

Perceptions of patients' smiles

A comparison of patients' and dentists' opinions

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Dental appearance has been shown to influence other people's judgment of a person's facial attractiveness as well as of personal characteristics.^{1,2} The media portrayal of the perfect smile seems to lead to an increased demand for esthetic treatment from the public.³ However, little is known about patients' perceptions of the ideal smile and how these perceptions relate to their own smiles.

The smile is determined by the position, shape, size and shade of the teeth; the position, texture, color and lines of the gingiva and lips; and the shape of the jaws. Ackerman and colleagues⁴ described a morphometric analysis of the smile.

It is known that laypeople favor smiles that feature teeth with a light shade, a large display of teeth and radiating symmetry.⁵ Attempts to quantify facial beauty date back to the ancient Greeks, and a number of methods of assessing facial beauty exist. Ahmad⁶ discussed three of these methods in relation to assessing the dentofacial aspect.

— The geometric method of facial assessment is based on objective mathematical principles, using the midline, profile angles and horizontal lines (hair, ophric, interpupillary, interalar and commissural).

— Morphopsychology⁷ attempts to link the facial types with the psy-

ABSTRACT



Background. Little information has been published regarding the difference between how patients perceive their own smiles and how dentists view them.

Methodology. The authors interviewed 78 consecutively seen patients in a general dental practice in Norway about esthetic features of their faces. The patients were not actively seeking esthetic treatment. Patients rated themselves using a 100-point visual analog scale (VAS), and then two dentists (the patients' regular dentist and an independent periodontist), working with photographs of the patients, used the same VAS in rating the patients' smiles.

Results. The average age of the patients was 51.2 years (range, 22-84 years). There were 50 women (average age, 51.5 years; range, 22-84 years) and 28 men (average age, 52 years; range, 30-78 years). Patients' satisfaction with their own smiles reached an average of 59.1 (standard deviation [SD], 21.1; range, 5-100) on the VAS. The dentists' scores (38.6 and 40.7) were significantly lower than the patients' scores. The authors observed poor correlation between the periodontist's scores of dentogingival features and the patients' scores. Patients were most satisfied with the gingiva when smiling and least satisfied with tooth shade. Patients younger than 50 years were most satisfied with their smiles. Patients rated teeth and eyes as the most important features in an attractive face. Women gave teeth and hair significantly higher scores and head shape lower scores than did men.

Conclusion. Patients' opinions of their own smiles were significantly higher than the two clinicians' assessments of their smiles. Dentists should be aware that patients who seek esthetic services may have different perceptions of their smiles than may patients who do not express such desires.

Key Words. Patient perception; dental esthetics; smile; visual analog scale; dentogingival features.

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chological make-up. The identification of four different categories of facial typology plays an important part in this facial assessment. The four categories are lymphatic (rounded full features with a timid personality), nervous (large forehead, thin delicate features with an anxious disposition), sanguine (prominent, thick, well-defined features associated with intransigence and spontaneity) and bilious (rectangular and muscular features coupled with a dominant personality).

■ Physiognomy⁸ is the art of judging a person's character or personality by the appearance of his or her face. The relevance, meaning and importance of the different facial features vary among various cultures. Although this method seems primitive, it probably still is the most common method of social assessment.

Because of the importance of facial characteristics in human society, most dentists feel that producing esthetically pleasing work is the most desirable, rewarding and interesting aspect of dentistry.⁹ It is likely that dentists have an important influence on the decisions and choices patients make when undergoing esthetic treatment. However, it has been shown that patients' decisions to seek orthognathic surgery are correlated more with a layperson's rating of attractiveness than with a professional's rating.¹⁰ It also is known that in orthodontic treatment, there is a difference between the perceived need and the normative need for treatment among the patient, the parent and the clinician.¹¹ A difference also exists in the perception of desirable tooth color held by dentists, parents and children.¹²

Several studies have compared smile assessments between laypeople and dentists.¹³⁻¹⁷ The investigators in these studies used photographs—often with software-imaging programs—to assess the importance of the shape, symmetry and proportions of maxillary central incisors; the presence and shape of the interdental papilla; the presence of a midline diastema; the gingiva-to-lip relationship; and the impact of the buccal corridor.¹³⁻¹⁷ The studies showed that dentists are far more critical in their esthetic perceptions than are patients or laypeople in general.

Age, sex and level of education are known to influence a person's satisfaction with his or her oral appearance.^{18,19} Aside from the classic first study by Dr. Ronald Goldstein published in 1969,²⁰ little information exists about how dental patients who are not necessarily seeking esthetic

treatment perceive their own smiles.

The aims of our study were to assess how patients perceive their own smiles, how these perceptions relate to dentists' assessments of their smiles and how patients perceive various facial features.

SUBJECTS, MATERIALS AND METHODS

Subjects. We included in this study all patients treated by the principal clinician (J.J.) in the month of September 2004. The patients provided informed consent, and the study was carried out in accordance with the Helsinki Declaration of 1975, as revised in 2000.

All of the patients were adults, mainly northern Europeans, visiting a private dental practice in a small rural community in Norway (population approximately 12,000). The practice is one of three dental practices in the town, which also has a community dental clinic.

The study was part of an internal quality control measure of the treatment provided by the practice.

We asked the patients if they would complete a questionnaire regarding esthetics in dentistry. Patients agreed to write their age and sex, but not their names, on the form.

Methods. *Visual analog scale.* The visual analog scale (VAS) is a measurement tool that can be applied to evaluate patients' perceptions.²¹ The VAS has been shown to be simple to administer, reliable and valid; for example, it has been used to assess discomfort associated with periodontal therapy.^{22,23} Furthermore, Fardal and colleagues²⁴ showed that the VAS can be used to identify and quantify how important various aspects of periodontal treatment are to patients. It also has been used to assess patients' satisfaction with the transplantation of premolars in connection with orthodontic therapy.²⁵ In addition, Wolfart and colleagues²⁶ used the VAS to assess dental appearances after changes in incisor proportions.

Our questionnaire consisted of two sections relating to facial esthetics using a VAS. The questionnaire's first section asked patients to rate their own smiles overall; the shape of their lips; the shade, shape and alignment of their teeth; and the appearance of their gingiva. We used a horizontal VAS bar 100 millimeters in length, with the left anchor labeled "not pleased" and the

ABBREVIATION KEY. VAS: Visual analog scale.

BOX

Questionnaire on patient’s perceptions and and opinions of about facial esthetics.

SECTION 1	SECTION 2
<p>HOW PLEASED/SATISFIED ARE YOU WITH YOUR SMILE? PLEASE INDICATE ALONG THE FOLLOWING LINE.</p> <p>Not pleased _____ Very pleased _____</p>	<p>HOW IMPORTANT ARE THE FOLLOWING FEATURES FOR AN ATTRACTIVE FACE? PLEASE INDICATE ALONG THE FOLLOWING LINE IN EACH CASE.</p>
<p>HOW PLEASED/SATISFIED ARE YOU WITH THE SHAPE OF YOUR LIPS?</p> <p>Not pleased _____ Very pleased _____</p>	<p>HAIR</p> <p>Not important _____ Very important _____</p>
<p>HOW PLEASED/SATISFIED ARE YOU WITH THE SHADE (WHITENESS) OF YOUR TEETH?</p> <p>Not pleased _____ Very pleased _____</p>	<p>Hairline</p> <p>Not important _____ Very important _____</p>
<p>HOW PLEASED/SATISFIED ARE YOU WITH THE EVENNESS OF YOUR TEETH?</p> <p>Not pleased _____ Very pleased _____</p>	<p>Eyes</p> <p>Not important _____ Very important _____</p>
<p>HOW PLEASED/SATISFIED ARE YOU WITH THE LOOKS OF YOUR GUMS?</p> <p>Not pleased _____ Very pleased _____</p>	<p>Eyebrows</p> <p>Not important _____ Very important _____</p>
<p>ARE YOU AWARE OF HAVING RECEDING GUMS?</p> <p>Yes _____ No _____</p>	<p>Nose</p> <p>Not important _____ Very important _____</p>
<p>IF YOU ANSWERED YES, HOW MUCH DOES IT AFFECT YOUR SMILE? PLEASE INDICATE ALONG THE FOLLOWING LINE.</p> <p>Not at all _____ Very much affected _____</p>	<p>Skin</p> <p>Not important _____ Very important _____</p>
<p>DO YOU HAVE CROOKED TEETH?</p> <p>Yes _____ No _____</p>	<p>Ears</p> <p>Not important _____ Very important _____</p>
<p>IF YOU ANSWERED YES, HOW INTERESTED ARE YOU IN HAVING ORTHODONTIC TREATMENT TO CORRECT THE CROOKED TEETH? PLEASE INDICATE ON THE FOLLOWING LINE.</p> <p>Not interested _____ Very interested _____</p>	<p>Lips</p> <p>Not important _____ Very important _____</p>
	<p>Teeth</p> <p>Not important _____ Very important _____</p>
	<p>Chin</p> <p>Not important _____ Very important _____</p>
	<p>Shape of Head</p> <p>Not important _____ Very important _____</p>

right anchor labeled “very pleased.” We provided an example to explain the VAS and asked the patients to indicate their opinions of the variables by making marks along the bars. We did not provide patients with a mirror or a photograph to evaluate their smiles, but merely asked them to express an opinion of their smiles as they envisioned them in memory.

We also asked the patients if they had receding gums. If the answer was positive, we then asked them to rate how much it affected their smile on a 100-mm VAS bar labeled “not at all” on the left anchor and “very much affected” on the right anchor.

Furthermore, we asked the patients if they

had any teeth that were out of line (crooked). If the answer was positive, we then asked them to rate how interested they were in having orthodontic treatment to correct the “crooked” teeth on a 100-mm VAS labeled “not interested” on the left anchor and “very interested” on the right anchor.

The questionnaire’s second section asked the patients to rate the importance of the following features in an attractive face: hair, hairline, eyes, eyebrows, nose, skin, ears, lips, teeth, chin and shape of head. We used a 100-mm VAS bar with the left anchor labeled “not important” and the right anchor labeled “very important.” The box shows the questionnaire.

Photographs. The patients’ regular dentist (J.J.)

took digital photographs of the smiles of a subgroup consisting of the first 40 patients to obtain a representative sample of the whole group, as can be seen in the Results section. We both—the patients' regular dentist (J.J.) and an independent periodontist (Ø.F.) who was not involved in the general dental care of these patients—scored the photographs. We attempted to standardize the recording of the photographs in such a way that they showed only the oral region of the face, to minimize the risk of recognition by and bias on the part of the dentists. The dentist took the photographs of each patient's lower facial region, with the lips not retracted. She asked the patients to give a natural, unforced smile (Figure 1).

We scored lip lines as high, medium or low for both the upper and the lower lip.²⁷ We used Garber and Salama's²⁸ description of the ideal smile line:

The incisal edge line follows the form of the lower lip, while the line joining the most superior aspect of the free gingival margins shape[s] the upper lip. The teeth bilaterally extend to fill the vestibules to the commissures of the lips.

As we carried out our assessments, we referred to a copy of the figure used to illustrate these features in the article by Garber and Salama.²⁸ In addition, we considered tooth shade, spacing, crowding, obvious nonesthetic crown margins and inflamed nonesthetic gingiva. Based on all the factors, we recorded scores of the patients' smiles on a 100-mm VAS bar on which the left anchor was labeled "not esthetic" and the right anchor was labeled "very esthetic."

In addition, one of the authors (Ø.F.), a certified specialist in periodontics, scored the smiles recorded on photographs for the presence of the following features: gingiva visible when smiling, healthy esthetic gingiva, "black triangles" where the gingiva does not occlude the proximal spaces, gingival recession, gingival hyperplasia, obvious gingival inflammation and "gummy" smile (in which the gingiva is excessively displayed).

Intra- and interexaminer variability. We determined our scores in a blind fashion and repeated the scoring after four weeks to assess intraexaminer variability. To assess interexaminer variability, we scored lip lines for all the patients in the subgroup. We defined lip lines as high, medium or low. We determined scores for both jaws and compared the results between ourselves.



Figure 1. An example of the patient photographs (patient no. 23; see Figure 2). This 38-year-old woman scored 77 on smile satisfaction. Her own dentist gave her a score of 70, while the periodontist gave her a score of 66. She gave herself scores of 83 for lip shape, 80 for tooth shade, 91 for tooth shape, 94 for tooth alignment and 82 for gingiva. At both assessments, the two clinicians scored both of this patient's lips as having medium lip lines.

Statistics. We used the Mann-Whitney test to detect differences between the variables, as the results were not distributed normally. We set the level of significance at $P \leq .05$.

RESULTS

The principal clinician (J.J.) treated 87 patients in September 2004. Nine patients declined to participate, so data on 78 patients were available for analysis.

The average age of the patients was 51.2 years (range 22-84 years). Fifty were female (average age 51.5 years, range 22-84 years) and 28 were male (average age 52 years, range 30-78 years).

The average score for patients' satisfaction with their smiles was 59.1 of 100 on the VAS scale. Patients younger than 50 years were significantly more satisfied with their smiles and the shape of their lips than were those 50 years and older.

Patients were most satisfied with their gingiva when they smiled and least satisfied with the shade of their teeth, which they felt was too dark. The scores for gingiva, tooth alignment and shape of the lips were significantly higher than were the scores for tooth shade. We observed no significant differences between the sexes for these variables.

Table 1 shows the patients' evaluations of the smile, shape of the lips, tooth shade, tooth shape, tooth alignment and the gingiva, with variation according to sex and age.

Twenty-eight patients were aware of recession

TABLE 1

Patients' scores of their own smiles.*

CHARACTERISTIC	PATIENT GROUP					P VALUES	
	All (N = 78)	Men (n = 28)	Women (n = 50)	Age (Years)†		Sex	Age‡
				50 years and older	< 50 years		
Smile	59.1 (5-100) ± 21.1	60 (37-88) ± 16.5	58.6 (5-100) ± 23.4	53.4 (5-100) ± 21.0	63.7 (8-100) ± 20.2	.9087	.0176
Lip Shape	59.5 (5-100) ± 22.0	60.5 (31-93) ± 18.8	59.0 (5-100) ± 23.8	53.0 (5-94) ± 21.1	64.7 (22-100) ± 21.5	.9409	.0249
Tooth Shade	49.6 (4-100) ± 26.2	47.7 (5-96) ± 26.7	50.8 (4-100) ± 26.1	47.4 (5-100) ± 26.3	51.4 (4-96) ± 26.3	.6075	.4758
Tooth Shape	58.2 (10-100) ± 24.6	60.5 (21-100) ± 24.2	56.9 (10-100) ± 25.0	54.5 (10-100) ± 26.7	61.1 (15-100) ± 22.7	.5495	.2929
Tooth Alignment	60.5 (4-100) ± 23.4	64.3 (4-96) ± 21.6	58.2 (10-100) ± 24.4	57.1 (4-100) ± 25.2	63.1 (18-96) ± 21.9	.2912	.2850
Gingiva	63.7 (3-100) ± 22.9	60.8 (21-98) ± 22.3	65.3 (3-100) ± 23.4	60.8 (3-100) ± 25.6	66 (14-99) ± 20.6	.3087	.4613

* Mean value (range) ± standard deviation. Scores ranged from zero to 100.

† Average age: 51.2 years.

‡ Based on age < 50 years and age ≥ 50 years.

TABLE 2

Scores of the patients in the photographed subgroup.*

CHARACTERISTIC	PATIENT GROUP		
	All (N = 36)	Men (n = 11)	Women (n = 25)
Age in Years (Range)	50.5 (22-84)	50.3 (40-63)	50.6 (22-84)
Smile	65.1 (8-100) ± 21.6	70.0 (37-85) ± 14.9	63.6 (8-100) ± 23.9
Lip Shape	64.3 (15-100) ± 21.8	70.4 (48-85) ± 12.7	62.6 (15-100) ± 25.5
Tooth Shade	52.9 (4-100) ± 27.0	53.3 (17-96) ± 26.4	52.9 (4-100) ± 27.8
Tooth Shape	59.4 (10-100) ± 25.9	64.6 (29-95) ± 21.9	58.0 (10-100) ± 27.6
Tooth Alignment	62.7 (10-100) ± 24.0	69.3 (26-93) ± 18.2	60.6 (10-100) ± 26.0
Gingiva	65.3 (10-100) ± 22.7	62.8 (25-92) ± 21.8	67.0 (10-100) ± 23.4

* Except where noted, shown as mean value (range) ± standard deviation. Scores ranged from zero to 100.

of their gingiva. When asked how detrimental this was to their smiles, they assigned it a score that averaged 32.

Thirty-five patients replied that they had malaligned teeth (“crooked teeth”). They returned an average score of 12 with regard to being interested in orthodontic therapy.

Photographed subgroup. In the subgroup, we took digital photographs of 36 patients' smiles. (Three patients declined to participate and one patient did not want photographs taken.) Their own scores averaged 65.1 (standard deviation [SD] 21.6, range 8-100). We scored these photographs twice in a blind fashion. J.J.'s average score was 40.7 (SD 19.3, range 5-78) while Ø.F.'s average score was 38.6 (SD 20.7, range 6-74). Table 2 shows these patients' scores and the scores for the other variables. Patients' scores were significantly higher than both of our scores. Figure 2 shows a comparison of the patients' and the dentists' scores.

Assessment of gingival features revealed that 18 of the 36 patients

did not show any gingiva when smiling. We described only nine patients as having healthy and esthetic gingiva. Table 3 shows these scores and the scores for the other dentogingival features.

The patients' opinions of facial features ranked teeth and eyes highest, with scores of 81.5 (SD

16.5, range 9-100) and 75.7 (SD 21.2, range 0-100); they scored skin at 73.0 (SD 18.2, range 3-100). Patients judged the least important features to be ears and hairline. Women scored teeth and hair significantly higher than did men, while scoring head shape lower than did men. Patients younger than 50 years scored the shape of the chin significantly higher than did patients 50 years and older. Table 4 shows the scores for facial features and Figure 3 diagrams the relationships between these variables.

Examiners' variability. We recorded no significant differences between our initial scores or between our repeat scores. Figures 4 and 5 (page 1551) provide examples of the results of intra- and interexaminer variability.

Sex matching. We used the mean values of the first 28 women to match the mean values of the 28 men in the study (Table 5, page 1552).

DISCUSSION

We designed our study to assess how patients feel about their own smiles. We compared the results with our own assessments of the patients' smiles recorded on photographs. In addition, we investigated patients' opinions relating to facial features.

Patients rated their own smiles at an average of 59.1 of 100 on a VAS scale, while we returned scores of only 40.7 and 38.6. The fact that the patients had much higher opinions of their smiles than we dentists did is interesting. However, it must be emphasized that we and the patients did not evaluate their smiles in the same fashion. The patients did not have a mirror or a photograph with which to evaluate their smiles; rather, we asked them to express their opinions of their smiles from memory. If the patients had used the same detailed approach as did the clinicians (that

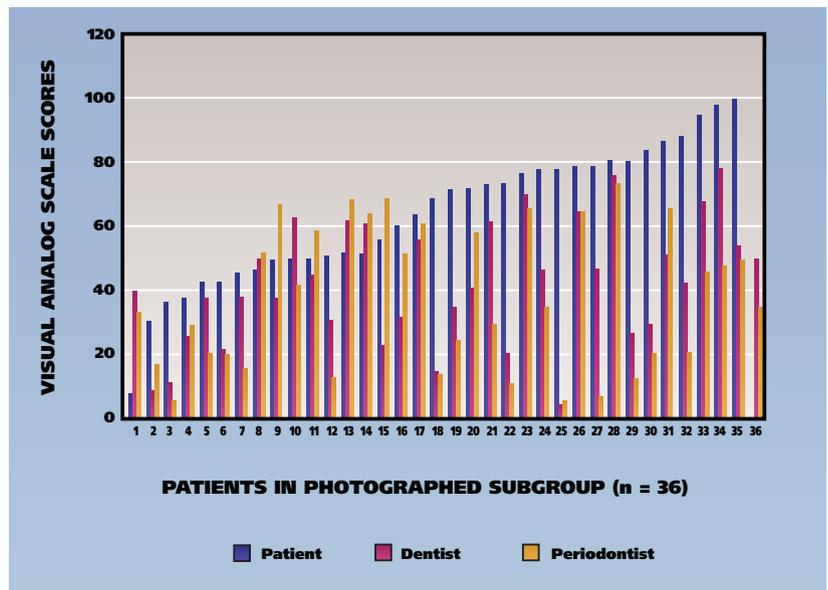


Figure 2. A comparison between the smile satisfaction scores of the individual patients in the photographed subgroup (n = 36) and the two clinicians. Note that patient no. 36 did not provide data. The visual analog scale on which all scores were marked ranged from zero to 100.

TABLE 3

Gingival visibility among patients, shown according to presence of various dentogingival features.

DENTOGINGIVAL FEATURES PRESENT	GINGIVAL VISIBILITY (NO. OF PATIENTS)		n
	Gingiva Visible When Smiling (n = 18)	Gingiva Not Visible When Smiling (n = 18)	
"Black Triangles"	2	4	6
Inflamed Gingiva	5	N/A*	5
Healthy and Esthetic Gingiva	9	N/A	9
"Gummy" Smile	1	N/A	1
Hyperplasia	1	N/A	1
Recession	0	N/A	0
Patients Aware of Gingival Recession When Smiling	15	N/A	15

* N/A: Not applicable.

is, assessing lip lines, tooth shade, spacing, crowding, obvious nonesthetic crown margins and inflamed nonesthetic gingiva), their opinions might have been different. Furthermore, had they used the clinicians' approach, the patients might have developed negative feelings about features that had not bothered them previously.

Unlike the patients' assessments, our assessment of their smiles involved the use of photographs. The quality of these photographs for

TABLE 4

Patients' scores* for the importance of the features that make up an attractive face.

FACIAL FEATURE	PATIENT GROUP					P VALUE	
	All	Men	Women	Age		Sex	Age†
				50 years and older	< 50 years		
Hair	68.3 (4-100) ± 23.7	58.1 (4-100) ± 25.5	74.1 (9-100) ± 20.7	67.4 (4-100) ± 26.7	69.0 (9-100) ± 21.3	.0102	.8534
Hairline	45.0 (0-100) ± 24.1	44.2 (5-100) ± 24.8	45.5 (0-96) ± 24.0	40.6 (0-93) ± 26.2	48.3 (0-100) ± 22.2	.6782	.2402
Eyes	75.7 (0-100) ± 21.2	76.7 (8-100) ± 19.4	75.1 (0-100) ± 22.3	75.9 (8-100) ± 22.2	75.5 (0-100) ± 20.6	.9092	.7730
Eyebrows	57.5 (0-100) ± 23.4	58.1 (3-100) ± 25.1	57.1 (0-97) ± 22.7	55.9 (0-96) ± 26.5	58.6 (0-100) ± 21.0	.6665	.7972
Nose	64.2 (0-100) ± 20.8	64.1 (9-100) ± 19.7	64.3 (0-100) ± 21.6	63.0 (9-100) ± 21.2	65.1 (0-100) ± 20.7	.8281	.5156
Skin	73.0 (3-100) ± 18.2	69.6 (3-100) ± 18.8	74.9 (40-100) ± 17.8	69.3 (3-100) ± 20.9	75.8 (43-100) ± 15.4	.2211	.2050
Ears	48.0 (0-100) ± 27.5	48.1 (4-100) ± 26.6	48.0 (0-100) ± 28.2	48.5 (0-100) ± 30.3	47.6 (0-100) ± 25.3	.7386	.6815
Lips	66.5 (0-100) ± 24.1	67.9 (6-100) ± 22.3	65.7 (0-100) ± 25.3	63.4 (0-97) ± 24.8	69.0 (0-100) ± 23.6	.6679	.2813
Teeth	81.5 (9-100) ± 16.5	72.4 (9-100) ± 18.8	86.5 (46-100) ± 12.8	81.2 (9-100) ± 19.5	81.7 (46-100) ± 13.9	.0003	.6567
Chin	54.2 (0-100) ± 24.7	56.4 (6-100) ± 24.5	53.0 (0-100) ± 25.0	46.1 (0-93) ± 25.0	60.6 (0-100) ± 22.8	.3966	.0091
Head Shape	51.2 (0-100) ± 26.3	60.1 (4-100) ± 24.2	46.1 (0-95) ± 26.4	48.2 (0-95) ± 28.3	53.6 (0-100) ± 24.8	.0069	.5517

* Mean value (range) ± standard deviation. Scores ranged from zero to 100.

† Based on age < 50 years and age ≥ 50 years.

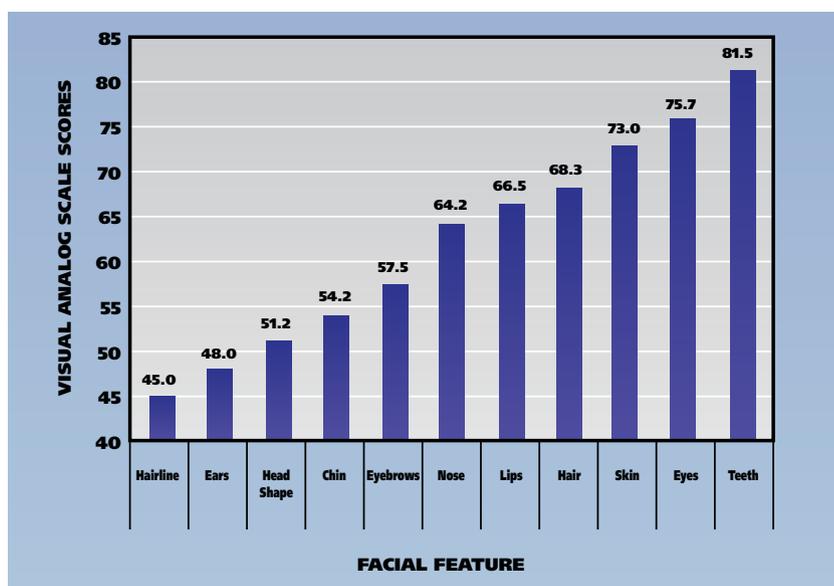


Figure 3. Patients' ratings of facial features in order of importance, as marked on a visual analog scale with scores ranging from zero to 100.

assessment purposes could have been affected by several factors: angle and distance of view, lighting, profound color contrast between teeth and lips, and poor image quality. However, our findings that dentists assign lower scores in esthetics than do patients also have been reported in a number of other studies.¹³⁻¹⁷

The patients were most pleased with their gingiva when smiling. There seems to be a lack of agreement between the patients and the periodontist (Ø.F.). Fifty percent of the patients in the photographs showed no gingiva when smiling. Only 25 percent displayed esthetically pleasing, healthy-looking

gingiva. The remaining smiles showed gingival inflammation, hyperplasia, gummy smile and/or black triangles. Fifteen (42 percent) of the 36 patients in the subgroup were aware that they had gingival recession. When asked how detrimental this was for their smiles, patients returned an average score of 32 on the VAS. Again, there seemed to be a marked difference between the patients' and the periodontist's perceptions of the gingival features. The periodontist did not observe any gingival recession on the photographs.

It may be difficult to understand what a "smile satisfaction" level of 59 of 100 really means. These VAS numbers hardly validate patients' satisfaction with their appearance. However, it is not unreasonable to assume that because their scores were higher than 50, the patients were not markedly dissatisfied with their smiles. This is supported partly by the fact that these patients were recall patients in a general practice and were not specifically seeking esthetic treatment. In addition, a number of patients stated that they had malaligned teeth, and yet they returned a low score for wanting this corrected by orthodontic treatment.

The patients interviewed may have been resigned to the fact that their smiles are far from the perfect smile portrayed by the media. On the basis of the patients' scores, it might be accurate to say that they are accepting of, or contented with, their smiles.

The media focus on esthetic dentistry in Europe is fast catching up with the intense media focus experienced in North America. The patients in this study thus should have been well-informed about the ideal smile concept and how to achieve it. It therefore is interesting that with a satisfaction level of only 59 of 100, these patients were not actively seeking esthetic treatment.

Patients rated teeth and eyes as the most important features in a face. These answers may

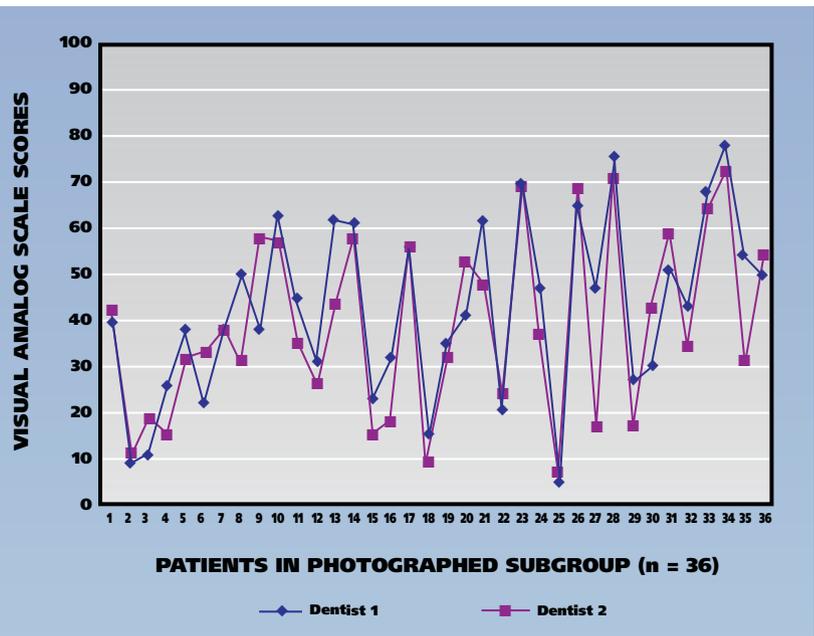


Figure 4. An example of the intraexaminer variability for the dentist. Dentist 1: The dentist's baseline scores. Dentist 2: The dentist's repeat scores after four weeks.

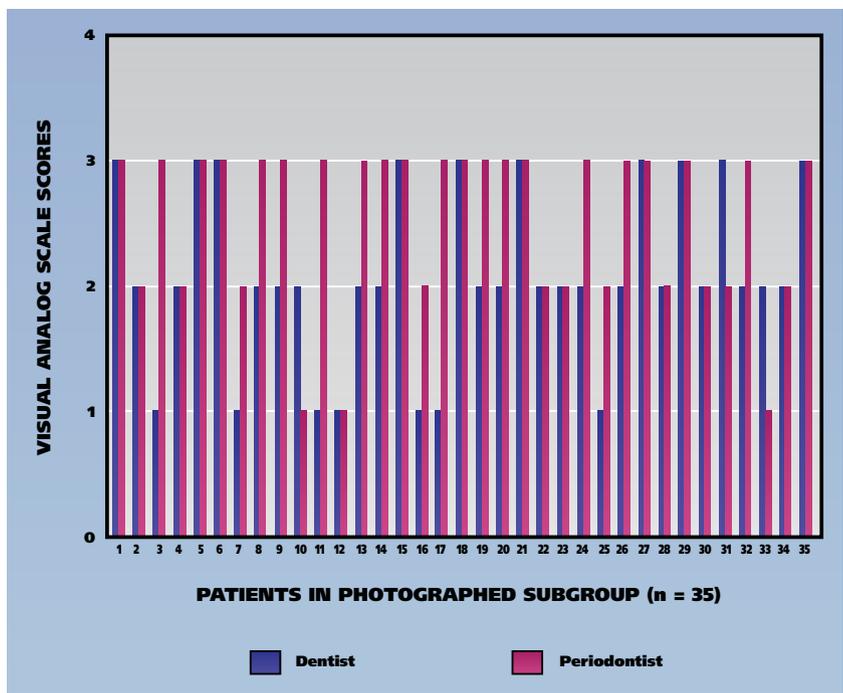


Figure 5. An example of the interexaminer variability results using the patients' lower jaws (note that patient no. 36 did not provide data). The score of 3 indicates high lip line, the score of 2 indicates medium lip line and the score of 1 indicates low lip line. Dentist 1: The dentist's baseline scores. Periodontist: The periodontist's scores.

be biased owing to the interviews' having taken place in a dental office. However, other studies also have shown that teeth are very important when people judge faces. York and Holtzman¹ found that dental appearance affected judgment

TABLE 5

Sex-matched mean values for the variables shown in Tables 1 and 4.*

FACIAL FEATURE	WOMEN (n = 28)	MEN (n = 28)
Age	50.8	52.0
Smile	61.4	60.0
Lip Shape	59.4	60.5
Tooth Shade	53.1	47.7
Tooth Shape	56.7	60.5
Tooth Alignment	58.5	64.3
Gingiva	67.2	60.8
Hair	75.3	58.1
Hairline	41.8	44.2
Eyes	71.6	76.7
Eyebrows	56.1	58.1
Nose	60.9	64.1
Skin	71.0	69.6
Ears	50.0	48.1
Lips	65.1	67.9
Teeth	86.2	72.4
Chin	49.6	56.4
Head Shape	41.6	60.1

* Scores ranged from zero to 100.

of facial attractiveness regardless of sex or the attractiveness of other facial features. Furthermore, Newton and colleagues² concluded that the judgment a person makes concerning the personal characteristics of others is influenced by dental appearance.

Our average scores of the smiles in this study were only approximately 40 of 100. This reflects a generalized dissatisfaction with the smiles of these patients. Furthermore, it leads to a thought-provoking question: should a dentist give patients unsolicited advice on how to improve their appearance? This could benefit patients owing to the finding that dental esthetics can influence other people's opinions of them²; in addition, the patients in this study put teeth on top of the "importance list" of facial features. On the other hand, is it unethical of the dentist to impose his or her opinions on patients who seem content with their esthetic status and who are not actively seeking esthetic care?

Even if the dentist is prepared to give such

advice, there is some doubt as to how important this would be in the patients' decision-making process. It has been shown that patients' decisions to undergo orthognathic surgery for esthetic reasons are not determined by objective criteria given by dental specialists, but rather by laypeople's opinions of their appearance.¹⁰ This emphasizes the complex mechanisms behind patients' decisions to seek esthetic dental care.

It is not clear from this study at what level of satisfaction or dissatisfaction these patients might seek esthetic care. However, dentists must keep in mind that ours is not a longitudinal study, so these patients may request esthetic therapy in the future. It also is feasible that some of these patients have requested such therapy in the past. One could speculate that the majority of these patients have stable job situations and relationships and therefore do not feel a strong demand for the ideal smile. The average age of these patients would indicate that economics is not a major obstacle. It also is possible that some of these patients will enter into major reconstructive/esthetic therapy only if crowns, replacing lost teeth and/or stabilizing the dentition becomes necessary.

The point at which a patient decides to seek esthetic dental therapy is likely to vary between people and to depend on factors in each patient's life situation, such as age; sex; marital status; occupational and economic status; social standing; and influence by family, peers, colleagues and dental health professionals, as well as by the mass media. There also is likely to be a maturation process involved, similar to what is described in health theory. The Transtheoretical Model of Health Behavior Change, for instance, suggests that six stages of change are involved in health behavior: precontemplation, contemplation, preparation, action, maintenance and termination.²⁹ In addition, the Social-Cognitive Theory³⁰ incorporates intra- and interpersonal factors and suggests that the benefits of behavior must outweigh the costs before a person will adopt the behavior. Several personal factors also are emphasized in health theory, including the

person's knowledge, beliefs, motivation, attitudes, developmental history, experience, skills, self-concept and behavior.

We observed variations according to sex and age for some of the variables. This is in agreement with the findings of Vallittu and colleagues,¹⁹ who reported that various groups of patients had different attitudes toward the appearance of their teeth. In particular, the researchers recorded differences according to age, sex and education.

Patients in our study who were 50 years and older were significantly less satisfied with their smiles and the shape of their lips than were patients younger than 50 years. It is known that the amount of maxillary teeth displayed is inversely proportional to increasing age, whereas the amount of mandibular teeth showing is directly proportional to increasing age.³¹ Therefore, a younger person will display more maxillary than mandibular teeth, while an older person will show more mandibular than maxillary teeth. It may be this age-related phenomenon to which the older patients reacted. The ideal smile portrayed by the media invariably is that of a young person. In addition, older people's teeth often are more heavily restored and of a darker shade than are younger people's teeth.

This study was conducted in a rural setting with patients who had similar cultural backgrounds. The study should be repeated in an urban setting in the same region as well as in southern Europe, North America and other continents to enable a comparison and validation of the results. This would make the results more meaningful to both patients and dentists and also put them into a global perspective.

CONCLUSION

Patients asked to rate their own smiles scored an average of 59.1 on a 100-point satisfaction scale. Their own dentist and an independent periodontist rated the patients' smiles significantly lower than did the patients themselves, at 40.7 and 38.6, respectively. The patients rated teeth and eyes as the most important features in an attractive face. Dentists should be aware that patients who seek esthetic services may have different perceptions of their smiles than patients who do not express such desires. ■

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