Clinical and Experimental Health Sciences

Original Article / *Özgün Araştırma*

Assessment of Reliability and Validity of the Parental Sun Protection Scales in Turkish Population*

Ebeveyn Güneşten Koruma Ölçekleri'nin Türk Toplumunda Geçerlik ve Güvenirliğinin Değerlendirilmesi

Adem Sümen[1], Selma Öncel[2]

[1] Department of Public Health Nursing, Kumluca Faculty of Health Sciences, Akdeniz University, Antalya, Turkey
[2] Department of Public Health Nursing, Faculty of Nursing, Akdeniz University, Antalya, Turkey

ORCID IDw of the authors: A.S. 0000-0002-8876-400X, S.Ö. 0000-0002-1882-1793

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ABSTRACT

Objective: This study was aimed at adapting the "Parental Sun Protection Scales (PSPS)" in Turkish society and at determining its validity and reliability.

Methods: It was conducted methodologically in the kindergartens affiliated with Antalya-Manavgat District Directorate of National Education between May-June 2016. 974 individuals of 635 parents with children agreed to participate in the study which two forms as descriptive socio-demographic characteristics of the parents and PSPS were used. The scale were statistically tested by computing the language validity, content validity, internal criterion validity, construct validity, internal consistency analysis, test-retest analysis and item analysis.

Results: As a result of the screen test, the number of subscales was observed to be divided into four factors as in both original scales. The general Cronbach's alpha value of "Scale of the Use of Sunscreen Products" and "Sun Avoidance Scale" were found as 0,84. Among the subscales that Norms/Attitudes for the Use of Sunscreen Products (0,90), Self-Efficacy of Sun Avoidance (0,90), Norms/Attitudes for Sun Avoidance (0,87), Self-Efficacy of the Use of Sunscreen Products (0,86), and Tanning Expectancies (0,81) were highly reliable and Expectancies for the Use of Sunscreen Products (0,79), Expectancies for Sun Avoidance (0,79), and Impediments to the Use of Sunscreen Products (0,76) were likewise reliable. All of these scales can be used together or individually.

Conclusion: The PSPS, the results of the analyses showed that the scales are valid and reliable tools for Turkish Society. PSPS can be used to assess the parents' status of using sunscreen products for their children and their status of sun avoidance.

Keywords: Use of sunscreen products, sun avoidance, parents, child, methodological study, Turkey

ÖZ

Amaç: Bu çalışmanın amacı, "Ebeveyn Güneşten Koruma Ölçekleri (EGKÖ)"ni Türk toplumuna uyarlamak, geçerlik ve güvenirliğini saptamaktır.

Materyal Metot: Metodolojik tipteki bu araştırma, Mayıs-Haziran 2016 tarihleri arasında, Antalya-Manavgat İlçe Milli Eğitim Müdürlüğü'ne bağlı anaokullarına devam eden çocukların ebeveynleri ile yürütülmüştür. Araştırmaya toplam 974 ebeveynden 635'i katılmayı kabul etmiş olup veriler Sosyo-demografik özellikler formu ve EGKÖ ile toplanmıştır. Ölçeğin istatiksel işlemleri için dil geçerliği, kapsam geçerliği, iç ölçüt geçerliği, yapı geçerliği, iç tutarlık analizi, test-tekrar test analizi ve madde analizleri kullanılmıştır.

Bulgular: Açıklayıcı faktör analizine göre alt ölçek sayısının her iki orijinal ölçekte olduğu gibi dörder faktöre ayrıldığı görülmüştür. "Güneş Koruyucu Ürün Kullanımı Ölçeği" ve "Güneşten Kaçınma Ölçeği"nin genel Cronbach's alfa iç tutarlık katsayısı 0.84 bulunmuştur. Alt boyutlarda Güneş Koruyucu Ürünlerin Kullanımıyla İlgili Normlar/Tutumlar (0.90), Güneşten Kaçınma Öz-Yeterliliği (0.90), Güneşten Kaçınmayla İlgili Normlar/Tutumlar (0.87), Güneş Koruyucu Ürünlerin Kullanımı Öz-Yeterliliği (0.86), Bronzlaşma Beklentileri (0.81) yüksek derecede güvenilir; Güneş Koruyucu Ürün Kullanımıyla İlgili Beklentiler (0.79), Güneşten Kaçınma Beklentileri (0.79) ve Güneş Koruyucu Ürünlerin Kullanımıyla İlgili Engeller (0.76) ölçeklerinin de oldukça güvenilir olduğu belirlenmiştir. Bu ölçeklerin tamamı birlikte veya her biri ayrı ayrı da kullanılabilir.

Sonuç: Bulgular EGKÖ'nin Türk toplumunda geçerli ve güvenilir bir ölçme aracı olduğunu göstermiştir. EGKÖ ebeveynlerin güneş koruyucu ürün kullanımı ve güneşten kaçınma durumlarını değerlendirmek için kullanılabilir.

Anahtar Kelimeler: Güneş koruyucu ürün kullanımı, güneşten kaçınma, ebeveyn, çocuk, metodolojik çalışma, Türkiye.

INTRODUCTION

Skin cancer is drawing attention with its increasing incidence in the world and in Turkey. It has been reported that the lifetime incidence is one in every 39 males and one in every 58 females (1). The most important factor in the etiology of skin cancer is ultraviolet (UV) rays (2). In recent years, people are exposed to UV rays more intensively due to the fact that the ozone layer has become increasingly thinner which forms an important risk factor for skin cancer (3).

Correspondence Author/Sorumlu Yazar: Adem Sümen **E-mail/E-posta:** ademsumen@akdeniz.edu.tr

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Reducing the exposure of people to UV radiation in sunlight by developing positive behaviors in sun protection is the most important part of reducing the burden of skin cancers to public health (4). The effects of UV on human health have increased due to the tanning which has become fashionable among the people, the psychological effect of good appearances, and models of familial behavior (for example, the opinion that tanned skin is healthy and this opinion become widespread), increased holiday and similar activities (5, 6).

Due to the importance of sunlight exposure during the childhood in the development of skin cancer, parents should protect their children from sunlight and related instructional programs should be presented in schools and non-formal education institutions in this period (7). This is because parental behaviors are important for protecting children from the sun, and families can be a positive role model with their behaviors and attitudes for their children (8-10). The studies have revealed that sun protection programs are effective in creating public awareness about the negative effects of sunlight on health, but they remain very ineffective in changing the behavioral pattern (11).

Nurses play an important role in early diagnosis and prevention of skin cancer. They accomplish this by teaching the children and their families the purpose and importance of the sun protection to. Due to the fact that the sun exposure especially takes place during childhood, the early development of sun protection awareness and the education of the families are extremely important (12). The studies conducted in Turkey have revealed that especially knowledge, attitudes, and behaviors of children about sun protection are related to parent's education and monthly income level, children's period of time in the and their sunburn history. It is reported in these studies that sunlight protection applications are inadequate, children's parents should be educated about sun protection, and the awareness of the parents with high educational level should be raised (13). It has been emphasized in some studies that families should be focused in order to change the sun protection behaviors of young children in the prevention of skin cancer (14-16).

Melanoma is a type of skin cancer; it arises due to uncontrolled proliferation of melanocytes. It is most lethal when it progresses into advanced stages and metastatic melanoma is considered as one of the deadliest types of skin cancers (17). By proving the effect of intense UV rays exposed during childhood on the development of skin cancers especially melanoma, it has been understood that the sun protection should be a lifestyle as from childhood ages (18). Sun protection should be recommended to all children regardless of their skin phototypes. Regular sun protection in childhood and adolescence reduces the lifetime incidence of skin cancer. Since habits acquired in childhood will be easier to acquire, appropriate sun protection habits should be given in childhood through various educational campaigns (19). While many cancers have to do with genetic mutations, skin cancer simply results from the overexposure to the sun, and the risk could be greatly reduced by applying a sunscreen-containing moisturizer every day. Growing of young population, who are currently living and will live in a sunny country, as healthy individuals depends on right information and habits they acquire in the early period. For this reason, childhood is important to reduce sun exposure and the risk of skin cancer in children, trainings made on parents constitute the focus of the studies. Starting from this essence, the purpose of the study is to adapt "Parental Sun Protection Scales (PSPS)" developed by Tripp et al. (2003) (20) into Turkish society and to test its validity and reliability.

Methods

Participants

This study was conducted methodologically to test the validity and reliability of PSPS, developed by Tripp et al. (2003), in Turkish society (20). The study was conducted in the kindergartens affiliated with Antalya-Manavgat District Directorate of National Education between May-June 2016. The population of the study consisted of the parents of the children attending the kindergartens affiliated with the Antalya-Manavgat District Directorate of National Education. Sampling method was not used in the study, the parents of 974 students who were attending the kindergartens and voluntary to participate in the study were included in the study. It is suggested in the methodological studies that the sample size should be between at least five and ten times of the number of variables namely number of items in testing the validity and reliability of the assessment instrument. In this study, 635 parents participated in the study, the sample size was about 16 times higher than the number of items in the scale (38).

Measures

Two forms as descriptive socio-demographic characteristics of the parents and PSPS were used. Age, gender, number of children, educational status, and income status of the parents were evaluated as socio-demographic data. The PSPS was developed to by Tripp et al. (2003) (20). PSPS consists of two forms including a 20-item "Scale of the Use of Sunscreen Products (SUSP)" and an 18-item "Sun Avoidance Scale (SAS)". Each of the scales consist of four subscales and questions parents' self-efficacy, expectancies, norm/attitudes, and impediments related to the use of sunscreen products and sun avoidance. The Self-Efficacy of the Use of Sunscreen Products (USPS-E) consists of 5 items, Norms/Attitudes for the Use of Sunscreen Products (USPN/A) consists of 6 items, Expectancies for the Use of Sunscreen Products (USPE) consists of 6 items and Impediments to the Use of Sunscreen Products (USPI) consists of 3 items in products; The Self – Efficacy of Sun Avoidance (SAS-E) consists of 5 items, Norms/Attitudes for Sun Avoidance (SAN/A) consists of 4 items, Tanning Expectancies (TE) consists of 4 items and Expectancies for Sun Avoidance (SAE) consists of 5 items in PSPS. Responses to items related to psychosocial dimensions of norms/attitudes, expectancies, and impediments are based on a five-point Likert scale ranging from "I strongly disagree" to "I strongly agree". Responses to items related to the self-efficacy subscale range from "I'm not sure" to "I'm extremely sure". To calculate the scores of the scale, the items are numbered from 1 to 5. Each subscale will be evaluated within itself in the scales and it is expected that the scales of USPS-E, USPN/A, USPE, SAS-E, SAN/A, and SAE scales have high scores and USPI and TE scales have low scores.

Procedure

The data of the study were collected by the researcher through face-to-face interviews with the parents also with the help of teachers in the kindergartens. Firstly, the parents were informed about the aim of the study and the data were collected after obtaining the written consents of the parents who agreed to participate in the study. I took approximately 15-20 minutes to answer the forms. For test-retest reliability, the scale was administered again to 93 participants in one of the schools two weeks later.

Data analysis

Statistical analysis of the data was carried out in the computer environment by using Statistics Base V 23 version of SPSS (Statistical Package for Social Sciences Inc.; Chicago, IL, ABD). The data assessment processes were carried out in the six steps indicated in Figure 1 and by using the analysis methods given in Figure 2.

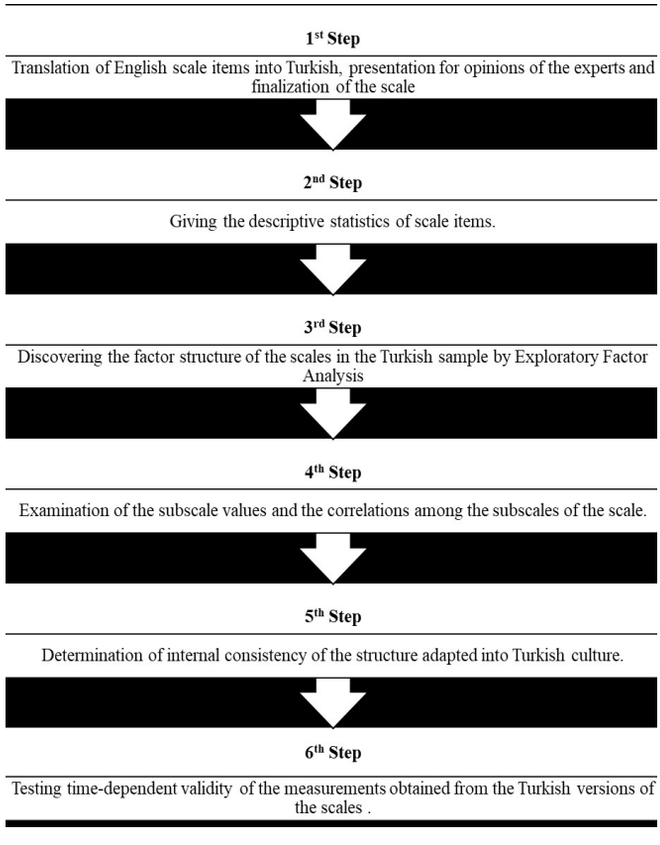

Figure 1: Evaluation steps of PSPS data.

Ethical considerations

Before the study, a written permission was obtained from the Antalya Provincial Manavgat District Directorate of National Education for the purpose of conducting the study in the related schools. This study was approved by the institutional review board of the Akdeniz University Medical Faculty Clinical Research Ethics Committee. The parents who participated in the study were informed about the study and their written consents were obtained. In order to adapt the PSPS into Turkish, permission was obtained by contacting with Scott C. Carvajal, one of the researchers, via e-mail (scott.carvajal@arizona.edu).

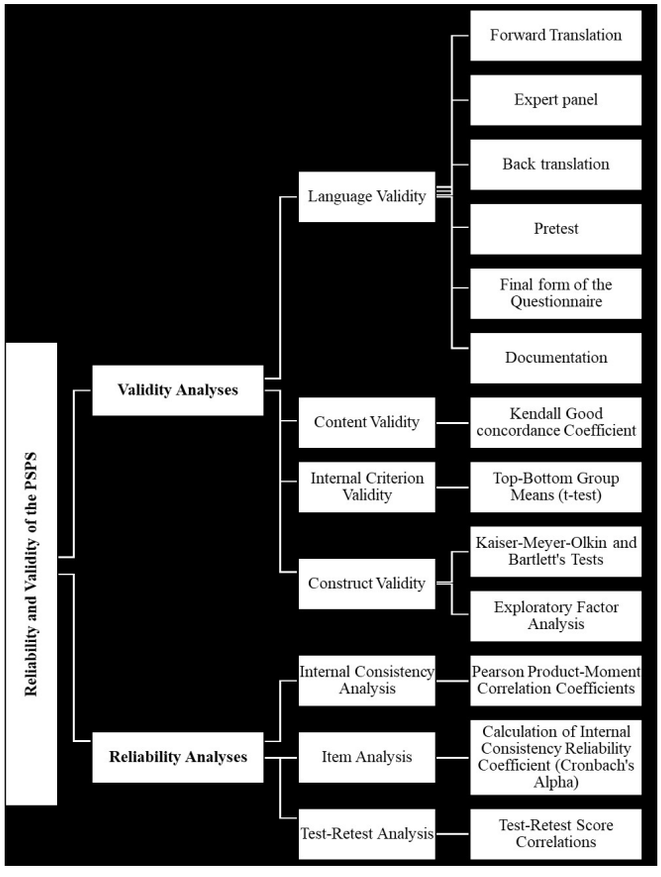

Figure 2: Analyses used for validity and reliability study of PSPS.

Results

Socio-demographic characteristics

It was found that 84,9% of the parents constituting the sample group were female, 29,9% were high school graduates, 24,4% were secondary school graduates, their average age was 33,9±6,2 (min:25, max:55) and more than half of them (65,2%) had an income equal to expense. 54,3% of the parents had two children and more than half of the children attending the kindergartens (54,2%) were the first-born children. The validity and reliability study of the scale was performed in six steps.

1st Step: Language and content validity

Firstly, the permission was obtained from Scott C. Carvajal, one of the authors developing the scale (20), by contacting with him via e-mail. Then, for the language validity, the adaptation and the translation process procedure of the questionnaires suggested by the World Health Organization were followed in the adaptation studies (21).

Forward translation

In order not to have Turkish problems, the scale items were translated into Turkish by the researchers and three English linguists, who were native Turkish speakers and had a good command of both languages, cultures, and terminology. The most appropriate expressions from the Turkish translations of the questionnaires were selected by the researchers and the Turkish questionnaire was prepared.

Expert panel

The questionnaire was presented to the opinions of nine experts. The experts were asked to evaluate each item in terms of language appropriateness, clarity, and comprehensibility for the Turkish society and the final form of PSPS was given according to the experts' suggestions. Opinion differences among experts were analyzed by Kendall good concordance coefficient and no statistically significant difference was found between the scores given by experts on scale items (Kendall's W=0,347, p=0,113).

Back translation

The scale was translated back into English by a Turkish linguist who had a good command of both languages and cultures and had not seen the English version of the questionnaire before, it was sent to Carvajal, who developed the questionnaire, again and his approval was obtained.

Pretest

The scale was then applied to 10 people with characteristics similar to the parents to be included in the study; they were asked whether there were in comprehensible words and expressions or inappropriate content and their opinions were taken about which word would be more appropriate to express the expression better.

Final version of the Questionnaire

After all of the above-mentioned stages, the final version of PSPS in Turkish was given (Table 1 and 2).

Table 1: Descriptive statistics of items of the Scale of the Use of Sunscreen Products

Items		M	SD	Skew.	Kurt.
	Self-Efficacy of the Use of Sunscreen Products				
1.	How much do you trust your ability for remembering to purchase sunscreen products for your child?	3,14	1,25	-0,26	-0,87
2.	How much do you trust your ability for keeping sunscreen products with you in any time/occasion when your child might spend time outside?	2,98	1,01	-0,17	-0,71
3.	How much do you trust your ability for remembering to reapply sunscreen products to your child every 1.5 or 2 hours or after swimming or sweating?	2,86	1,19	0,01	-1,14
4.	How much do you trust your ability for purchasing more sunscreen products for your child when necessary?	2,77	1,40	-0,02	-1,41
5.	How much do you trust your ability for applying the sunscreen product properly/accurately to your child?	3,34	1,16	-0,43	-0,68
	Norms/Attitudes for the Use of Sunscreen Products				
1.	The teachers of my children consider that it is important to reapply sunscreen products to their students when necessary.	3,50	0,96	-0,70	0,16
2.	The teachers of my children consider that it is important to apply sunscreen products to their students.	3,58	0,99	-0,08	-1,05
3.	The teachers of my children apply sunscreen products to their students before they spend time outside.	3,03	0,90	-0,57	-0,58
4.	My friends consider that it is important to apply sunscreen products to their children.	3,48	0,95	-0,92	0,49
5.	My friends consider that it is important to reapply sunscreen products to their children when necessary.	3,49	0,81	-0,55	-0,53
6.	My friends consider that it is important to have a sunscreen product with them in case that their children might need.	3,36	0,94	-0,52	-0,09
	Expectancies for the Use of Sunscreen Products				
1.	It is important to apply the sunscreen products all over my child's body.	3,37	1,07	-0,52	-0,80
2.	If my child play in the shade, it is necessary to apply/spread sunscreen products to him/her.	3,07	1,25	-0,41	-0,99
3.	I consider that it is important to have the sunscreen product with me in case that my child needs.	3,67	0,95	-0,80	0,20
4.	I consider that it is important to keep aside some money for the sunscreen products in our family budget.	3,52	0,96	-0,95	0,31
5.	Sunscreen products are only necessary when my child is playing in or near water (sea, lake, river, pool, etc.).	2,60	1,18	0,35	-1,06
6.	I consider that it is important to reapply sunscreen products to my child when necessary.	3,87	0,71	-1,21	1,93
	Impediments to the Use of Sunscreen Products				
1.	It is difficult to apply sunscreen products to my child without spreading it around.	2,79	1,18	2,39	-1,07
2.	It is difficult to apply sunscreen products to my child in a manner to cover sufficiently all the areas to be exposed to sun.	2,84	1,28	0,77	-0,95
3.	My child doesn't like it when I apply sunscreen products on him/her.	3,15	1,13	-0,24	-1,12

M: Mean; SD: Standard deviation; Skew: Skewness; Kurt: Kurtosis

Table 2: Descriptive statistics of items of the Sun Avoidance Scale

Items		M	SD	Skew.	Kurt.
	Self – Efficacy of Sun Avoidance				
1.	How much do you trust your ability for keeping your child at home during peak sun hours?	3,93	1,01	-0,48	-0,95
2.	How much do you trust your ability for getting your child wear clothes which will protect him/her from the sun?	3,86	0,98	-0,67	-0,48
3.	How much do you trust your ability for keeping protective clothes on your child when he/she spends time outside?	3,81	0,87	-0,17	-0,80
4.	How much do you trust your ability for deciding whether or not the area your child spends time is shaded sufficient to protect him/her from the sun?	3,69	1,07	-0,35	-1,13
5.	How much do you trust your ability for checking whether or not your child wears protective clothing before going outside?	3,78	1,06	-0,42	-1,04
	Norms/Attitudes for Sun Avoidance				
1.	The teachers of my children pay attention to the period of time their students spend outside.	3,71	1,03	-0,65	-0,75
2.	The teachers of my children restrict the period of time their students spend outside	3,95	0,84	-0,71	0,14
3.	My friends consider that it is important to check whether or not their children wear protective clothes before going outside	3,70	0,68	-0,57	0,42
4.	My friends consider that it is important to restrict the period of time their children play outside during peak sun hours	3,75	0,83	-0,55	-0,12
	Tanning Expectancies				
1.	I feel more attractive when I tan in the sun.	2,33	0,88	0,31	-0,58
2.	I look better when I tan in the sun.	2,42	0,91	0,22	-0,76
3.	I feel healthier when I tan in the sun.	2,39	0,86	0,32	-0,54
4.	My child looks better when he/she tans in the sun.	2,08	0,83	1,00	0,78
	Expectancies for Sun Avoidance				
1.	It is important to restrict the period of time my child spends outside during peak sun hours	4,26	0,81	-2,26	2,36
2.	My child may still have a qualified playtime even when he/she does not go outside during peak sun hours	3,99	0,75	-0,78	0,82
3.	I can reduce the sun exposure by wearing protective clothing.	3,84	0,75	-0,87	0,89
4.	I consider that it is important to check whether or not my child wears protective clothes before going outside	3,98	0,67	-0,88	1,83
5.	It is important to restrict the period of time my child plays during peak sun hours	4,19	0,74	-0,87	0,90

M: Mean; SD: Standard deviation; Skew: Skewness; Kurt: Kurtosis

2nd Step: Descriptive statistics of the scale items

Table 1 and Table 2 show descriptive statistics based on the items of the scales and the obtained data before the validity and reliability analysis. It was found that the mean scores of the answers given by the parents to 20 items in SUSP were 2,77±1,40 and 3,87±0,71; the skewness values ranged from – 1,21 to 2,39; and the kurtosis value varied between – 1,41 and 1,93 (Table 1). The mean scores of the answers given by the parents to 18 items in the SAS were 2,08±0,83 and 4,26±0,81; the skewness values ranged from – 2,26 to 1,00; and the kurtosis value varied between – 1,13 and 2,36 (Table 2).

3rd Step: Exploratory Factor Analysis

While Kaiser-Meyer-Olkin (KMO) test was used to assess whether the sample of PSPS was adequate for factor analysis, Bartlett's Test of Sphericity (BTS) was applied to evaluate whether the sample was appropriate for the factor analysis. In this study, KMO test result was 0,89 and 0,86 for SUSP and SAS, respectively and result of BTS was 9163,40 and 9593,92 for SUSP and SAS, respectively.

Principal Components Analysis and Varimax Rotation method were used to determine the construct validity of the scale. As a result of the scree test, the number of subscales was observed to be divided into four factors as in both original scales. As a result of the analysis, it was determined that the eigenvalue of each obtained subscale was greater than 1 and accounted for 70,52% of the total variance for SUSP and 70,50% for SAS. During the factor analysis, items 2 and 5 of the "Expectancies for the Use of Sunscreen Products" subscale of SUSP were omitted from the scale because they had high factor loading value in more than one factor at the same time. The SUSP was continued with 18 items. All items were included in SAS and it was evaluated over 18 items. The factor loadings of the items in the obtained subscales were listed in descending order and factors loading values varied between 0,86 and 0,53 for SUSP and 0,92 and 0,56 for SAS (Table 3 and 4).

Table 3: Distribution of the items of Scale of the Use of Sunscreen Products to its subscales and their factor loadings

Items		Factor loadings			
		USPN/A	USPS-E	USPI	USPE
Norms/Attitudes for the Use of Sunscreen Products	I4	0,85			
	I1	0,83			
	I5	0,82			
	I3	0,76			
	I2	0,74			
	I6	0,69			
Self-Efficacy of the Use of Sunscreen Products	I3		0,86		
	I2		0,83		
	I4		0,81		
	I1		0,72		
	I5		0,70		
Impedimentsto the Use of Sunscreen Products	I1			0,85	
	I2			0,83	
	I3			0,66	
Expectancies for the Use of Sunscreen Products	I6				0,81
	I3				0,67
	I4				0,55
	I1				0,53
% of variance accounted for after rotation		35,39	20,12	9,18	5,81
Cumulative variance		35,39	55,52	64,70	70,52
Cronbach's alpha		0,90	0,86	0,76	0,79

USPS-E: Self-Efficacy of the Use of Sunscreen Products, USPN/A: Norms/ Attitudes for the Use of Sunscreen Products, USPE: Expectancies for the Use of Sunscreen Products, USPI: Impediments to the Use of Sunscreen Products

Table 4: Distribution of the items Sun Avoidance Scale to its subscales and their factor loadings

Items		Factor loadings			
		SAS-E	SAN/A	SAE	TE
Self – Efficacy of Sun Avoidance	I2	0,86			
	I5	0,82			
	I3	0,81			
	I1	0,77			
	I4	0,76			
Norms/Attitudes for Sun Avoidance	I4		0,85		
	I2		0,84		
	I1		0,82		
	I3		0,62		
Expectancies for Sun Avoidance	I4			0,85	
	I2			0,76	
	I3			0,71	
	I1			0,60	
	I5			0,56	
Tanning Expectancies	I1				0,92
	I2				0,90
	I3				0,65
	I4				0,57
% Of variance accounted for after rotation		34,80	15,44	11,55	8,71
Cumulative variance		34,80	50,24	61,79	70,50
Cronbach's alpha		0,90	0,87	0,81	0,79

SAS-E: Self – Efficacy of Sun Avoidance, SAN/A: Norms/Attitudes for Sun Avoidance, TE: Tanning Expectancies, SAE: Expectancies for Sun Avoidance

4th Step: Subscale values and correlation coefficients of the scales

It was observed that the mean values of the subscales of SUSP varied between 8,79±2,98 and 20,46±4,62; whereas, the mean values of the subscales of SAS varied between 9,23±2,64 and 20,28±2,86 (Table 5). When the correlation coefficients and p values between the subscales were examined; it was found that there was a significant correlation between USPS-E and USPN/A, between USPE and USPI, between USPN/A and USPE and USPI in SUSP (p<0,01) (Table 5). A significant correlation was determined between SAS-E with SAN/A, between TE and SAE, and between SAN/A and SAE in SAS (p<0,01) (Table 5).

5th Step: Internal Consistency Analysis

In the analysis conducted with the purpose of determining the internal consistency of the measurements obtained from the scales, Cronbach's alpha internal consistency coefficient was found to be 0,84 in both scales in the overall scale. In SUSP, it was found as 0,86 in USPS-E, 0,90 in USPN/A, 0,79 in USPE and 0,76 in USPI (Table 3). SAS-E in SAS is determined as 0,90; SAN/A is 0,87, TE is 0,81 and SAE is found as 0,79 (Table 4).

Table 6. Correlation analysis of test-retest scores of Parental Sun Protection Scales

Scale	Test	Mean	SD	r	p
Scale of the Use of Sunscreen Products					
USPS-E	Test	15,44	4,84	0,999	0,000
	Retest	15,40	4,81		
USPN/A	Test	20,35	4,58	0,999	0,000
	Retest	20,39	4,59		
USPE	Test	20,09	3,55	0,995	0,000
	Retest	20,16	3,61		
USPI	Test	8,59	2,98	0,998	0,000
	Retest	8,56	2,95		
Sun Avoidance Scale					
SAS-E	Test	19,12	4,30	0,993	0,000
	Retest	19,17	4,22		
SAN/A	Test	15,20	2,90	0,966	0,000
	Retest	15,31	3,04		
TE	Test	9,24	2,89	0,977	0,000
	Retest	9,38	2,90		
SAE	Test	20,40	2,92	0,976	0,000
	Retest	20,62	2,88		

SD: Standard deviation
r: Correlation coefficient
p: Statistical significance

Table 5: Values of subscales of Parental Sun Protection Scales and correlation coefficients between the subscales

Subscales of Scale of the Use of Sunscreen Products									
Scales	**R**	**M**	**SD**	**Skew.**	**Kurt.**	**USPS-E**	**USPN/A**	**USPE**	**USPI**
USPS-E	5-25	15,11	4,86	-0,05	-1,09	…			
USPN/A	6-30	20,46	4,62	-0,83	0,09	0,24**	…		
USPE	4-20	14,45	2,97	-1,16	1,29	0,29**	0,71**	…	
USPI	3-15	8,79	2,98	0,45	-0,83	-0,27**	0,19**	0,05	…
Sun Avoidance Subscales									
Scales	**R**	**M**	**SD**	**Skew.**	**Kurt.**	**SAS-E**	**SAN/A**	**TE**	**SAE**
SAS-E	5-25	19,09	4,27	-0,25	-1,02	…			
SAN/A	4-20	15,13	2,91	-0,58	-0,01	0,51**	…		
TE	4-20	9,23	2,64	-0,04	-0,25	-0,17**	0,01	…	
SAE	5-25	20,28	2,86	-1,15	3,27	0,36**	0,51**	-0,06	…
n: 635		**p<0,01							

USPS-E: Self-Efficacy of the Use of Sunscreen Products, USPN/A: Norms/Attitudes for the Use of Sunscreen Products, USPE: Expectancies for the Use of Sunscreen Products, USPI: Impediments to the Use of Sunscreen Products; SAS-E: Self – Efficacy of Sun Avoidance, SAN/A: Norms/Attitudes for Sun Avoidance, TE: Tanning Expectancies, SAE: Expectancies for Sun Avoidance; R: Range; M: Mean; SD: Standard deviation; Skew: Skewness; Kurt: Kurtosis

6th Step: Time-Dependent Reliability Analysis

Another analysis performed to determine the reliability of PSPS is test-retest application. This application reveals the time-dependent invariance of the measurement. Test-retest was applied to a sample group of 93 people two weeks later, and the correlation between two measurements was tested by Pearson correlation analysis. A statistically significant and very strong correlation was found between both applications as a result of test-retest in subscales of both scales (p<0,001) (Table 6).

Discussion

1st Step: Language and content validity

In providing language and content validity, attention was paid to ensure that the translation was understandable in Turkish by considering that the people who translated the scale from English to Turkish knew both languages and the cultures (22). For content validity, the Kendall good concordance coefficient was examined and it was observed in the analysis that scores received from the experts were concordant (Kendall's W=0,347, p=0,113). Thus, it was observed that there was a consensus among the experts, no item was omitted from the scale and the scale was thought to reflect the area requested to be measured.

2nd Step: Descriptive statistics of the scale items

Firstly, it was checked whether the data met the normal distribution, the mean values and standard deviation values of the items were then calculated. Also, the collected data were examined in terms of skewness and kurtosis values. These values provided information to the researchers in terms of seeing that the available data were located in the normal distribution curve. Cut-off score of skewness and kurtosis values was expected to be |3| (23) and all of the data showed normal distribution.

3rd Step: Exploratory Factor Analysis

Before Exploratory Factor Analysis (EFA), KMO value and Bartlett's test results were examined in terms of sample adequacy. If 0,80 or greater KMO measurements were obtained, this result shows that the sample adequacy of that data of the factor analysis is sufficient, on the other hand significant Bartlett's test result shows that items in the scale are suitable for performing factor analysis (24). Accordingly, KMO test resultwas 0,89 and 0,86 for SUSP and SAS and BTS test results were significant in this study showed that sample size of the study was adequate for factor analysis.

Principal components analysis which is reported to most frequently and commonly used in the application and relatively easy to interpret and Varimax rotation technique which is one of the most commonly used vertical rotation techniques were used in EFA (25). As a result of the analysis, the higher the total variance explained by the factors was, the stronger the factor structure of the scale was (26). While it is expected that at least 30% of the total variance is explained on single factoral scales, this number is requested to be higher in multi-factoral structures (25). The four-factor structures that arise on these scales account for the majority of the total variance (SUSP=70,52%, SAS=70,50%). Therefore, it could be asserted that the factor structure was strong.

The first criterion in the factor analysis is that the loading values are high in the factors where the items are involved. It is stated in the literature that the correlation values below 0,30 indicate that the items are inadequate but those between 0,30-0,40 can be included in the scale if necessary, and those above 0,40 indicate that the distinguishing characteristic of the items is good (25, 27, 28). In the present study, it was found that there was no item having item-total score correlation value lower than 0,30 and the lowest values were 0,53 for SUSP and 0,56 for SAS. Therefore, all items were included in the study. Another related criterion is that the items have high loading value in a single factor and low loading values in the other factors. This difference between the two loading values is recommended to be at least 0,10 (25). In this study, during the factor analysis, item 2 (If

my child play in the shade, it is necessary to apply/spread sunscreen products to him/her.) and 5th item (Sunscreen products are only necessary when my child is playing in or near water [sea, lake, river, pool, etc.].) from "Expectancies for the Use of Sunscreen Products" subscale of SUSP were omitted from the scale since they had high factor loading values in more than one factors at the same time and the difference between them was lower than 0,10 and the analyses were continued with 18 items.

4th Step: Subscale values and correlation coefficients of the scales

If there are subscales/factors in the scales or the scale is in the form of a battery constructed from subscales, total scores for the subscale and correlations of the factors of this scale are examined. A scale can be one dimensional (factorial) or multidimensional (factorial). When the general total scores and the correlation between the items in multifactorial scales are examined, the correlation coefficient of many items seems low. Item-total score correlation is high in only one-dimensional scales (28). In this study, it was found that correlation coefficients of the factors varied between – 0,27 and 0,71 in SUSP and between – 0,17 and 0,51 in SAS and some correlations were significant ($p<0,01$). Another criterion of the consistency within the scale itself is the significance of the correlations between the subscales forming the scale themselves. The fact that the most correlations are significant in the scales indicates that the subscales forming the scale are not independent from each other.

5th Step: Internal Consistency Analysis

Two basic criteria looked for the reliability of an assessment instrument are the consistency between the responses (scores) obtained at different times and the consistency between the responses obtained at the same time (29). In order to determine the internal consistency of the measurements obtained from the scale, Cronbach's alpha analysis, which is commonly used especially in likert-type scales, was used. The Cronbach's alpha coefficient is found by dividing the sum of the variances of the scale items by the general variance and the coefficient closer to 1 shows that this scale is composed of consistent items predicting the same property. If the Cronbach's alpha value is $0,40\leq\alpha<0,60$ the scale is accepted to have low reliability, if it is $0,60\leq\alpha<0,80$ then it is quite reliable, if it is $0,80\leq\alpha<1,00$ then the scale is accepted to be a highly reliable scale (26, 29, 30). The fact that the Cronbach's alpha value was 0,84 in both scales in this study indicated that the study was highly reliable. In the original form of the scale, it was found as 0,86 for SUSP and 0,56 for SAS (20). This revealed that while the internal consistency of SUSP was high and in parallel with the original study, the internal consistency of SAS was highly reliable in the present study compared to the original study. Among the subscales, USPN/A (0,90), SAS-E (0,90), SAN/A (0,87), USPS-E (0,86), and TE (0,81) were highly reliable and USPE (0,79), SAE (0,79), and USPI (0,76) were quite reliable.

6th Step: Time-Dependent Reliability Analysis

Test-retest analysis is performed to assess time-dependent in variance characteristic of the test (28, 29). It is recommended to have minimum two and maximum four weeks between the first and second measurements and to perform the test with at least 30 people (26, 28). In this study, test-retest was applied to a sample group of 93 people two weeks later. The correlation coefficient calculated between two scores obtained at certain intervals is used to predict how stable measurements the test gives depending on time (25). If correlation coefficient is between 0,60 and 0,80, it shows a strong correlation; and if it is higher than 0,80, it shows the presence of high correlation (28). In this study, test-retest reliabilities of both SUSP ($r=0,95-0,99$; $p<0,001$) and SAS ($r=0,96-0,99$; $p<0,001$) were found to be highly significant. Thus, PSPS was considered to be time-dependent. Tables 3 and 4 show the final usable forms of the scales.

Conclusion

In this study examining the validity and reliability of PSPS, the results of the analysis showed that the scales is a valid and reliable tool for Turkish Society. The general Cronbach's alpha value of both scales was found as 0,84. Among the subscales that USPN/A (0,90), SAS-E (0,90), SAN/A (0,87), USPS-E (0,86), and TE (0,81) were highly reliable and USPE (0,79), SAE (0,79), and USPI (0,76) scales were quite reliable. All of these scales can be used together or individually. Childhood is an important period of time for sun protection applications. The importance of sun protection and sun avoidance is constantly emphasized in the literature and these scales focused on the parents of preschool children are thought to provide the basis for the measurements and initiatives performed to prevent skin cancer and to reduce the sun exposure in children. Based on these results, Turkish version of PSPS can be used to assess the parents' status of using sunscreen products for their children and their status of sun avoidance.

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APPENDİX

Ebeveyn Güneşten Koruma Ölçeği

Aşağıdaki ifadeleri okuduktan sonra uygun olan **sadece bir** seçeneği işaretleyiniz. Lütfen ***tüm maddeleri yanıtlayınız***.

Güneş Koruyucu Ürünlerin (krem, losyon, yağ vb.) Kullanımı					
Güneş Koruyucu Ürünlerin Kullanımı Öz-Yeterliliği	**Hiç emin değilim**	**Çok az eminim**	**Kararsızım**	**Oldukça eminim**	**Son derece eminim**
1. Çocuğunuz için güneş koruyucu ürünleri satın almayı hatırlama becerinize ne kadar güveniyorsunuz?					
2. Çocuğunuzun dışarıda olabileceği herhangi bir zamanda/durumda yanınıza güneş koruyucu ürünleri alma becerinize ne kadar güveniyorsunuz?					
3. Çocuğunuza 1.5-2 saat arayla ya da yüzme/ terleme sonrası güneş koruyucu ürünleri tekrar uygulamayı hatırlama becerinize ne kadar güveniyorsunuz?					
4. Gerektiğinde çocuğunuz için daha fazla güneş koruyucu ürün satın alma becerinize ne kadar güveniyorsunuz?					
5. Çocuğunuza güneş koruyucu ürünü uygun/ doğru bir şekilde uygulama becerinize ne kadar güveniyorsunuz?					
Güneş Koruyucu Ürünlerin Kullanımıyla İlgili Normlar/Tutumlar	**Kesinlikle katılmıyorum**	**Katılmıyorum**	**Kararsızım**	**Katılıyorum**	**Kesinlikle katılıyorum**
1. Çocuğumun öğretmenleri, öğrencilerine güneş koruyucu ürünleri uygulamanın önemli olduğunu düşünüyorlar.					
2. Çocuğumun öğretmenleri, öğrencilerine güneş koruyucu ürünleri gerektiğinde tekrar uygulamanın önemli olduğunu düşünüyorlar.					
3. Çocuğumun öğretmenleri, öğrencilerine dışarı çıkmadan önce güneş koruyucu ürünler sürerler/ uygularlar.					
4. Arkadaşlarım, çocuklarına güneş koruyucu ürünler uygulamanın önemli olduğunu düşünüyorlar.					
5. Arkadaşlarım, çocuklarına güneş koruyucu ürünleri gerektiğinde tekrar uygulamanın önemli olduğunu düşünüyorlar.					
6. Arkadaşlarım, çocukların ihtiyacı olma ihtimaline karşı yanlarında güneş koruyucu ürün bulundurmanın önemli olduğunu düşünüyorlar.					

Güneş Koruyucu Ürün Kullanımıyla İlgili Beklentiler	**Kesinlikle katılmıyorum**	**Katılmıyorum**	**Kararsızım**	**Katılıyorum**	**Kesinlikle katılıyorum**
1 Güneş koruyucu ürünleri çocuğumun her yerine uygulamak önemlidir.					
2. Çocuğumun ihtiyacı olma ihtimaline karşı yanımda güneş koruyucu ürün bulundurmanın önemli olduğunu düşünüyorum.					
3. Aile bütçemizde güneş koruyucu ürünler için para ayırmanın önemli olduğunu düşünüyorum.					
4. Çocuğuma güneş koruyucu ürünleri gerektiğinde tekrar uygulamanın önemli olduğunu düşünüyorum.					
Güneş Koruyucu Ürünlerin Kullanımıyla İlgili Engeller	**Kesinlikle katılmıyorum**	**Katılmıyorum**	**Kararsızım**	**Katılıyorum**	**Kesinlikle katılıyorum**
1. Çocuğuma etrafa bulaştırmadan güneş koruyucuları uygulamak zordur.					
2. Çocuğuma güneş koruyucu ürünleri güneşe maruz kalacağı tüm alanlarını yeterince kaplayacak şekilde sürmek zordur					
3. Çocuğum kendisine güneş koruyucu ürünleri uyguladığımda hoşlanmıyor.					

Güneşten Kaçınma						
Güneşten Kaçınma Öz-Yeterliliği	**Hiç emin değilim**	**Çok az eminim**	**Kararsızım**	**Oldukça eminim**	**Son derece eminim**	
1. Güneşin yoğun olduğu saatlerde çocuğunuzun evin içerisinde kalmasını sağlama becerinize ne kadar güveniyorsunuz?						
2. Çocuğunuzun onu güneşten koruyacak kıyafetleri giymesini sağlama becerinize ne kadar güveniyorsunuz?						
3. Çocuğunuz dışarıdayken üzerinde koruyucu kıyafeti tutma/bulundurma becerinize ne kadar güveniyorsunuz?						
4. Çocuğunuzun bulunduğu yerin, onu güneşten korumaya yetecek kadar gölgeli olup olmadığına karar verme becerinize ne kadar güveniyorsunuz?						

5. Dışarı çıkmadan önce çocuğunuzun koruyucu kıyafet giyip giymediğini kontrol etme becerinize ne kadar güveniyorsunuz?					
Güneşten Kaçınmayla İlgili Normlar/Tutumlar	**Kesinlikle katılmıyorum**	**Katılmıyorum**	**Kararsızım**	**Katılıyorum**	**Kesinlikle katılıyorum**
1. Çocuğumun öğretmenleri öğrencilerinin dışarıda geçirdikleri süreye dikkat ediyorlar.					
2. Çocuğumun öğretmenleri öğrencilerinin dışarıda geçirdikleri zamana sınır koyarlar					
3. Arkadaşlarım çocukları dışarı çıkmadan önce onların koruyucu kıyafet giyip giymediklerini kontrol etmenin önemli olduğunu düşünüyorlar.					
4. Arkadaşlarım güneşin yoğun olduğu saatlerde çocuklarının dışarıda oyun zamanlarının sınırlandırılmasının önemli olduğunu düşünüyorlar.					
Bronzlaşma Beklentileri	**Kesinlikle katılmıyorum**	**Katılmıyorum**	**Kararsızım**	**Katılıyorum**	**Kesinlikle katılıyorum**
1. Bronzlaştığımda kendimi daha çekici hissediyorum.					
2. Bronzlaştığımda daha iyi görünüyorum.					
3. Bronzlaştığımda kendimi daha sağlıklı hissediyorum.					
4. Çocuğum bronzlaştığında daha iyi görünüyor.					
Güneşten Kaçınma Beklentileri	**Kesinlikle katılmıyorum**	**Katılmıyorum**	**Kararsızım**	**Katılıyorum**	**Kesinlikle katılıyorum**
1. Güneşin yoğun olduğu saatlerde çocuğumun dışarıda geçirdiği zamanı sınırlandırmak önemlidir.					
2. Çocuğum güneşin yoğun olduğu saatlerde dışarıda olmasa bile kaliteli bir oyun zamanı geçirebilir.					
3. Güneşe maruz kalmayı koruyucu kıyafet giyerek azaltabilirim.					
4. Çocuğum dışarı çıkmadan önce koruyucu kıyafet giyip giymediğini kontrol etmenin önemli olduğunu düşünüyorum.					
5. Çocuğumun güneşin yoğun olduğu saatlerdeki oyun zamanını sınırlandırmak önemlidir.					