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Adaptation and validation of the Hungarian version of the Yale Food Addiction Scale for Children

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Background: Childhood obesity proves to be an important public health issue, since it serves as a potential risk factor for multiple diseases. Food addiction could also serve as an important etiological factor. As childhood obesity plays a serious issue also in Hungary, we aimed to adapt and validate the Hungarian version of the Yale Food Addiction Scale for Children (H-YFAS-C). *Methods:* A total of 191 children were assessed with the H-YFAS-C and the Eating Disorder Inventory (EDI). The following psychometric properties were analyzed: internal consistency, construct validity, convergent, and discriminant validity. *Results:* A good construct validity was revealed by confirmatory factor analysis (RMSEA = 0.0528, CFI = 0.896, χ^2 value = 279.06). Question 25 proved to have no significant effect on its group and was removed from further analyses. The Kuder–Richardson 20 coefficient indicated good internal consistency (K20 = 0.82). With the use of the eight EDI subscales, a good convergent and discriminant validity could be determined. Food addiction was diagnosed in 8.9% of children. The mean symptom count was 1.7 ± 1.2 (range: 0–7). Females were more often diagnosed with food addiction than males ($p = .016$; OR = 3.6, 95% CI: 1.2–10.6). BMI percentiles were significantly higher in children with diagnosed food addiction ($p = .003$). There proved to be no correlation between age and the occurrence of food addiction. *Discussion and conclusion:* Our results show that H-YFAS-C is a good and reliable tool for addictive-like behavior assessment.

Keywords: food addiction, food addiction assessment, obesity, public health, Yale Food Addiction Scale for Children

FOOD ADDICTION AND CHILDHOOD OBESITY

The theory of food addiction was suggested as early as 1956 (Randolph, 1956), but this concept has become more of a focus of addiction research due to the global pandemic. A growing body of evidence supports the hypothesis that specific types of foods (especially processed foods with high sugar and fat levels) may carry an addictive potential, similar to classic addictive substances (Avena & Gold, 2011). Meule and Gearhardt (2004) pointed out that the diagnostic criteria for substance use disorders can be determined in patients under treatment with obesity. Behavioral patterns, such as the tendency to lose control over consumption of highly palatable foods, suffering from repeated failed attempts to reduce, or to completely stop the consumption of these products, despite the negative physical and/or social consequences, have been described (Gearhardt, Corbin, & Brownell, 2009a). However, the empirical assessment of two crucial criteria for addiction, tolerance, and withdrawal on human sample is problematic; several animal experiments imply that tolerance and withdrawal symptoms can be induced by repeated sugar intake (Avena, Rada, & Hoebel, 2008). Schulte, Joyner, Potenza, Grilo, and Gearhardt (2015) pointed out that the danger of food addiction lies within these products' widespread availability (they are usually rather cheap and legal to be purchased) – similar to cigarettes regarding nicotine addiction. As the overconsumption of the aforementioned products causes not only serious somatic problems but also predisposes to other forms of addiction, the development of a reliable, objective tool with adequate psychometric properties has become necessary to assess the presence and severity of food addiction. Gearhardt, Corbin, and Brownell (2009b) developed the Yale Food Addiction

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Scale (YFAS), thus enabling the identification of people presenting with food addiction symptoms. The YFAS applies the same diagnostic criteria used to diagnose substance use disorders to the conception of highly palatable foods (e.g., chocolate and pizza). The German, French, Italian, and Chinese versions of the scale have already been developed and used for food addiction assessment (Brunault, Ballon, Gaillard, Réveillére, & Courtois, 2014; Chen, Tang, Guo, Liu, & Yiao, 2015; Innamorati et al., 2015; Meule, Heckel, & Kübler, 2012). Yale Food Addiction Scale for Children (YFAS-C) has been validated for the child population in 2013, also showing good psychometric properties (Gearhardt, Roberto, Seamans, Corbin, & Brownell, 2013).

Childhood obesity proves to be an especially important public health issue, since it serves as a potential risk factor for multiple diseases. Although numerous etiological factors have been already proven to cause childhood obesity (Kumar & Kelly, 2017), the recent reemergence of the food addiction concept could also serve as an important contributing factor. The data regarding the prevalence of food addiction in childhood are different, ranging from 4% up to 27.7% (Burrows et al., 2017). The issue of food addiction in childhood is particularly of great importance, because the central nervous system is not fully developed, thus the exposition of foods with addictive potential are more likely to result in unfavorable changes in the neural system, making the subject more prone to develop the behavioral patterns of addiction (Burrows et al., 2017). Children with long-term excessive consumption of highly palatable, high-caloric foods are more likely to become overweight and obese. The positive correlation between the body mass index (BMI) and food addiction has already been established in the adult as well as in the child and adolescent population (Burrows et al., 2017; Pursey, Stanwell, Gearhardt, Collins, & Burrows, 2014). Csábi, Török, Jeges, and Molnár (2000) found that potential risk factors for cardiovascular diseases already tend to cluster in childhood and they are strongly associated with obesity, suggesting that the development of metabolic cardiovascular syndrome has its origin in childhood. Besides its effect on the cardiovascular system, childhood obesity predisposes to multiple comorbidities (psychological, pulmonary, endocrine, gastrointestinal, etc.) (Kumar & Kelly, 2017).

Recently, childhood obesity has become a serious issue also in Hungary. In a study, aiming to assess the prevalence of overweight and obesity in children between 3 and 18 years of age, Zsakai and Bodzsar (2012) found that the number of overweight and obese children peaks at the 10–12 years of age group, with 23% in boys and girls, respectively. Considering the growing number of research regarding food addiction's contributory role in obesity, a reliable assessment tool has become necessary for two reasons: (a) it may serve as a primary prevention to screen children and to identify those who tend to show addictive-like symptoms to certain foods; (b) it may serve as a useful tool in secondary prevention in overweight/obese children by evaluating the child's tendency to addictive-like eating behavior. To our knowledge, currently, no Hungarian questionnaire exists to assess food addiction in children. Our aim was to analyze the psychometric properties of the Hungarian version of the YFAS-C (H-YFAS-C) on a non-clinical sample.

METHODS

Participants and procedures

A total of 191 Hungarian native children and adolescents were recruited from primary schools located in Baranya area, Hungary. Inclusion criteria were the following: (a) age was between 8 and 18 years, and (b) the children and adolescents received no treatment related to obesity. The participants completed a self-administered questionnaire, including a general sociodemographic part (age, gender, weight, and height) and two questionnaires [the H-YFAS-C and the Eating Disorder Inventory (EDI)], which were adapted to Hungarian population by Túry, Sáfrán, Wildmann, and László (1997).

The translation procedure was carried out according to the existing guidelines for scale validation (Guillemin, Bombardier, & Beaton, 1993), and the back-translated version of the questionnaire did not significantly differ from the original. The final, translated H-YFAS-C questionnaire is presented in Supplement1.

MEASURES

Nutritional status

The measurement of weight was carried out with an electronic scale (TANITA BC 420 SMA, TANITA) to the nearest 0.1 kg. The children wore only underwear and T-shirts. Height was measured barefoot with a telescopic height measuring instrument (SECA 225, White Medical) to the nearest 0.1 cm. BMI was calculated as weight (kg) divided by height (m) squared. BMI categories were defined according to IOTF to classify overweight, obese, and underweight children (Cole & Lobstein, 2012).

The Yale Food Addiction Scale for Children

YFAS-C is a 25-item, self-report scale designed by Gearhardt et al. (2013), which was adapted and validated based on the original YFAS, a validated measure of addictive-like eating behavior in adults (Gearhardt et al., 2009b). The scale explores the eating behavior regarding the past 12 months. Having been developed based on the diagnostic criteria of substance dependence listed in the *Diagnostic and Statistical Manual of Mental Disorders IV-TR* (American Psychiatric Association, 2000), it assesses the following seven criteria for food addiction (Gearhardt et al., 2013): substance is taken in larger amount and for longer period than intended (questions 1–3), persistent desire or repeated unsuccessful attempts to quit (questions 4, 17, 18, and 25), much time is spent to obtain and to use the substance or to recover from its effects (questions 5–7), important social, occupational, or recreational activities are given up or reduced because of substance use (questions 8–11), the substance is continued to be used despite knowledge of adverse consequences (e.g., failure to fulfill obligations or to continue using it even when it is physically hazardous) (question 21), tolerance (questions 22 and 23), and characteristic withdrawal symptoms, substance taken to relieve withdrawal (questions 12–14).

The scale also involves two additional questions assessing clinically significant impairment or distress (questions 15 and 16). The 25-item scale comprises two kinds of questions: 18 being Likert-type scale and 7 being dichotomous. Three questions serve as primers and are not scored (questions 19, 20, and 24). Scoring provides assessment of food addiction in two various ways. The "symptom count" scoring version offers a continuous assessment, reflecting the number of dependence symptoms (from 0 to 7). The "diagnostic" scoring version, offering a dichotomous evaluation, assesses whether the diagnosis of food addiction can be established or not (food addiction can be diagnosed when three or more symptoms are present and a clinically significant distress/impairment is established). The original development of the scale found that the YFAS-C had adequate internal consistency, convergent, and incremental validity (Gearhardt et al., 2013) and proved to be reliable and valid regarding assessment of food addiction in children.

The Eating Disorder Inventory (EDI)

The EDI evaluates emotional, cognitive, and behavioral factors in eating disorders (Garner, Olmstead, & Polivy, 1983). The 64-item long, self-report scale contains Likert-type questions and evaluates the following eight scales: (a) bulimia, (b) dissatisfaction with body image, (c) drive for thinness, (d) feeling of dissatisfaction, (e) perfectionism, (f) interpersonal uncertainty, (g) interoceptive exposure, and (h) anxiety over becoming adult. The first three scales measure the behavior of overeating and the impairment and distress in connection with it. The other five scales evaluate personal traits in case of anorexia nervosa and are not related to eating behavior. The questionnaire was adapted and validated to the Hungarian population by Túry et al. (1997).

Statistical analyses

Statistical analyses were conducted using the IBM SPSS Statistics 23 and R statistical software with the Lavaan package (Rosseel, 2012). Descriptive statistics were used to analyze sample characteristics. The scale's psychometric properties were examined in terms of internal consistency, construct validity, convergent, and discriminant validity.

Internal consistency was examined by assessment of the Kuder–Richardson Formula 20 (KR20) for the items' dichotomized versions (Kuder & Richardson, 1937). Confirmatory factor analysis with the seven-factor solution was conducted to test the scale's construct validity, using the mean- and variance-adjusted weighted least square estimator with a polychoric correlation matrix. To examine the model's global fit, the following items were calculated: (a) root mean square error of approximation (RMSEA), (b) χ^2 test, (c) comparative fit index (CFI), and (d) Tucker–Lewis index (TLI). The Hungarian version of the EDI was used to examine convergent and discriminant validity. These psychometric properties were examined with both H-YFAS-C scoring options: (a) when scoring according to "symptom count," PLUM-Ordinal regression model was performed, where the dependent variable was the "symptom count" and the independent was the subscales of EDI. Due to the relatively small sample, the cases with symptom counts of 6 and 7 were grouped together. (b) Multiple binary logistic regression test was performed to determine these psychometric properties, if the "diagnostic" scoring system was used. The independent variables in this case were also the EDI subscale values.

All results were considered to be statistically significant, if the p values of two-tailed analyses were $<.05$.

Ethics

The study procedures were carried out in accordance with the Declaration of Helsinki. The Institutional Review Board of the University of Pecs – Clinical Center, Regional and Institutional Research Ethical Committee approved the study (reference number: 6909). All participants and their parents were informed about the study and all provided informed consent.

RESULTS

Sample characteristics

A total of 191 children participated in this study, in which 109 (57%) were males. Participants had a mean age of 15.1 ± 1.7 years. Mean BMI was 21.2 ± 3.0 in males and 21.8 ± 4.8 in females. According to the IOTF classification of BMI percentiles, females and males were analyzed separately. About 5.3% of male participants were underweight (<15.5% percentile), 82.9% were normal weight (15.5%–90.5% percentile), 7.9% were overweight (90.5%–98.9% percentile), 3.9% were obese (98.9%–99.83% percentile), and 0% were morbid obese (>99.83% percentile). Among females, 13.6% were underweight (<16.5% percentile), 70.5% were normal weight (16.5%–89.3% percentile), 9.1% were overweight (89.3%–98.6% percentile), 4.5% were obese (98.6%–99.76%), and 2.7% were morbid obese (>99.76% percentile).

Item statistics and internal consistency

The distribution of the answer-based item-points for the continuous questions was not normal; the "very often" (answer 3) and "always" (answer 4) answers were given very rarely (in only 1–2 cases) or were given not at all (items 8 and 9). Therefore, the item analysis was performed with the dichotomous transformed items. The 0–4 ranged items were dichotomized, according to the following system: 0 corresponded to absent or rare, whereas 1 for a rather often occurrence of the symptom. In this study, the following cut-offs were developed: Questions #1, #2, #4, #6, #17, and #18 were scored 0 if the answer was 0–2, and 1 if 3–4; Questions #3, #5, #7, #8, #9, #10, #11, #12, #13, #14, #15, #16, #21, #22, #23, and #25 were scored 0 if the answer was 0–1 and 1 if 2–4. Descriptive statistics for the dichotomized items are presented in Table 1. The K20 internal consistency coefficient for these items was 0.81.

Construct validity

Assessing the model's global fit, confirmatory factor analysis was performed with the following results: RMSEA = 0.0528

Table 1. Mean scores of items and their relation to the total score

Item	Mean ± *SD*	Skewness	Kurtosis	Item total correlation
Substance is taken in larger amount and for longer period than intended				
#1 When I start eating, I find it hard to stop.	0.04 ± 0.02	4.61	19.46	0.427*
#2 I eat food even when I am not hungry.	0.06 ± 0.23	3.83	12.79	0.328*
#3 I eat until my stomach hurts or I feel sick.	0.04 ± 0.19	4.97	22.95	0.300*
Persistent desire or repeated unsuccessful attempts to quit				
#4 I worry about eating too much food.	0.23 ± 0.42	1.33	−0.25	0.662*
#17 I want to cut down or stop eating certain foods.	0.20 ± 0.40	1.48	0.19	0.689*
#18 How often do you try to cut down on certain foods?	0.14 ± 0.34	2.14	2.60	0.478*
#25 I am able to cut down on certain foods.	0.15 ± 0.36	1.96	1.84	0.270*
Much time is spent to obtain and to use the substance or to recover from its effects				
#5 I feel tried a lot because I eat too much.	0.13 ± 0.33	2.28	3.22	0.483*
#6 I eat food all day long.	0.03 ± 0.17	5.42	27.61	0.297*
#7 If I cannot find a food I want, I will try hard to get it (ask a friend to get it for me, find a vending machine, and sneak food when people are not looking).	0.03 ± 0.16	5.98	34.15	0.340*
Important social, occupational, or recreational activities are given up or reduced because of substance use				
#8 I eat food rather than do other things I like (e.g., play and hang out with friends).	0.01 ± 0.10	9.69	92.96	0.296*
#9 I eat so much that I feel bad afterward. I feel so bad that I do not do things I like (e.g., play and hang out with friends).	0.02 ± 0.14	6.74	43.94	0.384*
#10 I avoid places that have a lot of food, because I might eat too much.	0.19 ± 0.40	1.56	0.45	0.586*
#11 I avoid places where I cannot eat the food I want.	0.12 ± 0.33	2.35	3.57	0.462*
The substance is continued to be used despite knowledge of adverse consequences				
#21 I eat in the same way even though it is causing problems.	0.26 ± 0.44	1.12	−0.75	0.551*
Tolerance				
#22 I need to eat more to get the good feelings I want (feel happy, calm, and relaxed)	0.08 ± 0.28	3.03	7.25	0.345*
#23 When I eat the same amount of food, I do not feel good the way I used to (feel happy, calm, and relaxed)	0.06 ± 0.24	3.63	11.31	0.413*
Characteristic withdrawal symptoms; substance taken to relieve withdrawal				
#12 When I do not eat certain foods, I feel upset or sick.	0.08 ± 0.28	3.03	7.25	0.396*
#13 I eat certain foods to stop from feeling upset or sick.	0.09 ± 0.29	2.91	6.53	0.297*
#14 When I cut down or stop eating certain foods, I crave them a lot more.	0.14 ± 0.35	2.08	2.33	0.484*
Use causes clinically significant impairment or distress				
#15 The way I eat makes me a really unhappy.	0.22 ± 0.42	1.36	−0.14	0.686*
#16 The way I eat causes me problems (problems at school, with my parents, and with my friends).	0.08 ± 0.28	3.03	7.25	0.510*

Note. $p < .001$.

(95% CI: 0.04–0.065) (RMSEA associated p value was .342). Chi-square statistics was 279.06, which proved to be not significant on a 5% significance level (CFI = 0.896, TLI = 0.868). Partial tests were also performed for examining the items regarding the seven diagnostic criteria and question #25 proved to have no significant effect for its own group (persistent desire or repeated unsuccessful attempts to quit). We removed this item from our further analyses and used the 21-item scale. After removing item #25, the K20 internal consistency coefficient was 0.82. Factor loading values are presented in Table 2.

Convergent and discriminant validity

Analyses according to the "symptom count" scoring version. According to the PLUM-Ordinal linear regression model, two subscales of the EDI corresponded with the H-YFAS-C symptom count: "bulimia" subscale ($B = 0.469$; $p < .001$) and the "dissatisfaction with body image" subscale ($B = 0.373$; $p < .001$). There was no statistically significant connection between the H-YFAS-C symptom count and the other six EDI subscales.

Analyses according to the "diagnostic" scoring version. The multiple binary logistic regression model showed a connection between the two subscales of the EDI and the dichotomous scoring (food addiction present or not) of the H-YFAS-C: "bulimia" subscale [Exp(B) = 1.9; 95% CI: 1.3–2.7] and the "dissatisfaction with body image" subscale [Exp(B) = 1.2; 95% CI: 1.1–1.2]. There was no statistically significant connection between the H-YFAS-C's dichotomous scoring and the other six EDI subscales.

Sample characteristics with evaluation of the H-YFAS-C

Food addiction was diagnosed in 8.9% of our sample. The mean symptom count was 1.7 ± 1.2 (range: 0–7). The mean

Table 2. Results of the confirmatory factor analysis of the H-YFAS-C

		Group #1	Group #2	Group #3	Group #4	Group #5	Group #6	Group #7	Group #8
Y1	When I start eating, I find it hard to stop.	0.67							
Y2	I eat food even when I am not hungry.	0.50							
Y3	I eat until my stomach hurts or feel sick.	0.67							
Y4	I worry about eating too much food.		0.67						
Y17	I want to cut down or stop eating certain foods.		0.80						
Y18	How often do you try to cut down on certain foods?		0.82						
Y25	I am able to cut down on certain foods.		0.06						
Y5	I feel tried a lot because I eat too much.			0.49					
Y6	I eat food all day long.			0.47					
Y7	If I cannot find a food I want, I will try hard to get it (ask a friend to get it for me, find a vending machine, and sneak food when people are not looking).			0.04					
Y8	I eat food rather than do other things I like (e.g., play and hang out with friends).				0.51				
Y9	I eat so much that I feel bad afterward. I feel so bad that I do not do things I like (e.g., play and hang out with friends).				0.42				
Y10	I avoid places that have a lot of food, because I might eat too much.				0.60				
Y11	I avoid places where I cannot eat the food I want.				0.55				
Y21	I eat in the same way even though it is causing problems.					1.00			
Y22	I need to eat more to get the good feelings I want.						0.34		
Y23	When I eat the same amount of food, I do not feel good the way I used to (feel happy, calm, and relaxed).						0.45		
Y12	When I do not eat certain foods, I feel up set or sick.							0.54	
Y13	I eat certain foods to stop from feelings up set or sick.							0.54	
Y14	When I cut down or stop eating certain foods I crave them a lot more.							0.62	
Y15	The way I eat makes me really unhappy.								0.78
Y16	The way I eat causes me problems (problems at school, with my parents, and with my friends).								0.64

Note. Group #1: substance is taken in larger amount and for longer period than intended. Group #2: persistent desire or repeated unsuccessful attempts to quit. Group #3: much time is spent to obtain and to use the substance or to recover from its effects. Group #4: activities are given up or reduced because of substance use. Group #5: the substance is continued to be used despite knowledge of adverse consequences. Group #6: tolerance. Group #7: characteristic withdrawal symptoms; substance taken to relieve withdrawal. Group #8: clinically significant impairment or distress.

dissatisfaction of body image score was 8.9 ± 8.7 and 16% of the participants' score reached the pathological threshold. The mean bulimia score on EDI was 0.9 ± 2.1; none of the participants reached the score threshold for bulimia pathology. Females were more often diagnosed with food addiction than males ($p = .016$; OR = 3.6, 95% CI: 1.2–10.6). BMI percentiles were significantly higher in children with diagnosed food addiction ($p = .003$). There proved to be no correlation between age and the occurrence of food addiction.

DISCUSSION

Our aim was to assess the psychometric properties of the H-YFAS-C on a non-clinical sample. The confirmatory factor analysis showed that – in accordance with the original English version of the scale – all 22 original scored items, except for item 25, were significantly correlated with their total score. Therefore, exclusion of question 25 has been performed as it had no significant effect

for its own group ("persistent desire or repeated unsuccessful attempts to quit").

The modified, 21-item scale's internal consistency proved to be good, as the K20 internal consistency coefficient was 82%. The model's total fit was adequate as the measurement of RMSEA was <0.06 and CFI was close to 1. The Hungarian version of the scale showed adequate convergent validity for both the "symptom count" and the "diagnostic" scoring versions. The H-YFAS-C symptom count as well as the dichotomous scoring (food addiction is present vs. food addiction is not present) was strongly correlated with the "bulimia" EDI subscale, showing that H-YFAS-C adequately measures the presence of overeating symptoms. This is also consistent with prior research exhibiting a strong association between food addiction and bulimia (de Vires & Muele, 2016; Meule, von Rezori, & Blechert, 2014). Symptom count also showed a strong correlation and "dissatisfaction of body image" EDI subscale, indicating that the scale is capable to reliably measure eating-related impairment and distress. This is also consistent with prior research that has identified an association between food addiction and concerns about shape and weight (Gearhardt, Boswell, & White, 2014; Gearhardt et al., 2012). Discriminant validity was also evaluated using the EDI. Our results showed that there was no significant correlation between the 4th, 5th, 6th, 7th, and 8th EDI subscales and neither the "symptom count" nor the "diagnostic" scoring result of the H-YFAS-C. The aforementioned subscales do not relate to eating behavior rather measure personality traits regarding anorexia nervosa, so according to our results, the H-YFAS-C owns good discriminant validity for these subscales. According to our results, the 24-item H-YFAS-C possesses adequate psychometric properties (internal consistency, construct validity, convergent, and discriminant validity) and can be used on the Hungarian child population (a) to screen the addictive-like eating behavior in normal-weight child and adolescent population before the development of overweight/obesity and (b) to diagnose addictive-like eating behavior in already obese patients who are undergoing obesity-related treatment (Gearhardt et al., 2009b).

In our sample, food addiction was diagnosed in 8.9%, which showed only a slight difference to the sample of Gearhardt et al. (2013), where 7% of the children could be diagnosed. The mean age of participants was also higher, than in the sample of Gearhardt et al. (2013). According to the results of the 2nd Hungarian National Growth Study, the number of overweight and obese children peaks at the 10–12 years of age group (with 23%); thus, we hypothesize that this difference in food addiction prevalence could be attributed to the higher mean age in our sample. In our sample, a female predominance of food addiction could be assessed; however, in a recent study, Burrows et al. (2017) found no correlation between childhood food addiction and gender. Assessing the adult population, however, a meta-analysis by Pursey et al. (2014) showed a female predominance in food addiction. Since the mean age of the participants in the sample of Burrows et al. (2017) was also lower than in our sample (15.1 ± 1.7 vs. 8.2 ± 2.3 years), we hypothesize that this age difference could have caused the discordance between our sample and the sample of Burrows et al. (2017), regarding the gender differences. There proved to be no correlation between age and the occurrence of food addiction, similar to the results of Burrows et al. (2017). BMI percentiles were significantly higher in children who were diagnosed with food addiction, which also corresponds to the results of Burrows et al. (2017).

As the prevalence of childhood obesity shows a growing tendency in Hungary, it has become highly important to be able to assess the contributing factors for this condition. Growing number of evidence points toward the fact that food addiction could serve as one of the key factors. In the light of these results, we regard the use of the Hungarian version of the YFAS to be of special importance not only in the clinical practice but also in the general practitioner care. In the latter case, we propose the use of the scale not only in patients with already developed overweight and obesity, but also in children in the normal weight-range, who come from a family with problems of obesity. Since a positive correlation between the parents' and the child's food addiction symptoms has been proven, these children could benefit from an early intervention (Burrows et al., 2017). Identification of children, in either the normal or already in the overweight/obese weight range, who show a tendency of addictive-like eating behavior, could also be beneficial, because an increased surveillance regarding other forms of addiction and eating disorders can be carried out (Meule et al., 2014). Moreover, since the connection between parental feeding patterns and food addiction has been proven, parental feeding advices could also be of great help in avoiding or treating obesity (Burrows et al., 2017).

In conclusion, our aim was to assess the psychometric properties of the H-YFAS-C (internal consistency, construct validity, convergent, and discriminant validity). We found that question 25 did not have an effect to its own group; thus, we removed it from the H-YFAS-C. The modified 21-item scale showed good internal consistency and construct validity. With the use of the EDI, a good convergent and discriminant validity could be determined. We propose the use of the H-YFAS-C to be an adequate tool for both primary and secondary prevention of food addiction in the Hungarian child and adolescent population.

LIMITATIONS

The test–retest validity could not be assessed due to the cross-sectional nature of this study. The temporal direction of the associations could also not be assessed because of the cross-sectional nature of the study. The relatively small number of participants could have influenced the results of the confirmatory factor analysis; thus, these indexes have to be considered with caution. As the scale is self-reporting in nature, our results have to be carefully considered in the light of the possible distortion of reality due to social desirability and the participants' current emotional status.

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