Comparison of the effect of labiolingual inclination and anteroposterior position of maxillary incisors on esthetic profile in three different facial patterns

Praveen Chirivella, Gowri Sankar Singaraju, Prasad Mandava, Karunakar Reddy V, Jeevan Kumar Neravati and Suja Ani George[1]

ABSTRACT

Objective: To test the null hypothesis that there is no effect of esthetic perception of smiling profile in three different facial types by a change in the maxillary incisor inclination and position.

Materials and Methods: A smiling profile photograph with Class I skeletal and dental pattern, normal profile were taken in each of the three facial types dolichofacial, mesofacial, and brachyfacial. Based on the original digital image, 15 smiling profiles in each of the facial types were created using the FACAD software by altering the labiolingual inclination and anteroposterior position of the maxillary incisors. These photographs were rated on a visual analog scale by three panels of examiners consisting of orthodontists, dentists, and nonprofessionals with twenty members in each group. The responses were assessed by analysis of variance (ANOVA) test followed by *post hoc* Scheffe.

Results: Significant differences ($P < 0.001$) were detected when ratings of each photograph in each of the individual facial type was compared. In dolichofacial and mesofacial pattern, the position of the maxillary incisor must be limited to 2 mm from the goal anterior limit line. In brachyfacial pattern, any movement of facial axis point of maxillary incisors away from GALL is worsens the facial esthetics. The result of the ANOVA showed differences among the three groups for certain facial profiles.

Conclusion: The hypothesis was rejected. The esthetic perception of labiolingual inclination and anteroposterior of maxillary incisors differ in different facial types, and this may effect in formulating treatment plans for different facial types.

Key words: Esthetics, face, goal anterior limit line, orthodontics, profile

INTRODUCTION

Enhancing esthetics is the main objective of treatment planning during orthodontic therapy. Understanding facial esthetics and current societal preferences for facial attractiveness is mandatory for the orthodontists.[1,2] Orthodontics plays an important role in facial esthetics by controlling the final position and inclination of maxillary anterior teeth during the treatment plan that bears a strong influence on the overlying lips and hence on the profile of the patient.[3] Facial profile harmony and balance vary in different facial types, and the orthodontic treatment should take into account the individual facial form rather than standard set of norms in general. The norms may provide a clue to what facial anatomical relationships are attractive, but there

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are variations in the soft-tissue drape related to different facial types. A few studies were conducted to appraise the effect of the maxillary incisor on the perception of facial esthetics. One study by Schlosser *et al*.[2] considered only the Anteroposterior (AP) position and another study by Ghaleb[3] considered only the change in the inclination. Cao *et al*.[4] in his photographic study evaluated the esthetic perception by altering both the inclination and the sagittal position of the incisors. Earlier studies expected that there is the difference in the way the soft tissues react to orthodontic treatment in different facial patterns.[5,6] Specifically, there were no studies determining the perception of esthetic profile due to alteration in the position of the maxillary incisors in different facial types. Concepts underlying face and profile esthetics are often subjective, based more often on an individual opinion than on the scientific method.

Aim

The objective of this study was, therefore, threefold (1) to evaluate the impact of maxillary incisor inclination and AP position on the esthetic perception of different facial types - dolichofacial, mesofacial, and brachyfacial, (2) to determine the most esthetic inclination and the position of the incisor in the profile view and to correlate it with the facial pattern, and (3) determining whether profile perception varies among the different evaluators orthodontist, dentist, and a nonprofessional.

MATERIALS AND METHODS

The institutional ethical clearance was obtained for the conduct of the study (RC No. NDC//PG/2013-14IEc/071 dated 27-03-2014). Three male graduates with three different facial types (dolichofacial, mesofacial, and brachyfacial) were chosen from the students pursuing dentistry in Narayana Dental College, Nellore, Andhrapradesh, India. Subject selection in each of the facial type was carried out based on certain criteria. The facial type determined using the facial index[7] and cephalometric values of the hard[8] and soft tissues[9] within the normal range [Table 1]. Ideal maxillary incisor–to-forehead relationship, as described by Andrews and Andrews with facial axial point (FA) of the maxillary incisor on the goal anterior limit line (GALL)[10] [Figures 1 and 2].

Photographs were taken with a digital camera (Canon IXUS 265 HS, make 2013 China) at a five feet distance from the subject, with a shutter speed of 1/10th s. For each subject, two photographs were taken, one in profile view with a natural facial expression to be used in the profilometric assessment. The second profile photo taken with full smiling expression was superimposed on a calibrated digital lateral cephalogram after identifying the soft tissue landmarks. All the photographs were cropped to a standard size of 6 × 4 size.

Image Alteration

The smiling profile photograph in each facial pattern was altered with the FACAD digital imaging software (Ilexis AB in collaboration with university Hospital, Linkiping, Sweeden,

Table 1: The cephalometric values of the subjects for the different facial patterns under study

Selection criterion	Dolichofacial	Mesofacial	Brachyfacial
Facial index	92 (≥90.0-95.0)	87 (85.0-89.9)	83 (≤80.0-84.9)
SNA (°)	84	81	82
SNB (°)	82	79	80
ANB (°)	2	2	2
SN - MP (°)	36.5	32	22
Y - axis	69	67	60
S-Go/N - Me	62	65	73
U1 - L1 (°)	125	131	133
U1 - SN (°)	108	102	106
U1 - NA (mm)	6	6	4
U1 - NA (°)	24	21	22
L1 - NB	6	5	4
L1 - NB (°)	27	27	23
L1 - MP (°)	92	93	95
Facial angle	94	93	97
H - angle	11	10	10
Nasolabial angle (°)	91	90	93

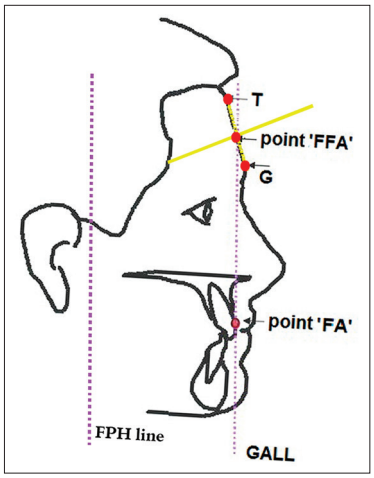

Figure 1: Landmarks and Lines used in the study.Trichion (T) - Where the flat portion of the forehead from glabella meets the hairline; glabella (G) - inferior most point on the fore head; Line "FFA" - Facial Axis line of Forehead-Line joining Trichion and the Glabella; Point "FFA" - Midpoint on the perpendicular bisector of the line "FFA"; point "FA" – Facial axis point of maxillary incisor (labial most point on maxillary incisor); GALL – Goal Anterior Limit Line is drawn parallel to the head's frontal plane (FPH). It passes though the line "FFA" and tangent to the point FFA. Ideally, this line should also pass through the point "FA" (facial axis point of the maxillary central incisor). GALL line indicates the ideal anteroposterior position of maxillary incisor in relation to forehead

version 3.8.4.2, release 2014). The labiolingual inclination and anteroposterior displacement were altered with reference to Andrews element II of orofacial harmony.[10] In the first series, the labiolingual inclination of a maxillary incisor in each group subject was altered while FA was kept unchanged on GALL by keeping the center of rotation of incisor at a distance two-thirds of root length from its root apex. The maxillary incisor crown was inclined labially (positive inclination) by +5°, +10°, and +15° and lingually (negative inclination) by −5°, −1°, and −15°,

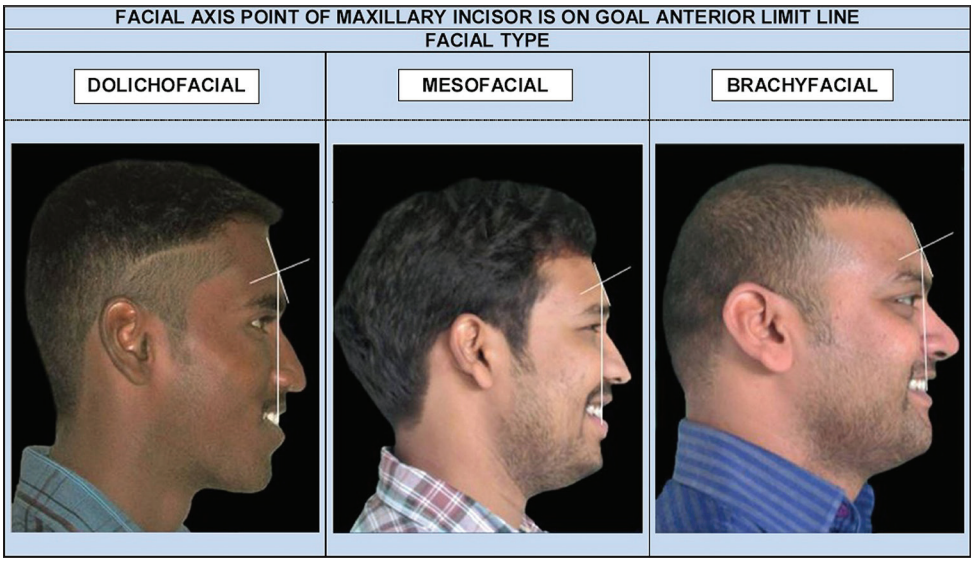

Figure 2: Ideal relation between goal anterior limit line (GALL), line "FFA" and the facial axis point (FA) on the incisor in three different facial patterns. The FFA point coincides with the FA point along the goal anterior limit line

respectively. In the second series, the maxillary incisor in each group was simulated to translate in the sagittal direction. The incisor was moved anteriorly (protrusive) by + 1 mm, +2 mm, +3 mm, and + 4 mm and posteriorly (retrusive) by −1 mm, −2 mm, −3 mm, and −4 mm, respectively. To offset the self-correction for compensation in the inclination of the anterior teeth by the software, the lower anteriors were also replicated to move in the same direction as that of upper central incisors keeping the overjet constant. Thus, a total of 15 images were created for each facial pattern [Figures 3 and 4]. All the images were printed on Kodak premier digital paper. The photographs were coded on the back and were randomly arranged.

Judges

These photographs were evaluated by three-panel groups, Group A: An Orthodontic professional panel, Group B: General dentist panel and Group C: Nonprofessional panel each consisting of twenty members with equal distribution of gender wise. The orthodontic professional panel consisted of orthodontists with a minimum of 3 years of clinical experience. The dentist panel included the graduates and specialists in other branches of dentistry with a minimum of 3 years of practical knowledge. The professionals' panel included those who practiced or graduated from Narayana dental college. The nonprofessional panel included the undergraduate dental students below the age of twenty pursuing the preclinical subjects from the same college.

Rating of Photographs

Each assessor received a set of 15 profile photographs of each group one after the other for all the facial types. Each photograph is given 1 min time for rating the attractiveness one by one without a chance being provided to review them to avoid comparison bias. Each of the examiners were asked to mark their scores of the attractiveness of each photograph on the 100 mm visual analog scale (VAS) ranging from "least attractive" (0) up to "most attractive" (100) in increments of 10 mm each. No other type of information relevant to the study was given to the examiners. The average value of each photograph is obtained by summing up of the three different panel ratings for a single particular photograph divided by 3. A mean score above fifty were considered as esthetically harmonious smiling profile while below fifty esthetically unpleasant. Before the analysis, intraexaminer reliability was tested for trial and the intraclass correlation for rating the same photograph showing reliability in the range of 0.621-0.961 in different facial pattern by the three panels.

Statistical Analysis

The VAS scores were entered separately for each of the facial type and panel of judges on a data sheet. Data variables were analyzed using SPSS program version 16 (SPSS Inc., Chicago, IL, USA). A one-way analysis of variance (ANOVA) was used to assess the significance of the differences in VAS scores among the three panels in all the three facial patterns for each simulation. When significant interactions were seen a pair-wise *post hoc* Tukey highly significant difference was performed. Further, the effect of independent variables on the dependent variable (scoring) and their interactions was tested utilizing three-way ANOVA. The hypothesis that there was no difference in esthetic perception of smiling profile in three different facial types among the three groups of raters was tested for each photograph. The individual variation of the interacting parameters was assessed by *post hoc* Scheffe method test after three-way ANOVA test. The significance level was predetermined at $P <$ level of 0.05 for all tests.

RESULTS

The mean and standard deviation of VAS according to simulation in each facial type were summarized [Tables 2-4 and Figure 5].

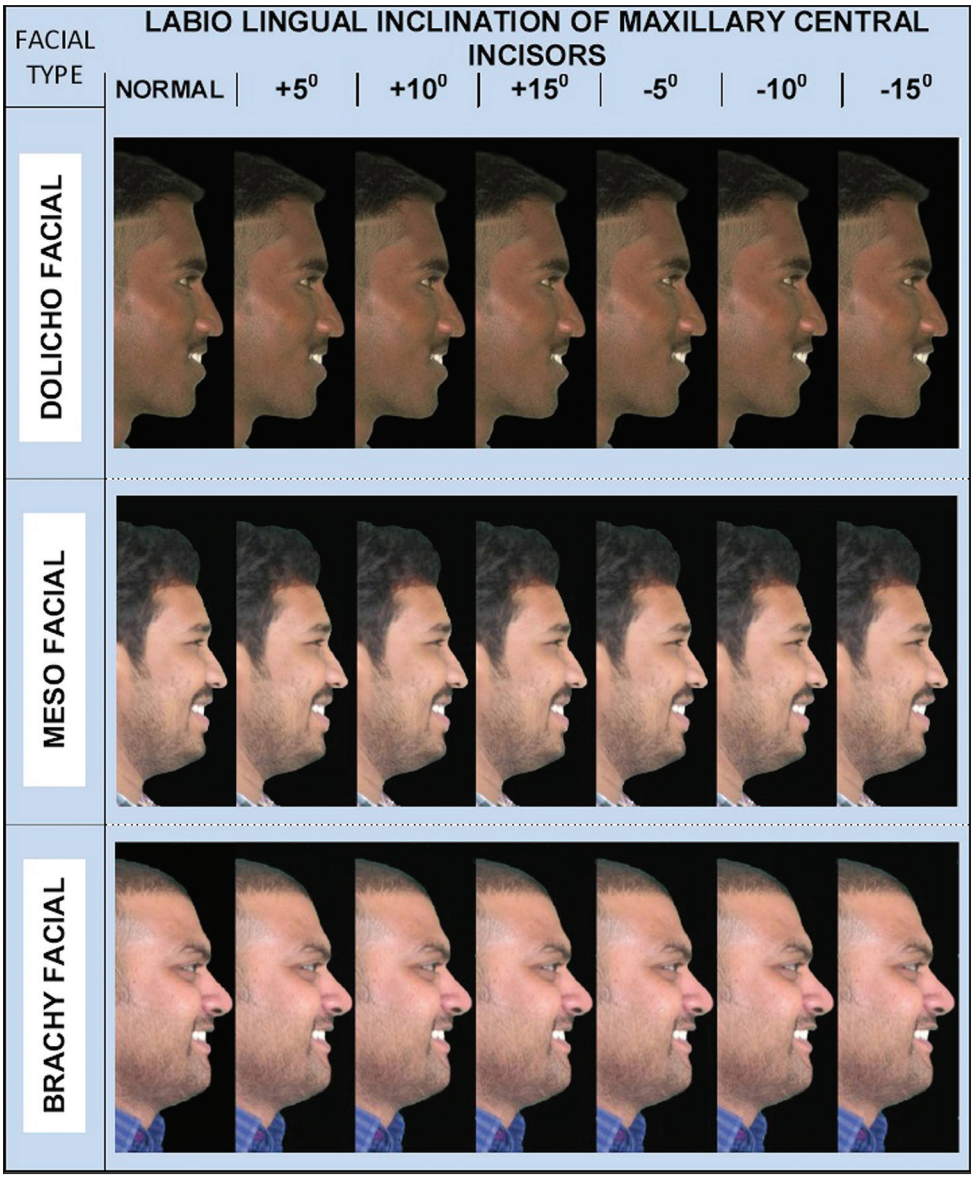

Figure 3: Change in facial profile due to altered labiolingual inclination of the maxillary incisors along with the normal unaltered image

Significant differences among the panels were more marked in dolichofacial and brachyfacial facial types and the rating among the three panels closely matched to one another for most of the simulations in the mesofacial types. There was a significant difference in rating the attractiveness among the three panels for the labiolingual inclination in the dolichofacial pattern ($P < 0.05$) [Table 2] and the AP positioning of the maxillary incisors ($P < 0.05$) in the brachyfacial face [Table 4]. Moreover, pair-wise analyses showed significant differences for categories between orthodontists and dentist (A × B) as well as dentists and nonprofessionals (B × C) while evaluating the dolichofacial pattern. This difference is more marked for the inclinations compared to the position of the incisors [Table 2].

However, in all the facial types, the simulations + 15°, −5°, −10°, −15° were marked in unison by all the three panels of judges as the esthetic profiles [Figure 6]. Accordingly, most of the high mean scores were found around these simulations with orthodontists rating the + 15° as the highest in all the facial patterns (67, 65, 57.5). The highest scores in the study were given by nonprofessional panel for − 5° for all the three patterns (74.5, 72, 73.5). Likewise, while rating the unesthetic profiles, all the three examiners were concordant in relation to the simulations of + 3 mm, +4 mm [Figure 7].

DISCUSSION

Only a few studies were available in assessing the profile based on the maxillary incisors.[2-4,11] This study differed from the previous studies in that all the three facial types are considered to be evaluated by three panels of judges-orthodontists, dentists, and layman

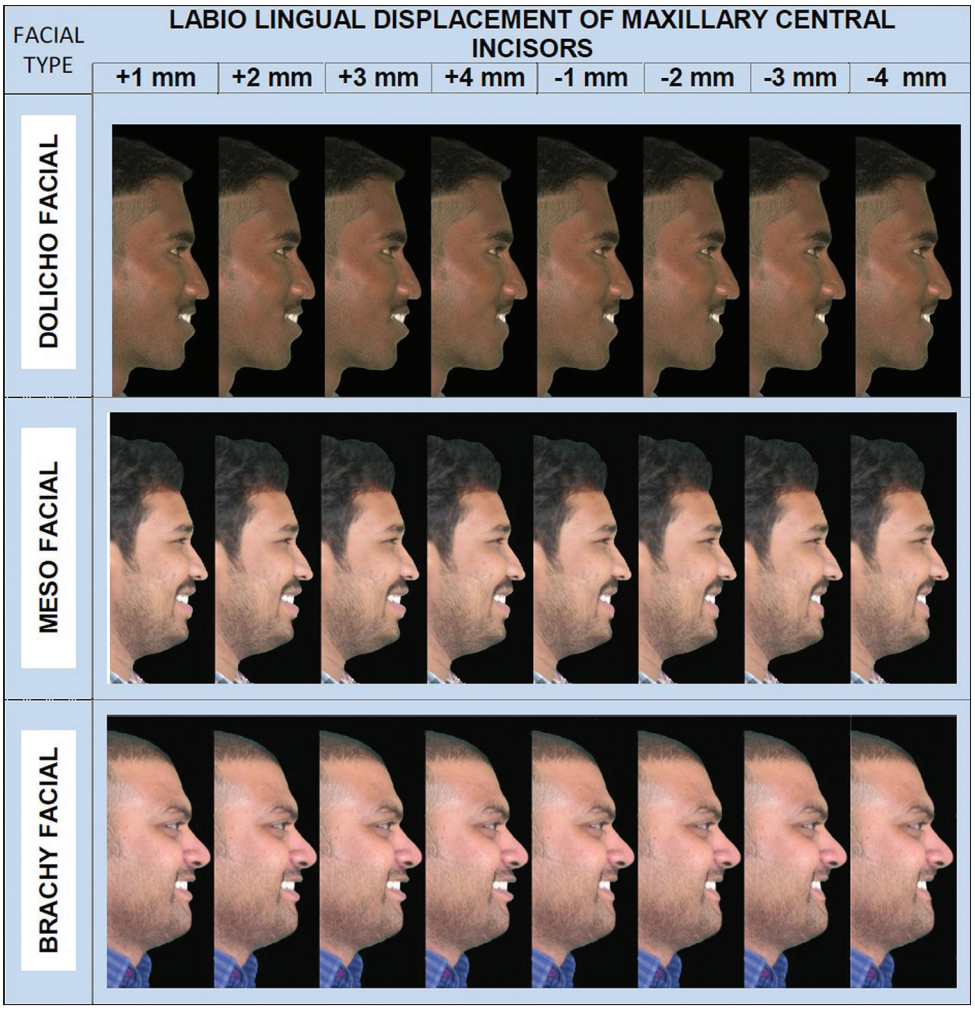

Figure 4: Change in facial profile due to altered position of the maxillary incisors in the anteroposterior direction

Table 2: Descriptive data and comparison of each of the simulated photograph-dolichofacial pattern

	Dolichofacial pattern						
Photos (*n*=20)	**Descriptive data (mean±SD)**			**One-way ANOVA (df=57; *n*=60) (*P*)**	***Post hoc* Tukey HSD (*P*)**		
	Orthodontists (A)	**Dentists (B)**	**Nonprofessionals (C)**		**A versus B**	**A versus C**	**B versus C**
Original	65.00±12.77	51.00±18.32	64.50±20.38	0.02*	0.03*		0.04*
+5°	42.50±12.92[q]	35.00±18.77[q]	53.50±16.94[q]	0.003*			0.002*
+10°	52.50±12.51[q]	36.00±16.98[q]	59.00±18.61	0.0001†	0.006*		0.001†
+15°	67.00±13.41	48.50±22.07	70.00±19.73	0.001†	0.007*		0.001†
−5°	58.50±17.55	47.50±23.36	74.50±20.12	0.0004†		0.04*	0.001†
−10°	64.00±17.59	48.00±19.89	68.50±19.27	0.009*	0.02*		0.003*
−15°	56.50±13.87[q]	45.50±20.38	63.00±17.80	0.009*			0.007*
+1 mm	55.00±13.95[q]	47.00±18.09	45.00±24.81[q]	0.23			
+2 mm	54.50±16.05[q]	44.50±18.48	45.00±20.39[q]	0.188			
+3 mm	45.00±11.92[q]	36.50±18.43[q]	45.50±18.77[q]	0.168			
+4 mm	46.50±14.96[q]	38.50±13.87[q]	48.00±21.17[q]	0.172			
−1 mm	60.00±16.22	48.00±18.80	62.00±16.09	0.02*			0.03*
−2 mm	59.00±11.19	42.00±18.80	55.00±18.77	0.005*	0.005*		0.04*
−3 mm	51.00±17.13[q]	39.50±17.00[q]	46.00±18.46[q]	0.124			
−4 mm	38.50±13.87[q]	35.50±15.72[q]	36.00±19.84[q]	0.827			
Total	54.37±16.37	42.87±19.07	55.70±21.95				

*P<0.05 – Significant; †P<0.001 – Highly significant; [q]Significantly different from the original image. HSD – Highly significant difference; SD – Standard deviation

Table 3: Descriptive data and comparison of each of the simulated photograph-mesofacial pattern

Mesofacial pattern							
Photos (*n*=20)	Descriptive data (mean±SD)			One-way ANOVA (df=57; *n*=60) (*P*)	*Post hoc* Tukey HSD (*P*)		
	Orthodontists (A)	Dentists (B)	Nonprofessionals (C)		A versus B	A versus C	B versus C
Original	61.00±14.47	51.50±18.43	65.50±20.12	0.04*			0.04*
+5°	56.00±15.35	47.50±14.09	64.00±17.88	0.007*			0.04*
+10°	60.00±12.97	50.50±20.12	65.00±20.90	0.04			0.04*
+15°	65.00±11.00	58.50±18.71	68.50±21.83	0.20			
−5°	55.50±14.31	56.00±17.59	72.00±21.17	0.006*		0.01*	0.01*
−10°	59.50±14.31	59.50±14.68	68.00±18.80	0.16			
−15°	61.50±14.96	52.00±19.89	69.50±17.00	0.009*			0.006*
+1 mm	59.00±14.47	54.50±23.05	59.50±26.84	0.73			
+2 mm	52.50±15.51	48.50±19.27	51.50±22.30[q]	0.79			
+3 mm	47.50±15.85[q]	44.50±16.69	53.50±22.30	0.29			
+4 mm	42.00±15.42[q]	32.00±17.04[q]	47.50±22.91[q]	0.03*			0.03*
−1 mm	57.50±14.82	48.50±15.65	62.00±18.80	0.03*			0.03*
−2 mm	59.00±13.33	53.00±14.54	60.50±21.87	0.34			
−3 mm	49.50±11.91[q]	41.50±14.24	50.50±27.23[q]	0.26			
−4 mm	59.00±14.47[q]	54.50±23.05[q]	48.50±26.41[q]	0.356			
Total	55.23±15.35	49.13±18.88	60.40±22.86				

*P<0.05 – Significant; †P<0.001 – Highly significant; [q]Significantly different from the original image. HSD – Highly significant difference; SD – Standard deviation

Table 4: Descriptive data and comparison of each of the simulated photograph-brachyfacial pattern

Brachyfacial pattern							
Photos (*n*=20)	Descriptive data (mean±SD)			One-way ANOVA (df=57; *n*=60) (*P*)	*Post hoc* Tukey HSD (*P*)		
	Orthodontists (A)	Dentists (B)	Nonprofessionals (C)		A versus B	A versus C	B versus C
Original	46.00±22.10	46.50±18.14	59.50±20.38				
+5°	37.00±16.80	40.50±18.20	52.00±23.75	0.005*		0.05*	
+10°	47.50±19.0	45.00±17.32	60.50±19.59	0.02*			0.02*
+15°	57.50±22.23	51.00±18.89	70.00±21.27	0.018*			
−5°	56.00±19.54	51.00±21.00	73.50±21.09[q]	0.002*		0.02*	0.002*
−10°	55.00±16.72	53.00±19.76	70.50±20.12[q]	0.009*		0.03*	0.01*
−15°	49.00±17.42	50.00±16.54	59.50±20.64				
+1 mm	46.50±18.43	42.50±17.43	56.00±26.43				
+2 mm	36.50±18.43	31.00±16.19[q]	53.00±21.54	0.0014†		0.02*	0.001†
+3 mm	30.50±13.56[q]	33.00±18.66[q]	51.00±18.89	<0.001†		0.001†	0.004*
+4 mm	26.50±15.31[q]	32.00±23.07[q]	53.00±24.30	<0.001†		0.001†	0.007*
−1 mm	33.00±19.76[q]	40.50±15.03	58.50±16.31	<0.001†		0.001†	0.004*
−2 mm	28.00±12.81[q]	31.00±14.10[q]	45.00±17.01[q]	0.001†		0.001†	0.01*
−3 mm	17.50±11.18[q]	19.00±13.33[q]	35.00±20.13[q]	<0.001†		0.001†	0.004*
−4 mm	21.00±9.67[q]	20.00±13.37[q]	35.50±20.38[q]	0.002*		0.01*	0.005*
Total	39.17±21.00	39.07±20.21	55.50±23.20				

*P<0.05 – Significant; †P<0.001 – Highly significant; [q]Significantly different from the original image. ANOVA – Analysis of variance; SD – Standard deviation

or nonprofessionals. Romani *et al*.[12] found that both orthodontists and lay judges were similarly sensitive to small horizontal changes in maxillary position and nearly identically sensitive to changes of 3 mm or more. The VAS allows greater sensitivity and can avoid biases toward preferred values as found with numeric or equal appearing interval scales.[13] In this study, nonprofessionals assigned higher values in all the three facial patterns followed by Orthodontists and Dentists scoring the least and this difference is significant when the type of face-photo factor is assessed in three-way ANOVA test (P < 0.01) [Tables 2-4].

Schlosser *et al*.[2] had done a photographic study and found that the 4-mm retruded maxillary incisors was esthetically less desirable than all other photographs, it is preferable to leave a normally protrusive maxillary dentition where it is or advance rather than retract the maxillary anterior teeth. Ghaleb *et al*.[3] from his photomorphic study concluded that the profile smile corresponding to an increase of 5° in a labial direction had the highest score. The most preferred smile matched with a maxillary incisor inclined 93° to the horizontal line and + 7° to the lower facial third. Cao *et al*.[4] in his photographic study located that the smiling profile with the highest score was the one with

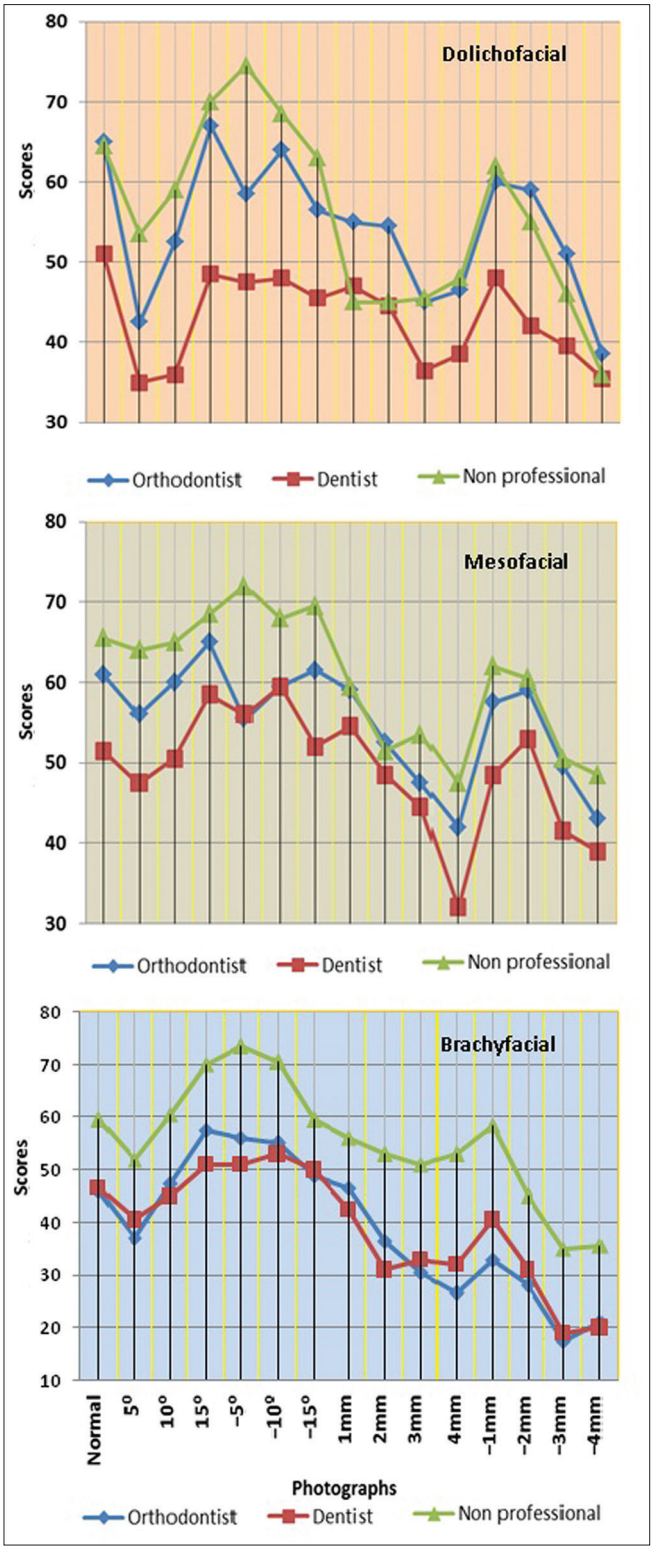

Figure 5: The mean scores of all the simulations in all the three facial patterns

5° lingual inclination. Maxillary incisor protrusion and lingual inclination were preferable compared with retruded incisors. In this study, it was observed that in the dolichofacial pattern the lingual inclinations and labial inclination of 15° are more attractive than the other photographs. In mesofacial pattern, the results of this study are in agreement with the study Cao *et al*.[4] The labial and lingual inclinations were attractive, but lingual inclinations were comparatively more attractive than the labial inclination. In the brachyfacial pattern, the change in inclinations is accepted while the change in the position of the incisors is not tolerated.

From the ratings in the study, it is observed that when the FA point of maxillary incisor was on GALL the change in the labiolingual inclination of maxillary incisor was attractive. It was understood that in dolichofacial pattern extraction of teeth is indicated, but the linear movement of maxillary incisor must be limited to lingual displacement up to 2 mm from the GALL, whereas the lingual inclination is preferred than the labial inclination when FA point of maxillary incisor is on GALL. Nahoum *et al*.[14] showed that in dolichofacial patients there is a lack of lip seal and therefore lip pressure in the increased face height patients, resulting in proclination of the incisors, thus during camouflage treatment of dolichofacial patients, retroclination helps as it will improve overbite as well as anterior esthetics.

In mesofacial pattern, extraction of teeth is indicated, but the labiolingual linear displacement is limited to 2 mm from the GALL beyond this point the displacement of maxillary incisors leads to worsening the facial esthetics, but when the FA point of maxillary incisor was on GALL the change in the labiolingual inclination of maxillary incisor was attractive. In brachyfacial pattern, any movement of FA point of maxillary incisors away from GALL (anteriorly/posteriorly) is worsening the facial esthetics. The preferred incisal positions and angulations at the end of active treatment might vary depending on the underlying vertical facial type, with brachyfacial patients tolerating more protrusive and proclined incisors than dolichofacial patients.

Data are further subjected to three-way ANOVA III test for analysis of variation when the interaction between all the factors put together in comparing the three facial patterns to one another. Nonprofessionals assigned higher values in all the three facial patterns followed by Orthodontists and Dentists scoring the least, and this difference was significant when the type of face– photo factor is assessed in three-way ANOVA test ($P < 0.01$) [Table 5]. In comparing the facial attractiveness in three facial types, a significant difference ($P < 0.05$) is found when the type of face, panel, the photo was compared individually and their interactions type of face x panel, type of face x photo. No significant difference was observed when comparing the interaction between panel x photo ($P = 0.238$) and type of face x panel x photo ($P = 0.972$).

The individual variation of the interacting parameters was assessed by *post hoc* Scheffe method test after ANOVA test. The level of significance was set at $P < 0.05$ for all statistical tests. The inter-pair comparison among the panels in all the facial patterns is done by *post hoc* Scheffe test. This would

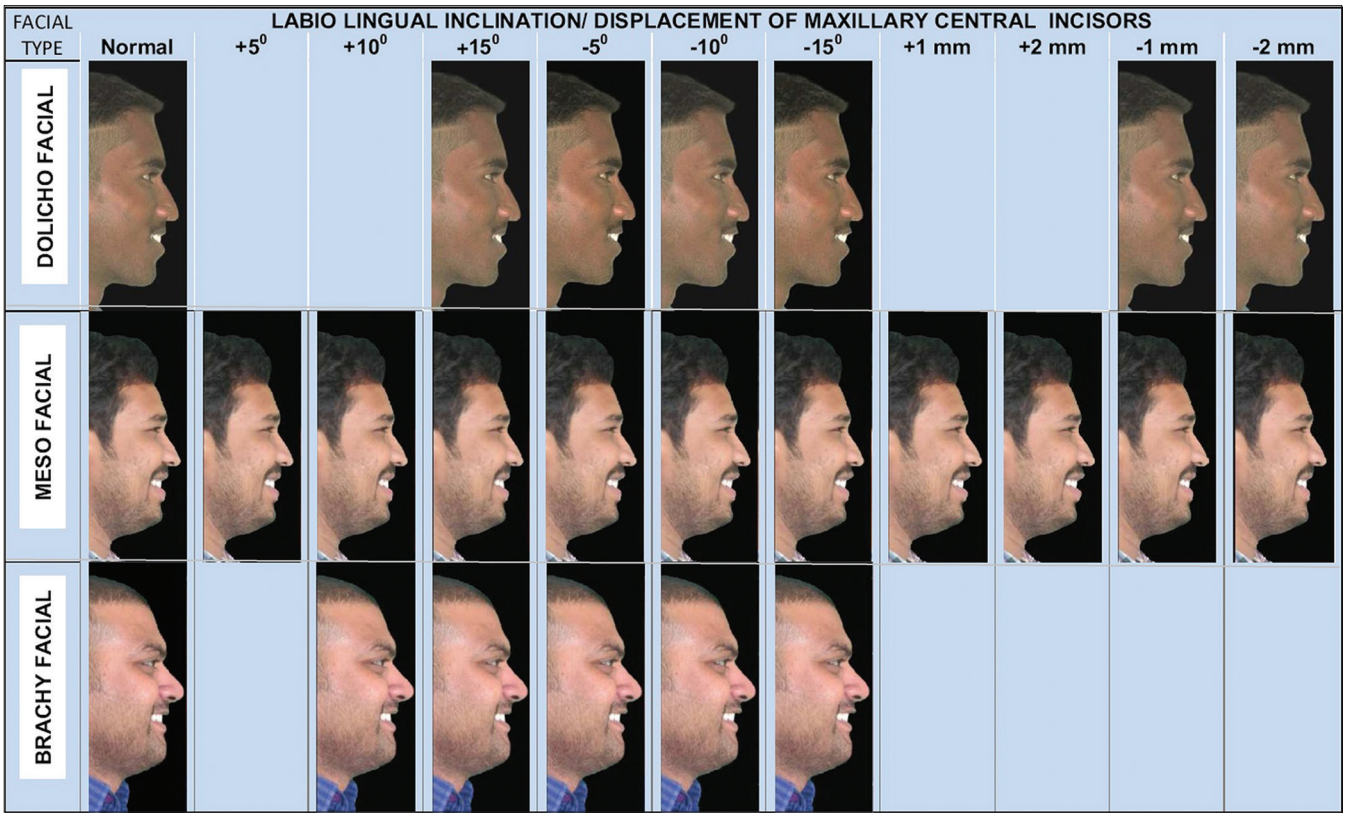

Figure 6: Harmonious esthetic smiling profiles of three different facial patterns

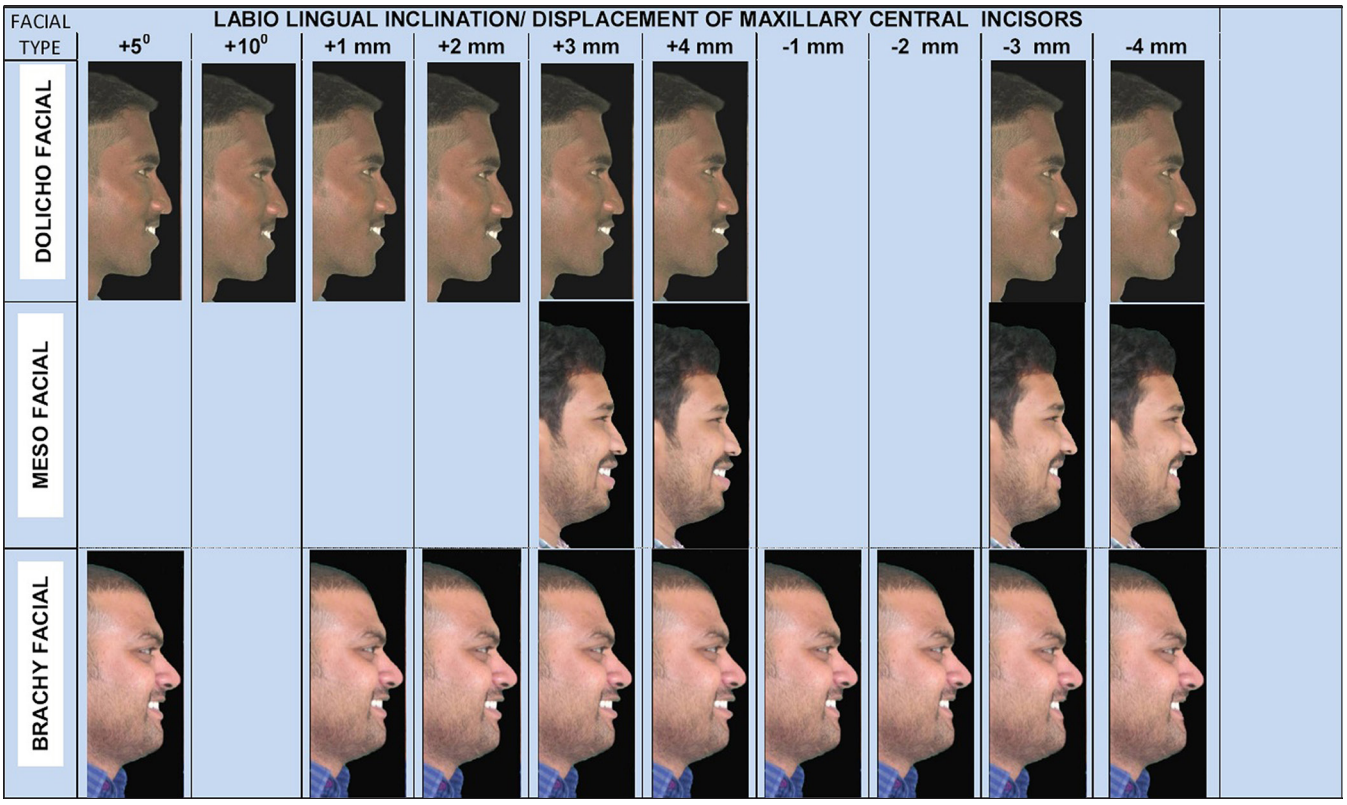

Figure 7: Unharmonious smiling profiles of three different facial patterns

Table 5: Three-way ANOVA test for comparison of the subjects-effects for facial attractiveness in three facial types

Factor	Type III sum of squares	df	Mean square	*F*	Significant
Type of face	49,057.852	2	24,528.926	73.775	0.001†
Panel	82,586.741	2	41,293.370	124.198	0.001†
Photo	173,774.296	14	12,412.450	37.333	0.001†
Type of face × panel	20,053.926	4	5013.481	15.079	0.001†
Type of face × photo	31,514.370	28	1125.513	3.385	0.001†
Panel × photo	10,962.148	28	391.505	1.178	0.238
Type of face × panel × photo	12,467.185	56	222.628	0.670	0.972
Error	852,815.000	2565	332.481		
Total	8,026,300.000	2700			

*P<0.05 – Significant; †P<0.001 – Highly significant; ANOVA – Analysis of variance

Table 6: Scheffe *post hoc* test for comparison between panels in all the three facial types

Facial pattern	Interpanel comparison		*P*
Dolichofacial	Orthodontists	Dentists	0.001†
		Nonprofessionals	0.654
	Dentists	Nonprofessionals	0.001†
Mesofacial	Orthodontists	Dentists	0.001†
		Nonprofessionals	0.003*
	Dentists	Nonprofessionals	0.001†
Brachyfacial	Orthodontists	Dentists	0.998
		Nonprofessionals	0.001†
	Dentists	Nonprofessionals	0.001†

(*P<0.05; Significant; †P<0.001; Highly significant); †(For descriptive purpose software generated *P* values of 0.000 are taken as 0.001)

determine the mean difference between each panel in judging at each level of individual photos. In this multiple comparisons, there is the mean difference between orthodontist and dentist panel as well as a dentist and lay person panels at a statistically significant level (P < 0.01) [Table 6]. The exception found is between the orthodontist and nonprofessional (P = 0.654) in dolichofacial pattern and orthodontist and the dentist in the brachyfacial pattern (P = 0.994).

The sex and age influence people's perceptions of profile esthetics. This study has not considered the gender factor within the groups. This study lacks this additional evaluation that will be hopefully taken into account in further studies involving a larger number of subjects in each group to ensure whether or not this finding is linked to the subjects' gender.

Our results should be interpreted as an average subjective rating, but not as a major indicator in choosing a treatment option over another, without having evaluated all clinical, esthetic, functional advantages and disadvantages in every individual patient.

CONCLUSION

- The null hypothesis is rejected. Significant differences in profile perceptions were found in the three different facial patterns when there is an alteration in the maxillary incisors either in the inclination or the position
- There is also a significant difference between professionals (orthodontists and dentists) and the nonprofessionals (laypeople).

Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of Interest

There are no conflicts of interest.

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