DENTAL AESTHETICS AND ASSESSMENT OF APPEARANCE SATISFACTION IN CHILDREN

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ABSTRACT

Aim: The aim of the work is to examine the possibility of perception of dental aesthetics and satisfaction with one's own appearance in children of different ages.

Materials and methods: In this research, 80 children, aged 3-16 years, participated, none of whom were orthodontic patients. The research consisted of an interview, in which the children were asked questions, and a drawing on the topic of what is a "beautiful and ugly" tooth for them. The questions were designed to reflect children's perception and attitude related to dental aesthetics, as well as satisfaction with their own appearance in the context of dental aesthetics. The drawings and answers were classified according to Piaget's classification of cognitive development, according to the age of the subjects.

The questions for the parents were related to the parents' practice related to visits to the dentist and previous caries experience in children.

Results: The results of the research showed that all respondents, regardless of gender and age, showed the ability to perceive and express their attitudes regarding the concepts of "beautiful" and "ugly" in the context of dental aesthetics, as well as to express their attitude, knowledge and satisfaction/dissatisfaction with one's own appearance.

Conclusion: The research results suggest that the experience of beauty and the feelings associated with dental aesthetics are universal, independent of gender and age. Children have the ability to distinguish what they consider beautiful or ugly, regardless of age, and are able to clearly express attitudes related to satisfaction with their own appearance.

Keywords: children; dental aesthetics, satisfaction with appearance

Introduction

Aesthetics is the art of observation. It comes from the Greek word aisthese which means to perceive with the sense or aisthanomai which means to feel. Aesthetics is considered to be finding everything that is "pleasant to the eye" or that which causes a feeling of pleasure due to beauty [1].

The perception of aesthetics refers to the way in which individuals experience, interpret and value the aesthetic qualities of objects, experiences or expressions. It includes perceptual processes, emotional reactions, and cognitive evaluation related to beauty, harmony, shape, color, and other visual or sensory characteristics that are considered aesthetically appealing or unattractive [2].

Aesthetics also plays a key role in dentistry, particularly in pediatric dental care. Aesthetic aspects, such as the appearance of the teeth and smile, can significantly affect the self-confidence and emotional state of children. Understanding how children perceive aesthetic values in the context of dental treatments and interventions is key to providing optimal dental care and support, especially in today's digital age, in which the media, social networks and people who have influence in the world of social networks, the so-called Influencers play a key role in shaping the perception of aesthetics, both among children and adults.

Media representations of aesthetic standards, including images of perfectly white and straight teeth, often present unrealistic expectations. Children exposed to such content may analyze these standards and develop the feeling that their natural teeth, which may have minor irregularities or discoloration, are aesthetically unacceptable. Dissatisfaction formed in this way can lead to psychological problems such as lack of self-confidence and anxiety. Children may feel the need for aesthetic procedures that are not necessarily medically necessary, but are driven by the desire to achieve imposed media standards.

Although aesthetic standards are clearly expressed in adults, the perception of aesthetics in children, when it comes to dentistry, is often neglected and insufficiently researched, especially in younger children. Adult patients are able to express themselves clearly when it comes to their perception of beauty or ugliness, and thereby contribute to the creation of a sincere, partnership relationship with their therapist, which ultimately leads to finding an ideal solution that will satisfy the patient's wishes and needs, as well as therapeutic possibilities .

Children's views and wishes are often ignored by parents and therapists, who often use the excuse that children at that age are not mature enough to draw conclusions or express their needs. This approach can seriously affect a child's emotional well-being, causing feelings of insecurity and inferiority. To prevent this negative influence, it is important to establish communication that allows children to express their feelings and thoughts in a way that is appropriate for their age. Involving children in the process of making decisions that concern them, as well as acknowledging and validating their feelings, can significantly contribute to their emotional development and self-confidence.

Aims of the research

The perception of children's aesthetics is a complex and insufficiently researched aspect in the field of psychology and dentistry. Although previous research has covered the influence of the media and social networks on the general perception of aesthetics, specific research dealing with the way in which children shape their aesthetic standards and how these standards influence their decisions about oral health and dental treatment is considerably limited.

The lack of research in this area is a significant problem for several reasons:

- Incomplete understanding of the development of aesthetic standards: Without detailed studies on how children form their aesthetic preferences and how media representations influence their perceptions, it is difficult to understand how these perceptions develop and change over time. This limited understanding can make it difficult to create effective interventions and educational programs that could help children develop more realistic and healthy aesthetic norms.

- Negative effects on self-confidence and mental health: Unrealistic expectations about one's own

appearance, especially in the context of oral aesthetics, can lead to a lack of self-confidence and anxiety, which can have long-term consequences for the emotional and psychological health of children.

- Unrealistic expectations from dental treatments: This can result in dissatisfaction with treatment results and increased pressure on therapists to meet aesthetic standards that are not always in line with real possibilities and needs [3].

- The emergence of serious oral health problems: Unrealistic expectations about aesthetic standards can have serious consequences for children's oral health. The pressure to achieve "perfect" aesthetically acceptable results can lead to overuse of dental treatments, which may not be necessary for health reasons.

This can lead to excessive or unnecessary orthodontic treatment, potential damage to the dental cavity, and even complications that may require additional interventions or cause long-term dental problems.

- Lack of targeted educational strategies: Without clear data on how children understand and react to aesthetic standards, the development of effective educational strategies aimed at improving their understanding and attitudes about oral aesthetics can be difficult. This can lead to fewer resources and interventions that are tailored to the specific needs of children and their perceptions of aesthetics [4].

Therefore, this research aimed to examine the possibility of perception of dental aesthetics and satisfaction with one's own appearance in children of different ages.

Materials and methods

This research paper represents a study conducted in the period 2009-2024. years, among 80 respondents, aged 3-16 years, with the aim of investigating their perception of aesthetic norms in the context of oral health. The exclusion criterion for the respondents was that they were not orthodontic patients.

In the first part of the research, carried out in 2009, 36 respondents participated, where an analysis of the possibility of general understanding and perception of aesthetic norms of children of different ages, related to dental aesthetics, was carried out through survey questions and drawing a drawing on a given topic - what is beautiful and what is not an ugly tooth. In order to obtain as objective answers as possible, since very young children participated in the research, the survey was conducted outside the dental office, by parents who were previously instructed by the researcher on the survey method and survey questions.

In the second part of the research, carried out in 2024, another 44 children were included, in whom the motives and attitudes of children related to dental treatment were additionally examined, as well as the assessment of children's satisfaction with their own appearance in the context of dental aesthetics.

In this part of the study, parents were also surveyed (n=40). The questions for the parents were related to the parents' practice related to visiting the dentist and the caries experience of the children so far.

Results

The most common answers to the question: "What do you think are beautiful and ugly teeth?" were:

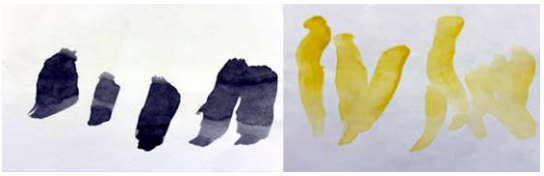
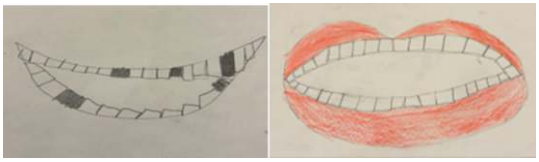
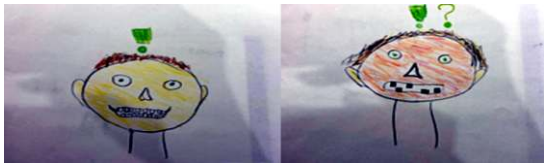
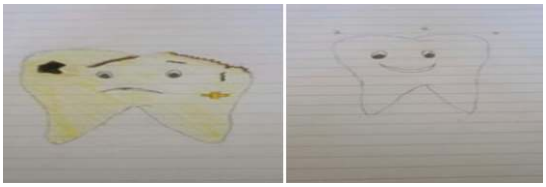
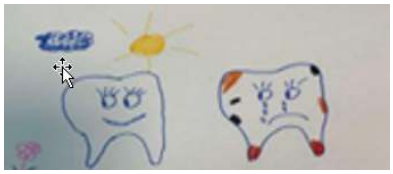
- *Beautiful teeth are:* "White teeth." Those who are not ugly. Teeth without caries. Mom's teeth. Clean teeth. Pearly white teeth. Gold teeth. Those who are not black. White as snow. From my Lamia. My teeth. Healthy teeth. Flat. Those that are cleaned and maintained regularly. Sparkling teeth. Young people. Amar's teeth.'

- *Ugly teeth are:* "Nana's teeth because they don't smell nice." Dirty teeth. Teeth with a hole. Rotten teeth. Yellow or brown teeth. Crooked teeth. Strange position. Teeth with food residue. The teacher's teeth. My teeth. Teeth with spaces between them. To crack. When they are not washed regularly. Mom's. When they are not neatly lined up."

The most common answers to the question: "Why would you fix a broken tooth?" were:

- "Because it is ugly." That I don't hurt. Because my mom told me it's not good. So that I wouldn't have teeth like the teacher's. Because I'm afraid of my

Table 1. Intellectual development of a child according to Piaget and presentation of individual drawings.

Intellectual development of a child according to Piaget	BOYS	GIRLS
Preoperative period 2-7 years	 *4 years old*	 *5 years old*
	 *6 years old*	 *5 years old*
Period of concrete operation 7-11 year	 *7 years old*	 *8 years old*
	 *10 years old*	 *7 years old*
Period of formal operations 12-15 years	 *13 years old*	 *12 years old*
	 *12 years old*	 *14 years old*

dentist. So that I don't run out of teeth. Because Mak would not like me. Because I have to get rid of the worm that lives there so that it doesn't eat my tooth. Because it is my fortune. I can't stand the pain. So that the defect does not spread further. ”

The most common answers to the question: "Is there anything you don't like in your mouth or on your teeth that you would like to change?" were:

- "I don't like this filling on my tooth, I would like it to be green." I don't like my black teeth and the ones that bleed, I'm afraid of blood. I like everything, my teeth are the most beautiful. I don't like this hole above the tooth. No, my teeth are beautiful, like pearls in shells. I don't like my big teeth. I wish they were more white. Yesterday I fixed the tooth that was making me sad.”

There were also various combinations of two or more of the above descriptions. The answers, together with the drawings (Table 1), were categorized in accordance with Piaget's theory of the stages of intellectual development of children.

The results of the answers to the questions for the parents, which related to the practice of the parents related to the visit to the dentist and the previous caries experience of the children, are shown in charts 1, 2 and 3.

The results of the research indicate that all respondents, regardless of gender and age, demonstrated the ability to perceive and express their attitudes regarding the concepts of "beautiful" and "ugly" in the context of dental aesthetics. Every examined child successfully identified and verbalized what a beautiful and an ugly tooth represents for him. These results suggest that aesthetic criteria and feelings related to the appearance of teeth have a universal application among children, regardless of their gender and age group.

The results showed that children aged 3 to 7 clearly expressed their aesthetic criteria regarding the appearance of their teeth. This age group belongs to the preoperational period of development, as defined in Jean Piaget's theory of cognitive development. The preoperational period, which spans the ages of approximately 2 to 7 years, is characterized by predominantly egocentric thinking and a limited capacity for abstract logic. During this

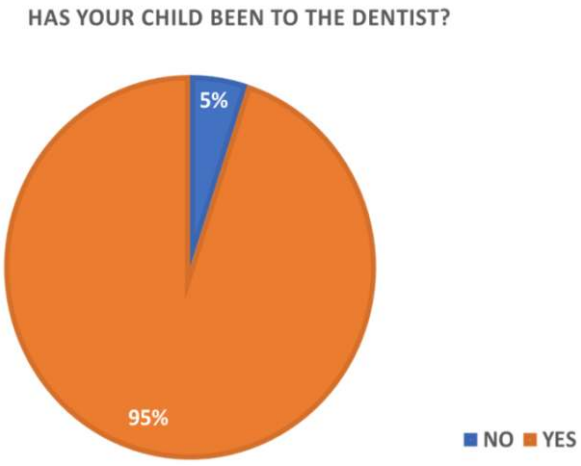


Chart 1. Parents' answers to the question: "Has your child been to the dentist?".

period, children develop basic abilities for symbolic thinking and can express their perceptions and feelings through concrete examples and visual representations. Although they do not yet possess complex cognitive abilities, which will develop in the operative period, children at this stage can form and express basic aesthetic preferences and values related to objects, including dental characteristics. Therefore, clearly expressed aesthetic criteria in children of this age group indicate their ability to recognize and interpret visual aspects such as "beautiful and ugly teeth", although their understanding may be limited by concrete and immediate experiences [5].

Answers to the question "What is a beautiful tooth, and what is an ugly tooth?" most often implied a connection between healthy and beautiful, which indicates the fact that children already at this age associate health with aesthetically acceptable norms ("Beautiful teeth are clean teeth, without holes. Ugly teeth are black or brown with a hole.”). Although many answers stated that only white teeth are beautiful teeth, some respondents defined beautiful teeth as golden or green teeth. Children of this age are particularly susceptible to the influence of their environment and often imitate the behavior and attitudes of adults or peers whom they consider role models. This period is characterized by the fact that children develop the ability for symbolic thinking and learning through imitation. They often use the models in their environment as reference points for developing their own norms and values, as evidenced

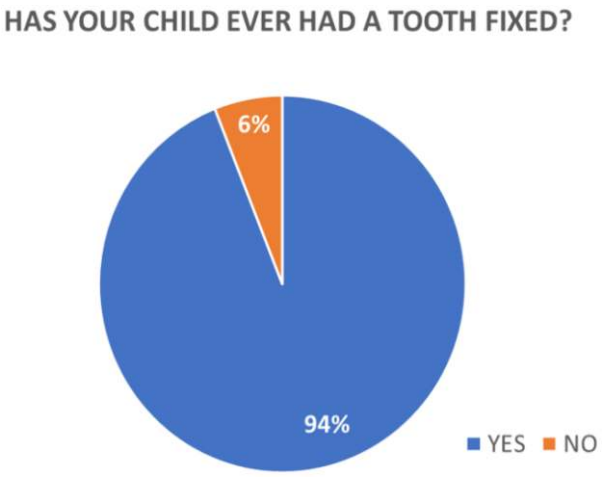


Chart 2. Parents' answers to the question: "Has your child ever had his teeth fixed?"

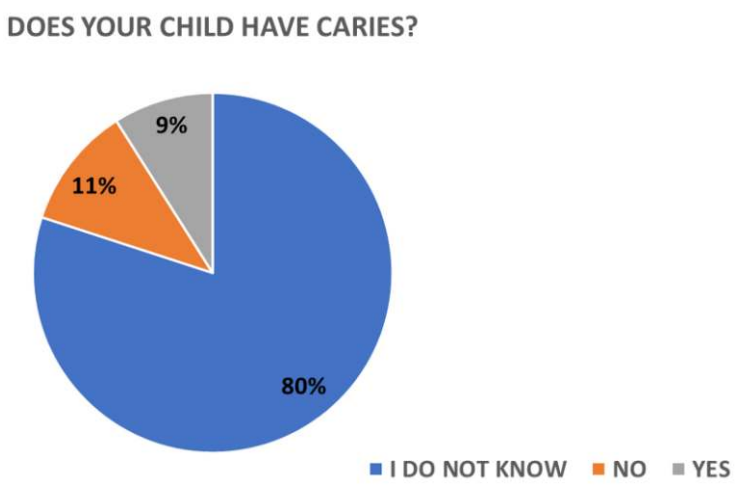


Chart 3. Parents' answers to the question: "Does your child have caries?"

by responses such as: "Nice teeth are mommy's teeth." Nana's teeth are ugly." Aesthetic standards can be shaped through direct or indirect influences from parents, teachers, or media portrayals [4].

The drawings of beautiful and ugly teeth of this age (2-7 years) were most often based on the color relationship white/black or white/red with the explanation that the blood ties them to something that is aesthetically unacceptable and that scares them. Also, the appearance of tears on drawings of teeth that represent ugly teeth, in children of all ages, indicates that children associate an ugly tooth with embarrassment, i.e. with negative associations in the sense of sadness, dissatisfaction, pain, from an early age [5].

To the question "Why would you fix a broken tooth?" they answered: "Because my mom told me that such a tooth hurts." Because then Mak wouldn't like me. Because I don't want to be in pain. That a worm wouldn't eat my tooth." Such answers once again prove that this is an age that is susceptible to environmental influences, as well as that their attitudes are based on the attitudes of their role models (parents, relatives, teachers, crushes).

It is known that parents often try, through a sense of fear, to get their child to act the way they want. This is evidenced by answers such as: "I would fix a tooth because my mom told me that such a tooth hurts."

Through the question: "Is there anything you don't like in your mouth?", the goal was to examine satisfaction with appearance. The results showed a variety of answers among younger children, from the fact that a large number of children are satisfied with their appearance, through answers expressing dissatisfaction with white fillings that they would replace with colored ones, to the fact that they do not like it a decayed tooth in their mouth. What caught our attention is the fact that children of that age (2-7 years) are aware that their tooth is broken and that such a tooth needs to be fixed.

Older children, in contrast to younger children, showed that they are capable of adopting and verbalizing specific concepts related to oral health by answering the question "What is a beautiful tooth for you, and what is an ugly tooth?". Their answers show awareness of the cause-and-effect relationship between oral hygiene, nutrition and regular checkups. A large number of children answered that beautiful teeth are natural teeth. However, part of the children of this age have the opinion that, although it is a natural tooth, it is not aesthetically acceptable. So, for them, 'beautiful teeth' are exclusively 'white teeth', 'straight teeth' and 'teeth without gaps', which speaks in favor of the fact that from the earliest stage of development, children have largely shaped their attitudes related to dental aesthetics under by the influence, most often, of media representations. This phenomenon indicates that the media play a key role in the formation of their aesthetic standards and perceptions. Older children's drawings were more precise, detailed and picturesque [5].

Some respondents even schematically depicted beautiful and ugly teeth, which is to be expected since

Pieget defines the age of 12-15 as a period in which children better understand specific information and are able to face real representations of certain situations.

The results of the 2020 survey, which included children aged 9 to 15 and their parents, showed that younger children predominantly express a higher degree of intolerance towards dental imperfections, while older children and adults are more moderate in their aspirations. Given that these were children in the period of mixed and permanent dentition, a modified scale of the aesthetic component of the IOTN was used to assess dental aesthetics [9].

In a similar study, among 110 subjects older than 16 years, 102 subjects had little or no need for orthodontic treatment for aesthetic reasons, 6 subjects had a moderate need, and 2 subjects had a strong need for treatment.

The original AC component of the IOTN was used as an instrument for assessing dental aesthetics, because all subjects were in the stage of full permanent dentition, and there was no need for scale modifications [4].

When it comes to the aspect of satisfaction with appearance, what is common between younger and older ages is the need to imitate their role models. While younger people find role models in their environment (parents, friends, teachers, crushes), older people are guided by the influence of media personalities. This leads to insecurity and non-acceptance of the aesthetic features of the teeth.

Analyzing the parents' responses, it was observed that 5% of the children had never visited the dentist (Chart1), which is a high percentage considering that our youngest respondents were three years old, and the first visit to the dentist was scheduled during the first year of life.

A total of 94% of children already had experience with restorative treatment (Chart 2). This data is in agreement with previous epidemiological research on the prevalence of caries in Bosnian-Herzegovinian children. Namely, research in all age groups among children in Bosnia and Herzegovina showed high caries prevalence values. Data from the national Bosnian-Herzegovinian study from 2004 showed that the estimated KEP index for twelve-year-olds was 4.8, while the KEP index for six-year-olds was 6.2 [6, 7]. According to the data of the study from 2022, which examined the frequency of caries in children from Mostar, the prevalence of dental caries in subjects under the age of six is 53%, while in subjects over 12 years of age, the prevalence of dental caries is 44.9% [6].

From chart no. 2 it is evident that 6% of respondents never had their teeth repaired. Upon inspection of the research records, it was observed that these were respondents whose parents answered that their children currently have caries (Chart 3), which speaks of inadequate dental care and treatment. The conclusion based on the data that 80% of parents are not sure if their child has caries indicates several key problems (Chart 3). Primarily, this may indicate a lack of awareness and education about the importance of regular dental examinations and recognizing early signs of caries. Also, it is possible that parents neglect dental prevention due to overload and stress. This phenomenon can lead to delayed interventions, which increases the risk of more serious dental problems. Education and regular examinations are key to timely recognition of problems and preservation of children's oral health.

The importance of the study on Dental aesthetics and assessment of appearance satisfaction in children lies in its ability to contribute to a better understanding of the impact of oral aesthetics on children's psychosocial well-being. Aesthetic satisfaction related to the appearance of teeth has a significant impact on children's self-confidence, social interaction and emotional health, which can shape their overall development. In addition, research on the relationship between dental aesthetics and oral diseases can help in the early recognition of dental problems, such as caries, which often have aesthetic and functional consequences. The study also provides a better understanding of parental awareness of the importance of oral hygiene and dental examinations, which is crucial for timely intervention and prevention. Through these insights, research can significantly contribute to the development of more effective prevention strategies, education and improved access to dental care for children.

The limitations and shortcomings of the study lie in the fact that the research was done in two phases: the first time in 2009, and the second time in 2024,

and in that period, aesthetic standards, in contemporary culture, have additionally changed. The difference in the perception of aesthetics can partly be attributed to this fact, but it can also be a good guide for designing future research on this topic. In addition, in research on the perception of dental aesthetics, the Aesthetic Component (AC) of the standardized and generally accepted Orthodontic Treatment Need Index (IOTN) is usually used for assessment, however, in this study, due to the very young age of some of the subjects, this was not possible. Namely, the aesthetic component of IOTN assumes that the patient/subject is in the period of early permanent dentition, which is chronologically approximately the age of 11 to 12 years.

As part of the subjects included in this study were much younger than expected, the application of the AC component of IOTN could not give adequate results. Designing a standardized visual tool for the assessment of dental aesthetics at a younger age could be a good way to objectify research results in this age group.

Conclusion

The results of this research indicate that children, regardless of gender and age, have the ability to recognize aesthetic aspects and distinguish between what they consider beautiful and ugly. Also, all respondents, from the earliest age, have formed attitudes related to the perception of aesthetics and are capable of concretely express satisfaction with their appearance in the context of dental aesthetics.

Respect for children's views and preferences could significantly improve the relationship between younger patients and dentists. Appreciation of children's aesthetic preferences could not only improve the quality of communication and trust between patients and therapists, but could play a key role in the choice of dental treatments, making them more acceptable and aligned with children's needs and wishes. This could not only increase patient satisfaction, but also improve the overall treatment and results of dental interventions.

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