

Perception of Dentofacial Aesthetics in School Children and Their Parents

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Abstract

Objective The aim of this research was to examine the attitudes and perceptions of dentofacial aesthetics among different age groups.

Materials and Methods The sample consisted of elementary-school students from the city of Sarajevo, Bosnia and Herzegovina, and their parents. This study included 314 subjects: 157 children and 157 parents. The children's group consisted of 85 (54.14%) males and 72 (45.85%) females, aged 9 to 15 years.

Statistical Analysis Descriptive statistics were used to determine frequency distribution and percentages for all variables. A chi-squared (χ^2) test was used to determine the association between variables and a p -value < 0.05 was considered significant for all the differences and associations.

Results For the dentofacial appearance with no teeth irregularity or with severe teeth irregularity, an analysis of variance (ANOVA) (post-hoc tests—Tukey's HSD) indicated that the difference is not statistically significant ($p = 0.06$) relative to rank matching between all three subject groups.

For dentofacial appearance with mild teeth irregularity, an ANOVA (post-hoc tests—Tukey's HSD) showed statistical difference ($p = 0.07$) between the teenage group of subjects relative to pre-teenage group of subjects and adult group of subjects.

Conclusion Attitudes about desirable and acceptable dental aesthetics differ in younger children compared with older children and parents. Ten years old children find good function with poor aesthetics more pleasing, while 14 years old children find aesthetics with bad function as more pleasing.

Keywords

- dentofacial aesthetics
- perception
- children
- adults

Introduction

It seems that today children become aware of these imposed needs and strive for perfection at an earlier age.¹ When it comes to dentofacial aesthetics, today the slightest irregularity, diastema, or mild rotation is considered as a reason for seeking orthodontic treatment. Children are under the uncontrolled influence of the modern media. The media

promote a perfect appearance as the only acceptable one.^{2,3} Parents, who are supposed to be the corrective factor in this misguidance, are not able to resist it themselves. As a result, we have an increased desire for orthodontic treatment at an early age, purely motivated by aesthetics.^{4,5}

In the past, the onset of a puberty was seen to be a period of life when people become highly aware of certain physical

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characteristics and also highly sensitive of them.⁶ Nowadays, even younger school children and preteenagers have clear standards of facial appearance and overall appearance.⁷ Generally, children of all ages pay too much attention and are too critically focused on the slightest physical imperfection of their face, teeth, smile, as well as the other external features that help to form the first impression in other people.⁸⁻¹⁰ During childhood, when social skills are acquired and built, excessive attachment to physical characteristics can be dangerous in two ways. Overestimation of one's own or other people's physical characteristics may result in some of the forms of behavioral disorder in a child. The most commonly described are disorders of insufficiently controlled behavior and disorders of excessively controlled behavior, with all the accompanying short-term and long-term consequences, such as loss of motivation, decline in school success, anxiety, depression, and some psychosomatic disorders.¹¹

In the light of this, the aim of this study was to determine how much awareness of dentofacial aesthetics is present among younger and older schoolchildren and their parents and whether there is a correlation between age and the perception of dentofacial aesthetics.

Materials and Methods

The aim of this research was to examine the attitudes and perceptions of dentofacial aesthetics among different age groups. A cross-sectional study was performed. The sample consisted of elementary-school students from the city of Sarajevo, Bosnia and Herzegovina, and their parents. One public elementary school was randomly selected from the list of all public and private primary schools registered in Sarajevo. This study included 314 subjects: 157 children and 157 parents. The children's group consisted of 85 (54.14%) males and 72 (45.85%) females, aged 9 to 15 years. The total sample consisted of 314 participants, divided into three groups: pre-teenage group (mean age 10.5), teenage group (mean age 14.8), and adult group—parents of children (mean age 40.2).

The instrument used in this study was a questionnaire approved by the Ethical Committee of the School of Dental Medicine, University of Sarajevo. An integral part of the questionnaire was a cover letter with all necessary information about the study, the rights and obligations of the subjects and their parents, and the researchers with precise instructions for filling in the questionnaire. A questionnaire and set of color photographs were used to collect information about attitudes and perceptions of pleasant or unpleasant appearance of teeth among the different age groups. For the purpose of this research, set of six color photos of a dentofacial appearance was used, as shown in ►Fig. 1. Subjects required to rank and rate them in relation to aesthetic acceptability, from the most acceptable to the most unacceptable. The examinees rated the dentofacial aesthetic based on a 1 to 6 numerical rating scale (►Table 1). Additionally, they were to write whether the teeth displayed on each photograph were considered beautiful—nice pleasant or ugly—unpleasant.

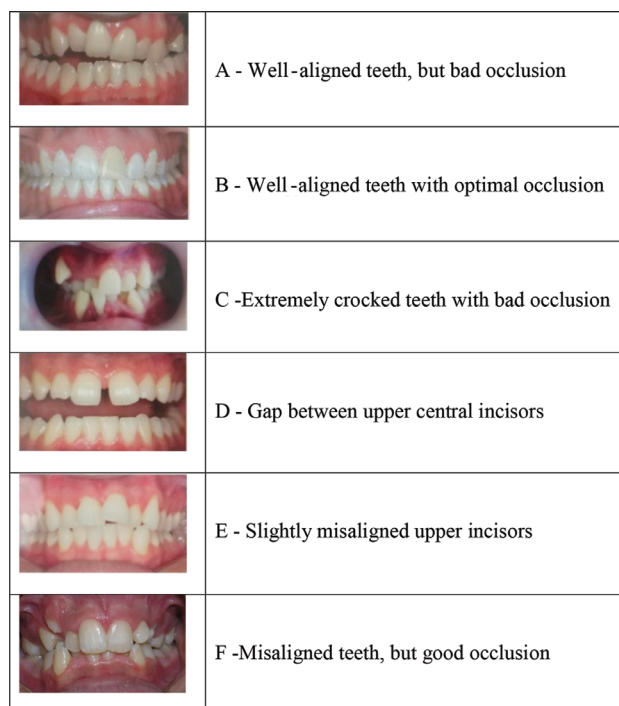


Fig. 1 The set of photos of dentofacial appearance.

Table 1 Six-grade acceptance scale

Grade	Scale
1	The most acceptable appearance
2	Very acceptable appearance
3	Acceptable appearance
4	Unacceptable appearance
5	Very unacceptable
6	The most unacceptable

The information obtained was converted into data using a six-grade acceptance scale.

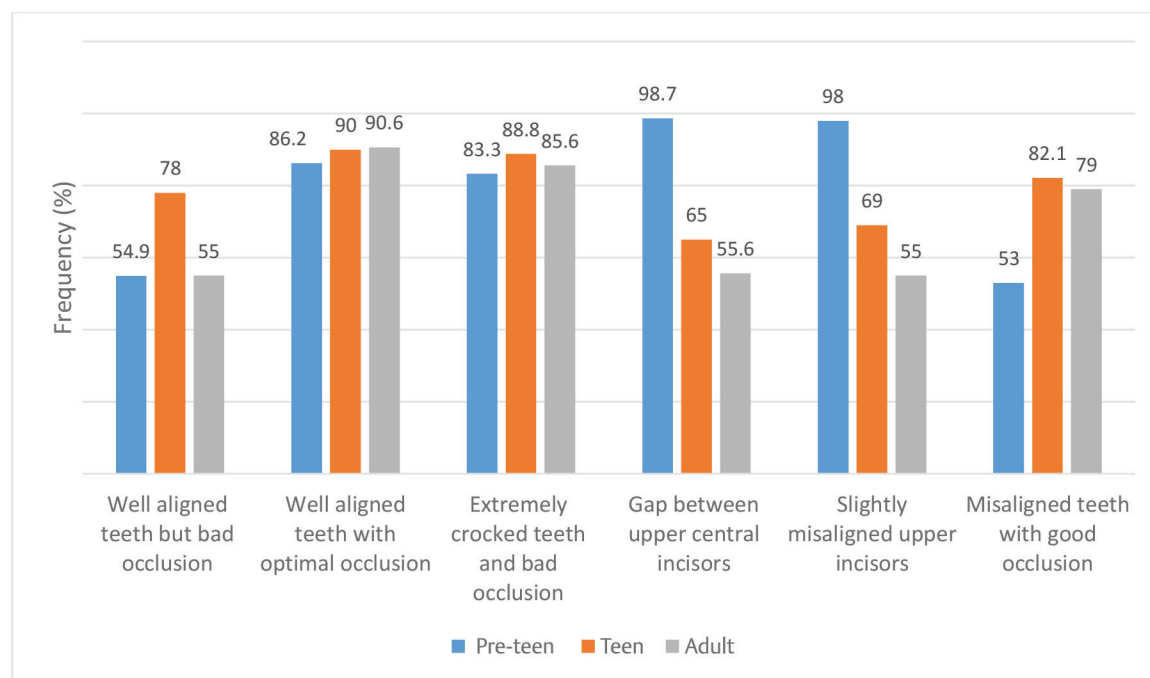
Results

Data collected were analyzed using the Statistical Package for Social Statistics (SPSS) version 17.0. Descriptive statistics were used to determine frequency distribution and percentages for all variables. A chi-squared (χ^2) test was used to determine the association between variables and a p -value < 0.05 was considered significant for all the differences and associations. Chi-squared tests were used for data analysis (►Table 2).

►Figure 2 shows the percentage of subjects in three different age groups, who rated the same degree of acceptability of six different dentofacial appearance. For the dentofacial appearance shown at photos A, B, C, and F, an ANOVA (post hoc tests—Tukey's HSD) indicates that the difference is not statistically significant relative to rank matching between all three subject groups.

Table 2 Age and gender characteristics of study participants

Group	Mean age (y)	Male, <i>n</i> (%)	Female, <i>n</i> (%)	Total, <i>n</i> (%)
Preteenage	10.5	54 (39.13)	37 (21.02)	91 (28.98)
Teenage group	14.8	31 (22.46)	35 (19.88)	66 (21.02)
Adult (parent)	40.2	53 (38.40)	104 (59.09)	157 (50.00)
Total		138	176	314

**Fig. 2** Perception of dentofacial appearance among different age groups.

For dentofacial appearance shown at photographs D and E, an ANOVA (post hoc tests—Tukey's HSD) indicates that statistical difference exists between the teenage group of subjects relative to preteenage group of subjects and adult group of subjects.

Discussion

Recent research confirms the long accepted attitude that only an attractive appearance is acceptable.^{1,12} The results of previous studies showed that more attractive people are considered more successful and are treated better.^{13,14} The perception of aesthetics in a person's general appearance and the perception of facial aesthetics are also influenced by physical, psychological, social, and cultural factors.^{15–17} The results of the present study, given in ►Tables 3 and 4, show that younger and older children have a clear perception of what are absolutely desirable and undesirable dental aesthetics. In that context, the results are consistent in relation to the gender and age of the subjects. Although no statistical

significance was observed in respect of gender and age, it is important to emphasize that a higher percentage of older participants had a clear perception of desirable and undesirable dental aesthetics. The difference of 5% was not statistically significant, but according to the results given in ►Tables 3 and 4, a slight increase from younger to older age was noted. Tole et al in their study investigated the perception of dentofacial aesthetics in relation to gender, age, and the psychology of personality. Their results show that the level of aesthetic perception increases with age, which is in line with the present study.¹⁸ A higher percentage of older children than younger has a clear attitude about what is absolutely desirable, and what is not desirable in the appearance of teeth. Comparing these results with the results of the parental study group (►Table 4), it is notable that the percentages of perception of dental aesthetics in the group of 14-year-old children are almost identical to the perception of the adults.

The difference of 2.7% regarding the absolutely undesirable dental appearance that 14-year-old children rated

Table 3 The dentofacial aesthetic on a six-grade numerical rating scale per groups

Dentofacial appearance photos	Preteenage group		Teenage group		Adult (parents) group	
	Frequency (%)	Ranking on AAS	Frequency (%)	Ranking on AAS	Frequency (%)	Ranking on AAS
Well-aligned teeth, bad occlusion	54.9	4	78.0	4	55.0	4
Well-aligned teeth, optimal occlusion	86.2	1	90.0	1	90.6	1
Extremely crooked teeth, bad occlusion	83.3	6	88.8	6	85.6	6
Gap between upper central incisors	98.7	2	65.0	3	55.6	2
Slightly misaligned upper incisors	98.0	3	69.0	2	55.0	3
Misaligned teeth, good occlusion	53.0	5	82.1	5	79.0	5

Abbreviation: AAS, aesthetic acceptability scale.

Table 4 Ranking of the dentofacial appearance within various groups

Dentofacial appearance photos	Preteenage group		Teenage group		Adult (parents) group		Mean difference p	F test	p-Value
	Frequency (%)	Ranking on AAS	Frequency (%)	Ranking on AAS	Frequency (%)	Ranking on AAS			
A	54.9	4	78.0	4	55.0	4	0.3537	0.7860	0.06
B	86.2	1	90.0	1	90.6	1	0.4200	0.7329	0.06
C	83.3	6	88.8	6	85.6	6	0.3341	0.7332	0.06
D	98.7	2	65.0	3	55.6	2	0.6347	0.9552	0.07
E	98.0	3	69.0	2	55.0	3	0.2673	0.2392	0.07
F	53.0	5	82.1	5	79.0	5	0.3210	0.6806	0.06

Abbreviation: AAS, aesthetic acceptability scale.

more strictly than adults indicates that with aging people become more moderate in expressing criticism. Stenvik et al in research conducted on a sample of 18-year-old and 35-year-old Norwegian examinees investigated their degree of satisfaction with self-dentofacial aesthetics. Among examinees who had been classified as having an obvious need for orthodontic treatment, 54% declared dissatisfaction at the age of 18 and 21% at the age of 35, which indicates the lower degree of concern in the older age group. The authors concluded that concern about one's own appearance had become less important with age that is in line with our results.¹⁹

In further analysis of these results, it was observed that the highest percentage of examinees in the younger groups evaluated the space between upper central incisors (medial diastema) as very acceptable, rating it in second place on the aesthetic acceptability scale (AAS) (→ **Table 3**). In the group of older children, medial diastema was rated as acceptable,

and they score it in third position on the scale of acceptance, while for 69% of adults it was evaluated as very acceptable, in second place on the scale of acceptance. The difference in the evaluation of the aesthetic acceptability of the specific appearance of the upper anterior teeth between younger and older children is the result of their different perception of the specific appearance of anterior upper teeth. In the research by Espeland and Stenvik, the degree of individual perception of occlusion in 18-year-old children was investigated on sample of 130 examinees. Their results showed that all examinees had a higher degree of perception of anterior teeth aesthetics.²⁰ The results of the present study show that in the group of younger children, the space between the anterior teeth was more acceptable than tight contact, while the opposite finding was observed in older children. Similar results were published by authors of related studies.^{21,22} The probable cause may be found in the fact that in a large percentage

of children with mixed dentition (age 8–10), it is normal to have a space between the upper anterior teeth, which in later age closes spontaneously. Children of this age have become accustomed to this kind of dental appearance both in themselves and their peers, and therefore they do not consider it to be unattractive, but even quite acceptable.²³ In contrast, 14-year-old children consider the space to be less acceptable, because at the time of early permanent dentition and later in life, mild crowding of the front teeth, which occurs after the eruption of the third molars, is more often present. Since this their teeth have this appearance as do the majority of peers, 14-year-old children find mild crowding more desirable than the diastema, which the 10-year-old children prefer. Previous research confirmed the differences in the perception of the aesthetics of anterior teeth that have developed due to age, culture, and other factors.²⁴

In the parental study group, the space between teeth and mild crowding was rated as equally acceptable, 55.6% of parents rated the space between teeth as very desirable, giving it second place in the rating scale, while for 55.0% of parents mild crowding was rated as strongly acceptable in third place on the AAS (►Table 4).

Children's and parental perceptions of dentofacial appearance and the desire and need for orthodontic treatment were studied by Kolawole et al. The authors stated that twice the percentage of parents assessed the dentofacial appearance of their children as a positive in comparison with their children.²⁵ The fact that in the present study no difference was found between the preference for diastema or mild crowding could be explained by the fact that during the growth and development of occlusion children often have diastema or mild crowding, so the parents are accustomed to this appearance, rating it as equally acceptable. This common appearance even if not ideal would be acceptable without too much criticism expressed. Unfortunately, in the increasing trend of advertising and promotion of an ideal smile as the only one desirable, the natural potential that people possess could be used for the wrong purpose.²⁶⁻²⁹

That is why, at least dental professionals, especially in pedodontics and orthodontics, must precisely potentiate and promote mild imperfections as part of a person's personal charm and individuality, and not satisfy their patient's demands for the ideal (most often completely artificial) aesthetics, as promoted by the mass media.^{30,31}

The results in ►Tables 3 and 4 show that the perception and acceptability of moderate irregularities differ between children of younger and older ages. A poor relationship between dental arches, even if the teeth in each individual series are correctly aligned (►Fig. 1A), was considered unacceptable by 54.9% of subjects of younger school age and 78.0% of the older subjects. Both age groups rated this type of dental appearance in fourth place on the acceptability scale. Greater deviations in tooth positions in the dental sequence, with a good ratio of dental arches (Fig. F), were assessed 53% of younger and 82% of older children as unacceptable and

assigned to fifth place on the assessment scale of the dental appearance.

More than half of the subjects of the younger age (54.9%) perceived that only the aesthetics of the dental arches, without a good interrelationship, is not enough to be acceptable and desirable. At the same time, 53.0% of children in the younger age group considered the poor aesthetics of the dental arches to be extremely unacceptable even with functional occlusion (►Table 3).

The fact that a slightly higher percentage of children in the younger age group even preferred functional occlusion over the aesthetics of the dental arches is a very surprisingly positive result at the present time. Nowadays, it has become normal to be more appreciative of the form than the function. This result could be taken with optimism as an indication direction in which the awareness of younger children should be developed to continue to prefer good dental function over aesthetics.³¹

In the older subjects, the results show a rising trend to rate aesthetic deficiency as more unacceptable even with adequate dental function. Seventy-eight percent of the 14-year-old children placed good aesthetics with bad function in fourth place on the AAS, while 82% placed good function with poor aesthetics in fifth place on the scale of acceptance. So, a higher percentage of the 14-year-old children in relation to the 10-year-old children preferred aesthetics over function (►Table 4). These results confirm what most orthodontics and pedodontics witness every day. In fact, currently younger children want orthodontic treatment only to improve aesthetics, because the awareness that only straight teeth are acceptable is present at an increasingly young age, even when function is not affected.³² Demands for the improvement in dental aesthetics are generally increasing, although there are differences in what is considered attractive and desirable because of different, cultural, ethnic, socioeconomic factors.³³⁻³⁵ Orthodontic treatment, especially fixed appliances, has side effects and potential complications.³⁶⁻³⁹ Therefore, it is necessary to work to raise awareness of the importance of functional occlusion. Children of a young age must be educated to appreciate functionality more, than to give preference to aesthetics overall, which would significantly reduce the number of requests for orthodontic treatment.

To achieve this, it is necessary to work primarily on the education of teachers and parents, through health education workshops and counseling centers.⁴⁰

Conclusion

Awareness about dentofacial aesthetics was found in all three age groups in the present study. Younger and older children, as well as adults, have clear perception of desirable and undesirable dental aesthetic appearance. The level of perception increases from the younger to the older age group. Attitudes about desirable and acceptable dental aesthetics differ in younger children compared with older children and

parents. Small irregularities are not equally acceptable in the different age groups.

A space between the anterior teeth is more acceptable to younger children, while older children are more receptive to mild density of the teeth. Younger children generally express a higher degree of criticism toward dental imperfections, while older children and adults are more moderate in their expression of criticism. Adults are less favorable toward the perfect appearance of teeth compared with children of both age groups.

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Conflict of Interest

None declared.

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