

## RESEARCH ARTICLE

# The influence of age and gender on perception of orofacial esthetics among laypersons in Switzerland

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## Abstract

**Objective:** The purpose of this study was to evaluate the perception and role of orofacial esthetics by laypersons, and how attitudes may be correlated with age and gender in Switzerland.

**Material and Methods:** Self-administrated questionnaires (SAQ) were distributed both conventionally and digitally to Swiss residents over 16 years of age (range 16–99 years). The participants were identified in the medical practice, at an open house of the ZMK Bern, in elderly care centers, and via the internet (Facebook and Instagram). To verify that the participants were Swiss residents and laypersons, they were checked by an operator (conventional) or were provided an exact description of eligible participants at the beginning of the SAQ (digital). The SAQ included 30 questions with multiple-choice responses and visual analogue scales (0–100) divided into four sections regarding dental appearance with respect to body esthetics, partner selection, employment and career opportunities, and overall health/quality-of-life. For statistical analysis, respondents were segregated into two age groups (<25 years and ≥25 years) and into two gender groups (male and female). Descriptive analyses, the Fisher exact test, and Welch's *t*-test were applied ( $\alpha = 0.05$ ).

**Results:** Five hundred and two laypersons completed the SAQ. The study's hypothesis—that various age groups and genders have different perceptions of dental esthetics—was supported. The willingness to correct one's own dentition was lower among older participants (OR: 0.54;  $p = 0.001$ ); charisma and dental esthetics were considered equally important with a trend toward charisma in both age groups ( $p = 0.003$ ). The belief that excellent dentition improves employment chances at a job interview (OR: 0.47;  $p = 0.0003$ ) was significantly lower among older participants, and the belief that dental correction would improve quality-of-life was significantly higher among older participants (OR: 1.81;  $p = 0.001$ ). The assumption that individuals with attractive teeth appear happier was significantly

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lower among older respondents (OR: 0.67;  $p = 0.03$ ). Women were less satisfied with their dental appearance and, proportionally, their willingness to receive correction was significantly higher (OR: 1.79;  $p = 0.01$  and OR: 1.77;  $p = 0.002$  relative to men, respectively). Moreover, male participants had a lower desire to have brighter teeth and undergo bleaching treatments (OR: 0.54;  $p = 0.002$ ; OR: 0.53;  $p = 0.002$ ). The proportion of men believing that having beautiful teeth improves attractiveness and employment chances was significantly lower (OR: 0.33;  $p = 0.02$  and OR: 0.66;  $p = 0.04$ ; respectively).

**Conclusions:** Within the limitations of this observational study, it was concluded that age and gender of laypersons in Switzerland have a significant impact on the perception of dental esthetics.

**Clinical Significance:** Evaluating and quantifying perceptions of dental esthetics for daily life across various age groups and genders can improve clinicians' understanding of individual needs in order to offer patient-oriented dental care.

#### KEYWORDS

attitude to health, dental esthetics, surveys and questionnaire

## 1 | INTRODUCTION

In contemporary society, social media, personality, rituals, and culture robustly influence perceptions of dental appearance. Young adults agreed that television plays an important role in the perception of dental esthetics.<sup>1</sup> Varying attitudes toward dental appearance due to rituals and cultural contexts, as well as individual experiences from childhood through adolescence to adulthood were described. Attitudes toward dental esthetics differ with gender and age.<sup>2-4</sup>

Dental appearance can play an important role in satisfaction and creating a positive first impression. Previously, the perception of friendliness, social class, popularity, and intelligence with respect to dentofacial appearance was assessed. Young adults with a normal dental appearance were judged to be more socially attractive over a range of personal characteristics relative to those with a dentofacial anomaly.<sup>5,6</sup> Orofacial esthetics can be subjectively associated with intellectuality, social competence, psychosocial adjustment, and relational ability.<sup>7-9</sup> Patients' personality traits were also shown to be directly influenced by dental appearance.<sup>7,10</sup> Tooth color can influence personality expectations and physical attractiveness.<sup>11-14</sup> It is also documented that negative self-perception of dental appearance or tooth color is not necessarily correlated with respondent age.<sup>15,16</sup> In that study, the influence of dental esthetics on everyday life was evaluated; however, several viewpoints have been documented on this topic. Dental esthetics were important for a person's self-esteem, but not for a successful career.<sup>1</sup> Individuals with ideal dental esthetics were perceived to be more intelligent and have greater job opportunities.<sup>1,17</sup> However, it has also been reported that dental appearance does not influence employment prospects, with a report on the topic finding no

differences between public-facing and non-public-facing jobs.<sup>18</sup> The ideal dental appearance has been defined in the literature: multiple studies have concluded that, for an ideal smile, not only the teeth are important, but also the gingiva and the lips.<sup>19-23</sup> It is generally accepted that functional mastication processes and good oral health are important and related issues.<sup>24</sup> Individuals with high dental esthetic scores also had more favorable attitudes toward oral health. Furthermore, increased plaque accumulation was found among individuals with a lower dental esthetic score.<sup>25</sup> Poor oral health is influenced by variety of individual and structural factors. Oral health conditions were found to be poorest among the socioeconomically disadvantaged, suggesting a potential for discrimination among socially marginalized groups with respect to dental appearance.<sup>26</sup> In recent years, the attention given to patient-reported outcome measures in dentistry has increased. It has been reported that the physical appearance from a patient's point of view is a motivating factor for undergoing cosmetic dental procedures.<sup>27</sup> One of the main interests lies in evaluating the esthetic appeal of the teeth by laypeople.<sup>28-30</sup> This includes their own esthetic appearance, that of their partner, and those of other individuals.

To maximize a patient's post-treatment satisfaction, it is important to understand each individual's expectations with respect to esthetics. In the context of providing professional consultation, it would be helpful to analyze these expectations for possible differences between age and gender groups. The aim of this study was therefore to evaluate the perception and importance of dental esthetics for a large group of laypersons across all age groups older than 16 years and to assess the influence of age and gender by means of a self-administrated questionnaire. The research hypothesis was that there are no statistically significant differences

between different age and gender groups on the perception of overall dental esthetics.

## 2 | MATERIALS AND METHODS

A preliminary study from the same authors was conducted as a master thesis.<sup>31</sup> A self-administrated questionnaire (SAQ) was developed and conducted by the authors and included 30 questions with a mixture of dichotomous responses, multiple choice responses, and visual analogue/numerical scale responses divided into four sections addressing perceptions of the teeth as they relate to the body, partner selection, employment/career opportunities, and health/quality-of-life. Participants could choose between some predefined dichotomous and multiple-choice responses. Most of the dichotomous responses were in the form of “yes/no” answers.

Visual analogue scales were designed using a 5-step scale over which participants express either strong agreement with option A (scale value = 1), ambivalence between the two options (scale value = 3), or strong agreement with option B (scale value = 5). Finally, regarding the numerical scales, participants choose how many Swiss Francs (CHF) they would spend for an improvement. In the context of the master thesis, the SAQ was pilot-tested. The data of the master thesis, which contained 233 participants, were included in this study.<sup>31</sup> No pre hoc power analysis was performed, as it was clear that the study's sample size would exceed 200 participants, allowing a precise estimation of effects and standard deviations by the central limit theorem.

This study and subsequent data analysis were based on an anonymous questionnaire; therefore, it follows STROBE recommendations for observational studies<sup>32</sup> and, according to the Swiss federal law on human research (Humanforschungsgesetz, HFG, Switzerland), the approval of the ethics committee of the Canton of Bern (KEK, Nr.: reg2016-00244) was not required.

A cross-sectional study was conducted between April 2017 and March 2019 by means of an SAQ in both conventional and online formats. To verify that the participants were Swiss residents and laypersons, they were either checked by an operator (for conventionally administered questionnaires) or explicitly informed of the eligibility criteria (for digital participants). Participants were recruited in a medical practice, at an open house of the School of Dental Medicine in Bern, in an elderly care facility, and via the internet (a link with the digital SAQ was shared via Facebook and Instagram).

The inclusion criteria for this study were: layperson status with respect to dentistry and orthodontics, Swiss residency, and  $\geq 16$  years of age. Before conducting the survey, all participants approved their participation in this study verbally or digitally.

The questionnaire was explained by the authors via email or before conducting in-person surveys; if participants had doubts or uncertainties, the questions were explained, and a contact email was provided to answer and provide clarification to the respondents. The translated questionnaire from German into English is presented in the supplement.

Descriptive statistics and graphics were generated by grouping participants according to their respective age classes: <25, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84, and 85+. Statistical analyses were performed for the age groups <25 and  $\geq 25$ , the latter being an aggregation of all participants that were at least 25 years old. Descriptive data, graphics, and statistical analyses were assessed with respect to gender groups (male and female).

Data were presented using descriptive statistics; numerical outcomes were calculated based on mean, median, and standard deviation. Categorical variables were analyzed by calculating the absolute and relative frequencies of all possible answers. The Fisher exact test was applied to assess the differences between response and group proportions; in some cases, *p* values were approximated using Monte-Carlo simulations. To assess differences in means, Welch's *t*-test for two independent samples was applied. Throughout this analysis, *p* values were not corrected for multiple hypothesis testing due to the explorative nature of this study. Statistical analyses were performed with the statistics software R, version 3.5.0 (R Development Core Team, <https://www.r-project.org/>, Vienna, Austria, 2018), and *p* values less than 0.05 were considered statistically significant.

## 3 | RESULTS

A total of 502 laypersons were recruited and completed the SAQ. Participants were between 16 and 99 years old and lived in Switzerland. Two hundred eighty-one participants filled out the conventional SAQ and 221 responded online. No questionnaire was incomplete. Nearly half of the participants were less than 25 years old (44.4%). The detailed composition of age groups was as followed: 25–34 years (90 participants), 35–44 years (49 participants), 45–54y (50 participants), 55–64 years (42 participants), 65–74 y (15 participants), 75–84 years (14 participants), and 85 + y (19 participants). For statistical analysis, respondents were segregated into two age groups (<25 years and  $\geq 25$  years). Among all participants, 326 were female (64.9%) and 176 male (35.1%). The proportion of women was significantly higher in the <25 years group ( $p = 0.0003$ ).

### 3.1 | Results overall

For 65.5% of all participants, the appearance of the teeth and body was equally important. Charisma and the appearance of the teeth were equally important for 42.8% of respondents. When asked to choose between beautiful teeth and a beautiful body, 67.7% of all participants responded that they would rather have beautiful teeth than a beautiful body. Choosing between perfect charisma and beautiful teeth, the majority (77.7%) would prefer to have a perfect charisma than beautiful teeth. Most participants (96.4%) believed that beautiful teeth increase one's attractiveness (Tables 1 and 2).

For 65% of the participants, the esthetic appearance of the body was equally important. For the majority of respondents (88.2%), it was important that they have a partner with beautiful teeth. For 63.7%, it

TABLE 1 Age groups

Topic	Level	<25	≥25	Total (age)	Odds ratio (age)	p Value (age)
Gender by age group	Female	164 (73.5%)	162 (58.1%)	326 (64.9%)	2.00 (1.35–3.00)	0.0003
	Male	59 (26.5%)	117 (41.9%)	176 (35.1%)		
Willingness to correct the teeth	No	119 (53.4%)	189 (67.7%)	308 (61.4%)	0.54 (0.37–0.80)	0.0010
	Yes	104 (46.6%)	90 (32.3%)	194 (38.6)		
Desire for brighter teeth	No	68 (30.5%)	149 (53.4%)	217 (43.2%)	0.38 (0.26–0.56)	<0.0001
	Yes	155 (69.5%)	130 (46.6%)	285 (56.8%)		
Willingness to bleach	No	101 (45.3%)	189 (67.7%)	290 (57.8%)	0.39 (0.27–0.58)	<0.0001
	Yes	122 (54.7%)	90 (32.3%)	212 (42.2%)		
Personal dislike	Tooth color	131 (39.5%)	118 (31.8%)	249 (35.4%)	-	<0.0001
	Tooth shape	36 (10.8%)	31 (8.4%)	67 (9.5%)		
	Tooth position	52 (15.7%)	54 (14.6%)	106 (15.1%)		
	My smile	26 (7.8%)	13 (3.5%)	39 (5.5%)		
	Halitosis	40 (12%)	38 (10.2%)	78 (11.1%)		
	Chewing comfort	14 (4.2%)	26 (7%)	40 (5.7%)		
	Nothing	33 (9.9%)	91 (24.5%)	124 (17.6%)		
Most dislike between gingiva and teeth	Gingiva	14 (6.3%)	20 (7.2%)	34 (6.8%)	-	0.0006
	Teeth	112 (50.2%)	90 (32.3%)	202 (40.2%)		
	Both	14 (6.3%)	30 (10.8%)	44 (8.8%)		
	None	83 (37.2%)	139 (49.8%)	222 (44.2%)		
Feeling of changes in gingiva	No	175 (78.5%)	170 (60.9%)	345 (68.7%)	2.33 (1.54–3.57)	<0.0001
	Yes	48 (21.5%)	109 (39.1%)	157 (31.3%)		
Higher importance: perfect teeth versus charisma	Dentition++	0 (0%)	4 (1.4%)	4 (0.8%)	-	0.0030
	Dentition+	3 (1.3%)	3 (1.1%)	6 (1.2%)		
	Both equal	78 (35%)	137 (49.1%)	215 (42.8%)		
	Charisma+	75 (33.6%)	66 (23.7%)			
	Charisma++	67 (30%)	69 (24.7%)	136 (27.1%)		
Preference: perfect teeth versus charisma	Dentition	37 (16.6%)	75 (26.9%)	112 (22.3%)	0.54 (0.34–0.86)	0.0070
	Charisma	186 (83.4%)	204 (73.1%)	390 (77.7%)		
Belief that an excellent dentition improves attractiveness	No	2 (0.9%)	16 (5.7%)	18 (3.6%)	0.15 (0.02–0.65)	0.0030
	Yes	221 (99.1%)	263 (94.3%)	484 (96.4%)		
Higher importance: the partner's teeth versus body	Dentition++	17 (7.6%)	13 (4.7%)	30 (6%)	-	0.0460
	Dentition+	16 (7.2%)	13 (4.7%)	29 (5.8%)		
	Both equal	129 (57.8%)	191 (68.5%)	320 (63.7%)		
	Body+	47 (21.1%)	39 (14%)	86 (17.1%)		
	Body++	14 (6.3%)	23 (8.2%)	37 (7.4%)		
Belief that an excellent dentition improves chances at a job interview	No	47 (21.1%)	101 (36.2%)	148 (29.5%)	0.47 (0.31–0.72)	0.0003
	Yes	176 (78.9%)	178 (63.8%)	354 (70.5%)		
Belief that a teeth correction improves quality of life	No	148 (66.7%)	146 (52.3%)	294 (58.7%)	1.81 (1.25–2.67)	0.0010
	Yes	74 (33.3%)	133 (47.7%)	207 (41.3%)		
Belief that beautiful teeth make one look happier	No	71 (31.8%)	115 (41.2%)	186 (37.1%)	0.67 (0.45–0.98)	0.0300
	Yes	152 (68.2%)	164 (58.8%)	316 (62.9%)		

Note: All statistically significant answers in the age groups are shown in the following table. Odds ratios are shown for dichotomous answers. The confident intervals are presented in brackets (OR). For each topic, the last mentioned level is assessed. Baseline is the <25 group, comparison is the ≥25 group.

**TABLE 2** Gender

Topic	Level	Female	Male	Total(gender)	Odds ratio (gender)	p Value (gender)
Willingness to correct the teeth	No	189 (67.7%)	119 (53.4%)	308 (61.4%)	1.83 (1.25–2.68)	0.0020
	Yes	90 (32.3%)	104 (46.6%)	194 (38.6%)		
Desire for brighter teeth	No	124 (38%)	93 (52.8%)	217 (43.2%)	0.54 (0.37–0.81)	0.0020
	Yes	202 (62%)	83 (47.2%)	285 (56.8%)		
Willingness to bleach	No	171 (52.5%)	119 (67.6%)	290 (57.8%)	0.53 (0.35–0.79)	0.0010
	Yes	155 (47.5%)	57 (32.4%)	212 (42.2%)		
Teeth satisfaction	Unsatisfied	85 (26.1%)	29 (16.5%)	114 (22.7%)	1.79 (1.10–2.97)	0.0100
	Satisfied	241 (73.9%)	147 (83.5%)	388 (77.3%)		
Smile satisfaction	Unsatisfied	63 (19.3%)	21 (11.9%)	84 (16.7%)	1.77 (1.02–3.17)	0.0300
	Satisfied	263 (80.7%)	155 (88.1%)	418 (83.3%)		
Preference: perfect teeth versus perfect body	Body	117 (35.9%)	45 (25.6%)	162 (32.3%)	1.63 (1.07–2.51)	0.0200
	Dentition	209 (64.1%)	131 (74.4%)	340 (67.7%)		
Belief that an excellent dentition improves attractiveness	No	7 (2.1%)	11 (6.2%)	18 (3.6%)	0.33 (0.11–0.95)	0.0200
	Yes	319 (97.9%)	165 (93.8%)	484 (96.4%)		
Higher importance: the partner's teeth versus body	Dentition++	26 (8.0%)	4 (2.3%)	30 (6.0%)	-	<0.0001
	Dentition+	27 (8.3%)	2 (1.1%)	29 (5.8%)		
	Both equal	212 (65%)	108 (61.4%)	320 (63.7%)		
	Body+	42 (12.9%)	44 (25%)	86 (17.1%)		
	Body++	19 (5.8%)	18 (10.2%)	37 (7.4%)		
Belief that an excellent dentition improves chances at a job interview	No	86 (26.4%)	62 (35.2%)	148 (29.5%)	0.66 (0.44–1.00)	0.0400
	Yes	240 (73.6%)	114 (64.8%)	354 (70.5%)		
Belief that beautiful teeth symbolize excellent health	No	35 (10.7%)	33 (18.8%)	68 (13.5%)	0.52 (0.30–0.91)	0.0100
	Yes	291 (89.3%)	143 (81.2%)	434 (86.5%)		

Note: All statistically significant answers between genders are shown in the following table. Odds ratios are shown for dichotomous answers. The confident intervals are presented in brackets (OR). For each topic, the last mentioned level is assessed. Baseline is the Female group; comparison is the male group.

was equally important that their partner has beautiful teeth and a beautiful body. The partner's charisma and the appearance of the teeth were equally important for 40.8% of the survey participants. For all groups (gender and age), it was important that a partner has beautiful teeth (Tables 1 and 2).

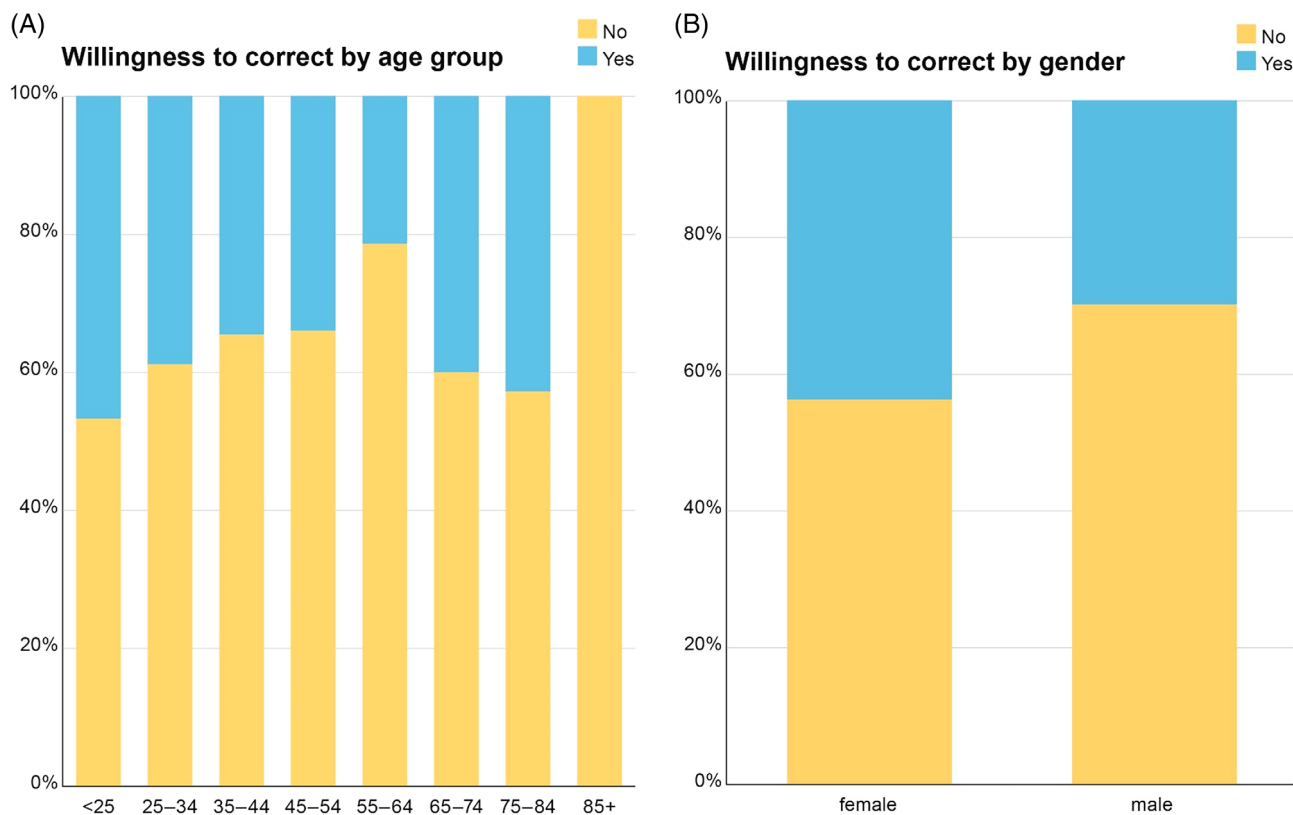
There were no significant differences in either the mean financial investment (CHF) to pay for corrections ( $\leq 25$  years: 2500.- CHF;  $\geq 25$  years: 4300.- CHF;  $p = 0.07$ /female: 3100.- CHF; male: 4100.- CHF;  $p = 0.45$ ) or in the mean maximum financial investment for perfect teeth in either group ( $\leq 25$  years: 3300.- CHF;  $\geq 25$  years: 4300.- CHF;  $p = 0.22$ /female: 3500.- CHF; male: 4500.- CHF;  $p = 0.27$ ).

### 3.2 | Age group results

The level of education was significantly different between the two age groups ( $p < 0.0001$ ). In the  $< 25$  years age group, 24% were students, 19% were employed, 18.2% had graduated from high school, 14.2% were apprentices, and 13.5% had completed an apprenticeship. A smaller fraction of the participants was attending high school (6.9%), had graduated from university (2.1%), were job seeking (1.6%), or were parents (0.5%). In the  $\geq 25$  years age group, the majority were employed

(30.3%), had completed an apprenticeship (24.4%), were parents (18.9%), or had a university degree (15%). The minority had graduated from high school (7.4%), were studying (3.4%), were apprentices (0.2%), were going to high school (0.2%), or were job seeking (0.2%). In the  $< 25$  y and  $\geq 25$  y age groups, 77.1% and 77.4% were satisfied with the appearance of their teeth, respectively. Both age groups were also satisfied with the appearance of their smile. The proportion of participants willing to correct the present appearance of their teeth was significantly lower in the  $\geq 25$  age group (OR: 0.54;  $p = 0.001$ ) (Figure 1A–D). There were no differences in the mean financial expenditure (Swiss Francs [CHF]) that participants were willing to invest in corrections to achieve perfect teeth with respect to age or gender (Table 1 and Table 2). Detailed results regarding age are presented in Table 1.

The desire to have brighter teeth (OR: 0.38;  $p < 0.0001$ ) and the willingness to bleach their teeth (OR: 0.39;  $p < 0.0001$ ; Figure 2A,C) was significantly smaller in the older cohort. There was a significant difference between the two age groups in responses regarding the dislike of their teeth and gingiva ( $p = 0.0006$ ). The opinion that their gingiva had changed was significantly higher for the  $\geq 25$  years age group (OR: 2.33;  $p < 0.0001$ ). Given the choice between excellent dentition and charisma, charisma was generally preferred over teeth in both groups; however, for the  $\geq 25$  years age group, the fraction of responses



**FIGURE 1** (A and B) Willingness to correct by (A) age and (B) gender

preferring teeth was significantly greater than for the younger group. The rating for whether excellent dentition improves attractiveness was significantly lower among older participants (OR: 0.15;  $p = 0.003$ ).

The proportion of answers concerning the importance of a partner's body versus their dentition significantly differed between the <25y and  $\geq 25$  years age groups ( $p = 0.046$ ), with a trend of the two parameters valued equally for the older and younger groups. The older group also responded less positively to the question of whether excellent dentition improves one's chances at a job interview (OR: 0.47;  $p = 0.0003$ ). However, there was no significant difference regarding which factors influence the appearance of the teeth.

The belief that dental correction would increase one's quality-of-life was significantly higher for the  $\geq 25$  years than for <25 years group (OR 1.81;  $p = 0.001$ ). Nearly half of both age groups believed that beautiful teeth symbolize luxury. No significant differences in responses to this question with respect to age were observed. The opinion that beautiful teeth make one look happier (OR: 0.67;  $p = 0.03$ ) was significantly lower in the older group.

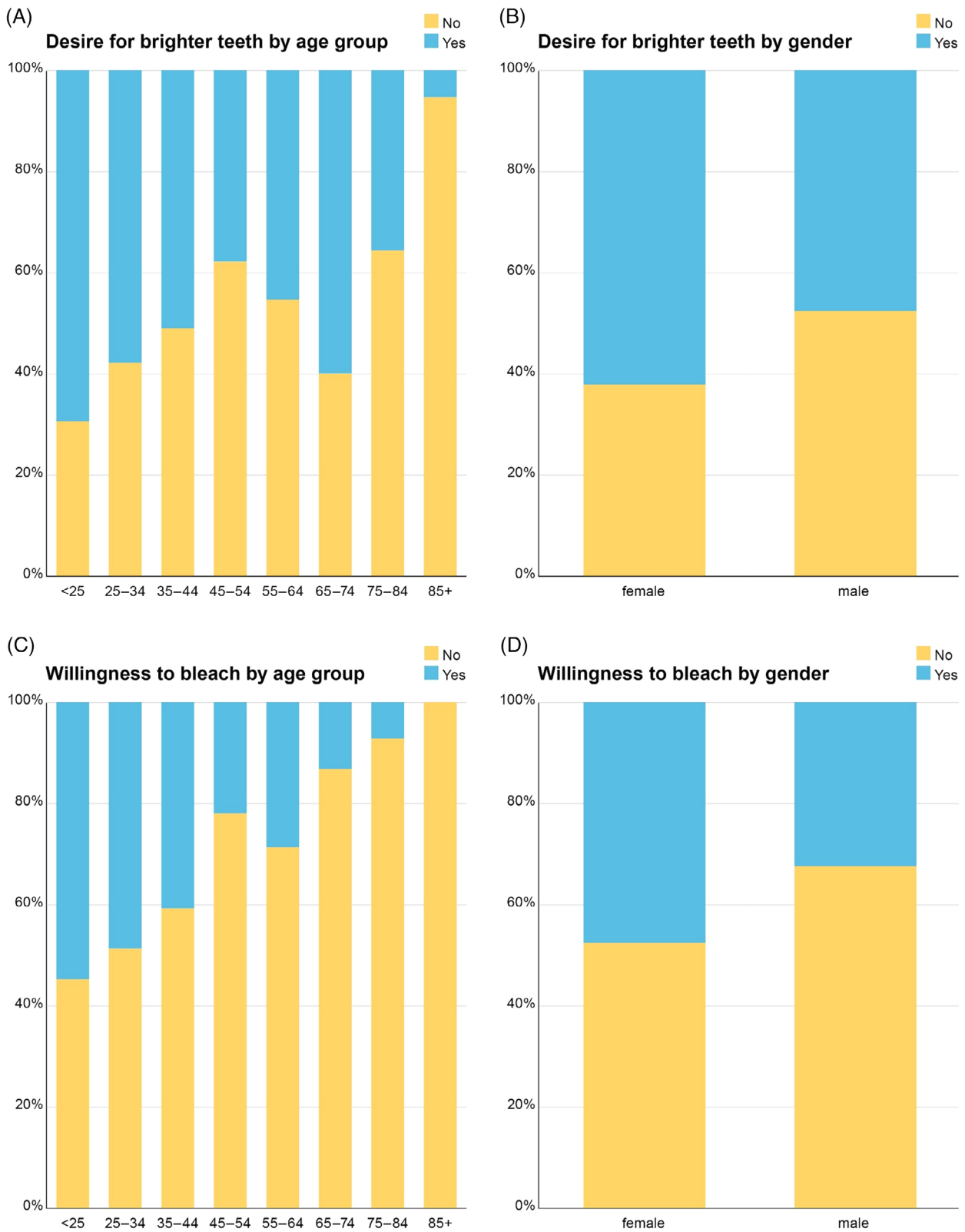
### 3.3 | Gender results

The proportion of responses regarding the level of education significantly differed between genders ( $p = 0.01$ ). Results for all questions regarding gender are presented in Table 2. Men were more satisfied with the appearance of their teeth than women (OR: 1.79;  $p = 0.01$ ).

The proportion of satisfaction with one's own smile was significantly higher for men than for women (OR: 1.77;  $p = 0.03$ ). There was a significant difference between the two genders in the willingness to correct the current appearance of their teeth. Women had a higher willingness to correct their teeth (OR: 1.83;  $p = 0.002$ ). More women than men would like to improve the appearance of their teeth. No differences in the mean financial investment to pay for corrections was found between men and women. Both the desire to have brighter teeth and willingness to bleach their teeth was significantly lower for men (OR: 0.54;  $p = 0.002$ ; OR: 0.53;  $p = 0.002$ ). Men have a significantly higher preference to have a perfect dentition over a perfect body (OR: 1.63;  $p = 0.02$ ) and significantly fewer believe that excellent dentition improves attractiveness (OR: 0.33;  $p = 0.02$ ). For both genders, it was important that their partner have beautiful teeth. Responses regarding their partner's body versus dentition differed significantly between female and male participants ( $p < 0.0001$ ), with most men valuing the appearing their partner's body over their teeth. The persuasion that excellent dentition improves chances at a job interview (OR: 0.66;  $p = 0.04$ ) and that beautiful teeth symbolize excellent health (OR: 0.52;  $p = 0.01$ ) was significantly lower among men.

## 4 | DISCUSSION

The study's research hypotheses were rejected, since stratified age groups and genders have different perceptions of overall dental esthetics.



**FIGURE 2** (A–D) Desire for brighter teeth by (A) age and (B) gender and willingness by (C) age and (D) gender

Most of the participants were satisfied with the appearance of their teeth. Only a small fraction of the participants wished to correct the current appearance of their teeth. There was only a statistically

significant difference between genders and not between age groups. Satisfaction with dental appearance was as high as in a previous study.<sup>5</sup> The findings were further supported reporting that most



people were satisfied with the color and appearance of their teeth and that their age was not necessarily associated with poor self-perceived dental appearance.<sup>15</sup> Concerns with physical appearance were a motivating factor for undergoing dental procedures. The disruption in daily functions and negative effects on well-being and quality-of-life could also be a key factor in the decision to undergo dental treatment.<sup>27</sup> The importance of dental appearance decreases with age and becomes a lower priority than general health.<sup>3</sup> Nevertheless, the results described here showed that the importance of dental appearance shifts across age groups, being more important during youth, decreasing in adulthood, and once again being considered important in old age. This data should be carefully interpreted, since advanced age is associated with tooth loss<sup>24</sup> and, considering the restorative phase, dental appearance will play a key role in the treatment success.

Overall, men were more satisfied with the appearance of their teeth and smile than women. A study of patients' perspectives on dental esthetics in a South-Eastern European community supported the observation that women were more critical in self-perceptions of their smile.<sup>13</sup> The same study investigated possible influences of tooth color on social perceptions and whether whiter teeth positively influenced perceived social competence, intellectual ability, psychological adjustment, and relationship satisfaction.<sup>11</sup> In this study, approximately half of the participants preferred having brighter teeth, but not as many would consider bleaching them. An article about dental appearance satisfaction demonstrated that tooth color self-satisfaction is associated with a weaker desire to undergo a tooth-whitening process.<sup>14</sup> The younger group had a greater desire to have brighter teeth than the older group, which could explain their preference to correct the appearance of their teeth. This result was supported by a study of dental appearance in which the authors found that participants younger than 55 were less likely to be satisfied with their dental appearance or color.<sup>15</sup> For a perfect smile, not only the teeth were important, but also the gingiva and the lips.<sup>19</sup> Other authors demonstrated that the gingiva influence smile esthetics.<sup>22</sup> In the current study, 31.3% of participants assumed that their gingival status had changed, while a significantly smaller fraction of the younger group felt that their gingiva had changed over time. This could be because they disliked their teeth more than their gingiva.

Dental appearance could play an important role<sup>11,12</sup> in making a positive first impression, confirmed by this investigation. More than half of the participants rated the appearance of the teeth as equally important as that of the body. There was a tendency to choose good charisma over excellent dental esthetics. In terms of partner choice, the appearance of the teeth was considered important, although the younger group preferred good charisma over good dental appearance. However, they believed that excellent dentition improves attractiveness more strongly than the older group. This was supported by a study in which young people were consulted and found that dental appearance influenced overall self-attractiveness. According to the authors, imperfections in female faces were perceived more often than in male faces.<sup>4</sup>

This could help explain why women were more aware of their own dentition and believed more in improving their attractiveness by

having excellent dentition, confirmed by a study of 50- and 60-year-old subjects living in Sweden.<sup>2</sup> Physical appearance had a particular influence on the first impression of a person, which has been examined by several studies.<sup>1,4,6,11,12,17</sup> Some studies showed that dental esthetics have no influence on the success rate of job interviews and were not important for a career.<sup>1,18</sup> On the other hand, in the present study, most of the participants believed that excellent dentition improves one's chances of success in a job interview. More than half of all participants believed that beautiful teeth can be associated with professional or career success. In this sense, a previous study demonstrated that dental esthetics were important for a person's self-esteem, but not for a successful career. Although respondents thought that a pleasant appearance was important for career prospects, no gender differences were found.<sup>1</sup> The present study observed that women and younger respondents supposed excellent dentition improves chances at a job interview more than men and older respondents, respectively. The influence of dental appearance on hypothetical intelligence and job opportunities has been previously confirmed.<sup>17</sup>

Previous studies<sup>1,6,8-11,16,29</sup> have shown that dental appearance could influence social perceptions and quality-of-life, as the current study also observed. A majority of respondents believed that beautiful teeth increased happiness and led to a happier demeanor. This was supported by another study, which demonstrated that smiles altered by esthetic dentistry co-occur more frequently than natural smiles with the following attributes: being interesting, intelligent, happy, friendly, sensitive to others, kind, successful, and wealthy.<sup>23</sup> Women believed more than men that beautiful dentition symbolizes excellent health, and nearly half of the participants associated beautiful teeth with luxury. Slightly more than half of all respondents thought that quality-of-life would not increase with a dental correction. This was in contrast to research evaluating dental esthetics and quality-of-life in adults, which concluded that oral health was indeed related to quality-of-life and that satisfaction with dental esthetics was increased.<sup>30</sup> This difference might be due to the fact that these authors compared responses before and after respondents underwent dental treatment, while these results are those of a more inclusive survey of the general population.

The younger group believed that their own quality-of-life would increase if they corrected their teeth to a lesser extent than the older group. On the other hand, the younger group thought that beautiful teeth make an individual appear happier. Considering the methodology and the results of the present study, its specific strengths were its wide age range inclusion and its exclusion of opinions from dentists, since only laypersons were consulted. Hence, this study reflected the general population's opinion objectively without being potentially influenced by a specialist.

Considering the methodology, to best of the authors' knowledge, this study is the first to frame the assessed parameters using highly specific questions across a wide range of laypersons in order to determine the influence of age and gender on dental esthetic perceptions. Although the collected information provides useful information for clinicians, the study has some limitations. Since the questionnaire was



designed by the authors to answer a very specific question, validation was not possible; nevertheless, the large study group size and the significance of the obtained results may indicate that the questionnaire design is valid and can be applied in a similar fashion to other cohorts. Additional studies following the methodology described here are needed in order to assess the reproducibility of the study and to compare various population samples.

Regarding participant stratification into age groups, participants 16 and older were included without further limitations; considering this situation, it was not possible to include the same number of participants per group. In this regard, a more homogeneous and/or specific age group segregation might provide more information about a given individual's expectations.

Further limitations of this study are that the cross-sectional design provides only a single longitudinal point and that the study participants were all living in Switzerland; however, this does not imply that all participants were Swiss and/or grew up in Switzerland. In this sense, the obtained results should be carefully interpreted.

## 5 | CONCLUSIONS

Within the limitations of this observational study, it was concluded that age and gender of laypersons in Switzerland have a significant impact on the perception of dental esthetics.

## ACKNOWLEDGMENTS AND DISCLOSURE

Open access funding provided by Universitat Bern. The authors do not have any financial interest in the companies whose materials are included in this article.

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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**How to cite this article:** Zaugg F-L, Molinero-Mourelle P, Abou-Ayash S, Schimmel M, Bragger U, Wittneben J-G. The influence of age and gender on perception of orofacial esthetics among laypersons in Switzerland. *J Esthet Restor Dent*. 2022;34(6):959-968. doi:[10.1111/jerd.12906](https://doi.org/10.1111/jerd.12906)