

ADAPTATION OF THE SCALE OF EFFECTS OF SOCIAL MEDIA ON EATING BEHAVIOR IN HUNGARIAN UNIVERSITY STUDENTS

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ABSTRACT

Background. People live in a technological world, where social media is used very commonly. Social media has effects on eating behaviors, as in other aspects. For this reason, it is important to measure social media effect.

Objective. This study aimed to adapt the Scale of Effects of Social Media on Eating Behaviour (SESMEB) that examines the effect of social media on eating behavior in Hungarian university students.

Material and methods. The SESMEB was translated into the target language by taking various stages. The online questionnaire including general information, social media use, and the eighteen-item SESMEB was used to collect data. The scale was administered to the study group consisting of 213 Hungarian university students, and data from 203 of them were analyzed. Confirmatory factor analyses were performed to test construct validity, and the Cronbach alpha coefficient was calculated for the reliability of the scale in Hungarian.

Results. Total correlation value was higher than 0.50 for all items of the scale. The fit indices were at an acceptable level or had a perfect fit. The t-values were significant at the level of 0.1 and ranged between 2.927 and 5.706. The Spearman–Brown coefficient was calculated at 0.894. The reliability coefficient of the scale was calculated to be 0.866. SESMEB scores were different according to spending time daily, sharing content, and using filters or Photoshop on social media ($p < 0.05$).

Conclusions. Higher than 0.80 Cronbach's alpha coefficient and other results show that Hungarian SESMEB is a valid and reliable tool. Therefore, Hungarian SESMEB will be useful for further studies to determine the impact of social media on eating behaviors.

Key words: eating behavior, Hungarian university students, social media effect, social media scale, reliability, validity

INTRODUCTION

Current technological developments have a remarkable effect on numerous aspects of people's lives, including the way they spend their free time, read the news, and keep in touch with their friends and family [1]. For this reason, especially Internet usage which is one of the most important technological advancements is on the increase all over the world, social media and social networks are gaining importance day by day. As of April 2021, 4.72 billion people around the world use the Internet, which means 60% of all the people on Earth. Also, social media use continues to grow, with more than 55% of the total world population, and today each global user spends an average of 2 hours and 22 minutes on any social

media every day [2]. This situation regarding the Internet and social media usage is also not different in Hungary, and 88% of Hungarian households had an Internet connection in 2020, this shows Internet usage in Hungary is expanding like the globe, and one of the aims of Internet usage is that used social media with percentage %74 [3].

Social media influences its users in various ways, and eating behavior is one of them. When considering the widespread use of social media, it is normal for people to be exactly exposed to norms in our wider social environment, and they influence our eating behavior, and potentially, body mass index [4]. Usage of social networking sites may be contributing to body image concerns, disordered eating, and body change behaviors [5, 6, 7]. As a result of a systematic review

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that included 20 studies, social networking site usage is associated with body image and eating disorders without depending on the gender of participants [8]. Especially Instagram has become an unofficial health promotion education resource. Health and well-being posts on Instagram can lead people to think more related to highlighting the importance of losing and managing weight [5, 6]. Therefore, upon this effect of social media, it is inevitable for individuals to also change their eating behavior.

Regarding all this information, the fact that with the widespread use of social media, we begin to acquire a social personality in the virtual world and that social media dominates every aspect of life and affects people, is known. Therefore, it is necessary to measure the effect of social media on eating behaviors, especially in young people. Validity and reliability studies should be conducted in the target language to use scales. Therefore, this study aimed to adapt the scale of effects of social media on eating behavior (SESMEB), a scale developed in Turkish, into the Hungarian language.

MATERIAL AND METHODS

Participants

Considering that the developed scale consists of 18 items and one dimension, at least 5 and 10 individuals per item were needed to participate in the study. In this case, a minimum of 90 participants was required. Inclusion criteria of the study: (i) being a volunteer (ii) aged 19-30 (iii) being a Hungarian native speaker (iv) using social media (v) being educated at University of Debrecen (bachelor students, master students, doctoral students) (vi) not educated departments related to nutrition (vii) not having any chronic or mental illness or eating disorder.

The students were informed and invited on the Facebook site, and the online platforms, and 213 students paid attention to this study. Two of them did not agree to attend the study. Eight of them were aged below 19 or above 30. Thus, the data of 203 students were analyzed.

Measures

Content of online questionnaire

The questionnaire was created online way using Google Forms. The introduction part of the online questionnaire form consists of informative sentences related to the study for participants. Before completing the questionnaire, they were required to read this informed consent form, to approve that that they volunteered via a check box and that they met the inclusion criteria. The first part of the questionnaire was related to students' social media use habits. The second part included the SESMEB, and the third part

was on the socio-demographic background. This online questionnaire took approximately 5-7 minutes to complete.

Steps of the data collection

Step 1: Translation of SESMEB from Turkish (the main language) to Hungarian (the target language). In the first step of this study, an expert, whose native language was Hungarian and who also knew Turkish translated this scale from Turkish into Hungarian independently.

Step 2: The experts controlled the scale that was translated into Hungarian in terms of terms, language, and understandability.

Step 3: Back translation. To avoid possible language mistakes, a different person from the first step translated the scale from Hungarian to Turkish again to avoid possible language mistakes.

Step 4: The Turkish authors examined the scale translated into Turkish in the third step to check for possible errors and compare it with the original scale.

Step 5: The pilot study. The scale's items were tested by online interviews with eight people who represented the whole student population to test the understandability Hungarian form of the scale.

Step 6: Internal-external validity phase. The final scale with other socio-demographic questions was sent to students.

Assessment of the SESMEB

The scale is a five-point Likert scale (never "1", rarely "2", sometimes "3", often "4" and always "5") which is used to express the level of participation of the items in the scale. The scoring applies to all items. There is no reverse-coded item in the SESMEB. The total score can be calculated. According to this, 18 points in minimum, and 90 points in maximum from the SESMEB scale can be taken as the total point. As a result, the increase in someone's scale score means that eating behaviors are affected by social media (9).

Data analysis

Descriptive statistics were represented as mean and standard deviation or median and interquartile range for continuous variables based on the normality assumption while for categorical variables frequency and percentages were given. The normality assumption for continuous variables was specified with the Kolmogorov-Smirnov test, histogram, and boxplot. To compare two independent groups and more than two independent groups, the Mann-Whitney U test and the Kruskal-Wallis variance analysis were conducted. For pairwise comparisons when the statistical significance was obtained after the Kruskal-Wallis variance analysis, the Dunn-Bonferroni test was applied. The construct validity was examined

with the confirmatory factor analysis (CFA). The factor loadings, item statistics, and model fit indices were evaluated. For reliability, the Cronbach's alpha coefficient, the Spearman-Brown formula for split-half reliability, and the correlation between two halves of the scale were investigated. $p < 0.05$ was considered statistically significant. Data were analyzed using the statistical software package IBM SPSS statistics for Windows v.23.0 (10) and AMOS 23.0. (11).

RESULTS

Characteristics of the participants

203 university students from 11 different faculties (except for departments related to nutrition), and most

of them were from the Faculty of Economics and Business, attended this study. 35.0%, 63.5%, and 1.5% of participants were male, female, and of other sex, respectively. The mean age of 203 university students was 21.11 ± 2.21 years. The majority of them (92.1%) were single and bachelor's students (Table 1).

Validity of the Hungarian SESMEB

Figure 1 shows the path diagram of the one-factor scale when the standardized factor loadings and error variances were examined for the model.

Factor loadings were above 0.50 for all items when the factors in Table 2. It was found that the t values were significant at the level of 0.1 and changed between 2.927 and 5.706. t values presented information on the

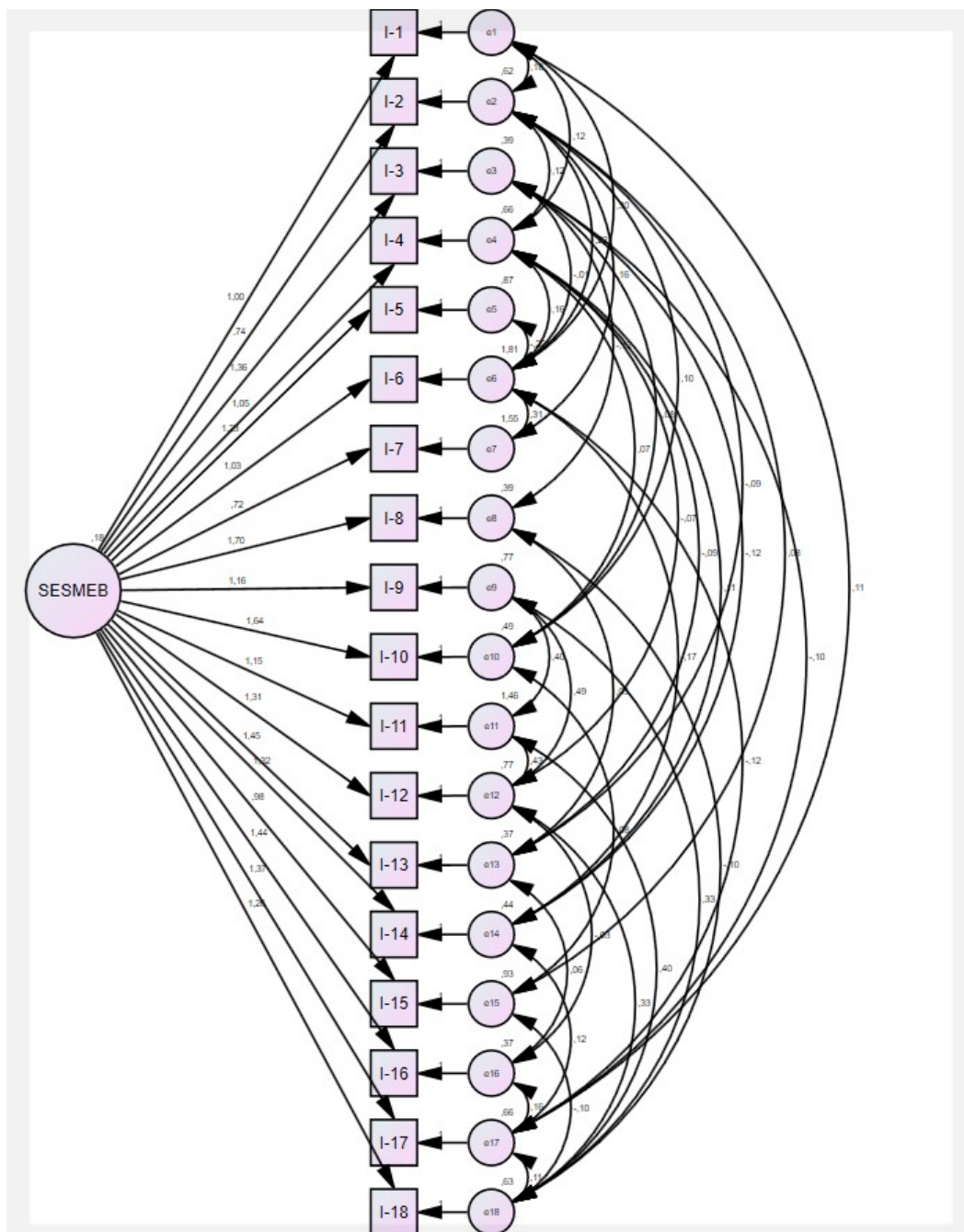


Figure 1. Standardized path coefficients of model

Table 1. Baseline characteristics of participants

Variable	Total Group (n=203)
Sex (M:F:O) n(%)	71(35.0) : 129(63.5) : 3(1.5)
Age (yrs) $\bar{X} \pm SD$	21.11 $\pm$ 2.21
Marital status (M:S) n(%)	16(7.9) : 187(92.1)
Educational status (BS:MS:DS) n(%)	187(92.1) : 12(5.9) : 4(2.0)

M: male, F: female, O: other for gender; M: married, S: single for marital status; BS: bachelor student, MS: master student, DS: doctoral student for educational status

explanatory level of the theoretical structure (hidden variable) on the items (observed variables) [12, 13].

The fit indices χ^2/df , root mean square error of approximation (RMSEA), comparative fit index (CFI), adjusted goodness of fit index (AGFI), goodness of fit index (GFI), normed fit index (NFI), and Tucker-Lewis Index/non-normed fit index (TLI/NNFI) were used as a result of CFA. In examining the SESMEB values according to the criteria in Table 3, while

χ^2/df (1.184), RMSEA (0.03), CFI (0.987), TLI (0.979) were at a good-fitting model level, AGFI (0.897), GFI (0.942), NFI (0.924) indicated the acceptable-fitting model level [14, 15].

Reliability of the Hungarian SESMEB

The Cronbach's alpha reliability coefficient was calculated and the coefficient is 0.866. The Cronbach's alpha coefficient was greater than 0.80 states that the

Table 2. Factor loadings, t-values and variances explained for the model

Items	$\bar{X}$ (SD)	λ	t	p
Item-1	2.56 (1.005)	0.42		
Item-2	2.86 (0.862)	0.371	4.65	<0.001*
Item-3	1.65 (0.845)	0.677	5.437	<0.001*
Item-4	2.11 (0.932)	0.476	5.115	<0.001*
Item-5	2 (1.069)	0.485	4.803	<0.001*
Item-6	3.22 (1.432)	0.308	3.945	<0.001*
Item-7	2.61 (1.283)	0.238	2.927	0.003
Item-8	1.76 (0.951)	0.755	5.706	<0.001*
Item-9	1.72 (1.007)	0.488	4.815	<0.001*
Item-10	1.96 (0.987)	0.701	5.594	<0.001*
Item-11	2.07 (1.303)	0.373	4.096	<0.001*
Item-12	1.81 (1.042)	0.535	5.042	<0.001*
Item-13	1.52 (0.864)	0.709	5.636	<0.001*
Item-14	1.71 (0.867)	0.645	5.42	<0.001*
Item-15	3.13 (1.052)	0.395	4.234	<0.001*
Item-16	1.48 (0.864)	0.707	5.666	<0.001*
Item-17	1.82 (1.01)	0.579	5.55	<0.001*
Item-18	1.74 (0.977)	0.553	5.096	<0.001*

* $p < 0.001$

Table 3. Compliance statistics of the SESMEB scale

Compliance indices	Criteria	SESMEB
χ^2/df	≤ 2	1.184
RMSEA	≤ 0.06	0.03
CFI	≥ 0.95	0.987
AGFI	$0.85 \leq AGFI \leq 0.90$	0.897
GFI	$0.90 \leq GFI \leq 0.95$	0.942
NFI	$0.90 \leq NFI \leq 0.95$	0.924
TLI (NNFI)	≥ 0.95	0.979

Hungarian SESMEB was reliable [12]. The correlation between two split parts of items and Spearman–Brown coefficient were calculated as 0.808 and 0.894, respectively. These results indicated a high correlation between two split parts of items and high reliability.

SESMEB scores of students

Instagram, Facebook, and TikTok were more commonly used social media platforms by students. In the examining of the SESMEB score, daily time spent on social media, and BMI of students, the mean SESMEB score was 37.72 ± 10.27 (19-72), the mean time spent was 239.63 ± 112.47 (60-720) minutes, and the mean BMI was 22.89 ± 4.09 (15.67-41.62) kg/m². While the median scores were different according to spending time daily, sharing content, and using filters or Photoshop on social media ($p < 0.05$), there was no significant difference between the median scores of those who had different main purposes while social media using ($p > 0.05$) (Table 4).

DISCUSSION

In examining the literature, before the development of the scale of SESMEB, no tool measured the effect of social media on eating behaviors. Although this scale presents an assessment of eating behavior, the

main language of it is Turkish. Due to changes that cannot be avoided during translation from the main language to the target language, there is a need to conduct a study to have a valid and reliable scale in the target language. For this reason, the eighteen-item form prepared in the target language by experts was administered to 203 Hungarian university students. As a result of the statistical analysis, Cronbach's alpha reliability coefficient of CFA was 0.866. Therefore, in this current study, the scale of effects of social media on eating behavior (SESMEB), which was a tool developed in Turkish, was proved that it is a valid and reliable scale in Hungarian. The Hungarian version of SESMEB can be used in scientific studies.

In this study, Instagram, Facebook, and TikTok were more commonly used social media platforms by participants. In 2021, the most common social platform is Facebook with 95.9% of Hungarian Internet users [16]. However, younger generations seem to prefer Instagram more than Facebook, while the biggest share of Instagrammers was between 18 and 24 years of age [1] similar to the results of this study. In addition, the effects of social media on the eating behaviors of Hungarian university students were measured via SESMEB. The eating behaviors of those who spend more time, sharing content, and using filters/Photoshop on social media, are more affected

Table 4. SESMEB scores of participants according to social media using and BMI

Variable	SESMEB Score Median (IQR)	p
Main purpose of social media using		
Friends group(s), or other group(s) (n=63)	37.00 (12.00)	0.875
Connecting with other people (n=18)	35.50 (24.75)	
To get information (n=37)	37.00 (10.50)	
Having fun, spending time (n=85)	36.00 (14.00)	
Daily time spent on social media (min)		
≤120 (n=41)	34.00 (11.00)	0.035*
>120 (n=162)	37.00 (12.25)	
Sharing frequency on social media		
Yes (n=65)	40.00 (17.00)	<0.001**
Rarely-never (n=138)	35.00 (10.25)	
Using filters or photoshop for your social media posts		
Yes (n=48)	38.00 (13.75) ^a	<0.001**
Sometimes (n=89)	39.00 (9.50) ^a	
No (n=66)	31.50 (11.25) ^b	
BMI		
Underweight (n=19)	35.00 (17.00)	0.844
Normal (n=136)	36.0 (12.00)	
Overweight (n=39)	35.00 (12.00)	
Obese (n=9)	38.00 (13.00)	

* $p < 0.05$ ** $p < 0.001$

by social media in the aspect of eating concerns. In the results of another current study, there was a strong and consistent association between social media use and eating concerns in a nationally representative sample of young adults aged 19 to 32 years [17].

On the other hand, although the SESMEB score exhibits the level of social media effect on eating behavior, it is not known whether this effect is positive or negative. While some of the items in SESMEB indicate the negative like item fifth '*After I started using social media, my fast-food/cook-chill food consumption increased*', some of them can be bi-directional like '*the foods/dishes that I see on social media arouse my desire to eat*'. This situation makes us think relative to the issue of which direction the effect is. There is evidence on social media accounts that have a high number of followers promoting the healthy food consumption. Because these accounts can lead to social nudges from the people who take a look at them [18]. Therefore, social media can be a useful tool for the healthy eating behavior development and consequently a healthier lifestyle. In the study in which undergraduate students participated, participants were watched with either a positive social media feed (health) or not (taste and visual) content on Instagram, and their food choices were observed. Apple preference increased and chocolate preference decreased in participants who did not care about health and nutrition, after a positive social media feed (health) [19]. In the study where dietary diaries were used in a smartphone application to motivate university students to create personal awareness related to eating habits, it was emphasized that they were encouraged to develop their eating habits through interactions on social media [20]. However, this effect sometimes could be a dangerous issue that anyone can compose content on social media, mostly without the proficiency of education, qualification, or experience. In addition, influencers can reach lots of people and share plenty of posts including health claims, often without any formal training [21]. According to the results of a review conducted on the impact of routine social media use or exposure to image-related content on body image and food choices in young adults (19-30 years), these situations may negatively impact body image and food choices in some of them [22]. Also, experimental and observational studies show that exposure to social networking sites was associated with negative body image and disordered eating behaviors in all stages of life (children, pre-adolescent, adolescent, and young adult populations) in community, school, and college settings [8]. Considering all aspects, while examining the effect of social media on eating behavior, after being supported by other data such as food consumption records, nutritional habits, physical activity habits, questioning the nutritional patterns and lifestyles of

individuals, a wide assessment should be made related to which direction this effect is.

CONCLUSIONS

There is a need to conduct studies to use SESMEB in other languages because it needs to be measured the impact of social media use on eating behaviors. According to this study's results, the Hungarian version of SESMEB is a valid and reliable tool that can be used to determine the effects of social media on eating behaviors.

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Conflict of interest

The authors declare no conflict of interest.

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