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Perceptions of Male Facial Attractiveness: Evaluating Profile Changes Through the Eyes of Laypeople, Orthodontists and Dentists.

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ABSTRACT:

Objective: To evaluate the aesthetic perception of facial profile changes caused by varying maxillary and mandibular projections, comparing the preferences and sensitivity of laypersons, orthodontists, and general dentists.

Materials and Methods: A series of digitally altered profile images representing incremental advancements and retrusions of the maxilla and mandible were presented to three groups: laypersons, orthodontists, and general dentists.

Participants answered a series of questions on attractiveness and statistical analysis was conducted to compare intergroup differences in aesthetic preferences and tolerance thresholds for skeletal changes.

Results: Orthodontists demonstrated the highest sensitivity to skeletal discrepancies, preferring profiles closer to cephalometric norms. General dentists exhibited moderate sensitivity, while laypersons showed a broader range of acceptance and often favoured slightly convex profiles with maxillary protrusion. Alterations in mandibular projection had a greater impact on aesthetic ratings than maxillary changes across all groups.

Conclusion: Perceptions of profile aesthetics vary significantly among professional and non-professional observers. Understanding these differences is critical for treatment planning, particularly in orthognathic and orthodontic cases where patient satisfaction and aesthetic expectations must be balanced with clinical objectives.

Keywords: Esthetic, Perception, Orthodontics, Photography, Sensitivity, Specificity.

INTRODUCTION

Facial aesthetics play a pivotal role in how individuals are perceived socially and in how they perceive themselves. In clinical orthodontics and dentistry, these perceptions influence treatment planning and patient satisfaction[1,2]. While professionals are trained to analyse specific anatomical features, laypeople often judge based on overall visual impressions[3]. Understanding how different observers—orthodontists, general dentists, and laypersons—perceive facial profile changes can enhance the alignment between treatment goals and patient expectations[4,5].

In this context, it becomes essential to explore how various groups assess aesthetic changes resulting from skeletal modifications, particularly in the maxillary and mandibular regions. Such insights can guide clinicians in planning treatments that are both functionally effective and visually acceptable to patients.

Objectives

1. To compare the aesthetic evaluations of facial profiles with altered maxillary and mandibular projections among three distinct observer groups—laypersons, orthodontists, and general dentists—in order to identify variations in preferences and assess the influence of professional training on aesthetic judgment.
2. To evaluate whether these groups can accurately identify changes in facial profile resulting from altered maxillary and mandibular projections, compared to a standardized neutral profile image.

Methodology

1. Study Design

Observational, cross-sectional comparative study.

2. Participants

Group A: Orthodontists

Group B: Laypersons (non-dental background)

Group C: General Dentists

3. Sample Size

Convenience sampling

4. Inclusion criteria

The participants must be from 3 groups, Orthodontist (Masters degree or Orthodontic Postgraduate students), General Dentists (Bachelors or Masters of other specialties), Laypersons

5. Exclusion criteria

Interns, Dental students, Participants must possess basic literacy as the study requires independent comprehension of written materials.

6. Procedure

Image Preparation: A standardized neutral male facial profile was selected by assessing cephalometric values, these values were found in normal rage for the gender and age of the patient. The maxilla and mandible was digitally altered using Nemoceph in 2 mm increments (advancement and retrusion) up to ±4 mm

Survey Tool: A structured questionnaire was prepared. Each participant provided informed consent for their responses to be included in the study. They viewed the silhouette image set and responded by

selecting their preferences from a structured list of options:
Which image is the most aesthetically pleasing? (FIGURE 1)
Option A, B, C
Did you notice any prominent changes? (FIGURE 1)
Forehead, Nose, Upper Lip, Chin, All Of The Above, None Of The Above
Rank the images from most to least pleasing.(FIGURE 2,3)
With best to last

7. Data Collection

Responses were collected anonymously through digital survey Google forms.
Consent to use response for study was mentioned in form.
Participants were not informed about which specific facial features had been altered or the magnitude of the changes. This blinding was implemented to minimize bias and ensure that their responses reflected genuine aesthetic perception rather than guided expectations.

Statistical analysis

Statistical Package for Social Sciences [SPSS] for Windows Version 22.0 Released 2013. Armonk, NY: IBM Corp., was used to perform statistical analyses.
Descriptive Statistics:
Descriptive analysis of all the explanatory and outcome parameters was done using frequency and proportions for categorical variables, whereas in Mean & SD for continuous variables.
Inferential Statistics:
Chi Square Test was used to compare the perception of most pleasing photographs, perception towards prominent features change, choice towards the best & worst Altered Chin and Upper lip Photographs between 3 groups.
The level of significance was set at $P<0.05$.

Results

PARTICIPANT DISTRIBUTION

The distribution of study participants based on their designation revealed that laypersons constituted the highest proportion of the sample, accounting for 42.3% (n=55). Orthodontists followed closely, making up 37.7% (n=49) of the participants. General dentists comprised the smallest group, representing 20.0% (n=26) of the total sample. This distribution reflected a varied representation across different professional backgrounds, ensuring a balanced perspective in the study.

PERCEPTION OF MOST PLEASING PROFILE

The comparison of perceptions regarding the most pleasing photograph among orthodontists, laypersons, and general dentists revealed significant differences between the groups. Option B (neutral photograph) was predominantly favoured by orthodontists, with 81.6% (n=40) selecting it as the most pleasing. However, preferences varied among laypersons and general dentists, with Option A (altered maxilla) being the most commonly chosen in these groups, at 47.3% (n=26) and 53.8% (n=14), respectively. Option C (altered mandible) received minimal selection across all groups, with only 2.0% (n=1) of orthodontists and 7.7% (n=2) of general dentists opting for it, while laypersons did not select it at all. The chi-square test indicated a statistically significant difference in preferences among the three groups, with a p-value of

<0.001, suggesting that professional background influenced the perception of aesthetic appeal in the presented images.

Table no .1 Comparison of Perception of Most Pleasing Photograph Between 3 Groups Using Chi Square Test

Question	Response	Orthodontist		Lay person		General Dentist		p-value
		n	%	n	%	n	%	
Which photo is the most pleasing?	Option A	8	16.3%	26	47.3%	14	53.8%	<0.001*
	Option B	40	81.6%	29	52.7%	10	38.5%	
	Option C	1	2.0%	0	0.0%	2	7.7%	

Table no. 1: Option A= prognathic maxilla, Option B= Neutral, Option C= Retrognathic mandible

PERCEPTION TOWARDS CHANGE

The comparison of perceptions regarding prominent feature changes in the pictures among orthodontists, laypersons, and general dentists showed variations in responses across different facial features. The majority of orthodontists identified changes in the chin, with 83.7% (n=41) noticing this feature alteration. Laypersons and general dentists also observed chin changes, at 72.7% (n=40) and 73.1% (n=19), respectively, but the difference was not statistically significant (p=0.36).

A significant variation was observed in perceptions of maxilla changes, where 67.3% (n=33) of orthodontists noted the alteration, compared to only 25.5% (n=14) of laypersons and 34.6% (n=9) of general dentists. The chi-square test confirmed a statistically significant difference between the groups for this feature (p<0.001), indicating that professional background influenced the ability to detect maxilla changes.

Regarding changes in the nose or forehead (which were not altered), responses were more evenly distributed, with 12.2% (n=6) of orthodontists, 27.3% (n=15) of laypersons, and 15.4% (n=4) of general dentists noticing alterations. However, the difference did not reach statistical significance (p=0.13). When considering all prominent features (which were not altered) together, responses remained relatively similar across groups, with 10.2% (n=5) of orthodontists, 10.9% (n=6) of laypersons, and 15.4% (n=4) of general dentists selecting this option, yielding a non-significant p-value of 0.79.

Table No. 2 Comparison of Perception Towards Prominent Features Change in The Pictures Between 3 Groups Using Chi Square Test

Question	Response	Orthodontist		Lay person		General Dentist		p-value
		n	%	n	%	n	%	
Did you notice prominent features change in any of the below pictures. What were they?	Chin	41	83.7%	40	72.7%	19	73.1%	0.36
	Upper Lip	33	67.3%	14	25.5%	9	34.6%	<0.001*
	Nose / Forehead	6	12.2%	15	27.3%	4	15.4%	0.13
	All of the Above	5	10.2%	6	10.9%	4	15.4%	0.79

Overall, the findings suggested that orthodontists were more attuned to maxilla changes compared to the other groups, while perceptions of chin and nose/forehead alterations were more consistent across different

backgrounds. The significant difference in detecting maxilla changes reinforced the influence of professional expertise in facial aesthetics assessment.

PERCEPTION TOWARDS ALTERED CHIN

The comparison of choices regarding the best and worst altered chin photographs among orthodontists, laypersons, and general dentists demonstrated significant differences in preference.

For the best-altered chin photograph, Photo E (neutral image) was the most favoured across all groups, with 75.5% (n=37) of orthodontists, 49.1% (n=27) of laypersons, and 57.7% (n=15) of general dentists selecting it. However, notable variations existed among the remaining choices. Laypersons showed a stronger preference for Photo C (4 mm advancement), with 32.7% (n=18) selecting it, whereas orthodontists and general dentists had lower selections at 6.1% (n=3) and 15.4% (n=4), respectively. General dentists demonstrated a higher preference for Photo A (2 mm advancement), with 26.9% (n=7) choosing it compared to laypersons (10.9%, n=6) and orthodontists (10.2%, n=5). The chi-square test indicated a statistically significant difference in preferences among groups (p=0.006), suggesting that professional background influenced aesthetic choices.

For the worst-altered chin photograph, perceptions varied significantly between groups. Orthodontists overwhelmingly selected Photo C (4 mm advancement) as the least favourable, with 57.1% (n=28) choosing it, while laypersons and general dentists showed a strong preference for Photo D (4 mm retrusion) as the worst, with 76.4% (n=42) and 65.4% (n=17), respectively. Minimal selections were observed for Photo A (2 mm advancement), Photo B (2 mm retrusion), and Photo E (neutral) across all groups. The chi-square test yielded a highly significant difference in perceptions (p<0.001), indicating strong variations in how different groups evaluated facial alterations.

Table No. 3 Comparison of Choice Towards the Best & Worst Altered Chin Photographs Between 3 Groups Using Chi Square Test

Question	Response	Orthodontist		Lay person		General Dentist		p-value
		n	%	n	%	n	%	
Altered Chin - Best	Photo A	5	10.2%	6	10.9%	7	26.9%	0.006*
	Photo B	1	2.0%	3	5.5%	0	0.0%	
	Photo C	3	6.1%	18	32.7%	4	15.4%	
	Photo D	3	6.1%	1	1.8%	0	0.0%	
	Photo E	37	75.5%	27	49.1%	15	57.7%	
Altered Chin – Worst	Photo A	3	6.1%	4	7.3%	1	3.8%	<0.001*
	Photo B	0	0.0%	6	10.9%	2	7.7%	
	Photo C	28	57.1%	1	1.8%	2	7.7%	
	Photo D	18	36.7%	42	76.4%	17	65.4%	
	Photo E	0	0.0%	2	3.6%	4	15.4%	

Table no. 3: Photo A- 2 mm advancement, Photo B- 2 mm retrusion, Photo C- 4 mm advancement, Photo D- 4 mm retrusion, Photo E- Neutral

These findings suggested that orthodontists were more critical of specific modifications, particularly those in Photo C (4 mm adv), while laypersons and general dentists aligned in considering Photo D (4 mm retrusion) as the least appealing.

PERCEPTION TOWARDS ALTERED MAXILLA

The comparison of choices regarding the best and worst altered maxilla photographs among orthodontists, laypersons, and general dentists revealed significant differences in aesthetic preferences across groups.

For the best-altered maxilla photograph, Photo E (neutral) was the most preferred option among all groups, with 73.5% (n=36) of orthodontists, 56.4% (n=31) of laypersons, and 42.3% (n=11) of general dentists selecting it. However, general dentists showed a stronger preference for Photo A (2 mm advancement) compared to the other groups, with 46.2% (n=12) choosing it, whereas orthodontists (16.3%, n=8) and laypersons (14.5%, n=8) exhibited lower selections. The chi-square test indicated a statistically significant difference in choices among groups (p=0.004), suggesting that professional background influenced the perception of altered maxilla aesthetics.

For the worst-altered maxilla photograph, responses varied considerably between groups. Orthodontists predominantly selected Photo C (4 mm advancement) as the least appealing, with 55.1% (n=27) choosing it, while laypersons and general dentists showed a stronger preference for Photo D (4 mm retrusion) as the worst, with 40.0% (n=22) and 50.0% (n=13), respectively. Minimal selections were observed for Photo A (2 mm advancement), Photo B (2 mm retrusion), and Photo E (neutral)across all groups. The chi-square test confirmed a highly significant difference (p<0.001), indicating notable variations in how different groups evaluated maxilla modifications.

Table no. 4 Comparison of choice towards the best & worst Altered Maxilla Photographs between 3 groups using Chi Square Test

Question	Response	Orthodontist		Lay person		General Dentist		p-value
		n	%	n	%	n	%	
Altered Upper Lip - Best	Photo A	8	16.3%	8	14.5%	12	46.2%	0.004*
	Photo B	2	4.1%	7	12.7%	0	0.0%	
	Photo C	2	4.1%	4	7.3%	3	11.5%	
	Photo D	1	2.0%	5	9.1%	0	0.0%	
	Photo E	36	73.5%	31	56.4%	11	42.3%	
Altered Upper Lip - Worst	Photo A	1	2.0%	6	10.9%	0	0.0%	<0.001*
	Photo B	7	14.3%	11	20.0%	5	19.2%	
	Photo C	27	55.1%	11	20.0%	3	11.5%	
	Photo D	13	26.5%	22	40.0%	13	50.0%	
	Photo E	1	2.0%	5	9.1%	5	19.2%	

Table no. 4: Photo A- 2 mm advancement, Photo B-2 mm retrusion, Photo C-4 mm advancement, Photo D-4 mm retrusion, Photo E- Neutral

These findings suggested that orthodontists were more critical of specific alterations, particularly those in Photo C (4 mm advancement), while laypersons and general dentists aligned in considering Photo D (4 mm retrusion) as the least favourable.

INTERGROUP COMPARISON

Multiple comparison analysis revealed significant differences in aesthetic preferences among the three groups, underscoring the influence of professional background. Orthodontists showed distinctly different aesthetic judgments compared to both laypersons ($p = 0.003$) and general dentists ($p = 0.001$), while laypersons and general dentists shared more similar perceptions ($p = 0.08$).

In evaluating feature changes, orthodontists demonstrated significantly higher perceptual sensitivity than laypersons ($p < 0.001$) and general dentists ($p = 0.007$). However, no significant difference was observed between laypersons and general dentists ($p = 0.39$), indicating a shared level of detection ability. These findings emphasize the role of professional training in recognizing subtle facial changes.

Perceptions also varied in evaluating chin modifications. Orthodontists and laypersons differed significantly in choosing the most aesthetically pleasing chin alteration ($p = 0.007$), whereas no significant differences were found between orthodontists and general dentists ($p = 0.12$) or between laypersons and general dentists ($p = 0.14$). When judging the least attractive chin profile, orthodontists again differed markedly from both laypersons and general dentists ($p < 0.001$), who displayed similar judgments ($p = 0.22$).

Similarly, significant group differences were observed in preferences for altered maxilla profiles. For the best-modified image, general dentists' preferences differed from both orthodontists ($p = 0.02$) and laypersons ($p = 0.008$), while orthodontists and laypersons showed no significant difference ($p = 0.19$). In contrast, for the least favorable maxilla image, orthodontists' assessments differed significantly from both laypersons ($p < 0.001$) and general dentists ($p = 0.001$), with laypersons and dentists again showing alignment ($p = 0.24$).

Overall, these results demonstrate that orthodontists consistently exhibit a more refined and distinct aesthetic perspective—particularly in detecting and evaluating subtle facial profile changes—likely due to their specialized training and clinical experience.

Discussion

This study investigated how different observer groups—orthodontists, general dentists, and laypersons—perceive male facial profile alterations, particularly in the maxillary and mandibular regions. Findings confirmed that professional background plays a crucial role in the detection and aesthetic evaluation of facial skeletal changes, echoing conclusions drawn in multiple earlier studies.

The preference of orthodontists for neutral profiles close to cephalometric norms (81.6%) aligns with studies by Soh et al. and Hönn & Göz, who found that orthodontists favor balanced profiles and are more sensitive to deviations in anteroposterior relationships than laypersons or general dentists [3,4] . Similarly, a study by Johnston demonstrated that trained professionals are more attuned to subtle profile discrepancies, particularly involving mandibular projection, than untrained observers[6].

Laypersons in this study preferred slightly convex profiles, particularly with maxillary advancement, echoing the findings of Nomura et al., who reported that the public generally favors convexity and a fuller maxilla for perceived youthfulness and attractiveness[7]. Additionally, Naini et al. observed that while clinicians are more likely to identify and be critical of skeletal discrepancies, laypersons are influenced more by overall facial harmony than by anatomical precision[8]. This could explain why retruded chins were judged harshly by laypersons and dentists, while orthodontists were more critical of protrusions—indicating a difference in threshold for “aesthetic balance.”

Conversely, not all studies support the same pattern of perception divergence. For example, Prahl-Andersen et al. found fewer differences between professional and lay opinions in evaluating orthodontic treatment outcomes, suggesting that public awareness of facial esthetics may be growing[9]. Likewise, a study by Mertens et al. reported that orthodontists and non-professionals both favoured mild retrusion of the mandible in female profiles, which contrasts with the current findings where protrusion was more acceptable to lay observers in males[10]. These discrepancies highlight the influence of demographic

variables such as gender, ethnicity, and cultural background on aesthetic preferences.

Interestingly, the current study's finding that all groups consistently ranked extreme mandibular retrusion as unattractive corresponds with the results of Cochrane et al., who emphasized the strong negative aesthetic perception associated with retrognathia across all observer types[11]. Moreover, variations in maxilla sensitivity, where orthodontists significantly outperformed laypersons and dentists in detecting changes ($p<0.001$), also reflect findings by Fernandez-Riveiro et al., who noted that orthodontists' training enhances their attention to perioral soft tissue contours[12].

These perceptual differences emphasize the importance of clinician-patient communication. Aesthetic expectations often drive orthodontic consultations, and misalignment between professional diagnosis and patient desires can reduce satisfaction. Hence, incorporating patient preferences through digital simulations or photographic morphing tools, as recommended by Pithon et al., may help bridge the gap and support shared treatment decisions[13].

Overall, these findings reinforce the need for orthodontists to balance objective clinical goals with the subjective aesthetic expectations of patients. While professional judgment is essential for functional outcomes, patient perception ultimately governs satisfaction with facial appearance.

While the findings of this study provide valuable insights into aesthetic preferences across professional and non-professional observer groups, certain limitations should be acknowledged. The study employed convenience sampling with an unequal participant distribution, particularly a smaller number of general dentists, which may limit the generalizability of the results. Additionally, only male silhouette images were used, which, although useful for isolating skeletal changes, lack realistic features such as skin tone, texture, and three-dimensional depth. This restricts the applicability of the findings to broader, more diverse facial types. Furthermore, the participants likely represented a culturally homogeneous population, which may influence aesthetic perceptions and limit the cross-cultural relevance of the conclusions.

Conclusion

When assessing facial feature modifications, orthodontists demonstrated heightened sensitivity to changes in the maxilla, whereas general dentists displayed greater awareness of alterations in the chin. Laypersons exhibited broader recognition across multiple features but did not demonstrate the same level of refinement in detection as the professional groups.

All three observer groups preferred straight profile. In addition, Layperson and Dentists disliked retrusive chin and retrusive maxilla while Orthodontist were disinclined towards prominent chin and prominent maxilla.

The observed differences in aesthetic perception a suggest that laypersons may articulate chief complaints that do not always align with clinically significant features identified by professionals. While orthodontists tend to focus on subtle changes in facial structures, laypersons often emphasize more general aspects of appearance and thus to achieve optimal outcomes, patient expectations and aesthetic desires should be thoughtfully integrated with evidence-based orthodontic corrections, educating patients on why certain facial changes are considered important in orthodontic evaluations could enhance patient satisfaction and treatment acceptance.

Visual aids or before-and-after simulations may help align patient expectations with orthodontic goals. This ensures both satisfaction and scientifically sound results.

References

1. Newton JT, Prabhu N, Robinson PG. The impact of dental appearance on the appraisal of personal characteristics. Int J Prosthodont. 2003;16(4):429–34.
2. Naini FB, Cobourne MT, McDonald F, Donaldson AN. The influence of craniofacial to standing height proportion on perceived attractiveness. Am J Orthod Dentofacial Orthop. 2013;143(3):301–9.
3. Soh J, Chew MT, Wong HB. An Asian community's perspective on facial profile attractiveness. Am J Orthod Dentofacial Orthop. 2005;127(6):692–9.
4. Hönn M, Göz G. The ideal profile: Differences in the perception of attractiveness between patients and orthodontists. J Orofac Orthop. 2007;68(6):436–45.
5. Naini FB, Donaldson AN, McDonald F, Cobourne MT. Assessing the influence of mandibular prominence on perceived attractiveness in the orthognathic patient, clinician, and layperson. Eur J Orthod. 2012;34(6):738–46
6. Johnston DJ. The influence of lower face vertical proportion on facial attractiveness. Eur J Orthod. 2003;25(3):265–72.
7. Nomura M, Motegi E, Hatch JP, Rugh JD, Yamaguchi H. Esthetic preferences of European American, Hispanic American, Japanese, and African judges for soft-tissue profiles. Am J Orthod Dentofacial Orthop. 2009;135(4 Suppl):S87–95.
8. Naini FB, Donaldson AN, McDonald F, Cobourne MT. Assessing the influence of mandibular prominence on perceived attractiveness in the orthognathic patient, clinician, and layperson. Eur J Orthod. 2012;34(6):738–46.
9. Prahl-Andersen B, Boersma H, van der Linden FP, Moore AW. Perceptions of dental attractiveness. Am J Orthod. 1979;75(6):646–52.
10. Mertens LC, Polzin W, Rego MV, Elias AM, Laganá DC. Profile preferences in patients, orthodontists, and laypeople. Am J Orthod Dentofacial Orthop. 2017;151(3):512–8.
11. Cochrane SM, Cunningham SJ, Hunt NP. A comparison of the perception of profile attractiveness by the general public and 3 groups of clinicians. Int J Adult Orthodon Orthognath Surg. 1999;14(4):291–5.
12. Fernandez-Riveiro P, Smyth-Chamosa E, Suarez-Quintanilla D, Suarez-Cunqueiro M. Angular photogrammetric analysis of the soft tissue facial profile. Eur J Orthod. 2003;25(4):393–9.
13. Pithon MM, Nascimento CC, Barbosa GC, Coqueiro RS. Do dental esthetics have any influence on finding a job? Am J Orthod Dentofacial Orthop. 2014;146(4):423–9.