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The psychometric properties of the Turkish version of the smoking outcome expectation scale and the anti-smoking self-efficacy scale for early adolescents

İlknur Bektas[a], Murat Bektas[a], Dijle Ayar[a], Aslı Akdeniz Kudubeş [a], Yasemin Selekoglu[a], Sema Sal Altan[a], İsa Çelik[a], and Arzu Tuna[b]

[a]Dokuz Eylul University Faculty of Nursing, Department of Pediatric Nursing, Inciraltı, Izmir, Turkey; [b]Sanko University Faculty of Health Science, Department of Nursing, Gaziantep, Turkey

ABSTRACT

This study aimed to analyze the validity and reliability of the Smoking Outcome Expectation Scale and Anti-Smoking Self-Efficacy Scale for Early Adolescents in Turkey. The sample of the study included a total of 548 students. The data were collected using a demographic data collection form, the Smoking Outcome Expectation Scale, and the Anti-Smoking Self-Efficacy Scale (ASSES) for Early Adolescents. ASSES consists of 15 items, and SOES consists of six items. The Cronbach's alpha coefficients of the ASSES section and its subscales were .93, .94, .89, and .75, respectively. These values were found to be.70, .85, and .91 in the SOES section and its subscales. Both sections' test–retest correlation coefficients were found to be higher than .25 for all items. The factor loads ranged between .45 and .76 in the ASSES section and between .87 and .95 in the SOES section. The goodness-of-fit indices of both sections were above .90, and their root mean square error of approximation (RMSA) values was <.08. These results indicate that the scale is a valid and reliable tool for use with early adolescents in Turkey.

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Early adolescents; outcome expectation; scale validity and reliability; self-efficacy; smoking

Introduction

The negative effects of smoking on human health have been known for centuries. However, there has been a rapid increase in smoking among children (WHO, 2015). Although the rate of smoking has decreased in recent years due to a rise in the price of cigarettes, cessation policies and education programs, it has not fallen to the desirable level. In a survey conducted in 2014, the Centers for Disease Control and Prevention found that 12 out of every 100 high school students and 3 out of every 100 secondary school students had smoked twice or more in the previous 30 days (Centers for Disease Control and Prevention, 2014). Smoking is also becoming widespread among adolescents. It has been found that the age of the first cigarette is 10, and the age when children and adolescents start smoking is between 10 and 16 (Akca et al., 2016; KYTA, 2012). The wish to be different and independent, along with an effort to be included in a group of friends and accepted by their peers, prevalent in this age group, can direct adolescents toward smoking (Çakar et al., 2015; Doğan & Ulukol, 2010;Gilman et al., 2009; Wang et al., 2011). The fact that many smokers start smoking when they are teenagers indicates that the intervention programs designed to prevent smoking should focus on the period of early adolescence (ages of 10 to 14) (Bektaş & Öztürk, 2012). Children in this age group are aware of the negative effects of smoking on their health, but still continue to smoke (Akça et al., 2016; Bektaş & Öztürk, 2012; KYTA, 2012). It has been observed that the adolescents are affected by the sense of physiological and psychological benefits of smoking, which can be experiencing pleasure in smoking, eliminating stress, proof of independence, and preventing weight gain (Ünsal & Sezgin, 2009). Considering that they are gaining or will gain benefits as a result of a behavior does not stop people from engaging in that behavior, even if it has negative results (Bandura, 1989).

Outcome expectation is also an important factor that affects smoking (Dalton et al., 1999). In particular, the positive outcome expectations of smoking among adolescents significantly affect their frequency of smoking (Jøsendal & Aarø, 2012). The level of self-efficacy is the most important factor that affects individuals' behavioral outcome expectations (Bandura, 1989). The self-efficacy level affects an individual's outcome expectations, and outcome expectations affect adolescents' attitudes toward smoking (Bandura, 1989; Bektaş, 2010). Studies have shown that an adolescent's self-efficacy level is an important factor that affects smoking (Chang et al., 2006; Ulgen et al., 2012).

Smoking habits are very hard to change when smoking becomes an addiction. Adolescents between 10 and 14 years of age are particularly at risk on this issue. On the other hand, this is also an important period of age for developing healthy behaviors (Wang et al., 2012). Therefore, an anti-smoking attitude should be created among adolescents, and adolescents' smoking outcome expectations and anti-smoking self-efficacy levels should be determined (Bektaş, 2010; Wang et al., 2012).

There is no valid or reliable instrument to determine the anti-smoking self-efficacy levels and smoking outcome expectations among children and adolescents in Turkey. This study

CONTACT Murat Bektas mbekta@gmail.com Dokuz Eylul Universitesi Hemsirelik Fakultesi, Inciralti, Izmir 35340, Turkey.
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aims to test the validity and reliability of the Turkish version of the Smoking Outcome Expectation Scale and Anti-Smoking Self-Efficacy Scale, developed by Chen et al. (2015).

Method

Design

This descriptive, comparative, and correlational study aims to test the validity and reliability of Turkish version of the Smoking Outcome Expectation Scale (SOES) and the Anti-Smoking Self-Efficacy Scale (ASSES), which determine early adolescent smoking outcome expectations and anti-smoking self-efficacy levels.

Participants

The study data were collected from the 5th, 6th, 7th, and 8th graders in three Ministry of National Education middle schools in a city in Western Turkey between February and May 2015.

The literature reports that a sample of up to 100 entities is poor, up to 200 entities fair, up to 300 entities good, up to 500 entities very good, and up to 1,000 entities excellent for factor analysis. Experts urge researchers to obtain samples of 500 or more whenever possible (Nunnally & Bernstein, 2010; Rattray & Jones, 2007; Şencan, 2005).

It was planned to include all 600 students in the 5th, 6th, 7th, and 8th grades in the three secondary schools to determine the invariance of the scale. This study included 548 students who were in class on the day of the study, had their parents' permission to be included, were able to read and understand the questions in the instruments, and volunteered to participate in the study. The accessibility level of the study sample was 91.3%.

Measures

The data were collected by the researchers in classrooms using a demographic data collection form, the Smoking Outcome Expectation Scale, and the Anti-Smoking Self-Efficacy Scale.

Demographic data collection form

This form includes questions on students' age, gender, grade, parental educational levels, whether the student had tried smoking, parents' smoking status, siblings' smoking status, smoking status of close friends and family income level.

Smoking Outcome Expectation Scale (SOES) and Anti-Smoking Self-Efficacy Scale (ASSES)

The Smoking Outcome Expectation Scale and Anti-Smoking Self-Efficacy Scale for Early Adolescents were developed by Chen et al. in 2015 to determine the smoking outcome expectations and anti-smoking self-efficacy of early adolescents aged between 10 and 14. The Smoking Outcome Expectation Scale (SOES) consists of positive and negative outcome expectation subscales, and a total of 6 items. In this four-point Likert-type scale, each item is scored between 1 (I strongly agree) and 4 (I strongly disagree). Each subscale is scored between a minimum of 3 and a maximum of 12. The Cronbach's alpha coefficients of the subscales are 0.78 and 0.76, respectively. The Anti-Smoking Self-Efficacy Scale (ASSES) consists of 15 items. The scale has three subscales: self-efficacy to reject illegal tobacco use, self-efficacy to resist social influences to smoke, and self-efficacy to use strategies to refrain from smoking. In this four-point Likert-type scale, each item is scored between 1 (cannot do at all) and 4 (certainly can do). The minimum and maximum scores of this scale are 15 and 60, respectively. The Cronbach's alpha coefficient of the entire scale is .88, and its three subscales are 0.88, 0.86, and 0.78, respectively.

Procedures

Translation of the scale

The most appropriate wording and phrases in the target language should be used, and the sentences should be adapted to the target culture when translating a scale (Çam & Baysan-Arabacı, 2010; Nunnally & Bernstein, 2010; Rattray & Jones, 2007; Şencan, 2005). Therefore, the scale was translated into Turkish by three linguists of the English language. The Turkish form of the scale was created by the researchers' group work after it was translated into Turkish. The Turkish form was then translated back into English by a linguist who is fluent in both Turkish and English.

Content validity of the scale

It is recommended that the opinions of at least three experts be obtained in order to determine the equivalency between the original scale and the translated version (Şencan, 2005). The opinions of nine experts were obtained for the Turkish form of the scales. The experts were given both the original and the translated form of the scales and asked to score the items between 1 and 4 (1 = many changes are needed, 2 = few changes are needed, 3 = appropriate, 4 = very appropriate) to determine their appropriateness. The items were then revised considering the recommendations. The content validity index of each item, as well as the content validity indexes of the item-level (I-CVI) and scale-level (S-CVI), was calculated. The fit rates of 0.80 and above in the I-CVI and S-CVI indicate compliance between the experts (Polit et al., 2007; Terwee et al., 2007).

Pilot study

It is recommended that the scale be administered to a group of 20 or 30 people with similar characteristics, but who are not included in the study sample. This can determine the scale's comprehensibility in terms of language and expressions (Çam & Baysan-Arabacı, 2010; Nunnally & Bernstein, 2010; Rattray & Jones, 2007; Şencan, 2005). After the first translation, the scale was administered to a group of 20 people with similar characteristics, but who were not included in the study sample.

Reliability of the scale

The reliability analysis of the scale was performed in terms of internal consistency and invariance. The internal consistency was tested using Cronbach's alpha, item-total score, item-subscale total score, and base and ceiling effects. Experts state that the minimum acceptable Cronbach's alpha value is 0.70 (Çam & Baysan-Arabacı, 2010; Nunnally & Bernstein, 2010; Rattray & Jones, 2007; Şencan, 2005). It is recommended that the correlation coefficient of item-total score and item-subscale total score be at a minimum of 0.20, and the base and ceiling effects be below 15.0% (Terwee et al., 2007).

The test–retest scores of 72 students at a three-week interval were used to determine invariance. The differences and the relationship between the first and second administrations of the scale and subscales were analyzed to assess invariance. Experts recommend that no differences exist between the first and second administrations, and that the correlation coefficient between two assessments be 0.70 and above (DeVellis, 2012; Hayran & Hayran, 2011; Jonhson & Christensen 2014; Terwee et al., 2007). In another analysis that assessed invariance, the correlation of each item between the two assessments at a three-week interval was analyzed (Çam & Baysan-Arabacı, 2010). It is recommended that the correlation of the items between the two assessments be 0.20 and above (DeVellis, 2012; Hayran & Hayran, 2011; Jonhson & Christensen, 2014; Terwee et al., 2007).

Construct validity of the scale

The construct validity of the scale was analyzed through explanatory and confirmatory factor analysis. The sufficiency and appropriateness of the data were analyzed for factor analysis using the Kaiser–Meyer–Olkin (KMO) coefficient and Bartlett's sphericity test. Bartlett's sphericity test and the KMO value are recommended to be $p < 0.05$ and above 0.60, respectively, for factor analysis. The principle component and varimax rotation methods were used to determine the construct validity of the scale. The eigenvalues were accepted to be 1 and above in identifying the most appropriate construct and the number of factors (DeVellis, 2012; Hayran & Hayran, 2011; Jonhson & Christensen, 2014; Terwee et al., 2007). The experts emphasize that the minimum factor value should be 0.30 (Burns and Grove, 2009; Çam and Baysan-Arabacı, 2010). In this study, the minimum factor value was accepted as 0.30 in determining the factors under which the items would be categorized (DeVellis, 2012; Hayran & Hayran, 2011; Jonhson & Christensen, 2014; Terwee et al., 2007).

Another method used to analyze construct validity is confirmatory factor analysis. Pearson's chi-square, degree of freedom, root-mean-square error of approximation (RMSEA), goodness-of-fit index (GFI), comparative fit index, (CFI) and normal fit index (NFI) were analyzed as fit indexes for confirmatory factor analysis. It is recommended that the result of dividing the chi-square value into the degree of freedom be lower than 5, the RMSEA be below 0.08, and the other fit indexes be above 0.90 (Şimşek, 2010).

Data analysis. The demographic details of the students were analyzed using percentages and means. Shapiro–Wilk tests were conducted to assess the normality of the data from both the pilot- and main-testing phases. The validity of the scale was analyzed through explanatory (EFA) and confirmatory factor (CFA) analysis. The internal consistency of the scale was analyzed using Cronbach's alpha coefficient. The relationship between the item-total and item-subscale total scores was analyzed using Pearson's correlation analysis. The invariance of the scale was analyzed using the t-test and Pearson's correlation analysis. The t-test was used for the known group comparisons. The significance level was accepted to be 0.05.

Ethical considerations

This study was approved by Dokuz Eylul University Non-Invasive Research Ethics Committee Review Board (IRB approval no.: 2327-GOA-2015/24-12). Permission to conduct the study was also obtained from the Izmir Provincial Directorate for National Education. Written consent from parents and verbal consent from children were received to enable the children to participate in the study.

Results

The mean age of the students was 12.26±1.42. Of the students, 50.7% ($n = 278$) were female, and 49.3% ($n = 270$) were male. Of the students' mothers, 38.8% had completed primary school, and 32.6% were smokers. Of their fathers, 28.8% were high school graduates, and 57.9% were smokers. Of the students' siblings, 10.4% were smokers. Finally, 5.5% of the students and 11.3% of their close friends were smokers.

Content validity

The opinions of nine experts were obtained, and the compliance between the experts was found to be between 0.85 and 0.96 for each item (I-CVI) and to be 0.90 for the entire scale (S-CVI).

Construct validity

Explanatory factor analysis found that the Kaiser–Meyer–Olkin (KMO) coefficient was 0.917. The result of Bartlett's test was X = 6,246.693 and $p = 0.000$ for the ASSES section. The explained variance was 54.1% for the first factor, 10.7% for the second factor, and 7.7% for the third factor in the ASSES section. The rate of total explained variance was 72.5%. The factor values were between 0.70 and 0.85 for the first factor, 0.58 and 0.86 for the second factor, and 0.84 and 0.85 for the third factor in the ASSES section.

At the end of the confirmatory factor analysis of the ASSES, the factor values were found to be between 0.77 and 0.86 for the first factor, between 0.66 and 0.86 for the second factor, and between 0.78 and 0.78 for the third factor. The model fit indicators were found to be GFI = 0.92, CFI = 0.98, NFI = 0.98, NNFI = 0.98, IFI = 0.98, RFI = 0.97, $X^2 = 335.48$, df = 82, $p = 0.000$, and RMSEA = 0.075 (Figure 1).

The Kaiser–Meyer–Olkin (KMO) coefficient was 0.722, the result of Bartlett's test was $X^2 = 1{,}934.840$, and $p = 0.000$ for the SOES section. The explanatory factor

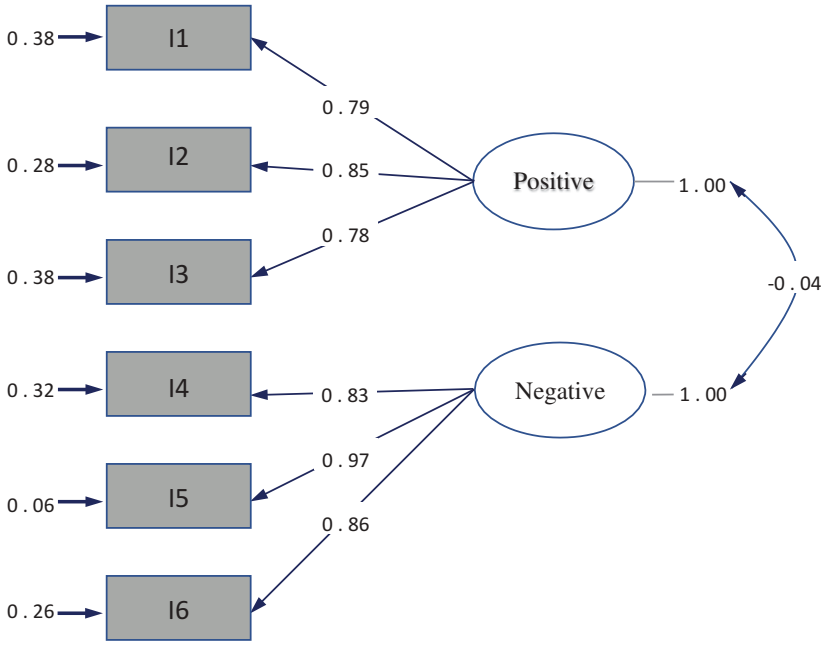

Figure 1. ASSES confirmatory factor analysis. Chi-square = 10.24, df = 8, *p*-value = 0.24884, RMSEA = 0.034.

analysis indicated that the scale was categorized under two factors. The explained variance was 42.6% for the first factor and 38.4% for the second factor in the SOES section. Explanatory factor analysis found that the total explained variance was 81.3% for the scale. The factor values were between 0.87 and 0.89 for the first factor and between 0.90 and 0.95 for the second factor.

The confirmatory factor analysis of the SOES found the factor values to be between 0.78 and 0.85 for the first factor and between 0.83 and 0.97 for the second factor. The model fit indicators were found to be GFI = 0.99, CFI = 0.99, NFI = 0.99, NNFI = 0.99, IFI = 0.98, RFI = 0.97, X^2 = 10.24, df = 8, p = 0.000 and RMSEA = 0.034 (Figure 2).

Reliability analysis

The total of the Cronbach's alpha coefficients in the SOES section was found to be 0.93. The alpha value was found to be 0.94 for the first factor, 0.89 for the second factor, and 0.75 for the third factor (Table 1).

The total score and correlations of the items in the ASSES section were found to range between 0.58 and 0.81. The item subscale total score correlations were found to be between 0.81 and 0.88 for the first factor, 0.77 and 0.88 for the second factor, and 0.88 and 0.91 for the third factor.

The total of the Cronbach's alpha coefficients in the SOES section was found to be 0.70. The alpha value was found to be 0.85 for the first factor and 0.91 for the second factor (Table 3).

The total score and correlations of the items in the SOES section were found to range between 0.45 and 0.76. The item-subscale total score correlations were found to be between 0.87 and 0.89 for the first factor and 0.91 and 0.95 for the second factor.

No statistically significant difference was found between the mean scores of the scale and subscales in the two assessments carried out at a three-week interval (p > 0.01, Table 5).

A positive relationship of high level significance was found between the test–retest scores of the ASSES and its three subscales (p < 0.01, Table 5).

The test–retest correlation coefficients were found to be higher than 0.25 for all items (p < 0.01).

No statistically significant difference was found between the mean scores of the scale and subscales in the two assessments carried out at a three-week interval (p > 0.01, Table 6).

The test–retest correlation coefficients were found to be higher than 0.25 for all items (p < .01).

A statistically significant difference was found between the ASSES and SOES mean scores of smoking and non-smoking students (p < 0.05).

Discussion

The appropriateness of the Turkish version of the scale for the target language and culture was assessed by nine experts. I-CVI and S-CVI were used to evaluate the experts' opinions. The analysis indicated that the I-CVI was between 0.85 and 0.96, and the S-CVI was 0.90. Both the I-CVI and the S-CVI should be above 0.80 to confirm that the experts' opinions are concordant (Polit, Beck & Owen, 2007; Terwee et al., 2007). In this study, both the I-CVI and the S-CVI were found to be above 0.80. The I-CVI and S-CVI scores in this study indicated compliance among the experts. The scores also revealed the appropriateness of the items on the scale for the Turkish culture, the sufficiency of the items to assess the subject and the content validity of the scale.

Bartlett's sphericity test and KMO were used to analyze the appropriateness and sufficiency of the data for factor analysis. The literature emphasizes that Bartlett's sphericity test should

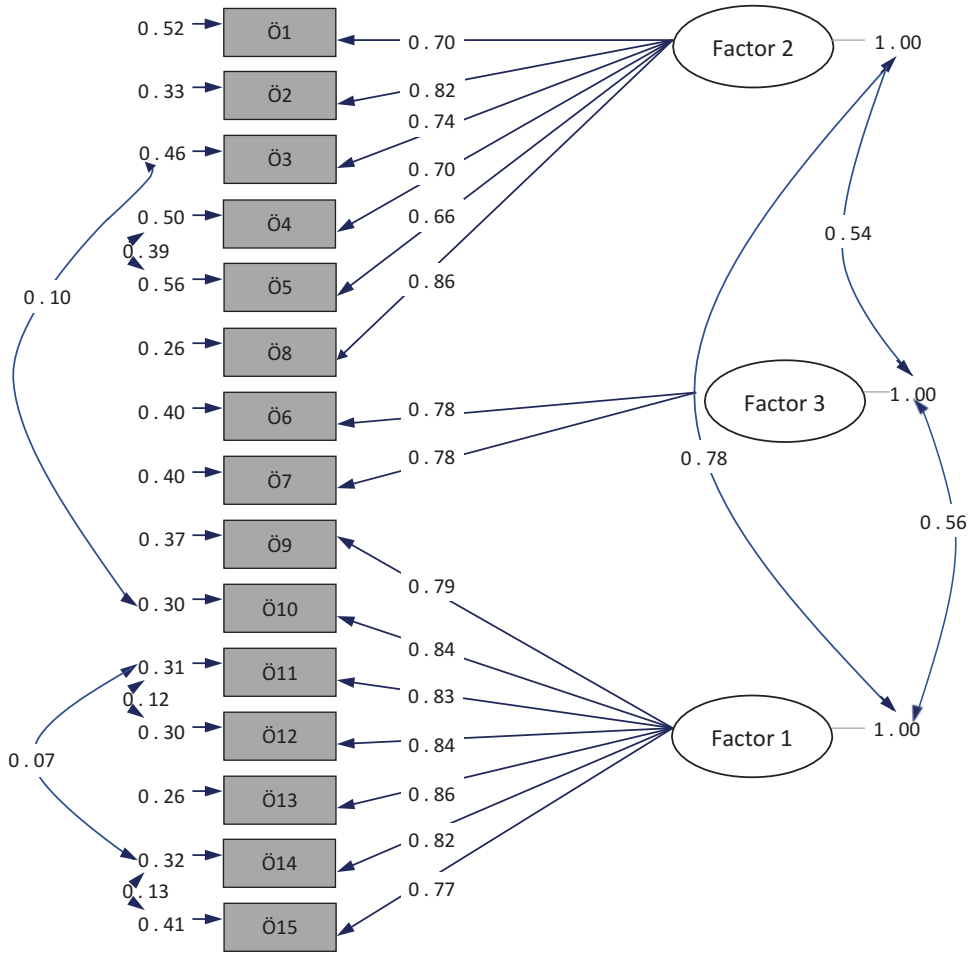

Figure 2. SOES confirmatory factor analysis. Chi-square = 335.48, df = 82, *p*-value = 0.00000, RMSEA = 0.075.

be statistically significant, and the KMO value should be at a minimum of 0.60 to carry out a factor analysis (DeVellis, 2012; Hayran & Hayran, 2011; Jonhson & Christensen, 2014; Terwee et al., 2007). In this study, Bartlett's sphericity test and the KMO value were $p < 0.05$ and above 0.60, respectively, indicating that the data were appropriate and sufficient for factor analysis (DeVellis, 2012; Hayran & Hayran, 2011; Jonhson & Christensen, 2014; Terwee et al., 2007). The eigenvalue was accepted to be 1.00 and above to determine the number of factors for the explanatory factor analysis (Çam & Baysan-Arabacı, 2010; Hayran & Hayran, 2011; Şencan, 2005). Three subscales were identified for the ASSES section, while two subscales were identified for the SOES section. While the three subscales explained 72.5% of the total variance for the ASSES section, two subscales explained 81.3% of the total variance for the SOES section. The literature indicates that the explained variance should be between 40.0% and 60.0%, and that the higher the total variance, the stronger the construct validity of the scale (Çam & Baysan-Arabacı, 2010; Hayran & Hayran, 2011; Şencan, 2005). In this study, the total variance was above 60.0% for both the ASSES and the SOES sections, and both sections of the scale had very high levels of explained variance. This shows that both sections of the scale had a very strong factor structure. The explained total variance was found to be 56.5% for the ASSES section and 54.7% for the SOES section of the original scale (Chen et al., 2015). The values obtained for both ASSES and SOES sections were similar to the values in the original study (Chen et al., 2015). These results support the construct validity of the scales.

The explanatory factor analysis showed that the factor values were between 0.71 and 0.85 for the first factor, between 0.70 and 0.86 for the second factor, and between 0.65 and 0.85 for the third factor of the ASSES section. The factor values were between 0.87 and 0.89 for the first factor and between 0.90 and 0.95 for the second factor of the SOES section. The literature indicates that the minimum factor value should be 0.30 and above, and that items below this value should be excluded from the scale when determining the factors under which items will be categorized (DeVellis, 2012; Hayran & Hayran, 2011; Jonhson & Christensen, 2014; Terwee et al., 2007). The factor value was found to be higher than .30 for the items in all subscales of both the ASSES and the SOES sections. The factor values for the subscales of the ASSES and SOES sections were found to range between 0.52 and 0.87 in the original study (Chen et al., 2015). The EFA factor values in this study were found to be similar to the values in the original study (Chen et al., 2015). These results show that the scales had a very strong factor structure for a Turkish sample.

The confirmatory factor analysis showed that the factor values ranged between 0.66 and 0.86 for the three subscales of the ASSES section and between 0.78 and 0.97 for the two subscales of the SOES section (Figure 1). It was found that the factor values were higher than 0.30, fit indexes (GFI, NFI, CFI and IFI) were higher than 0.90, and the RMSEA was lower than 0.08 for all subscales of the ASSES and SOES (Figures 1 and 2). The division of the chi-square value into the degree of freedom was found to be lower than 5 for both sections. A strong and significant relationship was found between each scale and its subscales (Figures 1 and 2). The literature accepts the model fit indicators higher than 0.90, a X^2/DF value lower than 5 and a RMSEA value lower than 0.08 as indicators of good fit (Hooper et al., 2008; Şimşek, 2010). This study's CFA results were in line with the literature. The CFA results showed that the data complied with the model and confirmed the factor construct of the scales, the subscales were related to the scales, and the items of each subscale sufficiently described their factors. The CFA results of this study could not be compared to the original study (Chen et al., 2015) since the latter did not include CFA results.

This study's explanatory and confirmatory factor analysis results support the Turkish version of the scales and show that the scales are valid instruments that can be used for Turkish samples.

The Cronbach's alpha coefficient shows whether the items assess the same characteristics and are relevant to the subject that is being assessed. The coefficient should be as close to 1 as possible. A Cronbach's alpha coefficient between 0.60 and 0.80 shows that the scale is quite reliable, while a Cronbach's alpha value between 0.80 and 1.00 shows a high level of reliability (Çam & Baysan-Arabacı, 2010; Nunnally & Bernstein, 2010; Rattray & Jones, 2007; Şencan, 2005). The Cronbach's alpha values of the ASSES and SOES sections and their subscales were found to be higher than 0.70 for the original scale (Chen et al., 2015). In this study, the Cronbach's alpha coefficients of the ASSES section and its subscales were found to be 0.94, 0.89, 0.75, and 0.93, respectively (Table 1). The Cronbach's alpha coefficients of the SOES section and its subscales were found to be 0.70, 0.85, and 0.91, respectively (Table 2). These values showed that the scale sections and their subscales had a high level of reliability. This study's results are similar to the results of the original study (Chen et al., 2015). The values obtained in this study demonstrated that the items were assessing the subject and relevant to the subject, and that the scales had a high level of reliability for Turkish samples.

Table 1. Reliability analysis of ASES and subscale scores (n = 548).

Subscale	Cronbach-α	M ± SD	MinMax
Factor 1 use strategies to refrain from smoking	0.94	29.19 ± *12.18*	7–28
Factor 2 social resist social influence to smoke	0.89	26.37 ± *4.13*	6–24
Factor 3 reject illegal tobacco use	0.75	22.86 ± *3.29*	2–8
Total	0.93	55.96 ± *7.78*	15–60

Table 2. Reliability analysis of SOES scale and subscale scores (n = 548).

Subscale	Cronbach α	M ± SD	Min–Max
Factor 1 positive outcome expectation	0.85	4.10 ± 2.23	3–12
Factor 2 negative outcome expectation	0.91	10.25 ± 3.01	3–12
Total	0.70	14.36 ± 3.66	6–24

The item-total score analysis explains the relationship between scores on the items and total score on the scale. It shows whether the items of the scale assess the desired characteristic (DeVellis, 2012; Hayran & Hayran, 2011; Jonhson & Christensen, 2014; Terwee et al., 2007). This analysis uses the Pearson's product–moment correlation coefficient. This coefficient should be positive and higher than 0.20 (Şencan, 2005). In this study, the correlations of the items with the total score on the scale ranged between 0.58 and 0.81, while their correlations with the total score on the subscales ranged between 0.77 and 0.91 for the ASSES section (Table 3). The correlations of the items with the total score on the scale ranged between 0.45 and 0.76, while their correlations with the total score on the subscales ranged between 0.87 and 0.95 for the SOES section (Table 4). Both the item-total score and the item-subscales total score correlation coefficients were found to be positive and higher than 0.20. These results showed that all items of the scale had a high correlation with the total score on the scale, and with the subscales that were included, they sufficiently assess the desired characteristics, and the scale and subscales had a high level of item reliability ($p < 0.01$, Tables 2 and 4). These results are also similar to the results of the original study (Chen et al., 2015).

Test–retest is one of the best ways to prove invariance in scale studies. The lack of a statistically significant difference, as well as a strong relationship between the test-retest scores, is accepted as proof of invariance (Çam & Baysan-Arabacı, 2010; Nunnally & Bernstein, 2010; Rattray & Jones, 2007; Şencan, 2005). In this study, no statistically significant difference was found between the mean scores of two assessments carried out on both sections and their subscales at a three-week interval ($p > 0.01$, Table 5, Table 6). A positive and strong relationship was found between the test–retest scores of both sections and their subscales ($p < 0.01$, Table 5,

Table 3. Characteristics of Items in ASSES Scores (n = 548).

		ASSES	
Subscales	Items	Item-total score correlations (r)*	Item-subscale score correlations (r)*
Factor 1 use strategies to refrain from smoking	9	0.77	0.81
	10	0.80	0.86
	11	0.79	0.88
	12	0.79	0.88
	13	0.81	0.86
	14	0.79	0.88
	15	0.74	0.83
Factor 2 resist social influence to smoke	1	0.69	0.77
	2	0.71	0.80
	3	0.69	0.77
	4	0.71	0.88
	5	0.68	0.86
	8	0.79	0.77
Factor 3 reject illegal tobacco use	6	0.58	0.88
	7	0.59	0.91

*Significant at p <0.01 level.

Table 4. Characteristics of Items in SOES Scores (n = 548).

		SOES	
Subscales	Items	Item-total score correlations (r)*	Item-subscale score correlations (r)*
Factor 1 positive outcome expectation	1	0.58	0.87
	2	0.50	0.89
	3	0.45	0.87
Factor 2 negative outcome expectation	4	0.70	0.91
	5	0.76	0.95
	6	0.74	0.92

* Significant at $p < 0.01$ level.

Table 5. Test–retest analysis results for the ASSES section (n = 72).

Scale		First administration M ±SD	Second administration M±SD	t	p	r	p
Subscale	Factor 1	22.87 ± 3.43	22.97 ± 3.47	0.475	0.636	0.873	0.000
	Factor 2	27.11 ± 6.04	34.03 ± 6.22	1.772	0.636	0.867	0.000
	Factor 3	6.93 ± 1.64	7.01 ± 1.59	1.349	0.182	0.948	0.000
	Total	56.91 ± 7.07	56.79 ± 7.10	1.381	0.172	0.994	0.000

Table 6. Test-–retest analysis results for the SOES section (n = 72).

Subscale	First administration M ± SD	Second administration M±SD	t	p	r	p
Factor 1 positive outcome expectation	3.44 ± 1.37	3.40 ± 1.33	0.395	.694	0.782	0.000
Factor 2 negative outcome expectation	10.63 ± 2.62	10.62 ± 2.63	0.050	.960	0.496	0.000
Total	14.08 ± 2.63	14.02 ± 2.28	0.191	.849	0.502	0.000

Table 6). The test–retest analysis results of this study could not be compared to the original study (Chen et al., 2015) since the latter did not include test–retest results. The findings of this study indicated that the test and retest results were similar to each other. The similarity and consistency of the results obtained by the same instrument at different times show the invariance of that instrument (Çam & Baysan-Arabacı, 2010; Nunnally & Bernstein, 2010; Rattray & Jones, 2007; Şencan, 2005). Thus, the Turkish version of the scales had high reliability.

There may be no significant difference between the test and retest scores of the individuals; however, the individuals may give different answers to each item. Therefore, the consistency of the items observed during the two assessments should also be analyzed (Nunnally & Bernstein, 2010; Rattray & Jones, 2007). The correlation coefficient between the first and second assessments should be at a minimum of 0.25 for each item in test–retest analyses (Çam & Baysan-Arabacı, 2010; Nunnally & Bernstein, 2010; Rattray & Jones, 2007; Şencan, 2005). In this study, the item test–retest reliability coefficients of both the ASSES and the SOES sections and their subscales were found to be higher than 0.25 ($p <$ .01). These results showed that the students gave similar answers to the items in both assessments, and that the items were comprehensible and sufficiently represented the subject.

The known group comparison is one of the methods recommended in the literature for testing the reliability and validity of scales (Çam & Baysan-Arabacı, 2010; Nunnally & Bernstein, 2010; Rattray & Jones, 2007; Şencan, 2005). This study found a statistically significant difference between the ASSES and SOES mean scores of smoking and non-smoking students ($p < 0.05$). These results showed that the scale had a high power of distinction, was able to sufficiently assess the desired area, and was able to make a distinction between known groups. This result proves that the scale is a reliable and valid instrument.

Conclusion

These results indicate that the scale is a valid and reliable tool for use with early adolescents in Turkey. Using this scale, professionals can determine students' smoking outcome expectations and anti-smoking self-efficacy levels and develop programs based on the results. This scale can also be used to determine groups at risk of smoking. It can also be used in cross-cultural studies.

ORCID

Aslı Akdeniz Kudubeş http://orcid.org/0000-0002-0911-8182

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