

Body image dissatisfaction among school children in Turkey and its potential effect on body esteem

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ABSTRACT

Background. This study aimed to validate the Turkish version of Collins' Body Figure Perceptions and Preferences (BFPP) scale. The second aim of this study was to investigate the relationship between body image dissatisfaction (BID) and body esteem (BE), and between body mass index (BMI) and BID, among Turkish children.

Methods. A descriptive cross-sectional study was conducted among 2066 4th grade children (mean age was 10.06 ± 0.37 years) in Ankara, Turkey. The Feel-Ideal Difference (FID) index from Collins' BFPP was used to assess the degree of BID. FID ranges from -6 to +6, with scores below or above 0 indicating BID. Collins' BFPP's test-retest reliability was evaluated in a subset of 641 children. The Turkish version of the BE Scale for Adolescents and Adults was used to evaluate the children' BE.

Results. More than half of the children were dissatisfied with their own body images (57.8% of girls vs. 42.2% of boys, $p < .05$). The lowest BE score in both genders was among adolescents who desired to be thinner ($p < .01$). The criterion-related validity of Collins' BFPP, in relation to BMI and weight, was at an acceptable level in girls (BMI $\rho = 0.69$, weight $\rho = 0.66$) and boys (BMI $\rho = 0.58$, weight $\rho = 0.57$), and was statistically significant in all cases ($p < .01$). The test-retest reliability coefficients of Collins' BFPP were found to be moderately high for both girls ($\rho = 0.72$) and boys ($\rho = 0.70$).

Conclusions. Collins' BFPP scale is a reliable and valid tool for Turkish children aged 9-11 years. This study demonstrates that more Turkish girls than boys were dissatisfied with their bodies. Children who were affected by overweight/obesity and underweight had a higher BID than those with a normal weight. It is important to evaluate adolescents' BE and BID in addition to their anthropometric measurements during their regular clinical follow-up.

Key words: children, adolescent, body image dissatisfaction, body esteem.

Body image was first defined as "the picture of our own body which we form in our minds, that is to say the way the body appears to ourselves" by German writer Schilder.^{1,2}

Slade^{2,3} expanded the definition of body image as "the picture we have in our minds of the size, shape and form of our bodies; and our feelings concerning these characteristics and our constituent body parts." There are many different survey instruments for the evaluation of body image.⁴ The most commonly used in pediatric research was developed by Collins^{5,6}, which consists of a figural drawing scale with 7 body figure charts to depict weight ranging

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from very thin to obese for preadolescent girls and boys. Figural drawing scales have several advantages. These scales are suitable and understandable for children of different ages and can be answered easily and quickly by children.⁷

The description of body image consists of two main components: a perceptual component and an attitudinal component.^{2,3} Body image dissatisfaction (BID) is the negative subjective evaluation of one's body shape (perceptual), whereas body esteem (BE) is characterized by feelings about how one looks or about one's overall appearance (attitudinal).^{8,9} Research has shown that age and gender are the strongest correlates of BID and BE. Negative BID is widespread among girls; they generally want to be thinner than they are, even if they have a normal weight. Boys, on the other hand, are more likely to want to be heavier and more muscular. Girls who want to be thinner cut down on food intake and avoid sweets and fatty foods. Boys may also cut out sweets and fatty foods but eat more healthy foods and are likely to do more exercise. Besides commonly recognized social pressures around ideal body types, early maturation can also cause BID, especially in girls.¹⁰ BID may contribute to depression, low self-esteem, obesity and eating disorders such as anorexia or bulimia.¹¹⁻¹⁷

According to limited studies conducted in Turkey, BID has been seen as an important problem in adolescence. For example, Arslan et al.¹⁸ found, among high school students in Istanbul, the percentage of BID was 46.8% overall. Most concerning, while the prevalence of BID was 29.8% in 9th grade, this percentage increased to 78.9% in 12th grade. Elsewhere, studies have also shown that females have greater BID than males in Turkey.^{19,20} There are also studies that have shown the relationship between BID and self-esteem in the early adolescent age group.²¹⁻²³ Tok and Gedik suggested the lack of validated measurements in Turkish is a significant constraint in this area of research in Turkey.²³

This study has three objectives. The first objective is to establish the validity and test-retest reliability of the Turkish version of Collins' Body Figure Perceptions and Preferences (BFPP) scale in order to contribute to this vital area of study. The second aim was to investigate the association between body mass index (BMI) and BID, and the last aim was to evaluate the association between BE and BID.

Material and Methods

Participants and data collection

Approval from the Provincial Directorate of the Ministry of National Education was obtained to conduct the study in the selected schools. In addition, ethical approval was obtained from the Noninterventional Clinical Research Ethics Board at Hacettepe University, Turkey (GO 14/429-07). Each participating school in the study sent relevant information to parents. The consent of parents and the assent of children were obtained before data collection.

A cross-sectional, descriptive study was performed. This study was part of the Child Obesity Study of Ankara (COSA), which aimed to investigate the prevalence of obesity and related factors in Turkey. Ankara was stratified according to 3 socio-economic status (SES) levels using the criteria mentioned by Yüceşahin and Tuysuz.²⁴ The study was carried out in 46 schools in Ankara during the 2014-2015 school year. The schools were selected from each SES stratum using probability proportional-to-size methodology. The sample included 2066 4th grade students aged 9-11 years. Further details of the sampling design of the COSA study can be found in the article by Yardim et al.²⁵ A subsample of 641 children was used in the test-retest study.

Measures

Anthropometric measures

Child anthropometric measurements, including weight and height, were taken by trained

nursing school students using a Seca 813 weight scale and Seca 213 height board. Children's weight status was estimated using World Health Organization (WHO) cutoff points.²⁶ Based on BMI-for-age z-scores, underweight was defined as < -2 , normal weight between ≥ -2 and $\leq +1$, overweight $> +1$ and $\leq +2$, and obesity $> +2$ standard deviation units.²⁷

Body Image Dissatisfaction (BID) and Feel-Ideal Difference Index (FID)

Collins' BFPP scale⁵ was used to assess BID. The scale includes two sets of 7 body figures for boys or girls, ranging from very thin to obese. The children were asked to mark the figure that most resembled their perceptions of how they looked in the first set of figures (Fig. 1). Children were then asked to choose their ideal body, i.e. the body they most wanted to resemble (their ideal figure), from the second set of figures chart (Fig. 2). The original study found good test-retest reliability in this instrument; the actual figure showed $r = 0.71$ and the ideal figure showed $r = 0.59$.⁵ Collins used weight and BMI for evaluation of criterion-related validity of the actual body figure chart. The criterion-related validity coefficients of the actual pictorial with weight (0.36 , $p < 0.05$) and with BMI (0.37 , $p < 0.05$) were found to have modest statistical significance.^{5,28}

The FID index represents the difference between the actual and ideal figures and indicates the degree of body dissatisfaction.²⁹⁻³¹ For example, if the score of the perceived self-figure is 3 and the score of the ideal is 1, then the FID index of the child is 2. A larger positive score indicates the child wishes to be thinner, and a larger negative score indicates the child desires to be larger. The range of the FID index can be between -6 and $+6$. An FID index score equaling 0 shows there is no BID. FID index values were grouped into three categories: children wanting to be thinner than their actual body image (FID index > 0), children wanting to be larger than actual body image (FID index < 0), and children satisfied with their body image (FID index $= 0$).

Body Esteem (BE) scale

Mendelson et al.²¹ defined BE as the "self-evaluation and self-esteem of one's physical appearance." The BE Scale for Adolescents and Adults (BESAA) consists of three dimensions: appearance ("feelings about one's general appearance", Cronbach's $\alpha = 0.92$), weight ("feelings about one's weight" Cronbach's $\alpha = 0.94$), and attribution ("evaluations attributed to others about one's body and appearance" Cronbach's $\alpha = 0.81$). Children responded to the survey on a 5-point Likert scale, ranging from 0 (never) to 4 (always).²¹ The validity and reliability of the Turkish version of the BESAA Scale for children was previously established by our team.³² In that study, Cronbach's α for the weight, appearance, attribution subscales and the total scale were 0.85 , 0.76 , 0.69 , and 0.85 . Test-retest reliability showed $r = 0.68$, 0.68 , and 0.57 for the three subscales, respectively.³²

Statistical analysis

Arithmetic mean, standard deviation, median, and minimum-maximum values were given as descriptive statistics for quantitative data. Criterion-related validity can be assessed by calculating the degree of correlation between the test score and a known standard criterion.³³ The actual weight and BMI were accepted as standard criteria. Spearman's rho correlation coefficient between pictorial figure selections and actual weight and BMI was used for evaluation of criterion-related validity of Collins' BFPP scale. Spearman's rho correlation coefficient was used for the assessment of test-retest reliability. Pearson χ^2 test was used to compare BMI groups in terms of the three FID index groups described above.²⁹⁻³¹ Pairwise comparisons between BMI groups in the each FID index group were examined by using Z-test with the Bonferroni correction. Since there were four levels of BMI groups and six pairwise comparisons, Bonferroni adjustment was applied for the significance level (adjusted significance value = 0.0083). The Shapiro-Wilk and Kolmogorov-Smirnov tests were used to determine the normality of BE

Self: Which picture looks the most like you look? (Same-gender child figure).



Fig. 1. Collins' instrument for BFPP scale for actual body size.

Ideal Self: Which picture shows the way you want to look? (Same-gender child figure).

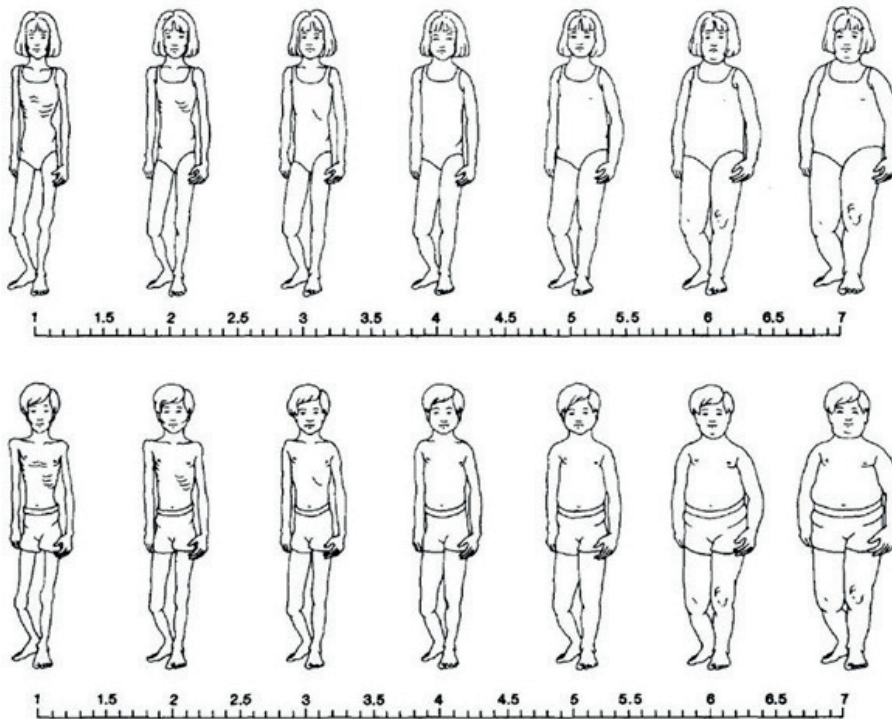


Fig. 2. Collins' instrument for BFPP scale for ideal body size.

scores. Because BE scores were not normally distributed, the Kruskal-Wallis test was used to compare BE scores among FID groups. Pairwise comparisons were performed using Dunn's test. The Mann Whitney-U test was used to determine differences between girls and boys in terms of the BE scores in each FID index group. The independent samples t-test was used to compare two proportions. The Statistical Package for the Social Sciences (SPSS) v.23.0 (Chicago, IL) was used for data analysis. A p value of less than 0.05 was considered to indicate a statistically significant difference.

Results

The study was conducted in 46 schools (15 schools from a low SES county, 17 from a medium SES county, and 14 from a high SES county). The full sample of children in this study (n = 2066) included 1100 (53.2%) children in low SES, 715 (34.6%) in medium SES, and 251 (12.2%) in high SES categories. Out of 2066 children, 53.1% were girls and 46.9% were boys. The mean age was 10.06 years (± 0.37). Of the total sample, 2.2%, 59.1%, 20.2%, and 13.9% were of underweight, normal, overweight, and obese status, respectively, based on WHO BMI cutoff points.^{26,27} The mean weight, height, and BMI were 35.9 kg (± 8.7 kg), 139.3cm (± 6.5 cm), and 18 kg/m² (± 3.5 kg/m²) respectively.

Test-retest reliability and criterion-related validity of Collins' BFPP in Turkish children

A total number of 641 children aged 9-11 years, (296 girls, mean age was 9.65 years (± 0.54); and 345 boys, mean age was 9.56 years (± 0.59)) were

included in the subsample for the test-retest study of Collins' BFPP scale. Among the sample, 243 (38.0%) children were from low SES, 205 (32.0%) from middle SES, and 193 (30.0%) from high SES regions.

The results of test-retest reliability and criterion-related validity for the Collins' BFPP scale are presented in Table I. The test-retest reliability coefficients of perceived self-figure were found to be moderately high for girls ($\rho = 0.72$) and boys ($\rho = 0.70$). Test-retest reliability coefficients of ideal self-figure were found to be moderate for girls ($\rho = 0.60$) and boys ($\rho = 0.55$). These test-retest associations were all significant ($p < .01$) The criterion-related validity analyses were conducted within the full sample. In both girls (BMI $\rho = 0.69$, weight $\rho = 0.66$) and boys the criterion-related validity of self-figure in relation to BMI and weight was acceptable and statistically significant ($p < .01$).

BID and BMI

Table II shows the distribution of FID by gender and BMI. Gender was significantly associated with BID ($p < .05$). Approximately 63.0% of girls and 53.0% of boys were dissatisfied with their own body image; 45.5% percent of girls wanted to be thinner and 17.1% wanted to be larger, whereas 30.7% of boys wanted to be thinner and 21.9% wanted to be larger. There was a statistically significant difference between boys (33.1%) and girls (24.2%) wanting to be larger in the normal BMI groups ($p < .01$).

A significant association was also found between BMI and FID index ($p < .05$). Children with an overweight or obese status were

Table I. Test-retest reliability and criterion-related validity of self-figure and ideal self-figure.

Figures	Test-retest Reliability Coefficient	Validity Coefficient with BMI	Validity Coefficient with Body Weight
Girl self-figure	0.72	0.69	0.66
Girl ideal self-figure	0.60	-	-
Boy self-figure	0.70	0.58	0.57
Boy ideal self-figure	0.55	-	-

BMI: Body mass index.
 $p < .01$ for all values.

Table II. FID index groups by gender and BMI status.

FID index groups	Gender						p
	Girls		Boys		Total		
	n	%	n	%	n	%	
Want to be thinner	492	45.5	289	30.7	781	38.6	p<0.05
Want to be the same	404	37.4	446	47.4	850	42.0	
Want to be larger	185	17.1	206	21.9	391	19.3	
Total	1081	100.0	941	100.0	2022	100.0	

FID Index Groups	Boys' BMI status										p
	Underweight		Normal		Overweight		Obese		Total		
	n	%	n	%	n	%	n	%	n	%	
Want to be thinner	1	4.3 ^a	75	14.3 ^a	78	43.8 ^b	115	68.0 ^c	269	0.30	p<0.05
Want to be the same	13	56.5 ^{a,b}	275	52.6 ^b	88	49.4 ^b	50	29.6 ^a	426	0.48	
Want to be larger	9	39.1 ^a	173	33.1 ^a	12	6.7 ^b	4	2.4 ^b	198	0.22	
Total	23	100.0	523	100.0	178	0	169	100.0	893		

FID Index Groups	Girls' BMI status										p
	Underweight		Normal		Overweight		Obese		Total		
	n	%	n	%	n	%	n	%	n	%	
Want to be thinner	0	0.0 ^a	196	29.1 ^b	177	75.0 ^c	105	94.6 ^d	478	0.46	p<0.05
Want to be the same	9	45.0 ^{a,b}	315	46.7 ^b	57	24.2 ^a	6	5.4 ^c	387	0.37	
Want to be larger	11	55.0 ^a	163	24.2 ^b	2	0.8 ^c	0	0.0 ^c	176	0.17	
Total	20	100.0	674	100.0	236	100.0	111	100.0	1041	100.0	

BMI: body mass index, FID: feel-ideal difference.

BMI groups with different superscript in the same FID index group statistically significant differences via post-hoc Z test with Bonferroni correction.

A total of 132 (6.3%) of the children did not answer all the questions of the scales used in this study.

more dissatisfied with their own body image compared to those in the underweight and normal weight groups. Results showed that 94.6% of girls of obese status wanted to decrease their body size (75.0% of girls of overweight status). Among boys, 68.0% of those affected by obesity wanted to decrease their body size (43.8% of boys of were of overweight status). Although 33.1% of boys wanted to be larger in the normal BMI group, 24.2% of girls reported the same thing in the normal BMI group.

BID and BE

Table III shows the BE scores based on the 3 subscales (weight, appearance, attribution) and the overall scale (total score) by FID index groups. Kruskal-Wallis test results indicated that BID had a significant effect on all BE scores using the subscales and overall scale (p<.01) for both gender. According to the results of a post-

hoc Dunn's test with Bonferroni correction, children with BID had lower BE scores in comparison with the "Want to be the same" group (p=.017). Among both girls and boys, the "Want to be the same" group had the highest overall BE scores.

There were some gender differences noted. In the "Want to be the same" FID group, all of the BE scales showed significantly higher scores in girls than in boys (p<.01). Similarly, in the "Want to be larger" FID group, with the exception of weight subscale score, all other BE scores of girls were significantly higher than those of boys (p<.01). In contrast, in the "Want to be thinner" FID group, only the weight subscale score was statistically different by gender; weight subscale scores for girls were lower than for boys (p<.01).

Table III. BE scores by FID index by gender.

Gender	BE Subscales	FID Index Groups	n	Mean (SD)	Median	Min-Max	p ^a
Girls	Weight	Want to be thinner ^{b,c}	452	10.9 (6.0)	11.0	0-20	<.01
		Want to be the same	375	15.5 (4.6)	17.0	0-20	
		Want to be larger ^b	173	13.8 (5.0)	14.0	0-20	
	Appearance	Want to be thinner ^{b,c}	453	14.2 (6.2)	15.0	0-24	
		Want to be the same	373	18.3 (5.6)	20.0	0-24	
		Want to be larger	174	18.3 (5.1)	20.0	0-24	
	Attribution	Want to be thinner ^{b,c}	454	9.3 (3.7)	9.0	0-16	
		Want to be the same	379	11.1 (3.5)	11.6	0-16	
		Want to be larger ^b	172	10.3 (3.7)	10.0	2-16	
Total	Want to be thinner ^{b,c}	398	34.6 (12.5)	35.0	4-60		
	Want to be the same	340	45.3 (10.2)	47.0	15-60		
	Want to be larger ^b	151	42.1 (9.7)	43.0	7-60		
Boys	Weight	Want to be thinner ^b	269	11.7 (6.1)	11.0	0-20	<.01
		Want to be the same	424	14.6 (5.3)	16.0	0-20	
		Want to be larger ^b	189	12.9 (5.4)	13.0	0-20	
	Appearance	Want to be thinner ^{b,c}	265	13.6 (6.7)	14.0	0-24	
		Want to be the same	404	16.8 (6.0)	18.0	0-24	
		Want to be larger	185	15.8 (6.0)	16.0	0-24	
	Attribution	Want to be thinner ^b	265	9.1 (3.9)	9.0	0-16	
		Want to be the same	423	10.3 (4.0)	11.0	0-16	
		Want to be larger	194	9.3 (4.2)	9.0	0-16	
Total	Want to be thinner ^{b,c}	236	34.1 (12.8)	35.0	0-60		
	Want to be the same	373	42.2 (10.6)	44.0	13-60		
	Want to be larger ^b	169	38.8 (9.6)	37.0	9-60		

BE: body esteem.

^a: Kruskal-Wallis analysis of variance test for 3 groups.

^b: Statistically significant according to Bonferroni correction (p =.017) compared with the “Want to be the same” group.

^c: Statistically significant according to Bonferroni correction (p =.017) compared with the “Want to be larger” group.

Discussion

In this study, more than half of the adolescents aged 9-11 were dissatisfied with their own body image. We found that approximately 46% of girls and approximately 30.0% of boys wanted to be thinner. Our study demonstrated that as BMI increased, body dissatisfaction increased in both genders. The percentage of body dissatisfaction among girls affected by overweight, or obesity was higher than that of their male counterparts.

Our results support recent studies that have shown that body dissatisfaction is a common

problem among early adolescents^{34,35}, and that girls are more dissatisfied with their bodies than boys.^{5,12,28,36-38} We found that there is a relationship between BMI and BID among our participants who have rapid physical growth and psychological development. Body image and BE are developed in early adolescence. In addition, our finding showing that adolescents with obesity experience greater dissatisfaction with their bodies is also consistent with prior research.^{39,40}

We examined BE scores for various body figure dissatisfaction groups. Our findings showed that in both girls and boys, the lowest scores of

BE occurred in the "Want to be thinner" group, whereas those without body dissatisfaction had the highest overall BE. Studies show that low BE is associated with restraint and emotional eating, emotional disturbances, as well as other psychological disorders.^{9,41-44} The results of the present study indicate that both "Want to be thinner" and "Want to be larger" are risk factors of low BE.

Weight-related stigmatization is a widespread problem for children with obesity.⁴⁵⁻⁴⁷ These children are frequently perceived as lazy, unhealthy, unattractive, and inactive by their peers.⁴⁷ Obesity-related stigmatization is associated with low self-esteem, depression, and body dissatisfaction.² Jendryca and Warschburger⁴⁶ found that weight status, body dissatisfaction and restrained eating directly influenced disordered eating in both genders aged 6-11 years. They also found that among girls who experienced weight stigma and exhibited eating disorder behaviors, 43.5% were affected by obesity; among boys, this percentage was 33.3%.

Television and other media can affect both the perception of body image and the ideal body image of children. Many theorists have opined that the media may play a central role in creating and exacerbating body dissatisfaction.⁴⁸ Ata et al.⁴⁹ found that females tend to report greater pressures from the media than males. According to Ricciardelli and McCabe⁵⁰, girls show a greater desire to be thin and are more likely to diet, while boys are more likely to be concerned with muscularity and a desire to increase the strength and size of their muscles. We found similar results in the current research, where a higher percentage of girls than boys wanted to be thin while a higher percentage of boys than girls wanted to increase their body size. That said, our study did not specifically examine the issue of muscularity, only body size. Future research should explore this aspect further among Turkish boys.

Our findings show that the Turkish version of Collins' BFPP scale has sufficient validity and reliability for early adolescents. Figural drawing scales for evaluating body perceptions and preferences provide several advantages, including ease of administration in group settings and ease of understanding by children.^{7,28,51,52} It has been discovered that body dissatisfaction is related to lower BE scores, indicating that the relationship between body dissatisfaction and BE is a growing public health issue in our country.

Our study has several strengths, including the relatively large sample of early adolescents and measured anthropometry. The study was designed to provide the ability to examine Collins' BFPP test-retest reliability and its validity against both BMI and BE as key criteria, thus making a significant contribution to the literature on the Turkish pediatric population. A limitation of the study is that it only included early adolescents living in Ankara; thus, findings may not generalize to all children in Turkey, especially those in rural parts of the country. We also did not collect specific data on eating disorders, the internalization of masculinity or mental health. Future research is warranted to investigate these additional dimensions in relation to BID.

This research shows that Collins' BFPP scale is reliable and valid for use in Turkish children aged 9-11 years, at least in large metropolitan areas such as Ankara. We found that girls were more vulnerable in terms of BID than boys. Children who are overweight/obese and underweight have higher levels of body dissatisfaction than adolescents with normal BMI. In light of the known negative health consequences of BID, BID may be an important risk factor to assess in pediatric settings beyond BMI. This study brings additional awareness of the importance of BID to researchers and clinicians in Turkey and should simulate further investigation using Collins' BFPP in child health research in Turkey.

Ethical approval

Approval from the Provincial Directorate of the Ministry of National Education was obtained to conduct the study in the selected schools. In addition, ethical approval was obtained from the Noninterventional Clinical Research Ethics Board at Hacettepe University in Ankara, Turkey (GO 14/429-07).

Author contribution

The authors confirm contribution to the paper as follows: study conception and design: UEA, HÖ; data collection: UEA, HÖ, SÜ, MSY, HKÜ; analysis and interpretation of results: UEA, HÖ; draft manuscript preparation: UEA, HÖ, ÖA, TTKH. All authors reviewed the results and approved the final version of the manuscript.

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Conflict of interest

The authors declare that there is no conflict of interest.

REFERENCES

- Schilder P. The Image and Appearance of the Human Body: Studies in Constructive Energies of the Psyche (1st ed). Kegan Paul, Trench, Trubner & Co. Publishing; 1935.
- Slade PD. What is body image? *Behav Res Ther* 1994; 32: 497-502. [https://doi.org/10.1016/0005-7967\(94\)90136-8](https://doi.org/10.1016/0005-7967(94)90136-8)
- Slade PD. Body image in anorexia nervosa. *Br J Psychiatry* 1988; 153: 20-22. <https://doi.org/10.1192/s0007125000298930>
- Coelho EM, Padez C, Moreira P, Rosado V, Rosado MV. BMI and self-perceived body shape in Portuguese children. *Revista de Psicologia del Deporte* 2013; 22: 371-376.
- Collins ME. Body figure perceptions and preferences among preadolescent children. *Int J Eating Disord* 1991; 10: 199-208. [https://doi.org/10.1002/1098-108X\(199103\)10:2%3C199::AID-EAT2260100209%3E3.0.CO;2-D](https://doi.org/10.1002/1098-108X(199103)10:2%3C199::AID-EAT2260100209%3E3.0.CO;2-D)
- Smolak L. Body image in children and adolescents: where do we go from here? *Body Image* 2004; 1: 15-28. [https://doi.org/10.1016/S1740-1445\(03\)00008-1](https://doi.org/10.1016/S1740-1445(03)00008-1)
- Zitzmann J, Warschburger P. Psychometric properties of figure rating scales in children: the impact of figure ordering. *J Pers Assess* 2020; 102: 259-268. <https://doi.org/10.1080/00223891.2018.1505731>
- Stice E, Shaw HE. Role of body dissatisfaction in the onset and maintenance of eating pathology: a synthesis of research findings. *J Psychosom Res* 2002; 53: 985-993. [https://doi.org/10.1016/s0022-3999\(02\)00488-9](https://doi.org/10.1016/s0022-3999(02)00488-9)
- Thompson JK, Smolak L. *Body image, eating disorders, and obesity in youth: assessment, prevention, and treatment*. Washington, DC: American Psychological Association; 2001. <https://doi.org/10.1037/10404-000>
- Polivy J, Herman CP, Mills JS, Wheeler B. *Blacwell Handbook of Adolescence (1st ed)*. Blacwell Publishing; 2006: 523-549.
- Gatti E, Ionio C, Traficante D, Confalonieri E. "I Like My Body; Therefore, I Like Myself": how body image influences self-esteem-a cross-sectional study on Italian adolescents. *Eur J Psychol* 2014; 10: 301-317. <https://doi.org/10.5964/ejop.v10i2.703>
- Thapa DK, Thapa S. Gender differences in body image dissatisfaction and eating disorder among Nepalese adolescents: a paradigm shift from fatness to thinness. *Clin Psychiatry* 2015; 1: 1-5. <https://doi.org/10.21767/2471-9854.100012>
- Goldschmidt AB, Wall M, Choo THJ, Becker C, Neumark-Sztainer D. Shared risk factors for mood-, eating-, and weight-related health outcomes. *Health Psychol* 2016; 35: 245-252. <https://doi.org/10.1037/hea0000283>
- Eisenberg ME, Neumark-Sztainer D, Story M. Associations of weight-based teasing and emotional well-being among adolescents. *Arch Pediatr Adolesc Med* 2003; 157: 733-738. <https://doi.org/10.1001/archpedi.157.8.733>
- Loth KA, Watts AW, van den Berg P, Neumark-Sztainer D. Does body satisfaction help or harm overweight teens? A 10-year longitudinal study of the relationship between body satisfaction and body mass index. *J Adolesc Health* 2015; 57: 559-561. <https://doi.org/10.1016/j.jadohealth.2015.07.008>
- Stice E, Marti CN, Durant S. Risk factors for onset of eating disorders: evidence of multiple risk pathways from an 8-year prospective study. *Behav Res Ther* 2011; 49: 622-627. <https://doi.org/10.1016/j.brat.2011.06.009>

17. O'Dea JA. Evidence for a self-esteem approach in the prevention of body image and eating problems among children and adolescents. *Eat Disord* 2004; 12: 225-239. <https://doi.org/10.1080/10640260490481438>
18. Arslan M. Lise öğrencilerinin beden algısı ve yeme tutumunun incelenmesi ve bunların BKİ (Beden Kitle İndeksi) ile ilişkisinin değerlendirilmesi. *Süleyman Demirel Üniversitesi Vizyoner Dergisi* 2020; 11: 107-117. <https://doi.org/10.21076/vizyoner.651699>
19. Bulduk EÖ, Bulduk S, Özkula G. Assessment of eating attitudes and body satisfaction among high school adolescents in Turkey. *Progress in Nutrition* 2018; 20: 205-211. <https://doi.org/10.23751/pn.v20i2.6332>
20. Avci M, Aklıman CK. Gender differences in perception of body, expressions of body image and body image coping strategies among Turkish adolescents. *Int J Curriculum and Instruction* 2018; 2: 30-34.
21. Mendelson BK, Mendelson MJ, White DR. Body-esteem scale for adolescents and adults. *J Pers Assess* 2001; 76: 90-106. https://doi.org/10.1207/S15327752JPA7601_6
22. Uluyol FM, Barışkın E. Ben-Tovim Walker Beden Tutum Ölçeği (BTWÖ)'nin Türkçe formunun psikometrik özelliklerinin incelenmesi. *AYNA Klinik Psikoloji Dergisi* 2020; 7: 57-77. <https://doi.org/10.31682/ayna.612797>
23. Tok ESS, Gedik Z. Turkish validity and reliability study of the Body Esteem Scale. *Dusunen Adam J Psychiatr Neurol Sci* 2019; 32: 345-35. <https://doi.org/10.14744/DAJPNS.2019.00049>
24. Yüceşahin MM, Tuysuz S. Patterns of urban socio-spatial differentiation in Ankara: an empirical analysis. *Turkish Journal of Geographical Sciences* 2011; 9: 159-188. https://doi.org/10.1501/cogbil_0000000123
25. Yardim MS, Özcebe LH, Araz OM, et al. Prevalence of childhood obesity and related parental factors across socioeconomic strata in Ankara, Turkey. *East Mediterr Health J* 2019; 25: 374-384. <https://doi.org/10.26719/emhj.18.052>
26. World Health Organization. *AnthroPlus for Personal Computers Manual: Software for Assessing Growth of the World's Children and Adolescents*. 2020. <https://cdn.who.int/media/docs/default-source/child-growth/growth-reference-5-19-years/who-anthroplus-manual.pdf>
27. de Onis M, Onyango AW, Borghi E, Siyam A, Nishida C, Siekmann J. Development of a WHO growth reference for school-aged children and adolescents. *Bull World Health Organ* 2007; 85: 660-667. <https://doi.org/10.2471/blt.07.043497>
28. Truby H, Paxton SJ. Development of the children's body image scale. *Br J Clin Psychol* 2002; 41: 185-203. <https://doi.org/10.1348/014466502163967>
29. Mciza Z, Goedecke JH, Steyn NP, et al. Development and validation of instruments measuring body image and body weight dissatisfaction in South African mothers and their daughters. *Public Health Nutr* 2005; 8: 509-519. <https://doi.org/10.1079/phn2005814>
30. Bell C, Kirkpatrick SW, Rinn RC. Body image of anorexic, obese, and normal females. *J Clin Psychol* 1986; 42: 431-439. [https://doi.org/10.1002/1097-4679\(198605\)42:3<431::aid-jclp2270420305>3.0.co;2-i](https://doi.org/10.1002/1097-4679(198605)42:3<431::aid-jclp2270420305>3.0.co;2-i)
31. Caradas AA, Lambert EV, Charlton KE. An ethnic comparison of eating attitudes and associated body image concerns in adolescent South African schoolgirls. *J Hum Nutr Diet* 2001; 14: 111-120. <https://doi.org/10.1046/j.1365-277x.2001.00280.x>
32. Arslan UE, Özcebe LH, Konşuk Ünlü H, et al. The validity and reliability of the Turkish version of the Body Esteem Scale for Adolescents and Adults (BESAA) for children. *Turk J Med Sci* 2020; 50: 10.3906/sag-1902-171. <https://doi.org/10.3906/sag-1902-171>
33. Bellamy N. Principles of clinical outcome assessment. In: Silman A, Smolen J, Weinblatt M, Weisman M, Hochberg M, Gravalles E (eds). *Rheumatology* (7th ed). Philadelphia: Elsevier; 2019: 202-212.
34. Dion J, Hains J, Vachon P, et al. Correlates of body dissatisfaction in children. *J Pediatr* 2016; 171: 202-207. <https://doi.org/10.1016/j.jpeds.2015.12.045>
35. Tatangelo G, McCabe M, Mellor D, Mealey A. A systematic review of body dissatisfaction and sociocultural messages related to the body among preschool children. *Body Image* 2016; 18: 86-95. <https://doi.org/10.1016/j.bodyim.2016.06.003>
36. McCabe MP, Ricciardelli LA, Finemore J. The role of puberty, media and popularity with peers on strategies to increase weight, decrease weight and increase muscle tone among adolescent boys and girls. *J Psychosom Res* 2002; 52: 145-153. [https://doi.org/10.1016/s0022-3999\(01\)00272-0](https://doi.org/10.1016/s0022-3999(01)00272-0)
37. Pinheiro AP, Giugliani ERJ. Body dissatisfaction in Brazilian schoolchildren: prevalence and associated factors. *Rev Saude Publica* 2006; 40: 489-496. <https://doi.org/10.1590/s0034-89102006000300018>
38. Gualdi-Russo E, Albertini A, Argnani L, Celenza F, Nicolucci M, Toselli S. Weight status and body image perception in Italian children. *J Hum Nutr Diet* 2008; 21: 39-45. <https://doi.org/10.1111/j.1365-277X.2007.00843.x>

39. Chen G, Guo G, Gong J, Xiao S. The association between body dissatisfaction and depression: an examination of the moderating effects of gender, age, and weight status in a sample of Chinese adolescents. *J Psychol Couns Sch* 2015; 25: 245-260. <https://doi.org/10.1017/jgc.2015.6>
40. Knowles G, Ling FCM, Thomas GN, Adab P, McManus AM. Body size dissatisfaction among young Chinese children in Hong Kong: a cross-sectional study. *Public Health Nutr* 2015; 18: 1067-1074. <https://doi.org/10.1017/S1368980014000810>
41. Hoare P, Cosgrove L. Eating habits, body-esteem and self-esteem in Scottish children and adolescents. *J Psychosom Res* 1998; 45: 425-431. [https://doi.org/10.1016/s0022-3999\(98\)00025-7](https://doi.org/10.1016/s0022-3999(98)00025-7)
42. Dzielska A, Mazur J, Nałęcz H, Oblacińska A, Strucińska M. Polish adaptation and validation of the physical appearance comparison scale (Pacs) - an analysis among young people in late adolescence in the context of obesity. *Dev Period Med* 2017; 21: 213-223.
43. Filaire E, Rouveix M, Pannafieux C, Ferrand C. Eating attitudes, perfectionism and body esteem of elite male judoists and cyclists. *J Sports Sci Med* 2007; 6: 50-57.
44. Forrester-Knauss C, Perren S, Alsaker FD. Does body mass index in childhood predict restraint eating in early adolescence? *Appetite* 2012; 59: 921-926. <https://doi.org/10.1016/j.appet.2012.08.026>
45. Latner JD, Simmonds M, Rosewall JK, Stunkard AJ. Assessment of obesity stigmatization in children and adolescents: modernizing a standard measure. *Obesity (Silver Spring)* 2007; 15: 3078-3085. <https://doi.org/10.1038/oby.2007.366>
46. Jendrzyca A, Warschburger P. Weight stigma and eating behaviours in elementary school children: A prospective population-based study. *Appetite* 2016; 102: 51-59. <https://doi.org/10.1016/j.appet.2016.02.005>
47. Brochu PM, Esses VM. What's in a name? The effects of the labels "fat" versus "overweight" on weight bias. *J Appl Soc Psychol* 2011; 41: 1981-2008. <https://doi.org/10.1111/j.1559-1816.2011.00786.x>
48. Champion H, Furnham A. The effect of the media on body satisfaction in adolescent girls. *Eur Eat Disord Rev* 1999; 7: 213-228. [https://doi.org/10.1002/\(SICI\)1099-0968\(199906\)7:3<213::AID-ERV229>3.0.CO;2](https://doi.org/10.1002/(SICI)1099-0968(199906)7:3<213::AID-ERV229>3.0.CO;2)
49. Ata RN, Ludden AB, Lally MM. The effects of gender and family, friend, and media influences on eating behaviors and body image during adolescence. *J Youth Adolescence* 2006; 36: 1024-1037. <https://doi.org/10.1007/s10964-006-9159-x>
50. Ricciardelli LA, McCabe MP. Sociocultural and individual influences on muscle gain and weight loss strategies among adolescent boys and girls. *Psychol Sch* 2003; 40: 209-224. <https://doi.org/10.1002/pits.10075>
51. Gardner RM, Brown DL. Method of presentation and sex differences when using a revised figural drawing scale to measure body size estimation and dissatisfaction. *Percept Mot Skills* 2011; 113: 739-750. <https://doi.org/10.2466/07.17.27.PMS.113.6.739-750>
52. Thompson JK, Altabe MN. Psychometric qualities of the figure rating scale. *Int J Eat Disord* 1991; 10: 615-619. [https://doi.org/10.1002/1098-108X\(199109\)10:5%3C615::AID-EAT2260100514%3E3.0.CO;2-K](https://doi.org/10.1002/1098-108X(199109)10:5%3C615::AID-EAT2260100514%3E3.0.CO;2-K)