, as all schools were included in the study, and a stratified sampling method was used for choosing teachers. Out of a total of 4350 teachers, 1236 agreed to participate in the study. In methodological studies, sample size is recommended to be five or ten times the variables, i.e. the number of items for testing the validity and reliability of assessment instruments. In this study, the sample size was approximately 33 times the number of items.

INSTRUMENTS

Two types of socio-demographic characteristics of teachers and SHPS were used. The teachers' age, gender, and marital status, the type of school, their duties at the school, the branch, and their period of employment in the profession were evaluated as socio-demographic data. A validity and reliability study of SHPS was conducted by Lee et al. (2013).[5] SHPS is a scale that is evaluated based on the statements of teachers, and it consists of seven subscales and a total of 37 items. The scale consists of the subscales of school nutrition services (3 items), healthy school policies (6 items), the school's physical environment (10 items), the school's social environment (4 items), community links (6 items), individual health skills and action competencies (3 items), and health services (5 items). All the items are evaluated as not at all, a little, moderate, or very much, based on a 4-point Likert scale. The statements corresponding to the quality of schools were enumerated as "not at all=1", "a little = 2", "moderate = 3", and "very much=4" to calculate the scores of the scale. The lowest score obtained by schools using the scale was 37, and the highest score was 148. Higher scores signify high quality health promoting schools, and lower scores signify low quality health promoting schools.

PROCEDURE

The data for the study were collected by the researcher using the face-to-face interview method with teachers at the schools. First, the teachers were informed about the objective of the study. Then, the verbal/written consent of the teachers who agreed to participate in the study was obtained, and the data were collected. It took approximately 15-20 minutes to answer the questionnaires.

DATA ANALYSIS

The analysis and evaluation of the collected data were performed using SPSS and SAS packaged programs for the computer. Language, content validity and construct validity were examined regarding the validity of the scale. Group translation and back translation methods were used for the preparation of the Turkish version. For content validity, the opinions of individuals who are specialists in the field were received, and a confirmatory factor analysis was used for construct validity. An assessment of their expert opinions was performed using the Davis method. In the Davis method, expert opinions are assessed with a four-point rating as: (a) proper, (b) item should be slightly reviewed, (c) item should be seriously reviewed, and (d) improper. In this method, a content validity index regarding the item was obtained by dividing the number of experts who marked options (a) and (b) into the total number of experts. Instead of comparing this value with a statistical criterion, the value of 0.80 is accepted as a criterion.[17] Internal consistency and item total score correlations were examined regarding the reliability of the scale, and the Cronbach's alpha coefficients of the overall scale and its subscales were calculated.

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is applied in order to determine the compliance of a predefined factor model with an observed dataset.[18] The following criteria were assessed to measure compliance in a CFA, as performed for the validity and reliability of SHPS. First, Goodness of fit index (GFI) and adjusted for degrees of freedom (AGFI), which are goodness of fit indexes, were evaluated; these statistics have a value between 0 and 1. A good model indicator for GFI and AGFI is an evaluation exceeding 0.90.[19] Second, values less than

0.05 are accepted as a good fit, and values less than 0.08 are accepted as reasonable values for RMSEA, which is a bad fit index and in which the value 0 shows the perfect fit. While values between 0.08 and 0.10 are a fit indicator at a medium level, values more than 0.10 are not acceptable.[18] Third, chi-square is the fit index whose results are traditionally most often provided in research reports. Chi-square statistics examine compliance with the population covariance matrix and sample covariance matrix, and a significant test result is undesirable, because it means that there is a difference between the matrices. In other words, a $\chi 2$ test needs to be insignificant.[19] Fourth, normed fit index (NFI), which was recommended by Bentler and Bonnett, and is influenced by sample size as a disadvantage, indicates the level of the relevant model's chi-square value, which is lower than the worst-case scenario. NFI has a value in the range of 0-1, and a value closer to 1 indicates a good fit. While 0.95 is an indicator of good fit as a normal rule, values above 0.90 are an acceptable fit indicator.[18] Finally, a comparative fit index (CFI) was used. The value acceptable for a CFI index in a range of 0-1 is 0.90 or higher.[18] In this study, the skewness values of the items were also given, because the values of the fit indexes may deteriorate when there are non-normal distributions in question.

Exploratory Factor Analysis

Researchers can use exploratory factor analysis (EFA) for re-developing a model when a theoretical structure fails in controlling its factor structure with CFA. In this study, EFA was performed in order to determine an applicable factor structure as the second stage of analysis. A principal components analysis was used to determine the factor structure of the 37-item SHPS, and the varimax rotation method was used in order for the factors to be interpreted more easily. The Bartlett test was used to test whether or not the correlation matrix was a unit matrix and to decide the appropriateness of using the factor model according to the result. The Kaiser-Mayer Olkin (KMO) index was used for the sufficiency of the sample size.

ETHICAL CONSIDERATIONS

This study was approved by the institutional review board of the clinical trials ethics committee of the university where the researchers work (approval no. AU-2015-150). Written permission was received from the Antalya Province Directorate of National Education in order to conduct the study at the relevant schools. The teachers who participated in the study were informed about the study, and their written consent was provided. In order to conduct a Turkish adaptation study of SHPS, permission was obtained from the researchers by contacting Eun Young Lee, an academic member of Hanyang University in Korea, via e-mail (dreylee@hanyang.ac.kr).

RESULTS

SOCIO-DEMOGRAPHIC CHARACTERISTICS

It was found that 51.0% of the teachers constituting the sample group were male, their average age was 42.5 ± 8.3 (min: 21, max: 61), and more than half (75.1%) were single. Among the teachers, 32.5% worked at secondary schools, 27.2% at primary schools, 21.0% at vocational and technical high schools, and 19.3% at Anatolian high school, and the mean duration of employment was 19.2 ± 8.0 years (min: 1, max: 35). Most of the participants were working as teachers (79.1%), but 10.4% were vice-principals, 5.3% were principals, and 5.2% were guidance and psychological counselors.

DESCRIPTIVE STATISTICS OF THE SCALE FOR HEALTH PROMOTING SCHOOLS

the items of the scale and the descriptive statistics based on data examined before a validity and reliability analysis of the scale. It was determined that the mean scores of the answers given by the teachers for 37 items about schools participating in SHPS varied between 1.95 ± 1.17 and 3.51 ± 0.65; the values of skewness varied between -1.30 and 0.77 (Table 1).

LANGUAGE VALIDITY

The language validity study aimed to achieve Turkish equivalents of the items in the scale. The ex-

TABLE 1: Items and descriptive statistics of the scale for health promoting schools.

	Items	Mean ± SD	Skewness
I1	School foods are prepared in accordance with hygiene rules.	3.06 ± 0.73	-0.73
I2	Foods served at school provide a balanced nutrition (in terms of protein, carbohydrates, fat, vitamins, minerals, water)	2.85 ± 0.88	-0.63
I3	Teachers are role models for students by consuming healthy food at school.	2.82 ± 0.86	-0.10
I4	Students are provided with education on the harm from smoking and on smoking cessation.	2.84 ± 0.97	-0.40
I5	Records of student medical conditions and drug use/management are kept by the school administration.	2.08 ± 0.94	0.44
I6	There are sufficient number of first aid materials available for all the personnel and students at school.	2.59 ± 0.85	-0.23
I7	First aid training is provided for teachers.	2.26 ± 0.94	0.17
I8	The school has a transfer system (e.g. ability to call an ambulance and transfer a patient to a medical institution using the school's own facilities) in emergencies (e.g. accident, injury, disaster)	2.77 ± 1.12	-0.36
I9	Families are informed about the medical screening results of their children	2.47 ± 1.08	0.08
I10	Safe and clean drinking water is available at school.	3.06 ± 0.97	-0.68
I11	There are an adequate number of clean toilets for students.	3.18 ± 0.86	-0.72
I12	Renewable resources (paper, glass, metal, batteries, and plastic) are recycled.	3.21 ± 0.84	-0.71
I13	Students participate in activities to keep the school clean.	2.61 ± 0.89	-0.14
I14	There is adequate ventilation in all areas of the school.	3.21 ± 0.80	-0.56
I15	Each classroom has adequate illumination.	3.51 ± 0.65	-1.30
I16	It is possible to heat and cool the school when necessary.	3.48 ± 0.71	-1.26
I17	Windows and doors in classrooms and hallways are double-gazed.	2.99 ± 1.07	-0.58
I18	There are extra lamps for boards.	1.95 ± 1.17	0.77
I19	Furniture and other service tools in school meets the needs of students with a different anatomy.	2.53 ± 1.00	-0.02
I20	Students are encouraged to involve themselves actively in the learning process.	3.32 ± 0.74	-0.79
I21	Teachers do not impose a strict discipline including physical or verbal abuse.	2.75 ± 1.07	-0.41
I22	The school actively does not approve physical and verbal violence among students.	3.15 ± 1.13	-0.93
I23	The school provides assistance to families so that they display a positive attitude towards the skills of the students.	3.06 ± 0.77	-0.42
I24	Families are involved in the decision-making process regarding the planning of appropriate activities regarding health promotion	2.61 ± 0.85	0.23
I25	The school presents activities for health in which children and families come together.	2.49 ± 0.95	0.14
I26	The school cooperates with local groups regarding organisations for child, adolescent, and community health and therefore gets them involved in the school's activities.	2.64 ± 0.87	-0.03
I27	Students and teachers regularly participate in regional activities.	2.57 ± 0.86	-0.04
I28	The school administration informs local people about medical interventions.	2.25 ± 0.98	0.25
I29	The school administration presents health-related activities for local people.	2.25 ± 0.93	0.29
I30	Health education consists of the management of daily health behaviours (skills) of the students.	2.71 ± 0.82	-0.07
I31	Students have the opportunity to gain skills in important health-related behaviours (e.g. not smoking tobacco).	2.66 ± 0.85	-0.22
I32	Students gain competence to improve their own health and welfare.	2.61 ± 0.80	-0.11
I33	Students are administered with proper vaccinations.	3.24 ± 0.99	-1.12
I34	Students undergo medical screenings (e.g. eyes, teeth, hygiene), which are appropriate for their development	2.87 ± 0.97	-0.47
I35	Proper oral and dental health services are provided.	2.36 ± 1.15	0.15
I36	There are psychological counselling and assistance services available for students with social, emotional or medical problems.	3.18 ± 0.81	-0.79
I37	Health professionals provide training programmes on appropriate subjects (e.g. physical evaluation, hypertension management, and first aid) for teachers.	2.32 ± 1.00	0.21

perts were individuals who not only have a command of both languages, but also have experience in the study field.[20] First, permission was obtained by contacting Lee, one of the authors who developed the scale, via e-mail for language validity. The back-translation method was then used to test the language validity of SHPS. Items on the scale were translated into Turkish by the researchers and by three English linguists. A Turkish questionnaire, prepared by the researchers choosing the most appropriate statements from the Turkish translations of the items on the questionnaire, was presented for expert opinion, and SHPS was put into its final form in accordance with the recommendations received. The scale was back translated into English by a linguist with command of both languages and cultures, who had not previously seen the English version of the questionnaire and whose native language was Turkish, and it was once again sent via e-mail to Lee, whose consent was obtained.

CONTENT VALIDITY

The translation of SHPS was completed and presented for the opinions of 12 experts (public health nursing, pediatric nursing, and educational sciences) to evaluate the content validity. The experts were asked to assess each item in terms of language validity for Turkish society, clearance, and comprehensibility. The CVI value of each item composing the SHPS is at a minimum 0.91 and at a maximum 1, and the general CVI for SHPS was calculated as 0.99. Differences of opinion between the experts were examined via Kendall's coefficient of concordance, and no statistically significant differences were found between the scores that the experts gave to the items of the scale (W: 0.281, p=0.073).

CONFIRMATORY FACTOR ANALYSIS

The seven-factor structure obtained from the original study was tested first within the scope of the confirmatory factor analysis. Statistics of goodness-of-fit in CFA need to be at the desired level for the structural validity of the scale. When the fit indexes obtained as a result of the analysis were examined, it was found that $\chi 2$=11484.51, $\chi 2$/df=602, p=0.001, RMSEA=0.12, GFI=0.63, AGFI=0.57, CFI = 0.65, NFI = 0.64, and NNFI = 0.62 (Table 2). It was understood that the fit index values did not confirm the original model, there was no concordance between the observed data, and the recommended model did not show an acceptable fit. These results revealed the fact that the scale structure of the model needed to be re-constructed with EFA and re-developed.

EXPLORATORY FACTOR ANALYSIS

A Kaiser-Meyer-Olkin analysis was applied to assess whether or not the sample of the SHPS was sufficient for factor analysis, and a Bartlett's test of sphericity (BTS) analysis was used to evaluate whether or not the sample was appropriate for factor analysis. The KMO test result was 0.90, the BTS test result was 32052.32, and the sample sufficiency and sample size were determined to be suitable for conducting the study (Table 3).

A principal components analysis and the varimax rotation method were used to determine the construct validity of the scale. The result of the scree test indicated that limiting the number of subscales to seven was appropriate, as in the original scale. An analysis performed by limiting the

TABLE 2: Confirmatory factor analysis consistency values of the scale for health promoting schools.

Goodness of fit index (GFI)	0.63
GFI adjusted for degrees of freedom (AGFI)	0.57
Chi-square	11484.51
Chi-square DF	602
Pr > Chi-square	< 0.001
RMSEA estimate	0.12
RMSEA 90% lower confidence limit	0.11
RMSEA 90% upper confidence limit	0.12
Bentler's comparative fit index	0.65
Bentler & Bonett's (1980) non-normed index	0.62
Bentler & Bonett's (1980) NFI	0.64

TABLE 3: Kaiser-Meyer-Olkin and Bartlett's tests.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.905
Bartlett's Test of Sphericity	Approx. Chi-Square	32052.32
	df	666
	Sig.	< 0.001

number of subscales to seven showed that the eigenvalue of each subscale was determined to be higher than 1. All the items were included in the factor analysis, and an evaluation of the 37 items was conducted. The factor loadings of the items found in the obtained subscales were ranked from largest to smallest, and the factor loadings were observed to vary between 0.85 and 0.34. The analysis showed that even though the order of the subscales was not the same as in the original scale, its structure was similar to the original structure. According to the principal components analysis and the varimax rotation method, the majority of items were not found under the same subscales as in the original scale, but were replaced; the number of items in the subscales also changed. It was therefore necessary to redenominate the subscales (Table 4).

The inter-factor correlation coefficient and the p values when examined mean scores of the factors varied between 5.91±1.84 and 33.35±8.73, the school's physical environment had the highest mean score, and healthy school policies had the lowest mean score. The correlation coefficients of the factors were found to vary between 0.10-0.88, and all the correlations were significant ($p < 0.001$) (Table 5).

INTERNAL CONSISTENCY ANALYSIS

The Cronbach's alpha internal consistency coefficient in the sum of the scale was determined to be 0.95 in the analysis performed to determine the internal consistency of the measurements obtained from the scale. Along with the redenomination of the subscales, their values

TABLE 4: Subscale distribution and factor loadings of items of the scale for health promoting schools.

	Factors	Items	Factor loadings	% Of variance accounted for after rotation	Cumulative variance	Cronbach's alpha
F1	School/community relationship and individual health skills	I25 I29 I24 I28 I26 I37 I27 I32 I31 I30 I13 I23 I19	0.85 0.81 0.76 0.75 0.71 0.67 0.65 0.61 0.58 0.57 0.53 0.52 0.39	19.58	19.58	0.93
F2	School's physical environment	I16 I11 I15 I14 I10 I20 I12	0.76 0.69 0.67 0.66 0.66 0.55 0.41	12.42	32.00	0.87
F3	Healthy school policies	I4 I6 I7 I5	0.54 0.54 0.50 0.43	7.73	38.73	0.73
F4	Health services	I34 I33 I35 I36	0.69 0.68 0.63 0.34	6.44	45.17	0.83
F5	School nutrition services	I1 I2 I3	0.53 0.53 0.53	5.13	50.31	0.73
F6	Health system and class structure	I18 I17 I8 I9	0.51 0.51 0.51 0.44	4.68	54.98	0.64
F7	Disciplinary structure of school	I21 I22	0.61 0.50	3.06	58.04	0.55

TABLE 5: Subscale values of the scale for health promoting schools (SHPS) and correlation coefficients between factor groups.

Latent variable	Number of items	Mean ± SD	SHPS	F1	F2	F3	F4	F5	F6	F7
SHPS	37	102.63 ± 19.59	…							
F1	13	33.35 ± 8.73	0.88**	…						
F2	7	22.99 ± 4.23	0.72**	0.43**	…					
F3	4	9.79 ± 2.79	0.77**	0.66**	0.53**	…				
F4	4	11.66 ± 3.23	0.81**	0.68**	0.52**	0.56**	…			
F5	3	8.75 ± 2.02	0.67**	0.56**	0.45**	0.50**	0.46**	…		
F6	4	10.19 ± 3.11	0.64**	0.43**	0.41**	0.37**	0.52**	0.40**	…	
F7	2	5.91 ± 1.84	0.34**	0.10**	0.39**	0.20**	0.23**	0.13**	0.21**	…

**p < 0.001

SHPS: Scale for health promoting schools.

were found to be 0.93 for school-community relationship and individual health skills; 0.87 for the school's physical environment; 0.83 for health services; 0.73 for the health policies of the school; 0.73 for the school nutrition services; 0.64 for health system and class structure; and 0.55 for the disciplinary structure of the school (Table 4).

DISCUSSION

LANGUAGE AND CONTENT VALIDITY

Translation was given due attention to ensure that the scale was comprehensible in Turkish, as the persons translating the scale from English to Turkish had a command of both languages and cultures to ensure both the language and content validity.[21] Although the literature claims that the Lawshe and Davis methods are frequently used for content validity, the Davis method was used in this study. In this method, a CVI is obtained, and a value of. 80 is accepted as a criterion instead of comparing this value with a statistical criterion.[22,23] In this study, it was determined that as a result of the opinions obtained from 12 experts, the CVI values of the scale items had values ranging between 0.91 and 1.00, and the general CVI of the scale was 0.99. Kendall's coefficient of concordance was also examined for content validity, and the scores of the experts were seen to be concordant in the analysis (W: 0.281, p = 0.073). There was thus agreement between the experts, no items were omitted from the scale, and the scale was considered to reflect the field required to be measured.

CONFIRMATORY FACTOR ANALYSIS

A confirmatory factor analysis was first performed in order to test whether or not the structure determined in the original study was compatible with the Turkish sample, whether or not it was sufficiently represented in the determined subscales, and whether or not it was sufficient to explain the structure of the scale.[24] In this analysis, the goodness of fit indexes were examined in order to evaluate the model's fit. There is no definite consensus about which of the numerous goodness of fit indexes must be reported.[24] The results of chi-square, chi-square/degree of freedom ($\chi 2$/sd), RMSEA, GFI, AGFI, CFI, NFI, and NNFI, which are among the frequently used fit indexes, were reported in this study. Although there is some flexibility in the goodness of fit indexes, the results of the study were compared with the accepted values, and it was determined that the original structure of the scale did not show sufficient fit. This meant that the scale structure of the model needed to be reconstructed with EFA and re-developed.

EXPLORATORY FACTOR ANALYSIS

Before the exploratory factor analysis, the KMO value and the Bartlett's test results were examined in terms of sample adequacy. The fact that the KMO value is between 0.90-1.00 indicates that the sample adequacy is perfect for analysis, and the sig-

nificant result of the Bartlett's test signifies that the items found in the scale are appropriate for the performance of a factor analysis.[25,26] Accordingly, the results of the KMO (0.90) and the Bartlett's test ($\chi 2$ =32052.32, df=666, $p < 0.001$) were found to be significant, and the sample size of the study was sufficient for factor analysis.

Principal components analysis, which is most frequently and commonly used for performing EFA and is reported to be relatively easy to interpret, and the varimax rotation method, which is one of the most frequently used vertical rotation techniques, were employed.[27] The analysis showed that the higher the total variance explained by the factors, the stronger the factor structure of the scale.[25] While at least 30% of the total variance is expected to be explained in single factor scales, this rate is required to be higher in structures with more than one factor.[27] Seven factors in this scale explain most of the total variance (59.04%), and therefore, it can be asserted that the factor structure is strong.

The first criterion in the factor analysis is that the loading values of items within the factors must be high. In the literature, a correlation value lower than 0.30 indicates that the items are insufficient, but items between 0.30 - 0.40 could be included in the scale where necessary, and items higher than 0.40 indicate that their distinguishing characteristics are good.[27] In this study, all the items were included in the study, because none of the items had an item-total score correlation value lower than 0.30, and there were two items between 0.30 and 0.40. This result signified that all the items measured the same attitude. Another criterion is that the items must have a high loading value in only one factor and a low loading value in the other factors.[27] Such a condition was not encountered in this study.

The factor structure validity of the scale was assessed with EFA. Factor analysis is used for scales, with subscales separate from the total score. Each subscale is named as a factor. This process is performed to evaluate whether or not the items in the scale were collected under different subscales.[23] According to the factor analysis performed in the original study of the scale, it was determined to consist of a total of seven subscales. As in the original scale, seven factors with eigenvalues higher than one in the item number of subscales according to the results of the EFA were also obtained in this study; however, it was noted that as in the original scale, the majority of items were not under the same subscales, but were replaced, and the item numbers of the subscales also changed. It was therefore necessary to redenominate the subscales.

The subscale "***school nutrition services***" in the original scale was observed to be the same, and nothing was changed. Items I8 and I9 in the subscale "*healthy school policies"* were omitted in the original scale and were replaced under another factor (F6), and the name remained the same, "***healthy school policies***". I13 and I19 from the items in the subscale "*school's physical environment*" in the original form were replaced with F1, and I17 and I18 were replaced with F6. The item "*students are encouraged to actively participate in the learning process*" (I20) under "*school's social environment*" was also replaced in this subscale. The name was not changed, however, and this subscale remained as "***school's physical environment***". The combination of I8 and I9, omitted from the subscale "*Healthy school policies",* and I17 and I18, omitted from the subscale "*school's physical environment*", created a new factor (F6), and this factor was also named "***health system and class structure***". I20 in the subscale "*school's social environment*" was found in the original scale and was replaced by the subtype "*physical environment of school*"; I23 was replaced by F1, and the remaining items, I21 and I22, were redenominated as "***disciplinary structure of school***", creating a new factor. Items in the subscale "***health services***" in the original scale remained the same, and only I37 was omitted and was replaced by F1. The name of the subscale remained the same. The subscales "*community links"* and *"individual health skills and action competencies"* in the original scale were joined under a single factor (F1) as a result of the analysis. Items I13, I19, I23, and I37, which were omitted from the other subscales, were also gathered under this factor. This factor was therefore given a new name, "***school/community relationship and individual health skills***".

The correlations among the total scores of the subscale and the factors belonging to this scale were examined if there were subscales/factors in the scales or if the scale was in a battery form consisting of subscales. A scale may be unidimensional (single factor) or multidimensional (multi-factor). The correlation coefficient of numerous items seems to be low when examining the correlation between the general total score and the items in the multi-factor scales. The item-total score correlation was high in scales with only one subtype.[26] It was found that the correlation coefficients of the factors varied between 0.10-0.88, and all the correlations were significant ($p < 0.001$). Another measure of the internal consistency of the scale is the significance of the correlations between the subscales comprising the scale. The fact that these correlations are significant signifies that the subscales comprising the scale were not independent of each other.

INTERNAL CONSISTENCY ANALYSIS

Two basic criteria that are required for the reliability of an assessment instrument are consistency between the answers (scores) obtained at different times and consistency between the answers obtained.[23] A Cronbach's alpha analysis is commonly used, especially for Likert-type scales, to determine the internal consistency of measurements obtained from the scale, and it was used here.

The Cronbach's alpha coefficient is determined by dividing the total variances of the scale items by the general variance, and the closeness of the coefficient to 1 indicates that this scale is consistent and consists of items predicting the same characteristic. If the Cronbach's alpha value was $0.40 \leq \alpha < 0.60$, the scale is accepted as a scale with *low reliability*; if it was $0.60 \leq \alpha < 0.80$, it was *fairly reliable*, and if it was $0.80 \leq \alpha < 1.00$, it was *highly reliable*.[23,25] In this study, the fact that the Cronbach's alpha value of SHPS was 0.95 indicated that the study was *highly reliable*. It was found to be 0.97 in the original scale.[5] This shows that the internal consistency of SHPS was high, and it was also in parallel with the original study. Regarding its subscales, it was observed that school-community relationship and individual health skills (0.93), school's physical environment (0.87), and health services (0.83) were highly reliable; the health policies of the school (0.73), the school nutrition services (0.73), and the health system and class structure (0.64) were fairly reliable; and the disciplinary structure of the school (0.55) had low reliability. It was thought that the reason the disciplinary structure of the school had low reliability was that there were only two items loaded to this factor.

CONCLUSIONS

This study determined, by examining the validity and reliability of SHPS, that the goodness of fit indexes of the original 37-item structure of the scale did not confirm the structure of the scale. A new structure was created by once again performing an EFA, and the results of the analysis showed that the scale was a valid and reliable tool. The Cronbach's alpha value of the overall scale was found to be 0.95. The subscales of the scale were redenominated as school-community relationship and individual health skills, school's physical environment, health policies of the school, health services, school nutrition policies, health system and class structure, and disciplinary structure of the school.

SHPS can be used to comprehensively assess the needs of schools and to monitor the progress of the schools' health interventions. This scale will contribute to the expansion of knowledge regarding health promotion in school settings in both research and practice. Because this study was conducted in a district located in the city center of Antalya, one of the most developed provinces of Turkey, it is recommended that the study be conducted again in different rural and urban areas to evaluate its validity and reliability, and to assess the qualifications of schools in terms of health by using the scale in cooperation with educational institutions.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that

provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Selma Öncel, Adem Sümen;* ***Design:*** *Selma Öncel, Adem Sümen;* ***Control/Supervision:*** *Selma Öncel;* ***Data Collection and/or Processing:*** *Adem Sümen;* ***Analysis and/or Interpretation:*** *Selma Öncel;* ***Literature Review:*** *Selma Öncel, Adem Sümen;* ***Writing the Article:*** *Selma Öncel, Adem Sümen;* ***Critical Review:*** *Selma Öncel;* ***References and Fundings:*** *Selma Öncel, Adem Sümen;* ***Materials:*** *Selma Öncel, Adem Sümen*

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