



Psychometric properties of the Turkish version of the Sugar-Sweetened Beverages Media Literacy Scale for university students

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Abstract

It is very important to determine the consumption of sugar-sweetened beverages that cause diseases, such as obesity, diabetes, hypertension, and cardiovascular disease in late adolescence. This study aimed to evaluate the validity and reliability of the Turkish version of the Sugar-Sweetened Beverages Media Literacy Scale aimed at university students. This methodological-descriptive-correlational study was conducted with 884 university students between September 2018 and December 2018. The data were collected using a socio-demographic data collection form and the Sugar-Sweetened Beverages Media Literacy Scale. Factor analysis, Cronbach's alpha, and item-total correlation were used to evaluate the data. It was determined that the scale consists of 19 items and three sub-dimensions; the three sub-dimensions explained 49.9% of the total variance. In both the explanatory and confirmatory factor analyses, all the factor loads were found to be >0.30 . In confirmatory factor analysis, it was found that all of the fit indices were >0.85 and the root mean square error of approximation (RMSEA) was <0.080 . Cronbach's alpha was found to be 0.86 for the entire scale; the Cronbach's alpha values for all three sub-dimensions were found to range between 0.65 and 0.84. In this study, the Turkish version of the Sugar-Sweetened Beverages Media Literacy Scale aimed at university students was found to be a valid and reliable measurement tool for the Turkish sample.

Keywords Sugar · Beverage · Sugar-sweetened beverage · Media · Literacy

Introduction

Sugar is a significant component of nutrition; hence, it has an impact on the lives of people in many countries around the world. Sugar consumption has increased exponentially in the

last 200 years with industrialization and population growth in developed countries (Healy 2013; Kit et al. 2013). Sugar-sweetened beverages are among the top products that contribute to this increase. Sugar-sweetened beverages, such as juices, soda, sports drinks, and energy drinks, comprise approximately 8% to 9% of the caloric intake in children and adults (Kit et al. 2013; Sanchez-Lozada et al. 2007; Welsh et al. 2011). However, frequent consumption of sugar-sweetened beverages leads to the development of obesity, diabetes, hypertension, and cardiovascular diseases in late adolescence (Malik et al. 2013; Nielsen and Pompkin 2004; Xi et al. 2015).

Recently, media literacy has been considered to be among the factors affecting the consumption of sugar-sweetened beverages. Sugar-sweetened beverages media literacy is a concept that has recently emerged as an important topic. Media literacy consists of access to and analysis, critical evaluation, and production of media messages in various forms, such as television, cinema, video, the internet, and advertisements (Aufderheide 1993; Scheibe and Rogow 2004). Mapping media literacy skills is important; it facilitates the ability to take necessary preventive measures by identifying an environment in which individuals are constantly exposed to attractive and

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often unrealistic food and beverage promotional messages (Chen et al. 2017; Jeong et al. 2012). In the literature, three sub-dimensions of media literacy for sugar-sweetened beverages have been studied (Chen et al. 2017; Primack and Hobbs 2009). The first sub-dimension is authors and audience. This sub-dimension elaborates on how companies use media to target a specific audience for profit. It includes items about what sugary beverage companies do to make people become addicted to sugar, and to make money (Chen et al. 2017; Primack and Hobbs 2009). The second sub-dimension is messages and meanings. It investigates the extent to which people agree or disagree on the values and perspectives depicted in the messages for sugar-sweetened beverages in the media and on their mass production techniques. It deals with whether individuals can analyze open and closed meanings in media messages. This sub-dimension includes items about how people can make different inferences after watching the same movie, how people may be influenced by advertisements, and how sugar-sweetened beverage ads contain subliminal messages (Chen et al. 2017; Primack and Hobbs 2009). The third sub-dimension is representations and reality. It assesses the extent to which the sugar-sweetened beverage messages in the media affect health and nutrition-related positive information and attitudes.

This sub-dimension includes items about how the media is trying to depict people's consumption of sugary beverages as being more attractive than it actually is, how advertisements promote consumption of sugary beverages as a healthy lifestyle by hiding the associated health risks, such as weight gain and diabetes, and how ads, generally, promote these products by hiding many of the negative effects of sugary beverages (Chen et al. 2017; Primack and Hobbs 2009).

The food and beverage industry is known to target consumers through its billion-dollar marketing efforts, including television commercials, packaging, and promotional activities (Federal Trade Commission 2008). These efforts use various persuasion techniques without exposing the potential risks of the products (e.g., the unhealthy effects of low nutritional value). While these techniques are effective for increasing product sales, they can negatively affect consumers' sensitivity to a product's health and contribute to long-term negative eating and drinking habits (Chandoni and Wansink 2006; Chen et al. 2017; Federal Trade Commission 2008; Hennessy et al. 2015).

Although the effect of sugar-flavored foods on health has been more often studied in children than in adults, recent literature reveals that sugar-sweetened beverages have many negative effects on adult health. The interesting and attractive environment of advertising increases consumption, which can pave the way for many chronic diseases, such as obesity, diabetes, heart diseases, and metabolic syndrome, in adulthood (Bogart et al. 2013; Chandoni and Wansink 2006; Harris and Bargh 2009; Hennessy et al. 2015).

It has been established that the consumption of sugar-sweetened beverages has undergone an upward trend as the media promotion and marketing of these products has increased, and the beverage industry is reported to have spent \$1.6 billion USD to promote these products to consumers under the age of 18 (Federal Trade Commission 2008). Although there are no current studies available on marketing expenditures aimed at adult consumers, evidence shows that sugar-sweetened beverage advertising is linked to positive perceptions about and tendencies to consume sugar-sweetened beverages among adults (Harris and Bargh 2009; Hennessy et al. 2015).

Exposure of adults to sugar-sweetened beverage advertisements influences their sugar-sweetened beverage intake as well as their children's intake (Harris and Bargh 2009; Hennessy et al. 2015). The eating habits of children are particularly affected by the eating behaviors of their families. Development of healthy eating attitudes only occurs in childhood and adolescence. It may be very difficult to create behavioral changes later in life. Therefore, it is critical to determine the level of sugar-sweetened beverage media literacy starting from childhood (Chen et al. 2017; Jeong et al. 2012). Studies show that there are shortcomings in the evaluation of some facts about the ingredients found in sugary beverages, how to read the label content of sugar-sweetened beverages, how ads attract people to sugary beverages, the purpose of the companies, and how they target specific market segments for profit (Chen et al. 2017; Jeong et al. 2012). Media literacy for sugar-sweetened beverages will increase people's level of knowledge about the consumption of sweetened beverages, enable them to acquire positive attitudes and behaviors, and identify negative drinking behaviors. Moreover, it will contribute to the formation of healthy communities in the future by preventing chronic diseases, such as obesity and diabetes (Chen et al. 2017; Jeong et al. 2012). Therefore, there is a need for valid and reliable measurement tools that assess attitudes towards sugar-sweetened beverages.

However, after examining previous studies, in which sugar-sweetened beverages media literacy has been measured in many countries, a standard scale with validity and reliability was not found. The present study sought to translate the Sugar-Sweetened Beverages Media Literacy Scale aimed at university students from English into Turkish, and verify its validity and reliability.

Methods

This study used a methodological-descriptive-correlational design to evaluate the validity and reliability of a Turkish version of the Sugar-Sweetened Beverages Media Literacy Scale aimed at university students. This study was conducted between September 2018 and December 2018 with students

from two universities located in the western and central regions of Turkey.

In the literature, it is reported that, for scale development, validity, and reliability, the number of people in a study's sample is insufficient if the sample has up to 100 people, medium if it has up to 200 people, good if it has up to 300 people, very good if it has up to 500 people, and excellent if it has up to 1000 people (Aksayan and Gözümlü 2002; Özdamar 2005; Şimşek 2010; Şencan 2005). Thus, this study aimed to include 600 students ranging in age from 18 to 25 in the sample. Random sampling was used to select the study participants from among the 1st, 2nd, 3rd, and 4th year students that were studying at the two chosen universities during the 2018–2019 academic year, and who voluntarily agreed to participate in the study. A total of 904 students who voluntarily agreed to participate in the study, and who thoroughly completed the forms (see below), were included in the study. Of those 904 students, 20 were pilot study and they were excluded from the sample. Thus, the sample consisted of 884 students.

The data were collected using the Socio-demographic Data Collection Form and the Sugar-sweetened Beverages Media Literacy Scale. Data were collected between September 2018 and December 2018. The consent forms, explaining the study and requesting consent to participate, and the questionnaires were distributed to the students.

- *Socio-demographic Data Collection Form*: This form consists of 9 questions about the student's age, class, gender, economic status, body weight, height, how they consider their body weight and height to be, and whether they maintain an adequate and balanced diet.
- *Sugar-Sweetened Beverages Media Literacy Scale*: The Sugar-Sweetened Beverages Media Literacy Scale was developed by Chen et al. (2017) to assess individuals' media literacy skills in relation to sugar-sweetened beverages. The scale consists of 19 items. Using a 7-point Likert-type scale, each item is scored as "1 = absolutely disagree", "4 = neutral" and "7 = absolutely agree". The scale is divided into three sub-dimensions: 1) authors and audience, 2) messages and meanings, and 3) representations and reality. The scale evaluates the following skills: functional, interactive, food selection, and critical thinking skills. Cronbach's alpha coefficients of the scale's three sub-dimensions ranged from 0.65 to 0.83. Cronbach's alpha coefficient of the entire scale was found to be 0.89. Thus, the scale is a valid and reliable tool for measuring the sugar-sweetened beverages media literacy of university students.

Procedure

Before beginning the study, written permission was obtained from the authors of the Sugar-Sweetened Beverages Media

Literacy Scale. Then, two people translated the scale from English into Turkish. Both translations were reviewed by the researchers, and a single Turkish version of the scale was obtained. The Turkish version was sent to seven faculty members, including dietitians, psychologists, and pediatric nursing specialists, for content validity. Expert opinions were evaluated with the item-level content validity index (I-CVI) and the scale-level content validity index (S-CVI); after obtaining a fit between the experts' opinions, a draft of the Turkish version of the scale was piloted to 20 students. The obtained Turkish version was translated back into English by a person who had not seen the scale before. A fit between the Turkish and English versions was obtained. After determining that the language and scope equivalence of the scale was sufficient, the scale was administered to the study sample.

Ethics Committee Approval

E-mail permission to use the Sugar-Sweetened Beverages Media Literacy Scale aimed at university students was received from Dr. Yvonne Chen, one of the people who had developed the original scale. Before beginning the study, approval (dated 09.08.2018 and numbered 4220-GOA-2018/21–11) was obtained from the Ethical Committee for Non-Invasive Studies. Written permission was also obtained from two universities located in the western and central regions of Turkey. The purpose of the study was explained to the students, and the students who agreed to voluntarily participate in the research were included in the study. Moreover, oral and written informed consent was obtained from the students.

Statistical Analyses

The data were analyzed using descriptive statistics (percentile and average). The Shapiro-Wilk normality test was used to determine if the data complied with normal distribution. The content validity index was used to analyze the compatibility of the experts' opinions. Pearson's correlation analysis was used to analyze the for total score of the scale and the sub-dimensions. Cronbach's alpha coefficient was used to determine the internal consistency of the scale and the sub-dimensions. Explanatory factor analysis (EFA) was used to determine the substance-factor relationship. Confirmatory factor analysis (CFA) was used to determine if the items and sub-dimensions explain the structure of the original scale. The Hotelling's T-squared test was used to determine the response bias, and a floor and ceiling effect analysis was also conducted (Aksayan and Gözümlü 2002; Özdamar 2005; Şencan 2005; Şimşek 2010). The database was divided into two halves for the factor analysis. EFA analysis was performed on one half of the database and CFA was performed on the other half. The significance level was accepted as 0.05.

Results

The average age of the students was 19.82 ± 1.89 ; 74.7% of the students ($n = 660$) were female and 57.8% ($n = 511$) of them stated they have incomes equal to their expenses. In terms of weight and height, 67.4% ($n = 596$) of the students evaluated their weight as normal and 64.8% ($n = 573$) evaluated their height as normal. The body mass index (BMI) of 14.6% ($n = 129$) of the students who participated in the study was low, the BMI of 68.1% ($n = 602$) of the students was moderate, and the BMI of 17.2% ($n = 152$) of the students was high.

Content Validity

Seven experts provided their opinions of the draft of the Turkish version of the scale. Based on those opinions, the scope validity index on the basis of the items was found to range between 0.90 and 1.00, and the scope validity index of the scale basis was 0.96.

Explanatory Factor Analysis (EFA)

The EFA results showed that the Kaiser-Meyer Olkin (KMO) coefficient was 0.834, the Bartlett test X^2 value was 3026.665, and $p < 0.01$. It was determined that the three sub-dimensions of the scale accounted for 49.9% of the total variance. The authors and audiences sub-dimension of the scale accounted for 29.4% of the total variance, the messages and meanings sub-dimension accounted for 12.6% of the total variance, and the representations and reality sub-dimension accounted for 7.9 of the total variances. The factor loadings of the authors and audiences sub-dimension of the scale ranged from 0.40 to 0.92, the factor loadings of the messages and meanings sub-dimension ranged from 0.30 to 0.83, and the factor loadings of the representations and reality sub-dimension ranged from 0.45 to 0.72 (Table 1).

Confirmatory Factor Analysis (CFA)

According to the CFA results, the fit indices were: $X^2 = 468.89$, $df = 147$, $X^2 / df = 3.189$, RMSEA = 0.070, GFI = 0.90, CFI = 0.94, IFI = 0.94, NFI = 0.92, TLI = 0.94, RFI = 0.91. The factor loadings of the authors and audiences sub-dimension of the scale ranged from 0.48 to 0.69, the factor loadings of the messages and meaning sub-dimension ranged from 0.47 to 0.72, and the factor loadings of the representations and reality sub-dimension ranged from 0.35 to 0.66 (Fig. 1, Table 2).

Reliability Analyses

The Hotelling's T-squared test was used to determine if the scale had response bias. The Hotelling's T-squared value was 912.990, $F = 49.745$ ($p < 0.01$). Thus, there was no response

Table 1 Results of explanatory factor analysis ($n = 442$)

Items	Sub-scale		
	Authors & audiences	Messages & meaning	Representation & reality
1	0.40		
2	0.89		
3	0.74		
4	0.92		
5	0.68		
6		0.35	
7		0.30	
8		0.81	
9		0.83	
10		0.78	
11		0.70	
12		0.66	
13		0.42	
14		0.30	
15			0.67
16			0.45
17			0.72
18			0.66
19			0.48
Eigenvalue	5.592	2.398	1.506
Explained Variance (%)	29.4	12.6	7.9

bias in the scale. The Cronbach's alpha coefficient of the entire scale was 0.86. The Cronbach's alpha values of the sub-dimensions were 0.80, 0.84, and 0.65, for authors and audiences, messages and meanings, and representations and reality, respectively. For the two-halves analysis, the Cronbach's alpha value of the first half was 0.81, the Cronbach's alpha of the second half was 0.78, the Spearman Brown coefficient was 0.73, the Guttman-split-half coefficient was 0.73, and the correlation coefficient between the two halves was 0.58. No floor effect and ceiling effect was detected for the entire scale. The floor effect was 0.5% and the ceiling effect was 0.7%, for the authors and audiences sub-dimension; the floor effect was 0.1% and the ceiling effect was 4.6% for the messages and meanings sub-dimension, the floor effect was 0.3% and the ceiling effect was 7.5% for the representations and reality sub-dimension. The scale items' correlations with the scale total score ranged from 0.41 to 0.63; the item-subscale total score correlations ranged from 0.55 to 0.87 (Tables 3 and 4).

Discussion

The content validity (CV) of the scale was evaluated by seven experts, and I-CVI/S-CVI were used to evaluate the experts'

Table 2 Model fit indices of the Sugar-Sweetened Beverages Media Literacy Scale ($n = 442$)

	X^2	DF ^a	X^2/DF	RMSEA ^b	GFI ^c	CFI ^d	IFI ^e	RFI ^f	NFI ^g	TLI ^h
Three-factor model	468.89	147	3.189	0.070	0.90	0.94	0.94	0.91	0.92	0.94

a: Degree of Free; b: (Root Mean Square Error of Approximation; c: Goodness of Fit Index; d: Comparative Fit Index; e: Incremental Fit Index; f: Relative Fit Index; g: Normed Fit Index; TLI (NNFI): Tucker-lewis Index

opinions. Both I-CVI and S-CVI should be >0.80 in order to be able to confirm that there is agreement between the experts’ opinions (Polit et al. 2007; Terwee et al. 2007). In the present study, I-CVI and S-CVI were both found to be >0.80. Thus, the I-CVI and S-CVI results showed that there was agreement between the experts, the scale measured the subject adequately, and the CV was ensured.

The Barlett Sphericity test and KMO were used to determine if the data were appropriate and sufficient for factor analysis. In the literature, it is emphasized that the Barlett Sphericity test value should be statistically significant and the KMO value should be at least 0.60 (DeVellis 2012; Hayran and Hayran 2011; Jonhson and Christensen 2014; Terwee et al. 2007). In the present study, the Barlett Sphericity test value was found to be less than $p < 0.05$, and the KMO value was >0.60. Thus, it was determined that the database and sample size of the present study are suitable for factor analysis (DeVellis 2012; Hayran and Hayran 2011; Jonhson and Christensen 2014; Terwee et al. 2007).

In the descriptive factor analysis, it was accepted that the eigenvalue of the factor number was 1 or higher (Çam and Baysan-Arabacı 2010; Hayran and Hayran 2011; Şencan 2005). The scale was determined to consist of three sub-dimensions. In this study, the three sub-dimensions of the scale explained 49.9% of the total variance. The results could not be compared with the findings reported in the original study conducted by Chen et al. (2017) because that study did not use EFA to evaluate the data. Arguments were made only based on the information found in the literature. In the literature, it is emphasized that the variance explained in multidimensional scales should be

>40%; moreover, the higher the total variance, the stronger the validity of the scale (Çam and Baysan-Arabacı 2010; Hayran and Hayran 2011; Şencan 2005). It was determined that the total variance obtained in this study was >50%, and the scale had a very high explained variance. These results support the structure validity of the scale.

As a result of the EFA, it was found that the factor loads of the three sub-dimensions ranged between 0.30 and 0.92. In the literature, it is emphasized that while designating items to factors, the minimum factor load should be 0.30 or higher, and items lower than that should be excluded from the scale (DeVellis 2012; Hayran and Hayran 2011; Jonhson and Christensen 2014; Terwee et al. 2007). In the present study, it was determined that the factor loads of all three of the sub-dimensions were >0.30. However, the results could not be compared to the findings reported in the study of Chen et al. (2017), because EFA was not performed in that study. Arguments were made only based on the information found in the literature. In the present study, the fact that the factor loads obtained in each sub-dimension were >0.30 demonstrates that the scale had a strong factor structure.

In the literature, it is recommended that the structure determined by EFA should be examined using CFA (Hooper et al. 2008; Şimşek 2010). In the present study, the CFA results showed that the factor loads of the three sub-dimensions ranged between 0.35 and 0.72. In CFA, it is recommended that factor loads be >0.30, general fit indices be >0.90, and RMSEA be <0.08. In the present study, it was determined that, in all sub-dimensions, the factor loads were >0.30, and the fit indices (GFI, NFI, CFI, and IFI) were >0.90 and RMSEA was

Table 3 Results of the reliability analyses of the scale and sub-dimensions ($n = 884$)

Sub-dimensions	Cronbach α	First half of Cronbach α	Second half of Cronbach α	Spearman-Brown	Guttman split-half	Correlation between two halves	M \pm SD (Min-Max)	Floor effect %	Ceiling effect %
Scale Total	0.86	0.81	0.78	0.73	0.73	0.58	99.96 \pm 16.41 (19–133)	0.0	0.8
Authors & Audiences	0.80						24.13 \pm 5.93 (5–35)	0.5	0.7
Messages & Meaning	0.84						51.01 \pm 9.08 (9–63)	0.1	4.6
Representation & Reality	0.65						24.82 \pm 5.69 (5–35)	0.3	7.5

Table 4 Correlations of the item total score and sub-dimension total score ($n = 884$)

Items	Item-total score correlation (r)*	Item-subscale total score correlation (r)*
1	0.49	0.59
2	0.57	0.86
3	0.51	0.75
4	0.56	0.87
5	0.50	0.69
6	0.51	0.57
7	0.54	0.55
8	0.63	0.76
9	0.62	0.75
10	0.51	0.66
11	0.63	0.73
12	0.63	0.72
13	0.61	0.65
14	0.58	0.57
15	0.58	0.70
16	0.41	0.61
17	0.46	0.70
18	0.58	0.66
19	0.42	0.59

* $p < .001$

<0.080. The division of Chi-square values by degrees of freedom was found to be <5. A strong and significant relationship was found between the scale and the sub-dimensions. In the literature, a good fit is indicated if the model fit indicators are >0.90, the X^2/DF are <5, and RMSEA is <0.08 (Hooper et al. 2008; Şimşek 2010). In the present study, the CFA results were consistent with the criteria found in the literature. The results could not be compared to the finding reported by Chen et al. (2017) because CFA was not performed in that study. Arguments were made only based on the information found in the literature. In the present study, the CFA results showed that the data were compatible with the model; the findings confirmed that the three-factor structure (the sub-dimensions) were related to the scale and the items in each sub-dimension were sufficient. Thus, the EFA and CFA results suggest that the Turkish version of this scale is a valid tool, thereby supporting the structure validity of the scale.

The Cronbach's alpha coefficient indicates whether the items measure the same property and whether the items are relevant to the subject to be measured. This value should be as close to 1 as possible in scales. A value ranging between 0.60 and 0.80 indicates that the scale is relatively reliable; a value ranging between 0.80 and 1.00 indicates that the scale is highly reliable (Çam and Baysan-Arabacı 2010; Şencan 2005; Nunnally and Bernstein 2010; Rattray and Jones 2007). In

the present study, Cronbach's alpha values of the total scale and the sub-dimensions of the scale were found to be >0.65. This demonstrates that the Cronbach's alpha values of the scale and its sub-dimensions were highly reliable. The Cronbach's alpha values obtained from the study showed that the items could be used to measure the desired subject at a sufficient level, the items were related to the subject, and the scale had very good reliability (Çam and Baysan-Arabacı 2010; Nunnally and Bernstein 2010; Rattray and Jones 2007; Şencan 2005). In the study conducted by Chen et al. (2017), the Cronbach's alpha values of the scale were found to be >0.65, which is similar to our study. This result showed that the Turkish version of the scale was similar to the original scale, and it had a strong internal consistency.

In the two-halves method used in this study, the Cronbach's alpha values of both halves were >0.70. Thus, there was a strong and meaningful relationship between the two halves; both the Spearman-Brown and Guttman Split-Half coefficients were >0.73. These results demonstrate that the scale has a high level of reliability (Çam and Baysan-Arabacı 2010; Nunnally and Bernstein 2010; Rattray and Jones 2007; Şencan 2005). While these results show that the internal validity of the scale is high, the results could not be compared with the findings reported by Chen et al. (2017) because a two-halves analysis was not conducted in that study.

Response bias is one of the important factors that affect the reliability of scales. Response bias means that, while rating the items in the scale, people respond by selecting answers that meet the expectations of the community or the people who administered the scale, not responses that are based on their own opinions. This negatively affects the reliability of the scale, and, indirectly, its validity. Hotelling's T-squared test was used to determine if the proposed Turkish version of the scale had response bias. It was found that the respondents answered the items in line with their own opinions, the participants' answers to items were different from each other, and the scale did not have response bias. This provides further evidence for the reliability of the scale (Nunnally and Bernstein 2010; Rattray and Jones 2007; Şencan 2005).

The floor and ceiling effect is another factor that affects the reliability and validity of scales. It is recommended to keep the floor and ceiling effect <20% in scale studies. In the present study, it was determined that the floor and ceiling effects were <20% for both the total scale and in the sub-dimensions. This demonstrates that the scale is very reliable (Nunnally and Bernstein 2010; Rattray and Jones 2007; Şencan 2005).

Item-total correlation analysis explains the relationship between the scores of the scale items and the total score of the scale. It is an indication as to whether or not the items in the scale adequately measured the quality that was measured (DeVellis 2012; Hayran and Hayran 2011; Jonhson and Christensen 2014; Terwee et al. 2007). This value must be >0.20, as close to 1 as possible, and positive (Şencan 2005).

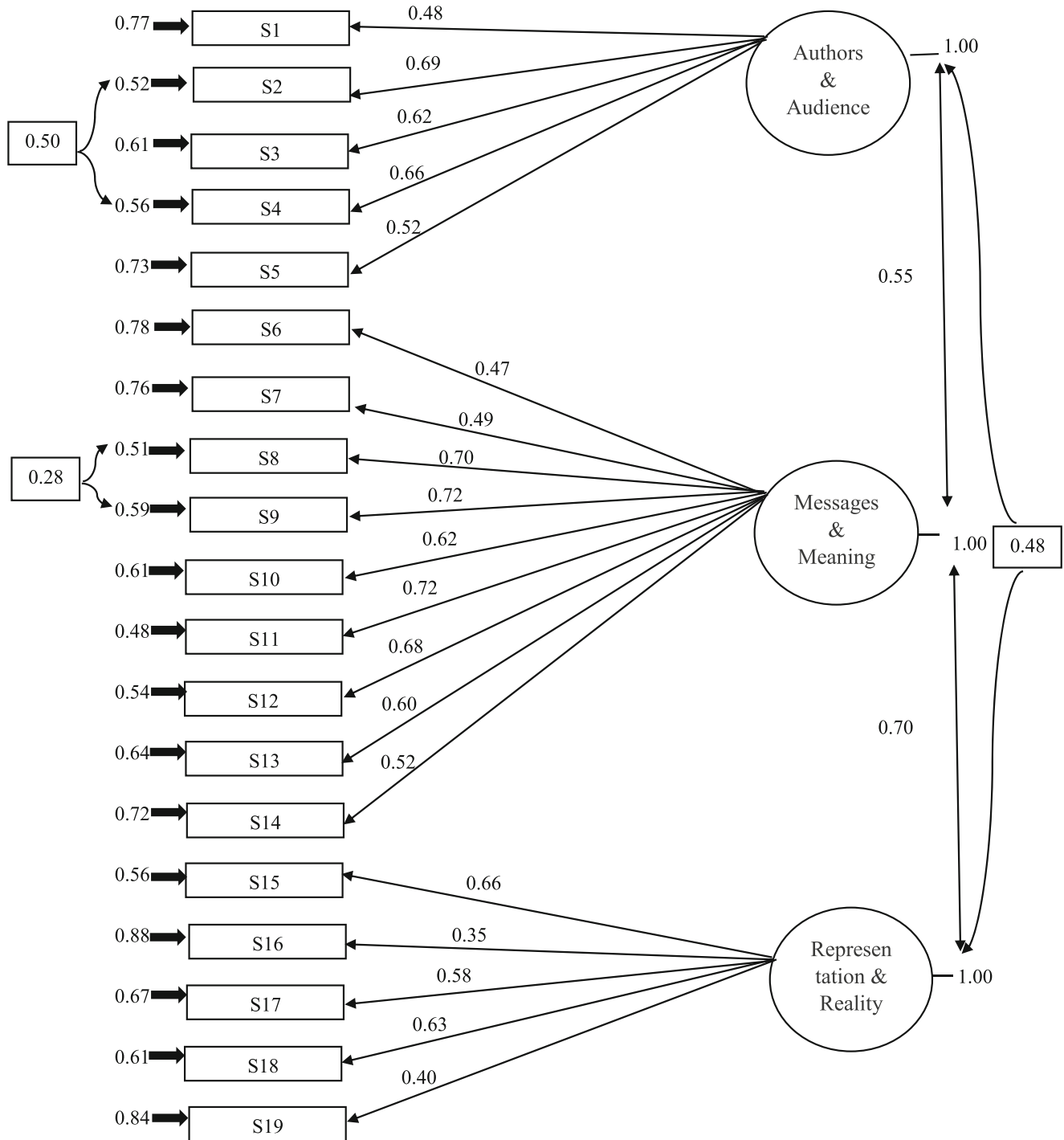


Fig. 1 Confirmatory factor analysis of the Sugar-Sweetened Beverages Media Literacy Scale ($n = 442$)

In the present study, it was determined that the correlations of items with the total score of the scale were between 0.41 and 0.63, the correlations of items with the subscale total score ranged from 0.55 to 0.87. Both the item-total and item-subscale total correlation coefficients were found to be positive and >0.20 . Thus, all items of the scale showed a high correlation with the total score and total score of their own

sub-dimensions, they adequately measured the quality to be measured, and the item reliability of the scale and sub-dimensions was high. Since the item-total correlation of the scale and sub-dimensions was not done in the original study by Chen et al. (2017), the results of the present study could not be compared with the results of that study. Arguments were made only based on the information found in the literature.

This result proved that the scale examined in our study has high internal consistency.

In the present study, and in the original study (Chen et al. 2017), the scale consists of three sub-dimensions. The sub-dimensions were found to be highly correlated in both cultures. Similar sub-dimensions were formed between the original scale in the Turkish sample, and the same items were located in the same sub-dimensions. The validity and reliability coefficients of the Turkish scale were high, and they were similar to those of the original scale. These results indicate that the features of the Turkish scale and the English scale were similar, and the cultural equivalence of the scales was achieved. Unlike the original study, EFA and CFA were performed for the Turkish sample, and conducting these analyses in the Turkish sample provided strong evidence for the validity of the Turkish version of the scale. However, while this study has many strengths, the use of random sampling is a limitation. This may affect the generalizability of the study's findings.

Conclusion

In this study, the results of the analyses and evaluations demonstrated that the Turkish version of the Sugar-sweetened Beverages Media Literacy Scale aimed at university students is a valid and reliable measurement tool for a Turkish sample. It is thought that the Sugar-sweetened Beverages Media Literacy Scale will allow for early diagnosis of obesity, diabetes, hypertension, and cardiovascular diseases in late adolescence, as the prevalence of these conditions has dramatically increased. The use of this scale will prevent the emergence of these diseases in this population or enable necessary follow-ups to be performed before these diseases manifest. In conclusion, both healthcare professionals and health educators are advised to use this scale to determine attitudes towards sugar-sweetened beverages, while providing training about sugar-sweetened beverages media literacy and evaluating its effectiveness.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Human and Animal Rights This article does not contain any studies with human participants or animals performed by any of the authors.

Informed Consent Informed consent was obtained from all the individual participants that were included in the study.

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