A Comparison of the Smile Esthetic Understanding of Periodontists, Orthodontists, General Dentists, and Dental Students

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ABSTRACT

Objective: The aim of this study was to evaluate smile esthetics among periodontists, orthodontists, general dentists, and dental students.

Methods: The study consisted of five groups: periodontists, orthodontists, general dentists, fifth-year dental students, and fourth-year dental students. The evaluators used the Smile Esthetics Index (SEI) consisting of 10 items to analyze the natural smile photographs of 15 different individuals. One-way ANOVA was performed for the comparison of group means. The Duncan multiple comparison test was also used to identify different groups. Non-linear principal component analysis was performed to determine the configuration of the relationship between categories of variables in two-dimensional space.

Results: The group with the highest reliability coefficient among the groups was the fourth-year dental students (Cronbach's Alpha = 0.89). This was followed by general dentists, periodontists, fifth-year dental students, and orthodontists. According to the evaluation of the total score averages of the fifteen pictures, a statistically significant difference was observed between the groups ($p = 0.041$). Accordingly, the fourth-year dental students (5.78 ±1 .13) had a lower total score than the fifth-year dental students (6.56 ± 0.88), and this difference was statistically significant. However, no significant difference was observed between the fourth-year dental students and the general and specialized dentists and between the fifth-year dental students and graduated and specialized dentists in terms of the total score given to the pictures.

Conclusion: It was observed that the reliability coefficient was high in all groups evaluated with SEI. It can be concluded that esthetic perception is formed by actively performing the profession of dentistry, and this situation does not change according to specialization.

Keywords: Esthetics, smiling, tooth

INTRODUCTION

The perception of facial esthetics, where a smile has a positive effect on attractiveness [1,2], is specifically seen as a dominant concern when planning dental treatment [3] because dissatisfaction with one's smile can have a significant impact on self-esteem [4]. This situation is associated with reports that,

when evaluating the general perception of beauty, teeth are considered the second most important facial feature after the eyes [1]. Correspondingly, in modern societies, the esthetic perception associated with smiling can play a prominent role in interpersonal communication. Factors including papillary recession between teeth and gum appearance as well as the midline of the face; the smile line; the size, shape, position, and color of the teeth; and the lip frame are important in the esthetics of a smile. It is crucial to make every effort to plan a harmonious balance that produces the most natural smile in every patient. Therefore, the emphasis placed on soft tissues in the assessment and design of smiles should be the same as that placed on hard tissues because esthetic perception can be achieved with harmony between these tissues. Hence, when a more beautiful smile is obtained through both periodontal and orthodontic interventions, the individual is likely to feel better and more confident.

In recent years the Smile Esthetic Index (SEI), published by Rotundo et al. [5], has been suggested as a reliable method for assessing smile esthetics [5,6]. The index evaluates smile esthetics based on ten variables: smile line, facial midline, tooth alignment, tooth deformity, tooth discoloration, gum discoloration, gum recession, excess gum, scar tissue on the gum, and diastema/lack of papilla. The authors have reported that SEI is a repeatable method and can even be useful in presenting appropriate treatment options for patients [5]. This is because the analysis of a smile by a dentist can contribute to correctly understanding patient expectations and to forming more accurate suggestions during the treatment phase. It can even be used to assess the difference before and after treatment [6].

In the literature, the differences in the main parameters of smile esthetics have been analyzed. The characteristics of esthetic smiles include no deviation or bending in the maxillary midline, a larger number of teeth showing during smiling, the maxillary incisal edges being parallel to the lower lip, and occlusal and commissural planes being parallel to the interpupillary line [7]. Moreover, perception differences, not only with dentists

Main Points;

It can be concluded that esthetic perception is formed by actively performing the profession of dentistry, and this situation does not change according to specialization.

but also among laypeople, have been evaluated [8] Gaikwad et al. [9] conducted assessments among laypeople, dentists, and orthodontists. Smile esthetics have been evaluated both in terms of individuals' own perceptions of their smile quality and using the SEI [10]. However, there is a lack of sufficient studies that evaluate this perception among specialist dentists, general dentists, and dental students who are new to the concept of esthetic perception.

Therefore, the aim of this study is to evaluate the SEI by periodontists, orthodontists, general dentists, and dental students and to compare the perception of smile esthetics among these groups. The null hypothesis of our study is formulated as follows: 'there is no difference in the evaluation of smile esthetics among dentists or dentist candidates working in different specialties of dentistry.'

MATERIALS AND METHODS

The study commenced after approval was obtained from the Van Yüzüncü Yıl University Non-Interventional Clinical Research Ethics Committee (Ethics Number 2023/04-08). The sample size was calculated using the G*Power statistical package (version 3.1). It was determined that a total of 125 individuals in five groups were needed, using an effect size of 0.4 and a power of 95 %. The five groups that made up the study were periodontists, orthodontists, general dentists, fifth-year dental students, and fourth-year dental students, with a total of 125 evaluators, each group including 25 evaluators. Each evaluator voluntarily participated in the study and was thoroughly informed about the purpose and methodology of the study; written consent was obtained from each participant. The study was conducted in accordance with the Declaration of Helsinki.

The inclusion criteria for the evaluators were as follows:

- The periodontists and orthodontists were required to have a PhD or specialization in the relevant field or to be currently pursuing specialization or PhD training in these branches with sufficient competence and knowledge in the field.
- The general dentists were required to have been actively working for at least two years and not to have specialized or pursued a PhD in any field of dentistry.
- The dental students were required to be in the fourth or fifth year, currently participating regularly in clinical internships, and actively taking on patient treatment.

The inclusion criteria for the individuals in the photographs to be analyzed were limited to individuals older than 20 years, without a history of orthodontic or orthognathic surgical treatment, having healthy and/or reduced periodontium, possessing a complete set of permanent teeth except for the third molars, and having various malocclusions. Subjects were seated with a natural head position on a cephalostat and then photographed from the front; each subject was smiling naturally. The photographs were taken in the same environment and under the same lighting conditions, with the camera (EOS 60D, ISO 200, shutter speed 1/200 sec, F 20, Canon Inc. made in Taiwan) fixed on a tripod, and all photographs were taken in color. Subjects were asked not to wear make-up and to remove piercings, if any, before the photo shoot. The photographs were then transferred to a computer and cropped with vertical (tip of the nose and soft tissue pogonion) and horizontal (a line drawn downwards from the zygomatic prominence) boundaries. All images were later resized to a standard image size. Evaluators analyzed the natural smile photographs of 15 different individuals. The use of the SEI was limited to the presence of teeth, meaning it is applicable only to smiles that show all the teeth and is not referred to in the absence of teeth. The SEI consists of a 10-item review. Each evaluator awarded 1 point for a "yes" response and 0 points for a "no" response to these 10 questions. The 1 or 0 points were attributed according to the presence or absence of the variable in question, respectively. The total score was then calculated by totaling the points attributed to each of the 10 responses.

Statistical Analysis

Descriptive statistics for the continuous variables were presented as mean, standard deviation, and minimum and maximum values while categorical variables were presented as count and percentages. Distribution of data was analyzed with Kolmogorov-Smirnov test. One-way ANOVA was performed for the comparison of group means. The Duncan multiple comparison test was also used to identify different groups. Cronbach's Alpha coefficient was calculated to determine intraclass correlation for the 15 photographs as follows: excellent reliability for $0.90 \leq \alpha \leq 1$, high reliability for $0.70 \leq \alpha < 0.90$, moderate reliability for $0.50 \leq \alpha < 0.70$, and low reliability for $\alpha < 0.50$ [11]. In addition, non-linear principal component analysis was performed to determine the configuration of the relationship between categories of variables in a two-dimensional space. Statistical significance level was considered to be five percent, and the SPSS (IBM Corp. Armonk, NY, Ver: 21) statistical program was used for all statistical computations.

RESULTS

The Cronbach's Alpha coefficients for determining the internal reliability for the fifteen smile photographs are provided in Table 1. Accordingly, since the Cronbach's Alpha coefficients for each group are within the range of $0.70 \leq \alpha < 0.90$, high reliability was accepted for all groups. The group with the highest reliability coefficient was the fourth-year students (Cronbach's Alpha = 0.89), followed by general dentists, periodontists, fifth-year students, and orthodontists, in order.

One hundred twenty-five individuals (71 women, 54 men) were included in the study. The distribution of individuals in the groups, their average ages, standard deviations, and minimum and maximum values are shown in Table 2.

The total scores received by each photograph are given in Table 3. Accordingly, the highest score of 10 points was given to photographs 7 and 14 while photograph 12 received zero points from two evaluators.

The average total scores given by the groups for each photograph, the average total scores for the 15 photographs, and the comparative statistics of the groups are shown in Table 4. When evaluating the average score points given to the fifteenth photograph, it was observed that general dentists (6.24 ± 2.47) gave lower scores compared to fifth-year students (5.12 ± 2.02) and orthodontists (4.76 ± 1.80) ($p = 0.044$). According to table, statistically significant differences were found in six photographs (4, 5, 6, 7, 14, and 15) among the groups ($p < 0.05$). The average scores of general dentists (6.56 ± 1.82) for the fourth photograph were lower than those of periodontists (7.76 ± 1.69) and fifth-year students (8.08 ± 1.57); the average scores of orthodontists (6.92 ± 1.49) were lower than those of fifth-year students (8.08 ± 1.57) ($p = 0.015$). For the fifth photograph, fourth-year (9 ± 1.58) and fifth-year students (9 ± 1.70) gave the same average score, and periodontists (7.96 ± 1.30) and orthodontists (7.96 ± 0.88) gave the same average score. The fourth-year students (3.28 ± 1.69) gave a significantly lower average score for the sixth photograph compared to the other four groups ($p = 0.001$). When the score averages for the seventh photograph were examined, the average score of fourth-year students was found to be 7.72 ± 2.03, which was statistically significantly lower than that of fifth-year students and periodontists ($p = 0.011$). While a significant difference was observed among students for the fourteenth photograph ($p = 0.019$), no significant difference was found among graduated dentists regardless of specialization status.

According to the evaluation of the total score averages for the fifteen photographs, a statistically significant difference was observed only between fourth- and fifth-year students (p = 0.041) (Table 4). Accordingly, it was determined that fourth-year students (5.78 ± 1.13) had a lower total score averages than fifth-year students (6.56 ± 0.88), and this difference was statistically significant. However, no significant difference was observed in terms of the total score averages given to the photographs between fourth-year students and general and specialist dentists and between fifth-year students and graduated and specialist dentists.

The two-dimensional configuration of the relationships between the categories of variables is shown in Figure 1. The first dimension explains 45.1 % of the variation observed among the categories of variables while the second dimension explains 25.85 %. Together, both dimensions explain 70.95 % of the variance. On the negative side of the first dimension, scores of 6–8 were observed in fourth- and fifth-year students who were 21–28-year-old males. Evaluating the positive side of the first dimension, it can be said that females who are general dentists, orthodontists, and periodontists in the 29–49 age range tend to give an average score of 3–6. When the positive side of the second dimension, the upper part of the graph, is evaluated, it can be said that males who are general dentists, orthodontists, and periodontists in the 29–49 age range tend to give an average score of 6–8.

Table 1. Cronbach's Alpha intraclass reliability coefficients for fifteen smile photographs

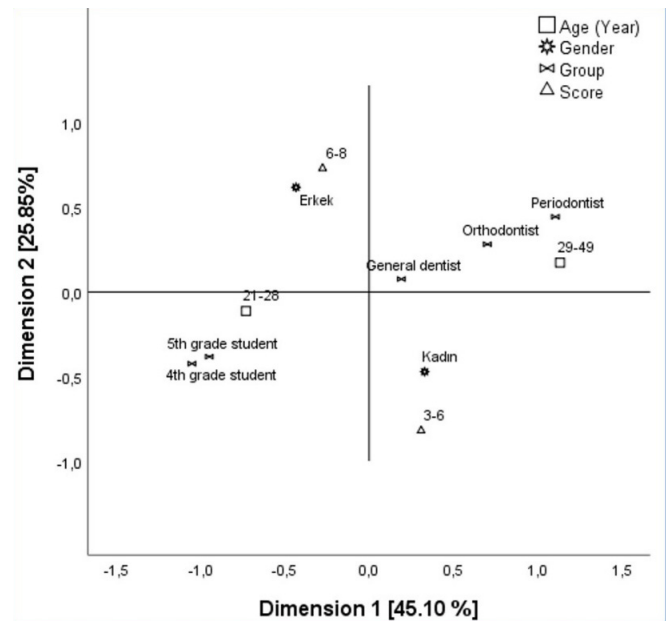| Group	Cronbach's Alpha
Fourth-year dental students	0.89
Fifth-year dental students	0.81
General dentist	0.85
Periodontists	0.83
Orthodontics	0.80

Figure 1. Configuration of the relationships between categories of variables in two-dimensional space

Table 2. The distribution of individuals in the groups, their average ages, standard deviations, and minimum and maximum values

		n	Mean	SD	Min.	Max.
Age	**Female**	71	28.66	6.25	21	49
	Male	54	27.33	6.04	22	43
	Fourth grade students	25	22.16	0.62	21	24
	Fifth grade students	25	23.12	0.60	22	25
	General dentists	25	30.32	5.78	24	42
	Peridontists	25	33.00	5.78	26	49
	Orthodontists	25	31.84	4.69	27	42
	Total	125	28.09	6.17	21	49

Table 3. Statistical evaluation of the total scores of the fifteen smile photographs

		Smile Picture Number														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Score	0	0% (n=0)	0% (n=0)	0.8% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	1.6% (n=2)	0% (n=0)	0% (n=0)	0.8% (n=1)
	1	0.8% (n=1)	0% (n=0)	6.4% (n=8)	0% (n=0)	0% (n=0)	5.6% (n=7)	0% (n=0)	8% (n=10)	0.8% (n=1)	0.8% (n=1)	0% (n=0)	12.8% (n=16)	2.4% (n=3)	0% (n=0)	2.4% (n=3)
	2	1.6% (n=2)	2.4% (n=3)	12% (n=15)	0.8% (n=1)	0.8% (n=1)	4.8% (n=6)	0% (n=0)	12.8% (n=16)	0.8% (n=1)	0% (n=0)	0% (n=0)	12.8% (n=16)	6.4% (n=8)	0% (n=0)	8.8% (n=11)
	3	12.8% (n=16)	3.2% (n=4)	32% (n=40)	1.6% (n=2)	0.8% (n=1)	15.2% (n=19)	0.08% (n=1)	20% (n=25)	0% (n=0)	0.8% (n=1)	1.6% (n=2)	19.2% (n=24)	9.6% (n=12)	0% (n=0)	11.2% (n=14)
	4	9.6% (n=12)	6.4% (n=8)	20.8% (n=26)	0.8% (n=1)	0% (n=0)	16.8% (n=21)	0.08% (n=1)	19.2% (n=24)	8% (n=10)	1.6% (n=2)	0.8% (n=1)	17.6% (n=22)	17.6% (n=22)	1.6% (n=2)	12.8% (n=16)
	5	35.2% (n=44)	29.6% (n=37)	12% (n=15)	16% (n=20)	3.2% (n=4)	20.8% (n=26)	2.4% (n=3)	12.8% (n=16)	14.4% (n=18)	6.4% (n=8)	0% (n=0)	25.6% (n=32)	18.4% (n=23)	0% (n=0)	21.6% (n=27)
	6	28% (n=35)	31.2% (n=39)	12.8% (n=16)	16.8% (n=21)	4% (n=5)	25.6% (n=32)	6.4% (n=8)	10.4% (n=13)	16.8% (n=21)	9.6% (n=12)	3.2% (n=4)	8.8% (n=11)	19.2% (n=24)	3.2% (n=4)	12.8% (n=16)
	7	10.4% (n=13)	19.2% (n=24)	3.2% (n=4)	13.6% (n=17)	11.2% (n=14)	9.6% (n=12)	10.4% (n=13)	9.6% (n=12)	21.6% (n=27)	22.4% (n=28)	12.8% (n=16)	1.6% (n=2)	18.4% (n=23)	7.2% (n=9)	17.6% (n=22)
	8	1.6% (n=2)	7.2% (n=9)	% (n=0)	20.8% (n=26)	26.4% (n=33)	1.6% (n=2)	17.6% (n=22)	4.8% (n=6)	24% (n=30)	22.4% (n=28)	17.6% (n=22)	0% (n=0)	5.6% (n=7)	24% (n=30)	4.8% (n=6)
	9	0% (n=0)	0.8% (n=1)	0% (n=0)	19.2% (n=24)	22.4% (n=28)	0% (n=0)	27.2% (n=34)	1.6% (n=2)	8% (n=10)	25% (n=20)	34.4% (n=43)	0% (n=0)	2.4% (n=3)	29.6% (n=37)	5.6% (n=7)
	10	0% (n=0)	0% (n=0)	0% (n=0)	10.4% (n=13)	31.2% (n=39)	0% (n=0)	34.4% (n=43)	0.8% (n=1)	5.6% (n=7)	16% (n=20)	29.6% (n=37)	0% (n=0)	0% (n=0)	34.4% (n=43)	1.6% (n=2)

Table 4. The average total scores given by the groups for each photograph, the average total scores for the 15 photographs, and the comparative statistics of the groups

		Mean	SD	Min.	Max.	p
Mean total score for the 15 photographs	Fourth-year dental students	5.78b	1.13	3.67	7.87	0.041*
	Fifth- year dental students	6.56a	0.88	4.40	7.86	
	General dentists	6.31ab	0.98	3.27	8.20	
	Periodontists	6.34ab	0.80	5.40	8.07	
	Orthodontists	6.20ab	0.78	4.27	7.33	
Smile picture 1 (score)	Fourth-year dental students	4.64	1.15	3	7	0.209
	Fifth- year dental students	5.44	1.22	3	7	
	General dentists	5.08	1.41	1	7	
	Periodontists	5.00	1.08	3	6	
	Orthodontists	5.36	1.57	2	8	
	Total	5.10	1.31	1	8	
Smile picture 2 (score)	Fourth-year dental students	5.36	1.41	2	8	0.220
	5th grade students	6.20	1.41	4	9	
	General dentists	5.88	1.33	2	8	
	Periodontists	5.64	1.35	2	8	
	Orthodontists	5.64	0.95	4	8	
	Total	5.74	1.31	2	9	

Smile picture 3 (score)	Fourth-year dental students	3.44	1.71	0	7	0.864
	Fifth- year dental students	3.76	1.69	1	7	
	General dentists	3.64	1.31	2	6	
	Periodontists	3.92	1.38	1	6	
	Orthodontists	3.68	1.60	1	7	
	Total	3.69	1.53	0	7	
Smile picture 4 (score)	Fourth-year dental students	7.12abc#	1.98	3	10	0.015*
	Fifth- year dental students	8.08a	1.57	5	10	
	General dentists	6.56c	1.82	2	10	
	Periodontists	7.76ab	1.69	5	10	
	Orthodontists	6.92bc	1.49	5	9	
	Total	7.29	1.78	2	10	
Smile picture 5 (score)	Fourth-year dental students	9.00a	1.58	5	10	0.017*
	Fifth- year dental students	9.00a	1.70	2	10	
	General dentists	8.44ab	1.71	3	10	
	Periodontists	7.96b	1.30	5	10	
	Orthodontists	7.96b	0.88	6	10	
	Total	8.47	1.52	2	10	
Smile picture 6 (score)	Fourth-year dental students	3.28b	1.69	1	7	0.001*
	Fifth- year dental students	4.84a	1.51	2	8	
	General dentists	4.64a	1.38	1	7	
	Periodontists	5.40a	1.32	3	8	
	Orthodontists	5.12a	1.66	1	7	
	Total	4.66	1.67	1	8	
Smile picture 7 (score)	Fourth-year dental students	7.72b	2.03	3	10	0.011*
	5th grade students	9.04a	1.10	5	10	
	General dentists	8.60ab	1.50	5	10	
	Periodontists	9.00a	1.04	7	10	
	Orthodontists	8.56ab	1.29	6	10	
	Total	8.58	1.49	3	10	
Smile picture 8 (score)	Fourth-year dental students	3.56	2.06	1	8	0.437
	Fifth- year dental students	4.52	1.73	2	9	
	General dentists	4.56	2.08	1	9	
	Periodontists	4.28	2.18	1	8	
	Orthodontists	4.32	2.23	1	10	
	Total	4.25	2.06	1	10	
Smile picture 9 (score)	4th grade students	6.60	1.87	4	10	0.762
	Fifth- year dental students	6.88	1.69	4	10	
	General dentists	6.64	2.09	1	10	
	Periodontists	6.64	1.55	4	10	
	Orthodontists	7.16	1.43	5	10	
	Total	6.78	1.73	1	10	

Smile picture 10 (score)	Fourth-year dental students	7.16	1.37	5	10	0.297
	Fifth- year dental students	7.96	1.79	4	10	
	General dentists	7.88	1.64	3	10	
	Periodontists	8.12	1.66	4	10	
	Orthodontists	7.64	1.86	1	10	
	Total	7.75	1.68	1	10	
Smile picture 11 (score)	Fourth-year dental students	8.24	1.78	3	10	0.351
	Fifth- year dental students	8.96	1.33	4	10	
	General dentists	8.44	1.63	3	10	
	Periodontists	8.68	0.94	7	10	
	Orthodontists	8.84	1.02	6	10	
	Total	8.63	1.38	3	10	
Smile picture 12 (score)	Fourth-year dental students	2.92	1.70	1	7	0.213
	Fifth- year dental students	3.56	1.87	1	6	
	General dentists	3.96	1.76	0	7	
	Periodontists	3.76	1.23	1	6	
	Orthodontsts	3.72	1.51	0	5	
	Total	3.58	1.64	0	7	
Smile picture 13 (score)	Fourth-year dental students	5.08	2.15	1	9	0.376
	Fifth- year dental students	5.76	1.66	2	9	
	General dentists	5.20	1.78	1	9	
	Periodontists	5.08	1.65	2	8	
	Orthodontists	4.72	1.81	1	7	
	Total	5.17	1.82	1	9	
Smile picture 14 (score)	Fourth-year dental students	8.20b	1.52	4	10	0.019*
	Fifth- year dental students	9.36a	1.07	6	10	
	General dentists	8.92ab	1.41	4	10	
	Periodontists	8.76ab	1.01	7	10	
	Orthodontists	8.68ab	0.80	8	10	
	Total	8.78	1.23	4	10	
Smile picture 15 (score)	Fourth-year dental students	4.52b	2.08	1	8	0.044*
	Fifth- year dental students	5.12ab	2.02	1	9	
	General dentists	6.24a	2.47	2	10	
	Periodontists	5.24ab	1.92	1	8	
	Orthodontists	4.76b	1.80	0	7	
	Total	5.18	2.12	0	10	

#: Different lowercase represents statistically significant differences among the groups

Statistically significant difference at *p<0.05

Max; maximum, Min: minimum SD: standard deviation

DISCUSSION

In esthetic smile design, the harmony among the lips, teeth, and gums is considered in its entirety. Nowadays, efforts are made to achieve a dynamic and esthetic smile through minimal invasive procedures for both discrepancies and deficiencies in soft tissues, as well as disorders in the teeth [1,3]. Thus, this study focused on the smile characteristics evaluated by dental specialists including periodontists, orthodontists, general dentists, and dental students, emphasizing their esthetic preferences towards achieving an esthetic smile. Our results show high reliability coefficients across all groups, with the highest rate belonging to the fourth-year students. However, no statistically significant difference was found between general dentists, periodontists, and orthodontists in terms of total score averages whereas the fourth-year students gave significantly lower total score averages compared to the fifth-year students. This leads to partial rejection of our H0 hypothesis.

The smile holds a unique place in an individual's confidence and the structuring of social relationships. Although studies finding no significant difference between SEI values and self-confidence scores have been encountered [12] both physical attractiveness and dentofacial appearance are known to enhance self-confidence [13]. Furthermore, dentofacial appearance can influence not only an individual's popularity but also their perceived social class [14].

Smile design and analysis, a notable part of dentofacial appearance, rely on important concepts in esthetic dentistry. For this purpose, the position, shape, and color of visible elements during a smile are considered valuable concepts for assessment. Concepts important in soft tissue esthetics, such as gum pigmentation, gum growths, and gum deficiencies along with tooth shape and position, tooth deformities, and the facial midline are among the different concepts evaluated in the 10 categories of SEI [5]. Thus, by examining these factors, the esthetic value of a smile, which holds a significant place in facial attractiveness, is provided.

The esthetic value of a smile has been provided in the literature through patient-centered assessments [15] as well as by periodontists [16], orthodontists, general dentists, prosthodontists, and laypeople [9,17]. For this purpose, the visual analog scale (VAS) [18] or the SEI, reported as an objective method [5,6], can be used as possible methods for subjective assessment. However, due to a lack of studies with similar designs to ours,

our study results are compared with studies that utilized different methodological analyses of smile esthetics.

In the study by Pham & Nguyen [17], 200 smile images were evaluated by 50 laypersons and 50 professional dentists using VAS. The authors reported that the profession, gender, and age of the evaluators had almost no effect on esthetic perceptions. On the other hand, Gaikwad et al. [9], who assessed smile esthetics and facial attractiveness by evaluating the smile arc and buccal corridors, reported significant differences in ratings among laymen, dentists, and orthodontists, with laymen being less sensitive to these aspects. In our study, all groups consisted of individuals actively involved in patient treatment within the dental profession. Only six out of the 15 evaluated images showed a significant difference among groups. Additionally, no significant difference was found in the total score averages for the 15 images, especially among general dentists, periodontists, and orthodontists, suggesting that these three groups gave similar total average scores to the images. Thus, it can be concluded that actively practicing dentistry fosters esthetic perception, which does not change with specialization.

However, the literature shows variability in the evaluation of various smile esthetic parameters among individuals with different levels of dental education [19]. In our study, fourth-year students were observed to have a significantly lower total score average compared to fifth-year students. Additionally, fourth-year dental students gave lower scores compared to other groups. This outcome might be due to fourth-year students having newly acquiring the experience and knowledge to perceive components that make a difference in smile esthetics. Their cautious approach in esthetic evaluation might also be attributed to their limited clinical experience.

Periodontists are dentists with expertise in soft tissues and have developed perceptions in this area. They play a crucial role in meeting patients' esthetic expectations during smile analysis and in the planning necessary for treatment procedures. Faure-Brac et al. [16] tested their assessments using SEI on videographs with three periodontists. In our study, five groups were tested on photographs. High reliability coefficients were observed across all groups in our study. This indicated that the overall assessment of smile esthetics was very consistent among evaluators, regardless of their prior education.

Among orthodontists, the reliability coefficients were found to be

lower compared to other groups. This may be due to orthodontists not being able to evaluate other factors (such as the buccal corridor and the difference in angles between the commissural line and the occlusal plane) that are not included in SEI but can affect smile esthetics [7]. This is because orthodontists consider balanced and harmonious facial features while evaluating patients with dental and skeletal anomalies.

The limitations of this study include a higher number of female evaluators (71 females) compared to male evaluators (54 males). While some studies have reported that the gender of the evaluator can influence the assessment of smile esthetics [20,21], others have not observed any effect. Future studies should consider the gender variable [17,19,22]. Another limitation is that the smiles were only evaluated statically, without considering video recordings.

CONCLUSIONS

Within the confines of this study, it was observed that the reliability coefficient in the SEI evaluation was high across all groups. Only a total of six out of the fifteen images showed a statistically significant difference among the groups. Moreover, no statistically significant difference was identified in terms of total score averages among periodontists, orthodontists, and general dentists while fourth-year students were observed to give significantly lower total score averages compared to fifth-year students. It can be concluded that actively practicing dentistry fosters the development of esthetic perception, and this outcome does not vary with specialization.

These insights contribute to our understanding of esthetic perceptions in dentistry, suggesting that further exploration into the nuances of esthetic evaluation, including dynamic assessments and gender influences, may provide a more comprehensive understanding of esthetic judgments in dental practice.

Conflict of interest: The authors declare that they have no conflicts of interest.

Informed Consent: Each evaluator voluntarily participated in the study and was thoroughly informed about the purpose and methodology of the study; written consent was obtained from each participant.

Ethical Approval: The study commenced after approval was obtained from the Van Yüzüncü Yıl University Non-Interventional Clinical Research Ethics Committee (Ethics Number 2023/04-08).

Author Contributions: Conception: D,A; Y,T - Design: D,A; Y,T - Supervision: D,A- Fundings: D,A;Y,T -Materials: D,A; Y,T - Data Collection and/or Processing: D,A; Y,T - Analysis and/or Interpretation: D,A; Y,T - Literature: Y,T - Review: Y,T - Writing: D,A- Critical Review: D-A

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