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Psychometric Properties of Turkish Version of the E-Cigarette Use Outcome Expectancies Scale

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Abstract

Objective: This study was carried out to evaluate the validity and reliability of the E-Cigarette Use Outcome Expectancies Scale (EUOES) in the Turkish context.

Method: The sample for the study was composed of 1,725 first-, second-, third-, and fourth-year university students aged 18–25 years. The data from the study were collected using a sociodemographic data collection form and the EUOES. Numbers and percentages were used for the evaluation of the data. In addition, content validity index, Pearson's correlation analysis, a paired samples *t* test, Cronbach's alpha coefficient, and exploratory and confirmatory factor analyses were employed for the analysis of language validity and expert opinions.

Findings: As a result of the confirmatory factor analysis, the factor loadings of the scale were found to range from 0.450 to 0.939. The confirmatory factor analysis revealed that the fit indices of the scale were 0.90 and higher. Cronbach's alpha coefficient of the scale was determined as .86.

Conclusion: As a result of the analysis, the EUOES was found to be a valid and reliable measurement tool for the Turkish sample.

Keywords: e-cigarette use outcome expectancies, validity and reliability

INTRODUCTION

Despite many regulations in the fight against tobacco in recent years, the use of tobacco products still prevails as a global public health problem. The rapidly growing tobacco industry is shifting from its traditional tobacco production and marketing to a policy of spreading heated tobacco and nicotine products. Although there are many forms of heated nicotine products, electronic cigarettes (e-cigarettes) are the most popular and most prevalent (Börekçi et al., 2015; World Health Organization, 2017).

The rate of e-cigarette use is rapidly increasing all over the world, and the e-cigarette industry is booming. More than 2,500 e-cigarette brands are sold worldwide (Börekçi et al., 2015; Michael et al., 2015). The *Tobacco Atlas* fifth report from the American Cancer Association has stated that there are approximately 2.1 million adult e-cigarette users in the United States currently. In addition, according to this report, 80% of the 1 billion tobacco smokers in the world are reported to be in developing countries. Because of lawsuits and other intensive projects and campaigns carried out against smoking in developed countries, the tobacco industry is increasingly turning its attention to developing countries; the e-cigarette market, too, is likely to target developing countries (Michael et al., 2015).

For continued profit, the global tobacco industry relies on finding new smokers. One way to create new tobacco product users is to offer people new products and create new markets. The best sources for new tobacco markets are usually adolescents and young people (Börekçi et al., 2015; Karakaş, 2014). Although reports released so far indicate a global fall in traditional tobacco consumption, e-cigarette use is rapidly increasing among young people, and the rate of use in the United States has reached nearly 11% (Jamal et al., 2017; U.S. Food & Drug Administration, 2018).

According to *A Report of the Surgeon General*, the rate of e-cigarette use is 6.10% among young people aged 18–24 years, and the rate of e-cigarette use together with other tobacco products is 7.47%. The same report informs us that the rate of e-cigarette use in the United States doubled between 2011 and 2013 (U.S. Department of Health and Human Services, 2016). In other reports, the prevalence of e-cigarette use is increasing throughout the world (Jamal et al., 2017; Lipari & Van Horn, 2017; U.S. Food and Drug Administration, 2018)

Despite many legal measures taken, the use of e-cigarettes in Turkey is spreading rapidly (Dağlı, 2016; Karakaş, 2014; Kennedy et al., 2017). The widespread use of e-cigarettes among youth is influenced by various factors: (a) They are cheap, (b) many believe that they are less harmful, (c) many see them as a method for quitting smoking, and (d) many assume that they are more socially acceptable compared with traditional cigarettes (Camenga et al., 2015; Choi & Foster, 2014; Coleman et al., 2015; Franks et al., 2017; Loukas et al., 2015; Pokhrel et al., 2015; Primack et al., 2015). Another of these factors is the collection of outcome

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expectancies of using e-cigarettes. An outcome expectancy is a positive or negative judgment of the likely consequences of a behavior (Abrams & Niaura, 1987; Bandura, 1989; Brandon et al., 1999; Harrell et al., 2015; Patel & Formme, 2010). If individuals believe that they will experience positive outcomes as a result of their behavior, they perform the behavior; they do not perform the behavior if they believe otherwise (Abrams & Niaura, 1987; Fishbein & Ajzen, 1975; Patel & Formme, 2010). Studies emphasize that positive expectancies of using tobacco products increase smoking, whereas negative expectancies reduce smoking (Brandon & Baker, 1991; Dalton et al., 1999; Jøsendal & Aarø, 2012; Pokhrel et al., 2014). Positive outcomes—such as perceptions among young people that e-cigarettes are less harmful, the feeling of smoking evoked by the smoke generated during e-cigarette use, the addition of sweeteners to the cartridges, and attracting attention in social environments—can increase the interest in and the rate of use of e-cigarettes. For this reason, the measurement of outcome expectancies for e-cigarettes is extremely important to prevent their use. Reliable scales are needed so that outcome expectancies can be measured (Pokhrel et al., 2018, 2014; Soule et al., 2017).

Because of the inadequacy of the legal regulations in Turkey, the ease of use in public areas, and the ease of purchasing on the internet, the rate of e-cigarette use is increasing every other day (Dağlı, 2016). This has led to the development of a new kind of addiction in Turkey. Early detection and prevention of this new type of addiction have grown in importance (Dağlı, 2019; "Law on Prevention and Control of the Harms of Tobacco Products," 2013; "Tobacco and Alcohol Market Regulation Law," 2019). It is necessary to determine the outcome expectancies for e-cigarettes to reduce this type of addiction. However, there are no valid and reliable measurement tools in Turkey for measuring outcome expectancies, especially in the late-adolescent group, of using e-cigarettes. For this reason, this study aimed to carry out the Turkish translation and adaptation study of the E-Cigarette Use Outcome Expectancies Scale (EUOES), developed by Pokhrel et al. in 2014 and revised in 2018, to determine its validity and reliability in the Turkish context.

METHOD

Design

This study was carried out using a descriptive cross-sectional format to perform the Turkish translation and adaptation study of the EUOES and to determine its validity and reliability in the Turkish context.

Setting and Samples

The study was conducted between March 2018 and May 2018 at two faculties of a university in western Turkey selected by a convenience sampling method. First-, second-, third-, and fourth-year university students who were aged between 18 and 25 years, who agreed to participate in the study, and who delivered consent forms were enrolled in the study. To reveal the relationships between the items in the scale clearly and to increase the generalizability of the scale, the sample of the study consisted of 1,725 university students from both faculties who met the inclusion criteria of the study and who filled out the forms.

Ethical Consideration

Permission for using the scale was obtained from Pokhrel et al. (2018), who developed and revised the validity of the scale. Written permission was obtained from the ethics committee of the university (IRB: 3918-GOA-2018/09-21) and the administration of both faculties. In addition, written informed consent of the students was obtained.

Instruments (Data Collection Tools)

The data of the study were collected using a demographic data collection form and the EUOES. The researchers collaborated with the faculty administrations to administer the data form and the scale during class hours of the instructors who permitted the administration of the scales to the university students who had provided a consent form and who had agreed to participate voluntarily in the study. The completed forms were collected by the researchers.

Demographic Data Collection Form

This form included items related to the sociodemographic features of the participants, such as age, gender, faculty, grade, family income status, smoking status of the participant's parents, the status of trying smoking, the status of trying e-cigarettes, the status of e-cigarette use, the frequency of e-cigarette use, the status of parents' e-cigarette use, the status of siblings' e-cigarette use, the status of friends' e-cigarette use, the status of close friends' e-cigarette use, and the status of using e-cigarettes for quitting conventional smoking.

E-Cigarette Use Outcome Expectancies Scale

The scale was developed by Pokhrel et al. in 2014, and then its validity was revised in 2018 by the same authors. The scale is a special measurement tool for determining the outcome expectancies of e-cigarette use in young adults aged 18–25 years and evaluating perceptions about e-cigarette use. The EUOES consists of 46 items. The scale has eight subdimensions, including four positive outcome expectancies, namely, social enhancement (SE), affect regulation (AR), positive smoking experience (PSME), and positive sensory experience (PSE), and four negative outcome expectancies, namely, negative health consequences (NHC), negative social consequences (NSC), addiction concern (AC), and negative sensory experience (NSE).

Cronbach's alpha reliability coefficients of the scale for the positive outcome expectancy subdimensions were .94 for SE, .94 for AR, .92 for PSME, and .91 for PSE, whereas the coefficients for the negative outcome expectancy subdimensions were .94 for NHC, .87 for NSC, .87 for AC, and .93 for NSE. The possible scores for each item in the scale were formed in a 10-point Likert-type scale ranging from 0 ("not at all likely") to 9 ("very likely"). The minimum and maximum scores that could be obtained from the scale are 0 and 414, respectively. Higher

mean scores obtained from the positive outcome expectancies of the scale indicate that positive outcome expectancies regarding e-cigarette use were high, whereas higher mean scores obtained from the negative outcome expectancies of the scale showed that negative outcome expectancies regarding e-cigarette use were high (Pokhrel et al., 2018, 2014).

Data Analysis

Descriptive data were analyzed using numbers, percentages, and mean scores. For the content validity analysis, the scale was translated into Turkish separately by three linguists who had graduated from the English language and literature field. After the scale was translated into Turkish, the Turkish version of the scale was collaboratively revised by the researchers, and then the revised version was submitted to the opinion of a Turkish language specialist. A different linguist, who had mastered both the Turkish and English languages, translated the Turkish version back into English. To determine the equivalence of the items in the original form, and those in the translated version, the forms were submitted to the opinions of three experts working on e-cigarette and tobacco products. The Davis technique was employed for evaluating the scope validity of the experts. The item-level content validity index (I-CVI) and the scale-level content validity index (S-CVI) were calculated for each item on the scale. The scale was piloted to a group of 20 individuals who had similar characteristics as the subjects in the sample but who were not enrolled in the study sample. As there was no negative feedback on the intelligibility of the scale in the pilot study, it was determined as the final form to be administered to the study group.

For the factor analysis, the data were randomly divided into two by using statistical software; the first part was subjected to exploratory factor analysis, and the second part was subjected to confirmatory factor analysis (CFA). A Kaiser–Meyer–Olkin (KMO) coefficient and Bartlett sphericity test were employed for analyzing whether the study data were adequate and appropriate for factor analysis. The principal component method and varimax rotation method were used for determining the construct validity of the scale. In determining the most suitable construct and the number of factors, an eigenvalue of 1 and above was accepted (DeVellis, 2012; Gürbüz & Şahin, 2017; Hayran & Hayran, 2011). In this study, the minimum factor loading was accepted as 0.30 in determining under which factor a certain item would fall.

As a result of CFA, Pearson's chi-square, degree of freedom, root mean square error of approximation, goodness of fit index, comparative fit index, and normed fit index values were examined as fit indices.

For the reliability of the scale, Cronbach's alpha coefficient, item–total score, item–subscale total score correlation, Spearman–Brown and Guttman split-half coefficients, and correlation analysis between two halves were used. The response bias of the scale was analyzed by a Hotelling t test. SPSS 24.0 and LISREL 8.7 statistical analysis software packages were used for analyzing the data. Significance level was accepted as .05.

FINDINGS

In the study sample, 64.6% (n = 1,114) were female and 35.4% (n = 611) were male; 21.5% (n = 371) of the students were in first year, 19.4% (n = 334) in second year, 33.4% (n = 576) in third year, and 25.7% (n = 444) in fourth year; and 6.8% (n = 118) of the students had a low income, 87.8% (n = 1514) had a medium income, and 5.4% (n = 93) had a high income.

The rate of e-cigarette use was 0.02% (n = 4) among the subjects' mothers, 1% (n = 18) among their fathers, 3% (n = 18) among their siblings, 37.4% (n = 646) among their friends, and 15.8% (n = 273) among their close friends.

Only 4.5% (n = 78) of the students were found to use e-cigarettes, whereas 95.5% (n = 1647) did not use them. Of the students using e-cigarettes, the frequency of use was 0.6% (n = 11) every day, 0.9% (n = 16) once or twice a week, 0.9% (n = 16) 1–2 times a month, and 2% (n = 35) once or twice a year. Of the e-cigarette users, 3.8% (n = 64) used e-cigarettes to quit a traditional cigarette-smoking habit.

Validity Analyses of EUOES

Content Validity of EUOES In the study, the I-CVI value was found to be 0.92–1.00, and the S-CVI value was determined as 0.90.

Construct Validity of EUOES As a result of exploratory factor analysis, the KMO coefficient was found to be 0.930, Bartlett test χ^2 value was 63145.907, and p = .000. Eight subdimensions with eigenvalues > 1 were identified. The first subdimension of the scale (SE) was found to explain 26.483% of the total variance, the second subdimension (AR) explained 14.548% of the total variance, the third subdimension (NHC) accounted for 7.456% of the total variance, the fourth subdimension (PSME) explained 7.288% of the total variance, the fifth subdimension (NSC) explained 4.914% of the total variance, the sixth subdimension (AC) accounted for 3.380% of the total variance, the seventh subdimension (NSE) explained 3.067% of the total variance, and the eighth subdimension (PSE) explained 2.914% of the total variance. The eight subdimensions were determined to explain 70.05% of the total variance.

The factor loadings of the subdimensions were found to vary between 0.621 and 0.863 for SE, between 0.618 and 0.852 for AR, between 0.843 and 0.939 for NHC, between 0.450 and 0.761 for PSME, between 0.740 and 0.852 for NSC, between 0.521 and 0.803 for AC, between 0.811 and 0.822 for NSE, and between 0.828 and 0.847 for PSE (see Table 1).

As a result of CFA, model fit indices were found to be as follows: goodness of fit index = 0.90, comparative fit index = 0.98, incremental fit index = 0.98, normed fit index = 0.97, Tucker–Lewis Index = 0.98, relative fit index = 0.97, χ^2 = 4437.25, df = 952, χ^2/df = 4.66, p = .000, and root mean square error of approximation = 0.046 (see Table 2).

As a result of CFA, factor loadings of the overall scale were found to vary by 0.33 and 0.97. According to CFA, factor loadings of the subscales were 0.65–0.90 for the SE subdimension, 0.63–0.89 for the AR subdimension, 0.75–0.97 for the NHC

TABLE 1 Factor Loadings of the Eight Extracted Factor After Varimax Rotation (N = 1,725)

Items	Factor Loadings							
	SE	AR	NHC	PSME	NSC	AC	NSE	PSE
M1	0.621							
M2	0.789							
M3	0.840							
M4	0.841							
M5	0.749							
M6	0.863							
M7	0.834							
M8	0.766							
M9	0.726							
M10	0.807							
M11	0.701							
M12		0.719						
M13		0.779						
M14		0.846						
M15		0.721						
M16		0.852						
M17		0.819						
M18		0.832						
M19		0.618						
M20			0.847					
M21			0.928					
M22			0.939					
M23			0.843					
M24			0.845					
M25				0.694				
M26				0.744				
M27				0.761				
M28				0.702				
M29				0.525				
M30				0.450				
M31				0.560				
M32					0.740			
M33					0.851			
M34					0.852			
M35					0.784			
M36					0.813			
M37						0.521		
M38						0.738		
M39						0.777		

(continues)

TABLE 1 Factor Loadings of the Eight Extracted Factor After Varimax Rotation (N = 1,725), Continued

Items	Factor Loadings							
	SE	AR	NHC	PSME	NSC	AC	NSE	PSE
M40						0.803		
M41							0.822	
M42							0.811	
M43							0.817	
M44								0.841
M45								0.828
M46								0.847
Explained variance (%)	6.483	4.548	7.456	7.288	4.914	3.380	3.067	2.914
Eigenvalues	2.182	6.692	3.430	3.352	2.261	1.555	1.411	1.340

Note. AC = addiction concern; AR = affect regulation; NHC = negative health consequences; NSC = negative social consequences; NSE = negative sensory experience; PSE = positive sensory experience; PSME = positive smoking experience; SE = social enhancement.

subdimension, 0.33–0.87 for the PSME subdimension, 0.70–0.81 for the NSC subdimension, 0.71–0.79 for the AC subdimension, 0.92–0.93 for the NSE subdimension, and 0.81–0.86 for the PSE subdimension (see Figure 1).

Whereas the mean total scale score of the students using e-cigarettes was 115.55 ± 54.1, the mean score of those who did not use e-cigarettes was 100.57 ± 45.59. The difference between the mean scores of e-cigarette users and nonusers was statistically highly significant ($p = .000$).

Reliability Analysis of EUOES

The total from Cronbach's alpha coefficient of the scale was determined to be .863. For the subdimensions, Cronbach's alpha coefficients were found to be as follows: .945 for SE, .940 for AR, .940 for NHC, .831 for PSME, .896 for NSC, .838 for AC, .948 for NSE, and .875 for PSE.

The split-half method was applied for the reliability analyses. Cronbach's alpha value was found to be .727 for the first half and .741 for the second half. For the overall scale, the Spearman–Brown coefficient was .951 and the Guttman split-half coefficient was 0.950. The correlation coefficient between the two halves was calculated as .907 ($p < .05$). The mean score of the scale was found to be 101.25 ± 46.10 (see Table 3).

Response bias affects both the reliability and validity of the scale. The Hotelling *t*-square test was performed to determine whether there was a response bias in the scale. The Hotelling *t*-square value was determined as 9520.216 and $p = .000$. As a result of the analysis, the scale was found to have no response bias.

The correlations of the scale items with the scale total score were found to range from .242 to .517. On the other hand, item–subscale total score correlations were determined as follows: .686–.888 for SE, .699–.898 for AR, .866–.946 for NHC, .524–.836 for PSME, .773–.891 for NSC, .775–.842 for AC, .951–.953 for the NSE, and .886–.900 for PSE (see Table 4).

DISCUSSION

In this study, the values of both I-CVI and S-CVI levels were found to be above 0.80. A content validity ratio of above 0.80 is accepted as evidence of consensus among experts in the literature (Alpar, 2018; Davis, 1992; Polit et al., 2007). These results showed that there was a high level of agreement among the experts, the items of the scale complied with Turkish culture, the items represented the area to be measured, and the content validity was achieved. In addition, the construct of the original scale and that of the Turkish adapted version were determined to be similar (Pokhrel et al., 2018).

As a result of the exploratory factor analysis, KMO, and Bartlett sphericity tests, the sample size and data were found to be suitable for factor analysis (DeVellis, 2012; Hayran & Hayran, 2011; Tavsancıl, 2010). The scale adapted to Turkish was found to consist of eight subdimensions (see Table 1). When the original scale was examined, it was determined that it also included eight subdimensions, that the construct of the scale adapted to Turkish and that of the original scale showed similarity, and that the Turkish scale maintained the original construct (Pokhrel et al., 2018). In this study, the eight factors were found to explain most of the total variance (see Table 1).

TABLE 2 Model Fit Indices of E-Cigarette Use Outcome Expectancies Scale

Eight-Factor Model	χ^2	*df*	χ^2/df	RMSEA	GFI	CFI	IFI	RFI	NFI	TLI
	4437.25	952	4.66	0.046	0.90	0.98	0.98	0.97	0.97	0.98

Note. df = degrees of freedom; RMSEA = root mean square error of approximation; GFI = goodness of fit index; CFI = comparative fit index; IFI = incremental fit index; RFI = relative fit index; NFI = normed Fit Index; NNFI = Non-normed Fit Index; TLI = Tucker-Lewis Index.

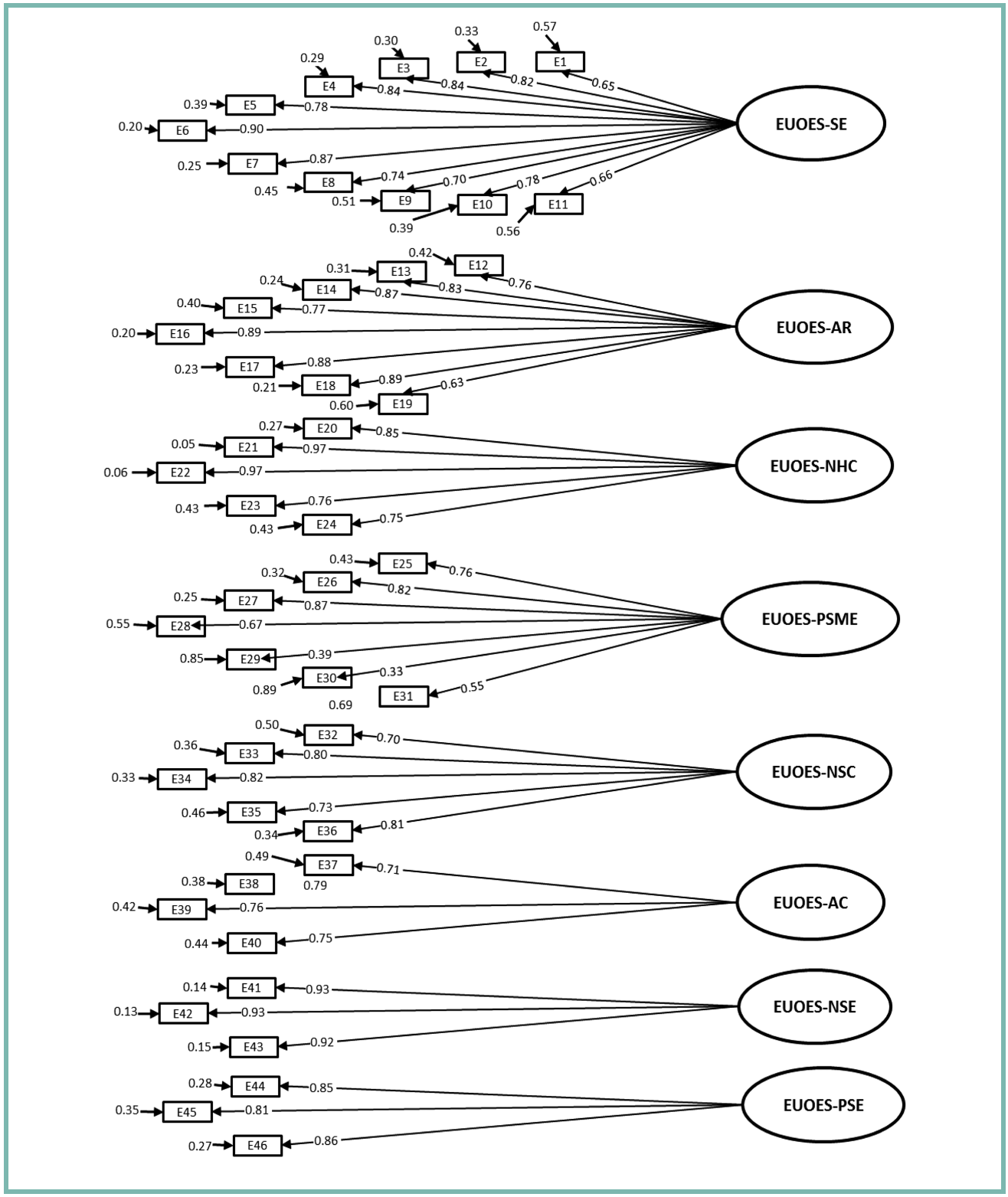

Figure 1. Confirmatory factor analysis of the E-Cigarette Use Outcome Expectancies Scale (EUOES).

According to studies in the literature, the higher the variance ratio is, the stronger the factor construct of the scale is (Şencan, 2005; Tavsancıl, 2010). The high variance obtained in this study showed that the scale had a strong factor construct and that it could accurately measure the quality it aimed to measure. This result revealed the fact that the scale adapted to Turkish accurately measured the construct created in the original scale (Pokhrel et al., 2018). In addition, this result indicated that the Turkish scale

TABLE 3 Reliability Analysis of the Scale and Subdimensions (N = 1,725)

Subdimensions	Cronbach's α	First Half Cronbach's α	Second Half Cronbach's α	Spearman–Brown	Guttman Split-Half	Correlation Between the Two Halves	*M* ± *SD* (Min–Max)
Overall scale	.863	.727	.741	0.951	0.950	.907	101.25 ± 46.10 (0–414)
SE	.945						4.73 ± 12.8 (0–99)
AR	.940						7.73 ± 13.68 (0–72)
NHC	.940						34.52 ± 14.19 (0–45)
PSME	.831						9.81 ± 12.83 (0–63)
NSC	.896						14.15 ± 15.04 (0–45)
AC	.838						11.69 ± 11.84 (0–36)
NSE	.948						15.50 ± 11.09 (0–27)
PSE	.875						3.08 ± 6.17 (0–27)

Note. AC = addiction concern; AR = affect regulation; Min–Max = minimum–maximum; NHC = negative health consequences; NSC = negative social consequences; NSE = negative sensory experience; PSE = positive sensory experience; PSME = positive smoking experience; SE = social enhancement.

could adequately and accurately measure the outcome expectancies of the use of e-cigarettes among Turkish adolescents. Because total variance, KMO, and Bartlett values were not included in the original scale, they could not be compared with those of the original scale (Pokhrel et al., 2018).

As a result of the exploratory factor analysis, the factor loadings of all items were found to be above the limits specified in the literature (see Table 1). This result showed that the items had a high level of relationship with their subdimensions, the subdimensions could adequately measure the quality that they aimed to measure, and the scale adapted to Turkish had a strong factor construct (Gürbüz & Şahin, 2017; Henson & Roberts, 2006). In addition, the factor loadings in this study were found to be similar to the factor loadings of the original study. This result showed that the items in the Turkish adapted version were similar to those in the original study and that the original construct was preserved (Pokhrel et al., 2018).

In this study, the results of CFA indicated that the factor loadings and fit indices were within the limits stated in the literature (see Table 2). In addition, the CFA results in this study and those of the original study were similar. These results revealed that the scale adapted to Turkish retained the original construct, the items fell under the same factors, the construct of the scale adapted to Turkish and that of the original scale showed similarity, and the Turkish scale maintained the original construct (Pokhrel et al., 2018). Furthermore, the CFA conducted indicated that the data were compatible with the model; it confirmed the eight-factor construct, that the subdimensions correlated with the scale, and that the items in each subdimension explained their factor adequately (Alpar, 2018; Çapık, 2014; Hooper et al., 2008; Şimşek, 2010). These results indicated that the scale could accurately and effectively measure the outcome expectancies for the use of e-cigarettes among Turkish adolescents.

The study utilized the mean score of adolescents using e-cigarettes and nonusers for the comparison of known groups. The scale score of adolescents using e-cigarettes was found to be significantly higher than those who were nonusers. Studies in the literature emphasized that the positive outcome expectations of adolescents for a behavior led to an increase in that behavior (Brandon & Baker, 1991; Dalton et al., 1999; Jøsendal & Aarø, 2012; Pokhrel et al., 2014). In this study, high scores of adolescents using e-cigarettes were found to be consistent with the literature. Positive outcome expectancies were found to lead to an increase in the rates of e-cigarette use (Pokhrel et al., 2018). This result revealed that the scale could distinguish between people with positive and negative outcome expectancies and that it could measure the desired quality adequately and accurately (Gozum & Aksayan, 2003; Hattie & Cooksey, 1984). As known-group comparison was not conducted in the original study, the results of the current study could not be compared (Pokhrel et al., 2018).

In this study, Cronbach's alpha values of the overall scale and subdimensions were found to be above the values indicated in

TABLE 4 Item–Total Score and Item–Subdimension Total Score Correlations (N = 1,725)

Subscales	Items	Item–Total Score Correlations (*r*)*	Item–Subdimension Total Score Correlations (*r*)*
Social enhancement	M1	.373	.686
	M2	.445	.830
	M3	.437	.858
	M4	.441	.862
	M5	.451	.799
	M6	.486	.888
	M7	.441	.850
	M8	.433	.787
	M9	.392	.765
	M10	.421	.821
	M11	.402	.729
Affect regulation	M12	.403	.809
	M13	.436	.857
	M14	.437	.887
	M15	.435	.794
	M16	.458	.897
	M17	.467	.884
	M18	.441	.898
	M19	.415	.699
Negative health consequences	M20	.319	.866
	M21	.326	.937
	M22	.313	.946
	M23	.316	.877
	M24	.307	.874
Positive smoking experience	M25	.266	.780
	M26	.242	.811
	M27	.300	.836
	M28	.372	.744
	M29	.255	.535
	M30	.272	.524
	M31	.257	.661
Negative social consequences	M32	.449	.773
	M33	.473	.883
	M34	.460	.891
	M35	.493	.802
	M36	.493	.851
Addiction concern	M37	.517	.775
	M38	.496	.842
	M39	.498	.834
	M40	.504	.832
Negative sensory experience	M41	.377	.951
	M42	.406	.953
	M43	.380	.951
Positive sensory experience	M44	.288	.900
	M45	.268	.886
	M46	.277	.898

*$p < .001$.

the literature, which indicated that the Turkish version of the scale had a high level of reliability (see Table 3). This result showed that the items in the scale had similar characteristics and could measure the similar construct consistently (Büyüköztürk, 2011; Rattray & Jones, 2007; Şencan, 2005; Tavsancıl, 2010). Cronbach's alpha coefficients obtained in this study showed similarity with those of the original scale, that the equivalence of the items of the Turkish version of the scale and the items of the original scale was achieved, and that the scale was shown to measure similar characteristics in different cultures in the same way (Pokhrel et al., 2018, 2014). These results also revealed that the scale was able to reliably measure adolescents' outcome expectancies for e-cigarettes in both cultures (Pokhrel et al., 2018).

The results of the split-half analysis employed in this study indicated that there was a high level of correlation between the two halves and that Cronbach's alpha, Spearman–Brown coefficients, and Guttman split-half coefficients of the two halves had a high level of reliability (see Table 3). In addition, the results showed that the scale consisted of closely related items, the items measured the same quality, the scale had a homogeneous construct, and it had a high internal consistency (Büyüköztürk, 2011; Rattray & Jones, 2007; Şencan, 2005). This result showed that the scale could measure the outcome expectancies for e-cigarettes in Turkish adolescents consistently and reliably. Because these results were not included in the original scale, they could not be compared with the results of this study (Pokhrel et al., 2018).

Another method used for reliability is item–total score statistics (Büyüköztürk, 2011; DeVellis, 2012; Gozum & Aksayan, 2003; Şencan, 2005). In this study, item–total score and item–

subdimension total score correlations were found to be higher than those reported in the literature (Büyüköztürk, 2011; DeVellis, 2012; Seçer, 2015). These results revealed that all of the items of the scale correlated adequately with the total score and the total score of their subdimension, and the item reliability of the subdimensions was high (see Table 4). These results showed that the items were highly correlated with the quality that the overall scale and the subdimensions intended to measure and that they could measure the desired quality consistently. This result showed that the scale could reliably and consistently measure Turkish adolescents' outcome expectancies for e-cigarettes (Büyüköztürk, 2011; Seçer, 2015; Şencan, 2005). These results also indicated that the scale could measure the quality that the original scale intended to measure similarly and consistently (Pokhrel et al., 2018). Because the results for item–total score and item–subdimension total score were not included in the original scale, the results of the current study could not be compared (Pokhrel et al., 2018).

Response bias is a test that is used for determining whether individuals respond to the items of a scale according to their views or according to the expectations of the society or the researcher (Şencan, 2005). It also aims to evaluate whether the measurement capacity of the items is similar and whether the items show a normal distribution (Özdamar, 2005). In this study, no response bias was found, and individuals were determined to respond to the items on the scale according to their own opinions. This result showed that the scale had a consistent construct and that it could measure adolescents' outcome expectancies consistently.

Despite all its strengths, this study had a few limitations. The use of the convenience sampling method and the inclusion of volunteers in the study were limitations, as they were thought to affect the generalizability of the study. Another limitation was the small number of e-cigarette users.

CONCLUSION

In conclusion, the EUOES was determined to have high validity and reliability for the Turkish sample. By using this scale, the outcome expectancies of young adults regarding e-cigarette use, and their perceptions of these products, can be determined. Thus, programs for the prevention of tobacco use can be developed accordingly. The scale also helps to determine risk groups, especially for the use of e-cigarettes. Furthermore, cross-cultural comparative studies can be carried out using this scale.

REFERENCES

Abrams, D. B., & Niaura, R. S. (1987). Social learning theory. In Blane, H. T., & Leonard, K. E. (Eds.), *Psychological theories of drinking and alcoholism* (pp. 181–226). Guilford Press.

Alpar, R. (2018). *Applied statistics and validity–reliability* (pp. 499–525). Detay Publication.

Bandura, A. (1989). Social cognitive theory. In Vasta, R. (Ed.), *Annals of child development. Six theories of child development* (Vol. *6*, pp. 1–60). JAI Press.

Börekçi, Ş., Bilir, N., & Karlıkaya, C., Group TTW (2015). A new area to fight: Electronic cigarette. *Eurasian Journal of Pulmonology*, *17*(2), 80–84. 10.5152/ejp.2015.65375

Brandon, T., Juliano, L., & Copeland, A. (1999). Expectancies for tobacco smoking. In Kirsh, I. (Ed.), *How expectancies shape experience* (pp. 263–299). American Psychological Association.

Brandon, T. H., & Baker, T. B. (1991). The smoking consequences questionnaire: The subjective expected utility of smoking in college students. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, *3*(3), 484–491. 10.1037/1040-3590.3.3.484

Büyüköztürk, Ş. (2011). *Data analysis manual for social sciences, statistics, research pattern SPSS applications and interpretation* (pp. 39–63). Pegem Publishing.

Camenga, D. R., Cavallo, D. A., Kong, G., Morean, M. E., Connell, C. M., Simon, P., Bulmer, S. M., & Krishnan-Sarin, S. (2015). Adolescents' and young adults' perceptions of electronic cigarettes for smoking cessation: A focus group study. *Nicotine & Tobacco Research*, *17*(10), 1235–1241. 10.1093/ntr/ntv020

Çapık, C. (2014). Geçerlilik ve güvenilirlik çalişmalarinda doğrulayici faktör analizinin kullanimi. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*, *17*(3), 196–205. https://dergipark.org.tr/tr/pub/ataunihem/issue/2666/34715

Change in the Law on the Prevention and Control of Harm of Tobacco Products (2013). Official newspaper (No. 4207). Retrieved October 18, 2019, from http://www.resmigazete.gov.tr/eskiler/2013/06/20130611-1.htm

Choi, K., & Forster, J. L. (2014). Beliefs and experimentation with electronic cigarettes: A prospective analysis among young adults. *American Journal of Preventive Medicine*, *46*(2), 175–178. 10.1016/j.amepre.2013.10.007

Coleman, B. N., Apelberg, B. J., Ambrose, B. K., Green, K. M., Choiniere, C. J., Bunnell, R., & King, B. A. (2015). Association between electronic cigarette use and openness to cigarette smoking among US young adults. *Nicotine & Tobacco Research*, *17*(2), 212–218. https://doi.org/10.1093/ntr/ntu211

Dağlı, E. (2016). New generation tobacco and nicotine products. *Journal of Continuing Medical Education*, *25*(Special Issue), 2–6. Retrieved October 18, 2019, from https://www.ttb.org.tr/sted/images/files/dergi/2016/2016_ozel.pdf

Dağlı, E. (2019). "New" tobacco products and struggle methods in 2019. *Journal of Continuing Medical Education*, *28*(Special Issue), 2–6. Retrieved October 10, 2019, from http://www.ttb.org.tr/sted/images/files/dergi/2019/OzelSayi.pdf

Dalton, M. A., Sargent, J. D., Beach, M. L., Bernhardt, A. M., & Stevens, M. (1999). Positive and negative outcome expectations of smoking: Implications for prevention. *Preventive Medicine*, *29*(6), 460–465. 10.1006/pmed.1999.0582

Davis, L. L. (1992). Instrument review: Getting the most from a panel of experts. *Applied Nursing Research*, *5*(4), 194–197. 10.1016/S0897-1897(05)80008-4

DeVellis, R. F. (2012). *Scale development, theory and applications 3rd ed* (pp. 31–59). SAGE Publication.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Addison-Wesley Publishing Company.

Franks, A. M., Hawes, W. A., McCain, K. R., & Payakachat, N. (2017). Electronic cigarette use, knowledge, and perceptions among health professional students. *Currents in Pharmacy Teaching and Learning*, *9*(6), 1003–1009. 10.1016/j.cptl.2017.07.023

Gozum, S., & Aksayan, S. (2003). Guide for transcultural adaptation of the scale II: Psychometric characteristics and cross-cultural comparison. *Turkish Journal Research Development Nursing-HEMAR-G*, *5*(1), 3–14. Retrieved October 17, 2019, from http://hemarge.org.tr/ckfinder/userfiles/files/2003/2003-vol5-sayi1-65.pdf

Gürbüz, S., & Şahin, F. (2017). *Research methods in social sciences*. Seçkin Publishing House.

Harrell, P. T., Simmons, V. N., Pineiro, B., Correa, J. B., Menzie, N. S., Meltzer, L. R., Unrod, M., & Brandon, T. H. (2015). E-cigarettes and expectancies: Why do some users keep smoking? *Addiction*, *110*(11), 1833–1843. 10.1111/add.13043

Hattie, J., & Cooksey, R. W. (1984). Procedures for assessing the validities of tests using the "known-groups" method. *Applied Psychological Measurement*, *8*(3), 295–305. 10.1177/014662168400800306

Hayran, M., & Hayran, M. (2011). *Basic statistic for health research* (pp. 132–332). Art Press.

Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research: Common errors and some comment on improved practice. *Educational and Psychological Measurement*, *66*(3), 393–416. 10.1177/0013164405282485

Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modeling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, *6*(1), 53–60. http://www.ejbrm.com/volume6/issue1

Jamal, A., Gentzke, A., Hu, S. S., Cullen, K. A., Apelberg, B. J., Homa, D. M., & King, B. A. (2017). Tobacco use among middle and high school students—United States, 2011–2016. *MMWR Morbidity and Mortality Weekly Report*, *66*(23), 597–603. 10.15585/mmwr.mm6623a1

Jøsendal, O., & Aarø, L. E. (2012). Adolescent smoking behavior and outcome expectancies. *Scandinavian Journal of Psychology*, *53*(2), 129–135. 10.1111/j.1467-9450.2011.00927.x

Karakaş, D. G. (2014). Market-oriented transformation of tobacco sector in Turkey. *Turk Toraks Dergisi*, *15*, 71–91. 10.5152/ttd.2013.41

Kennedy, R. D., Awopegba, A., De León, E., & Cohen, J. E. (2017). Global approaches to regulating electronic cigarettes. *Tobacco Control*, *26*, 440–445. 10.1136/tobaccocontrol-2016-053179

Lipari, R. N., & Van Horn, S. L. (2017). *Trends in smokeless tobacco use and initiation: 2002 to 2014*(The CBHSQ Report: May 31, 2017). Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved October 18, 2019, from www.samhsa.gov/data/sites/default/files/report_2740/ShortReport-2740.html

Loukas, A., Batanova, M., Fernandez, A., & Agarwal, D. (2015). Changes in use of cigarettes and non-cigarette alternative products among college students. *Addictive Behaviors*, *49*, 46–51. 10.1016/j.addbeh.2015.05.005

Michael, E., Mackay, J., Schluger, N., Gomeshtap, F., & Drope, J. (2015). *The tobacco atlas* (6th ed.). American Cancer Society Publication. Retrieved October 18, 2019, from https://tobaccoatlas.org/wp-content/uploads/2018/03/TobaccoAtlas_6thEdition_LoRes_Rev0318.pdf

Özdamar, K. (2005). *Statistical data analysis with package programs*. Kaan Publishing House.

Patel, A., & Formme, K. (2010). Explicit outcome expectancies and substance use: Current research and future directions. In Scheier, L. M. (Ed.), *Handbook of drug use etiology: Theory, methods, and empirical findings*. American Psychological Association.

Pokhrel, P., Herzog, T. A., Muranaka, N., & Fagan, P. (2015). Young adult e-cigarette users' reasons for liking and not liking e-cigarettes: A qualitative study. *Psychology & Health*, *30*(12), 1450–1469. 10.1080/08870446.2015.1061129

Pokhrel, P., Lam, T. H., Pagano, I., Kawamoto, C. T., & Herzog, T. A. (2018). Young adult e-cigarette use outcome expectancies: Validity of a revised scale and a short scale. *Addictive Behaviors*, *78*, 193–199. 10.1016/j.addbeh.2017.11.019

Pokhrel, P., Little, M. A., Fagan, P., Muranaka, N., & Herzog, T. A. (2014). Electronic cigarette use outcome expectancies among college students. *Addictive Behaviors*, *39*(6), 1062–1065. 10.1016/j.addbeh.2014.02.014

Polit, D. F., Beck, C. T., & Owen, S. V. (2007). Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Research in Nursing & Health*, *30*(4), 459–467. 10.1002/nur.20199

Primack, B. A., Soneji, S., Stoolmiller, M., Fine, M. J., & Sargent, J. D. (2015). Progression to traditional cigarette smoking after electronic cigarette use among US adolescents and young adults. *JAMA Pediatrics*, *169*(11), 1018–1023. 10.1001/jamapediatrics.2015.1742

Rattray, J., & Jones, M. C. (2007). Essential elements of questionnaire design and development. *Journal of Clinical Nursing*, *16*(2), 234–243. 10.1111/j.1365-2702.2006.01573.x

Seçer, İ. (2015). *Psychological test development and adaptation SPSS and LISREL applications*. Anı Publication.

Şencan, H. (2005). *Sosyal ve davranışsal ölçümlerde güvenilirlik ve geçerlilik (Reliability and validity in social and behavioral measurement)*. Seçkin Publishing House.

Şimşek, Ö. F. (2010). *Introduction to structural equation modeling, LISREL fundamental principles and practices*. Ekinoks Publications.

Soule, E. K., Maloney, S. F., Guy, M. C., Eissenberg, T., & Fagan, P. (2017). User identified positive outcome expectancies of electronic cigarette use: A concept mapping study. *Psychology of Addictive Behaviors*, *31*(3), 343–353. 10.1037/adb0000263

Tavsancıl, E. (Ed.) (2010). *Attitudes measurement and data analysis with SPSS* (4th ed.). Nobel Publishing House.

Tobacco and Alcohol Market Regulation Law (2019). Official newspaper (No. 4733). Retrieved October 18, 2019, from https://www.tarimorman.gov.tr/TADB/Belgeler/%C4%B0dari%20Yapt%C4%B1r%C4%B1mlar/2019-4733.pdf

U.S. Department of Health and Human Services (2016). E-Cigarette use among youth and young adults: A report of the Surgeon General. Retrieved October 18, 2019, from https://e-cigarettes.surgeongeneral.gov/documents/2016_sgr_full_report_non-508

U.S. Food & Drug Administration. (2018). Youth tobacco use: Results from the 2016 National Youth Tobacco Survey. Retrieved October 17, 2019, from https://www.fda.gov/tobacco-products/youth-and-tobacco/youth-tobacco-use-results-national-youth-tobacco-survey

World Health Organization. (2017). Report on the global tobacco epidemic: Monitoring tobacco use and prevention policies. Retrieved October 17, 2019, from https://apps.who.int/iris/bitstream/handle/10665/255874/9789241512824-eng.pdf;jsessionid=039DB0FDB94E359D0EC02ED8D9BE8A8D?sequence=1