Age and aesthetics perception related to different types of orthodontic devices. Is there a relationship?

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Objective: To verify in different age groups if the use of different types of braces influences their perception of aesthetics and estimated age of the patients.

Methods: The subjects were randomly selected and allocated into three groups: adolescents (15–19 years; n = 120), adults (35–44 years; n = 120), and elderly (65–74 years; n = 120). Each participant received seven images on photographic paper and were asked to answer a questionnaire, to evaluate each individual smile through the Visual Analogue Scale and to estimate the age of each person. The images were obtained from digital frontal photographs of volunteers and were digitally altered to show blue, gray, and aesthetic orthodontic devices. Statistical analysis was performed to verify the isolated effect of the type of orthodontic device and in interaction with the evaluators’ characteristics using the analysis of variance two-way test.

Results: There was no significant difference in descriptive characteristics between the groups of evaluators. The control image was similarly evaluated in relation to the attractiveness of the smile and to the age attributed by all groups. A higher average attractiveness score was observed for the blue device in the young male patient and a lower mean age attributed to the elderly male patient using the gray orthodontic apparatus; both effects were independent of the gender, race, and age group of the evaluators.

Conclusion: Our data suggest that the use of the blue device increases the attractiveness of the smile in young male patients and that the gray device makes the elderly male patient look younger.

1. Introduction

Malocclusions can have impacts on physical, psychological, and social aspects, leading to consequences that affect quality of life [1], because oral health constitutes a fundamental part of the general health [2]. In this context, the self-perception of facial aesthetics presents one of the main motivational factors related to seeking orthodontic treatment [3].

In the past, it was more common to see patients until the third decade of life under orthodontic treatment [4,5]. However, the increase in life expectancy has led to a growth in middle-aged and older adult patients under orthodontic treatment [6]. Despite this, there is still a lower percentage of interest in this population to seek treatment than the younger patients [7].

Adult orthodontic patients present more distinct expectations than children and young adults. It is of fundamental importance to consider what leads these patients to seek treatment and what they hope in relation to the outcome [6].

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the best of our knowledge, there is no other study that evaluates whether the use of the orthodontic appliance influences the patient’s age perception for other persons, because it is believed that there is a tendency to consider the patient’s age to be younger than it actually is. The objective of the present study was to evaluate the influence of the use of different types of braces during orthodontic treatment on the aesthetics and patient’s age perception between different age groups of evaluators.

2. Materials and methods

A cross-sectional study was conducted between April and May of 2017. Before data collection, approval was obtained from the Ethics Committee (number 17333113.10000.0055).

Before the beginning of the study, the following parameters were used: effect size $f = 0.25$ (mean effect size), $\alpha = 0.05$, power $= 0.95$, numerator $df = 6$, number of groups $= 9$. Thus, a minimum sample size of 341 individuals was estimated.

Initially, seven volunteers were randomly chosen after the end of orthodontic treatment and were asked to smile for digital frontal photographs. Photographs were taken using a Canon Rebel XTi camera (Tokyo, Japan). Among the obtained photographs, six were submitted to a manipulation software program (Photoshop, CS3; Adobe Systems, San Jose, CA) to be digitally altered with the purpose of implementing three different types of orthodontic appliances and elastic color, varying from blue, gray, and aesthetic (Fig. 1), resulting in a total of 18 images. For the reliability of the research, the file obtained from the 22-year-old woman was not edited, so as to be used as a standard. Then, the images were allocated into three groups, through simple distribution, with repetition of the standard image in all of them. Images were printed on photographic paper and posteriorly distributed for evaluation by subjects of the study. The evaluators of one group did not have access to the other groups.

The participants were randomly selected to evaluate the influence of orthodontic devices and elastic color on the

![Fig. 1. Images used in the study.](image)

Table 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>Groups</th>
<th></th>
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<tbody>
<tr>
<td>Age (median ± SD)</td>
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<td>2 (n = 120)</td>
<td>3 (n = 120)</td>
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<td>Age group, y (%)</td>
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<td>33.3</td>
<td>33.3</td>
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<tr>
<td></td>
<td>33–48</td>
<td>33.3</td>
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<td>34.2</td>
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<td></td>
<td>57–75</td>
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<td>Gender (%)</td>
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<td>47.5</td>
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<td></td>
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<td>Race (%)</td>
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<td></td>
<td>White</td>
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<td></td>
<td>Eastern</td>
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</table>

SD, standard deviation.

* ANOVA one-way test.

¹ Chi-square test.
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