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The impact of orthodontic treatment on choosing a career in dentistry

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Abstract

Introduction: Many studies, globally, have aimed at elucidating reasons to choose a career in dentistry. The most common motives found are reasonable working hours and aspiration to help. The aim of this study was to explore whether eventual past personal experience of orthodontic treatment and particularly the interpersonal skills of the treating orthodontist are of significance in this respect.

Materials and methods: An electronic questionnaire, consisting of multiple choice and descriptive questions about dental history and experiences in dental care, was sent to dental and, as controls, psychology students within the same Faculty of Medicine, University of Helsinki, Finland. The answers between the two groups were compared and differences tested statistically.

Results: The questionnaire was answered by 143 (46.0%) dental students and 94 (17.6%) psychology students. Dental students, compared to psychology students, had more positive views of their dentition and dental treatment in general (p = 0.000). Amongst participants, 47.9% of dental students and 57.4% of psychology students had received orthodontic treatment. Of those, dental students had perceived their orthodontic treatment as less painful (p = 0.001) and less uncomfortable (p = 0.000) than psychology students. Moreover, dental students reported more often experiences of orthodontist taking into account their situation in life during treatment (p = 0.011) and gave more positive descriptions of the orthodontist's interpersonal skills (p = 0.031).

Conclusions: Dental students, compared to psychology students, had statistically significantly more positive personal experiences related to dentistry and orthodontics, supporting our hypothesis that positive experiences with orthodontic treatment likely increase the probability of choosing dentistry as the future career.

KEYWORDS
career choice, dentistry, orthodontics, student

1 | INTRODUCTION

Multiple factors play a role in how a career is chosen. Many research studies have been published globally looking into factors that have influenced students to choose dentistry as a career. The most common motives found internationally were reasonable working hours, corresponding to more time with their families, and ambition to help underprivileged people.[1] In studies carried out in Scandinavia, the main motivations found were a combination of theory and practice, helping and working with people and other altruistic motives.[2-4]

Another motivating factor, even though it was not identified as the most influential one, is being inspired by one's dentist and other experiences as a patient.[1,5] In a US study assessing pre-dental students' reasons for seeking a career in dentistry, it was found that the professional that most inspired them to pursue a career in dentistry was a family dentist (52.6%), followed by orthodontist (18.4%, 28 out of 152 students).[6]

The aim of this study, based on electronic questionnaire data, is to explore how having had orthodontic treatment is associated with seeking a career in dentistry, comparing dental students with a control group of psychology students. It focuses on the positive and negative associations experienced with orthodontic treatment and the interpersonal skills of the orthodontist as variables. The hypothesis is that people who have undergone orthodontic treatment will have a higher probability of choosing a career in dentistry and, furthermore, that decision would be influenced by a positive personal experience from the past orthodontic treatment.

2 | MATERIALS AND METHODS

2.1 | Questionnaire

A new electronic questionnaire was formulated using the University of Helsinki's official electronic questionnaire form (E-lomake). The Finnish questionnaire was translated into English and back from English to Finnish to ensure its accuracy. The questionnaire included both multiple choice and descriptive questions. The electronic answers were given by adult university students voluntarily and anonymously, and the age of the respondents was not asked to eliminate any possibility of identifying someone from their information. The obtained and processed data were entirely anonymous; thus, there were no ethical issues.

2.2 | Subjects

This one-centre study was addressed to both dentistry and psychology undergraduate students from the Medical Faculty of the University of Helsinki, Finland. Power calculation was not performed. A link to the questionnaire was sent through institutional group mailing lists in January 2019 with acceptance from the heads of both courses of study. A reminder was sent out to both student groups in February 2019 and another to dental students in May 2019. The questionnaire included general questions about the students and their previous dental experiences, with additional questions for those who had undergone orthodontic treatment. Some of the questions focused on the interpersonal skills of the orthodontists and other dentists in charge. The questionnaire requested that respondents answer the questions regarding experiences before starting their current studies. Psychology students were chosen as a control group because they act in the same Medical Faculty as dentistry at the University of Helsinki but were considered to represent a sufficiently different field of study.

2.3 | Data analysis

This paper is based on selected parts of the questionnaire data that were chosen so that the two student groups could be compared with each other, to find differences between them and to test the study hypothesis.

The questionnaire yielded quantitative and qualitative data. The answers from some descriptive questions were converted into quantitative form using the tone of the answer. SPSS 25 and Excel 16.36 were used for statistical analysis. A chi-square test of independence and Mann-Whitney U test were employed for testing significant differences between the two groups. The level of statistical significance was set to 0.05 for all statistical tests.

TABLE 1 General background of the respondent dental and psychology students.

	Dentistry (n=143)	Psychology (n=94)	P-value
Gender			
Male	41 (28.7%)	11 (11.7%)	0.002**
Female	102 (71.3%)	83 (88.3%)	
Other	0 (0.0%)	0 (0.0%)	
Year			
1st	27 (18.9%)	16 (17.0%)	0.131
2nd	24 (16.8%)	21 (22.3%)	
3rd	20 (14.0%)	15 (16.0%)	
4th	29 (20.3%)	19 (20.2%)	
5th	21 (14.7%)	8 (8.5%)	
6th	14 (9.8%)	3 (3.2%)	
Other	8 (5.6%)	12 (12.8%)	
Previous enrolment in vocational/higher education			
Yes	74 (51.7%)	34 (36.2%)	0.023*
Healthcare professional as a parent			
Yes	54 (37.8%)	31 (33.0%)	0.491

*Statistically significant at $p < 0.05$.; **Statistically significant at $p < 0.01$.

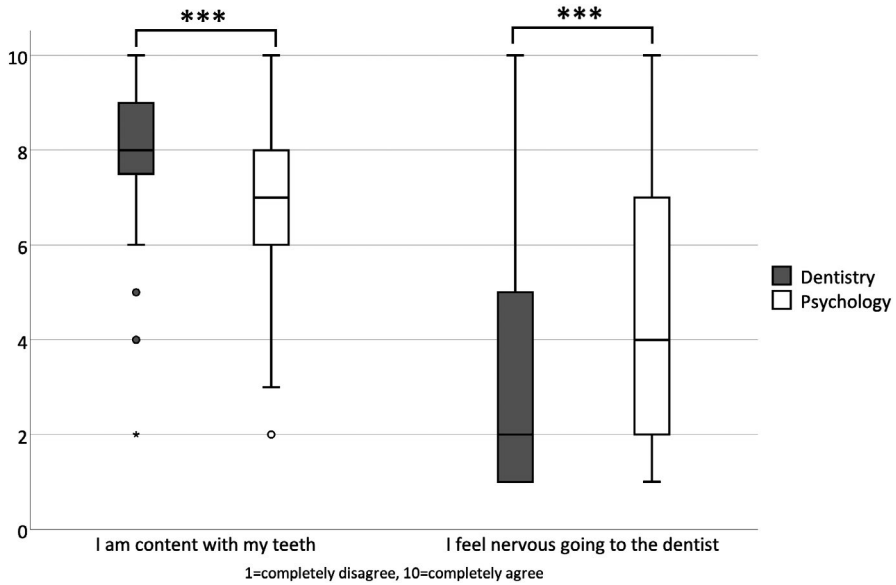

FIGURE 1 Students' assessment of their own dentition and dental anxiety on a 1–10 Likert scale. *** Statistically significant at $p < 0.001$.

TABLE 2 Respondent's own history with dental treatment.

	Dentistry (n=143)	Psychology (n=94)	P-value
Dental fillings			
Yes	117 (81.8%)	73 (77.7%)	0.506
Other dental treatment (such as prosthodontics)			
Yes	35 (24.5%)	23 (24.5%)	1.000
Occlusal splint			
Yes	41 (28.7%)	12 (12.8%)	0.004**
Orthodontic treatment			
Yes	71 (49.7%)	54 (57.4%)	0.287

**Statistically significant at $p < 0.01$.

3 | RESULTS

3.1 | Respondents

When the questionnaire was sent out, there were 326 (66.9% female, 33.1% male) dental students attending the University of Helsinki. Of them, 143 (46.0%) answered the questionnaire. Out of 533 psychology students (73.7% female, 26.3% male), 94 individuals (17.6%) participated. Considering the gender distribution in the two student groups, male and female dental students participated equally, whereas male psychology students were underrepresented amongst the respondents (p=0.002) (Table 1).

The distribution of the respondents by study year was uniform without statistically significant differences between the two student groups and amongst first to fourth study years. Fifth-year students and older responded more rarely (Table 1). Regarding the general background of the respondents, dental students compared to psychology students had more often enrolled in vocational or higher education prior to their current studies and more often reported unaccomplished studies in these other fields of education (68.9% vs 26.5%, p = 0.000). No significant difference was found between numbers of dental and psychology students having parents with an education in health care.

3.2 | Dental care

Concerning the respondents' views of their dentition and dental care (Figure 1), dental students, compared to psychology students, were significantly more content with their teeth (p = 0.000) and felt less nervous about going to the dentist (p = 0.000). Regarding the respondents' history with dental care, no significant differences were found between the groups in having had restorative treatment or other dental treatments, such as prosthetic treatments (Table 2). There was, however, one highly significant difference between the two groups: users of an occlusal splint were more frequent amongst dental students (p = 0.000).

Respondents were asked to describe the interpersonal skills of their dentists, excluding possible orthodontists. These answers were divided into three categories by tone: positive, neutral and negative and an example of an answer from the positive category: "*Mainly good experiences*," neutral: "*Interpersonal skills are highly variable"* and negative: "*Inadequate*, *in a hurry."* Answers of not remembering were categorised as neutral. The dental students gave slightly more both positive and negative descriptions compared to psychology students (positive/other p = 0.182, negative/other p = 0.603). The psychology students gave more neutral descriptions of their dentists than did dental students, but the difference did not reach statistical significance (Figure 2).

3.3 | Orthodontics

A history of orthodontic treatment was reported by 47.9% (n=71) of dental students and 57.4% (n=54) of psychology students (Table 1).

Figure 3 shows the timing of their treatment, divided by stage of schooling. Primary school in Finland generally corresponds to ages 7 to 12 years, secondary school 13 to 15 years and upper secondary school 16 to 18 years. There was no significant difference in the timing of orthodontic treatment between the two groups ($p = 0.119$).

Students who had received orthodontic treatment were asked to rate on a Likert scale from 1 (not at all) to 10 (extremely) how painful and uncomfortable they found their treatment. The medians of the answers were lower for dental students than for psychology students (Figure 4). Also, the maximum values reported by dental students were lower. None of the dental students had experienced their treatment as extremely painful or uncomfortable, unlike psychology students. Thus, dental students found their past orthodontic treatment less painful ($p = 0.001$) and less uncomfortable ($p = 0.000$).

The same students were asked to describe the interpersonal skills of their orthodontist in the same manner as their other dentists in the earlier part of the questionnaire. These answers were categorised in the same way by their overall tone into three categories: positive, neutral and negative, with the neutral category including answers of not remembering. Dental students, in comparison with psychology students, gave significantly more positive descriptions of their orthodontist's interpersonal skills ($p = 0.031$) and slightly fewer negative ones ($p = 0.552$) (Figure 5). When separating the answers of not remembering from the neutral ones, it showed that 7 (10.0%) dental students and 10 (18.9%) psychology students did not remember their orthodontist well enough to describe them ($p = 0.158$).

Respondents were also asked to describe their orthodontist in five words or less. The single words used were divided in the same way as before: positive, neutral (including not remembering) and negative. Words like *skilful/skilled*, *expert* and *pleasant* were classified as positive and *distant*, *hurried* and *frightening* as negative. The full answers, considering all words in an entry, were categorised the same way. Dental students used slightly more positive ($p = 0.245$) and slightly less negative ($p = 0.374$) words to describe their orthodontist than psychology students (Figure 6). The main tone of the answer was significantly more often positive ($p = 0.030$) and less often

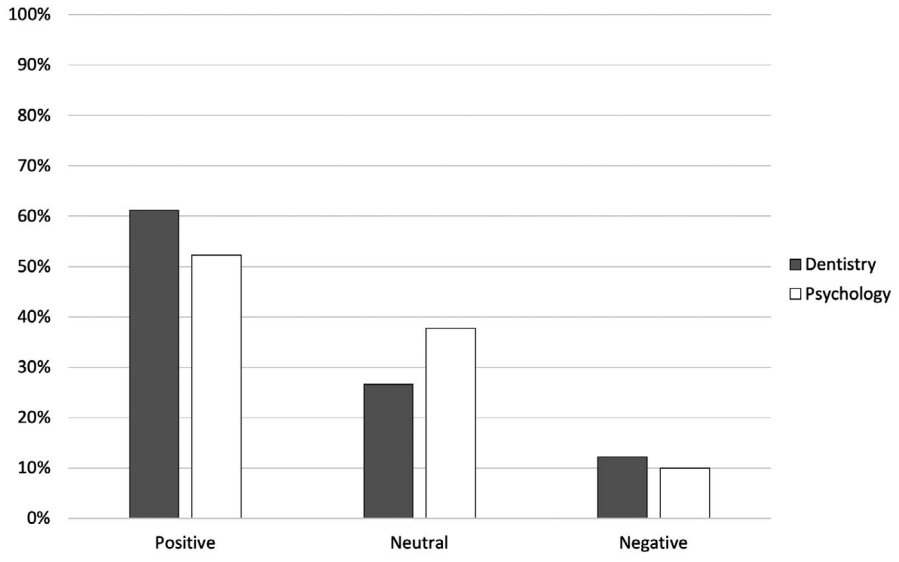

FIGURE 2 Students' description of their dentists' interpersonal skills. Positive/other $p = 0.182$ and negative/other $p = 0.603$.

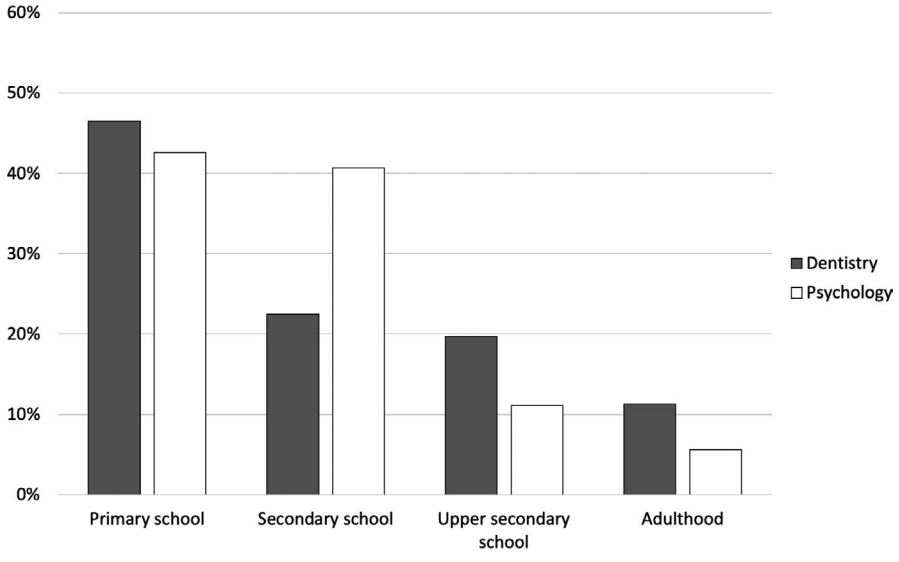

FIGURE 3 Timing of orthodontic treatment in both groups of students ($p = 0.119$).

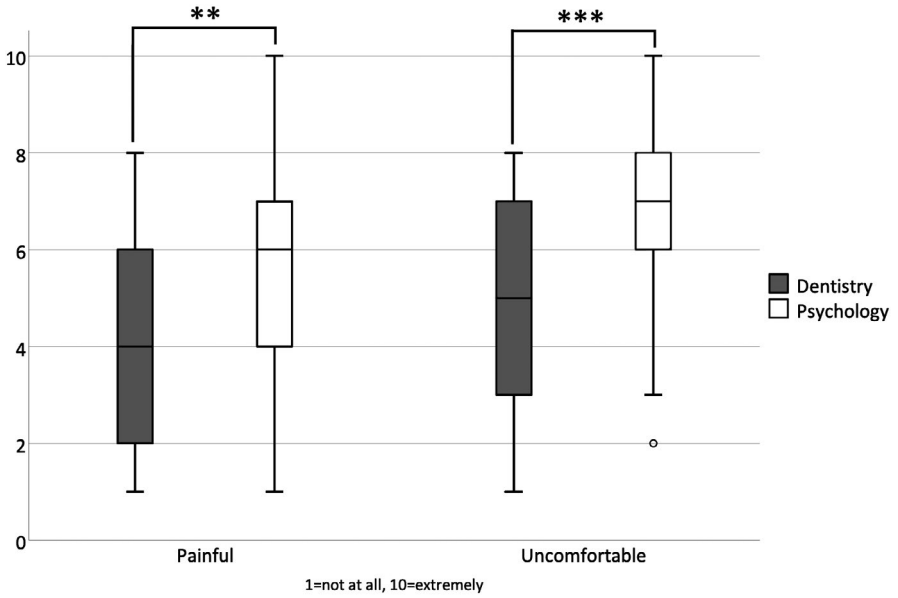

FIGURE 4 Students' experience with their orthodontic treatment. ** Statistically significant at $p < 0.01$ and *** statistically significant at $p < 0.001$.

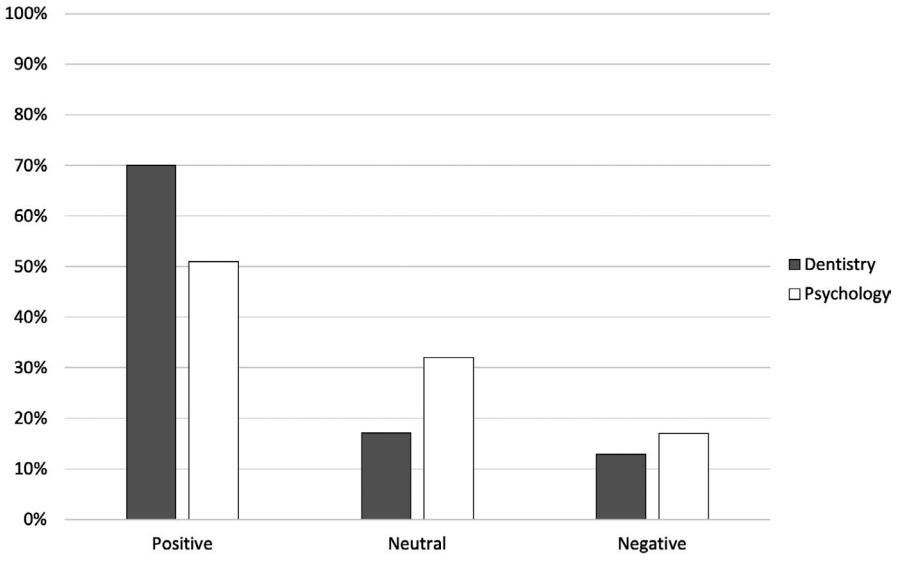

FIGURE 5 Students' description of orthodontist's interpersonal skills. Positive/other $p = 0.031$.

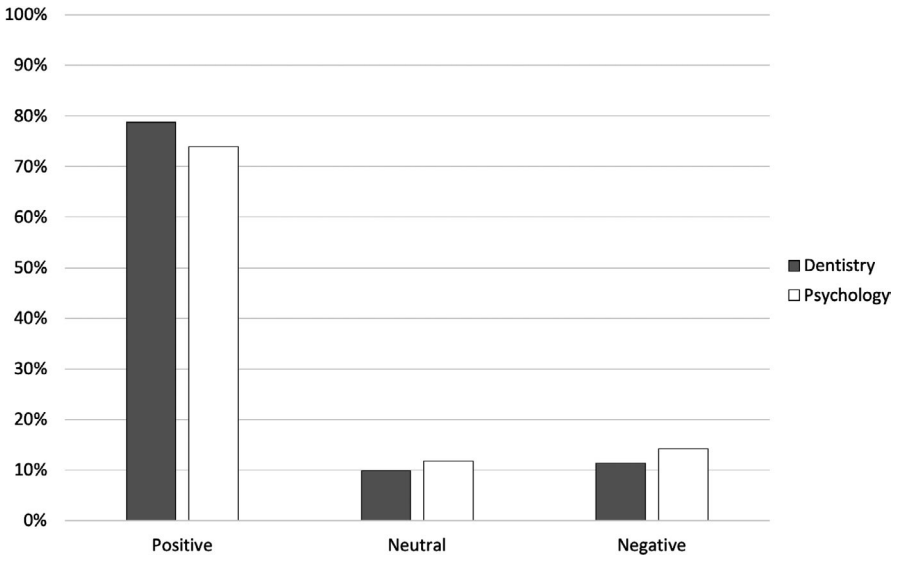

FIGURE 6 Tone of single words used by students to describe their orthodontist.

negative (p = 0.272) for dental students than psychology students (Figure 7). In addition, the descriptive words were divided into three categories by subject: occupational, personal and other/neutral. The distributions across these categories (Figure 8) were not significantly different between dental and psychology students (p = 0.546). The majority (67.0%) of words describing the orthodontist were related to their personal traits (Figure 8).

Respondents with personal experience as orthodontic patients were also asked if their orthodontist had taken into account their situation in life during the course of the treatment. Dental students had experienced that more often (Table 3). Another open question asked in which ways this was shown. In dental students' answers, the most common way (6 out of 20) was taking the age of the patient into consideration, especially with adolescents. Other ways mentioned were taking the patient's own wishes into account, such as the aesthetics of appliances and appointment times, and realising the effect of treatment on the patient's self-esteem. An example of this is: "*I was a teenager, so I always got the least noticeable elastic ligatures*."

In psychology students' answers, 5 out of 13 said that their orthodontist took into account that they were a child and interacted according to that. An example of this is: "*Spoke in an appropriate way to a child*." Single answers listed other ways, such as noticing the patient's parents and removing fixed appliances before a graduation ceremony.

4 | DISCUSSION

This study looked at personal experiences with orthodontic treatment as one of the factors leading to choosing dentistry as a future career. From a dental teacher's perspective, it can be beneficial to be aware of the motivational factors because knowledge of these may help in tutoring the students and keeping up their motivation to

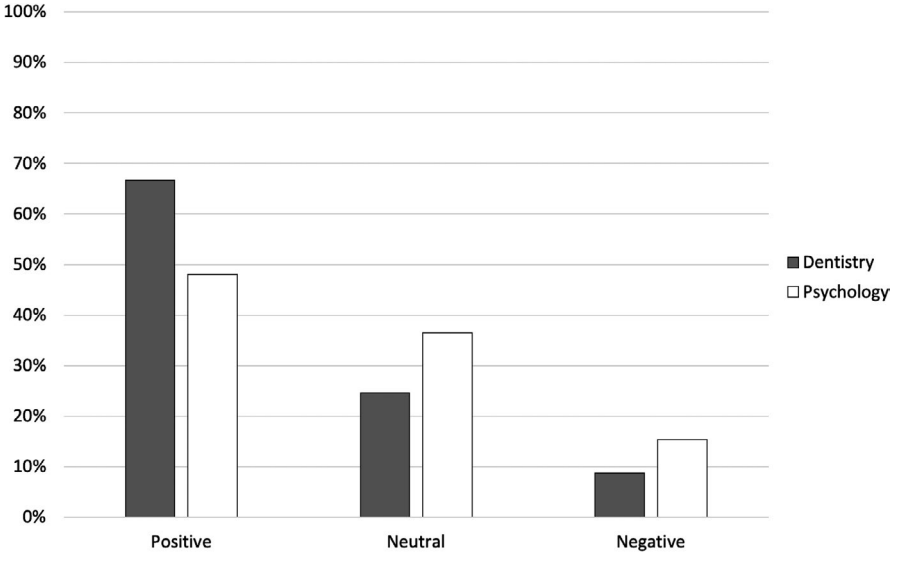

FIGURE 7 Tone of students' description of their orthodontist. Positive/other p = 0.030.

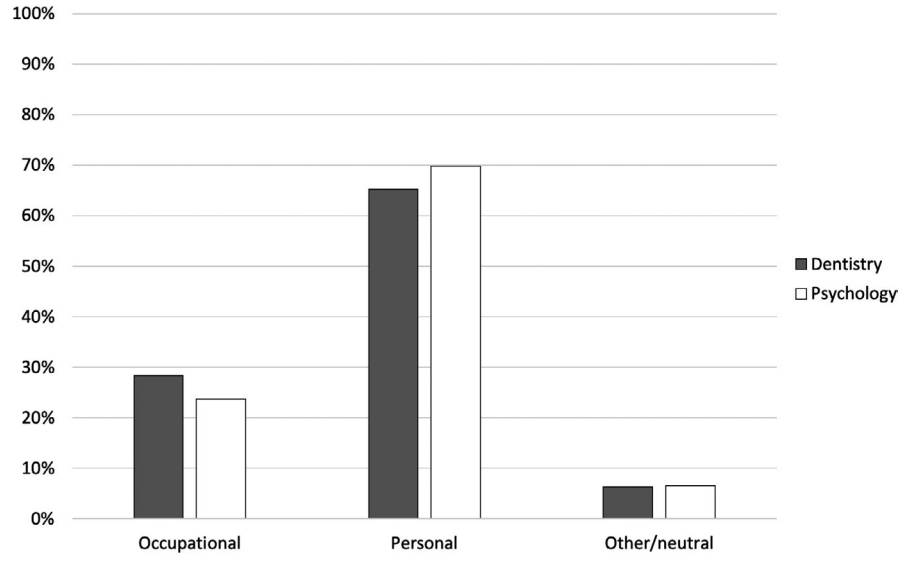

FIGURE 8 Subject of words used by students to describe their orthodontist. Personal skills were emphasised equally by both groups.

TABLE 3 Questions to the subgroup undergone orthodontic treatment.

	Dentistry (n=71)	Psychology (n=54)	P-value
Have you been treated with orthognathic surgery?			
Yes	3 (4.2%)	4 (7.4%)	0.464
Did the orthodontist take into account your life situation?			
Yes	38 (53.5%)	16 (29.6%)	0.011*

*Statistically significant at $p < 0.05$.

study. The question was addressed by asking dental students to participate in a questionnaire survey, and the study was controlled by an identical request to psychology students within the same Faculty of Medicine.

The response rate, a total of 28%, was considerably good. Dental students participated more actively than the comparison group, which was to be expected considering the subject of the questionnaire. The gender distribution of the data from dental students was unbiased, whilst amongst psychology students, females responded more actively. Regarding background data, the two respondent groups differed in terms of previous studies in other fields. It was more common amongst dental students to have studied something else before the present studies, and this was the case regarding both finished and unfinished degrees. It is possible that dentistry does not come to mind straight after upper secondary school or that the students do not get into dental school on their first try. Nevertheless, this phenomenon is not new—it was reported three decades ago that about half of Scandinavian dental students (from Denmark, Norway, Finland and Sweden) had earlier studies or working experiences.[2] Therefore, it is particularly interesting to try to look into factors that have motivated the students onto the dental path.

Of the Finnish population, approximately 10% have received orthodontic treatment.[7] It is presumable that the questionnaire attracted more attention from those students that have had orthodontic treatment, probably as a result of the wording of the questionnaire heading. Therefore, the high percentage of respondents with orthodontic treatment history (53%) more likely results from a research bias than reflects the commonness of past orthodontic treatment amongst Finnish university students and does not allow comparison between the two fields.

According to Holland's theory of vocational choice, a person's history affects their personality type and thus their career choice.[8] From this, it could be assumed that a history of orthodontic treatment could influence the choice of dentistry. Holland's theory also states that people in the same vocation have similar histories of personal development, so it could be assumed that they have gone through similar experiences, and thus, orthodontic treatment could be a shared part of personal development amongst dental students. Children who go through orthodontic treatment usually visit the dentist's office recurrently, and Gottfredson's theory of circumscription and compromise suggests that children start to limit their career options based on the information from their environment.[9] Children are more likely to have interests in areas of constant exposure, which in this case is dentistry and, more accurately, orthodontics.

During the frequent and sometimes long visits, the treating orthodontist often keeps good spirits by discussing the interests of the young patient and may also ask questions about their thoughts about a future career. Similarly, it has happened that the child actively asks the orthodontist how they feel about dentistry as a career, making a more straightforward connection between the treatment situation and career choice.

In the United States, a family dentist is the most common professional influencing a career choice in dentistry.[6] In Finland's public healthcare system, there are no assigned dentists for individual children, and dental care for those under 18 years old is provided free. Other healthcare personnel, including dental hygienists and dental assistants, are strongly involved in the dental care of children. Because of this system, the number of dental professionals treating a child varies, so the longest dentist-patient relationship could be formed between a patient and an orthodontist. Therefore, in Finland the most influential professional affecting a career choice in dentistry could be the orthodontist, which this study supports.

Studies in Finland that look into the dental visits of minors support that orthodontic patients have more frequent exposure to the dental office. In a nationwide study, it was found that one-third of minors' dental visits were for orthodontic treatment in 2009.[7] This means that one-third of dental visits are used by 8.7% of the age group.[10] Also, in a randomised study made in Espoo, Finland, 66.4% of under-18-year-old heavy users of public dental services had orthodontic visits. Moreover, the largest portion, 45%, of the heavy users' treatment measures were orthodontics, and these figures do not include visits to specialists. This implies that children and adolescents that go through orthodontic treatment have more visits to the dental office than regular users.[11] These figures also reflect the fact that orthodontic treatment is carried out to a notable extent by other community oral healthcare professionals than specialised orthodontists, and the patient may not recognise their professional status.[12] Therefore, answers in the present study related to orthodontists' qualities may reflect the qualities of a much larger and professionally non-homogenous group.

In addition to the frequent exposure to an orthodontic care provider's office, the emotions associated with the treatment could have an effect on career choice. In this study, there was no significant between-group difference in describing the interpersonal skills of dentists, excluding orthodontists, but with orthodontists, it was found that dental students had significantly more positive experiences with their interpersonal skills. This could support the hypothesis that positive experiences during orthodontic treatment, which good interpersonal skills reinforce, would lead to a higher probability of choosing to study dentistry. Importantly, dental students, compared with psychology students, perceived their orthodontic treatment significantly less uncomfortable and less painful, in line with the hypothesis set for this study.

Compared to psychology students, dental students more often experienced that the orthodontist considered their situation in life.

This would also show better interpersonal skills of the orthodontist. With dental students, taking into account the adolescence of a patient stood out, whereas with psychology students, childhood experiences were emphasised. This could suggest that when orthodontic treatment happens later in a patient's life, those experiences could come to mind more when choosing a career. However, because there was no significant difference between the groups in timing of treatment, the positive experiences, particularly during adolescence, seem to play a pronounced role in career choice.

Dental professionals, or at least dental students, are unlikely to have a full understanding about how influential they can be as role models for young patients and that they can affect their future career choice. The results of the present study can be widened to exemplify for the whole dental profession how important dental treatment is outside the patients' oral situation. These results can be used when planning professionalism studies for dental curricula.

5 | CONCLUSIONS

Dental students, compared to the control group of psychology students that were in many respects very similar, had more positive views of their dentition and dental treatment. Dental students also had more positive experiences with orthodontic treatment and their orthodontist's interpersonal skills. These results suggest that positive experiences with orthodontic treatment can be a significant factor behind the choice to study dentistry.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data are available from the main author, but restrictions apply to the availability of these data, which were used under licence for the current and still ongoing analysis and are thus not publicly available.

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