Perception Of Midline Deviations Among Different Facial Types – Comparative Study

Dr Naomi Rodrigues[1]*, Dr Aparna Khamatkar[2], Dr Sushma Sonawane[3], Dr Veera Sawant[4], Dr Aarti Sethia[5], Dr Sameer Narkhede[6]

***Corresponding Author: -** Dr Naomi Rodrigues
*[1]PG Student, Department Of Orthodontics and Dentofacial Orthopaedics, D Y Patil Deemed To Be University School Of Dentistry Nerul Navi Mumbai. Email: naomi.rodrigues@gmail.com
[2]Reader, Department Of Orthodontics and Dentofacial Orthopaedics, D Y Patil Deemed To Be University School Of Dentistry Nerul Navi Mumbai. Email: aparna.khamatkar@dypatil.edu
[3]Professor, Department Of Orthodontics and Dentofacial Orthopaedics, D Y Patil Deemed To Be University School Of Dentistry Nerul Navi Mumbai. Email: sushma.sonawane@dypatil.edu
[4]Lecturer, Department Of Orthodontics and Dentofacial Orthopaedics, D Y Patil Deemed To Be University School Of Dentistry Nerul Navi Mumbai. Email: veera.sawant@dypatil.edu
[5]Lecturer, Department Of Orthodontics and Dentofacial Orthopaedics, D Y Patil Deemed To Be University School Of Dentistry Nerul Navi Mumbai. Email: aarti.sethia@dypatil.edu
[6]Professor and HOD, Department Of Orthodontics and Dentofacial Orthopaedics, D Y Patil Deemed To Be University School Of Dentistry Nerul Navi Mumbai. Email: Sameer.narkhede@dypatil.edu

Abstract:

Background: The objective is to assess the effect of different facial types, euryprosopic mesoprosopic and leptoprosopic on lay persons perception of various midline deviations.
Methods: 2 Subjects with different gender and a mesoprosopic facial form are selected for taking frontal facial photographs with adequate tooth display upon smiling. Total of 54 photographs are used where the midline is deviated to both sides 0mm to 4mm respectively. In each gender with midline combinations euryprosopic and leptoprosopic facial forms are created. 150 evaluators from the population have to evaluate the photographs and rate the attractiveness of the face on the visual analog scale and also to rate whether the subject requires orthodontic therapy
Results: The male photograph was significantly more attractive than the female photograph overall. The leptoprosopic facial form was significantly more attractive than mesoprosopic and euryprosopic facial forms. At 2mm and 4mm midline deviations significant differences were found. The euryprosopic facial type was less attractive than other facial types at a 4mm midline deviation.
Conclusions: The male was more attractive overall. Leptoprosopic facial form was most accepted. Right sided midline deviation of 2mm with leptoprosopic facial form was most attractive for males and left sided midline deviation of 2mm with leptoprosopic facial form was most attractive for females. Female required orthodontic treatment overall.

Key words: Midline deviation, Mesoprosopic, Leptoprosopic, Euryprosopic.

DOI Number: 10.14704/nq.2022.20.9.NQ44466 **Neuro Quantology 2022; 20(9):4065-4071**

INTRODUCTION:

The 3 various different head forms are dolichocephalic, brachycephalic, and meso-cephalic. The dolichocephalic head form gives rise to the "leptoprosopic" facial type which is narrow, long, and more protrusive. The brachycephalic head form gives rise to the "euryprosopic" facial type that is broad, short, and less protrusive. The mesocephalic head form give rise to facial form called "mes-oprosopic." [1]

Tjan and Miller considered creating the dental midline coincident with the midline of the oral commissures.[2]

Facial midline was defined by symmetry of base of the nose, nasal apex, center of the philtrum and central point of the chin, and the upper dental midline is checked from the tip of the gingival papilla between the maxillary central incisors.[3]

Research has shown that facial appearance might affect behaviour, communication, capability, and needs.[4]
At the era of the Renaissance period illustrators correct anatomic human face ratio is the distance from hairline to the base of the nose, the base of the nose to the bottom of the nose, and the bottom of the nose to chin should be the same.[5]
Facial beauty and attractiveness in combination to social insight it shows that people who have a more attractive face tend to have better healthy, societal, and management skills.[6]
Orthodontic treatment was based on occlusal relationship initially but currently the orthodontic paradigm has changed to harmonious balance between soft tissue and steady occlusion.[7]
An important functional component of occlusion is that in a totally proportionate face, the dental midline and the facial midline should overlap, but this often is not always the case.[8]

MATERIALS AND METHODOLOGY:

- One male subject and one female subject with a mesoprosopic facial type are selected for taking frontal facial photographs with sufficient tooth display upon smiling,
- Total of 54 photographs are used where the midline deviated to the left and right sides 0mm to 4mm.
- In each gender with midline combination, euryprosopic and leptoprosopic variations are created
- The photographs are transformed by using Adobe Photoshop to introduce two more variations.
- After each midline modification, the dentition is altered to preserve buccal corridors correspondingly on both sides in each photograph.
- 150 evaluators from general population are asked to evaluate all photographs and the facial attractiveness of the both the subjects on the visual analog scale and also to rate whether the subject requires orthodontic treatment.
- Analog scale has a bar labeled "very unattractive (0-20)", "unattractive (20-40)", "average (40-60)", "attractive (60-80)" and "very attractive (80-100)" values between 0-100 clicked according to the assessment done
- The corresponding level of midline deviation (0-4mm) are recorded separately for each subject, and each subject's acceptance mean is calculated
- In addition to an overall, separate brinks are determined for each gender and each gender with facial type combination.
- Unpaired t tests is used for evaluation of differences in acceptability between both the subject's genders.

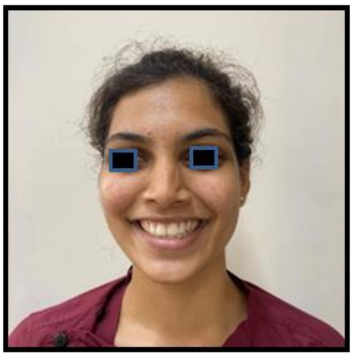
INCLUSION CRITERIA:

one male and one female adult subject for taking photographs should have –

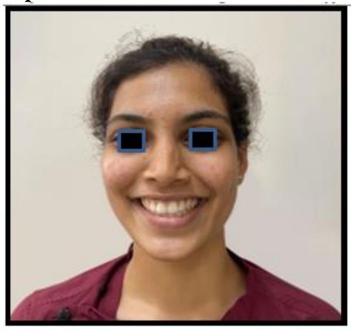
- Age group 18-30 years
- No history of Orthodontic treatment
- Mesoprosopic facial form
- Adequate tooth display upon smiling.
- Subjects should have no dental abnormalities or irregularities

EXCLUSION CRITERIA:

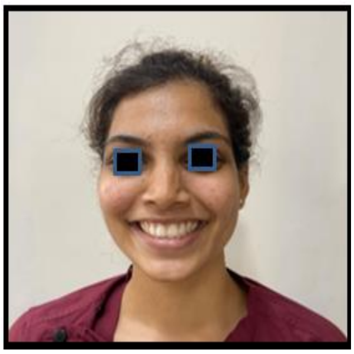
- Dentist and dental students are excluded as evaluators
- Evaluators below the age of 18 years and above the age of 40 years are excluded.
- The evaluators should not have any visual problems.



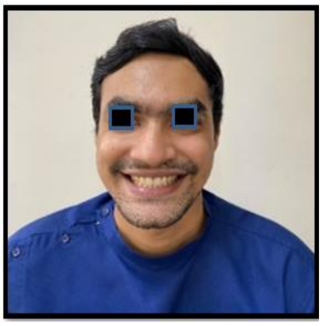
Mesoprosopic Facial form



Leptoprosopic Facial form



Euryprosopic Facial form

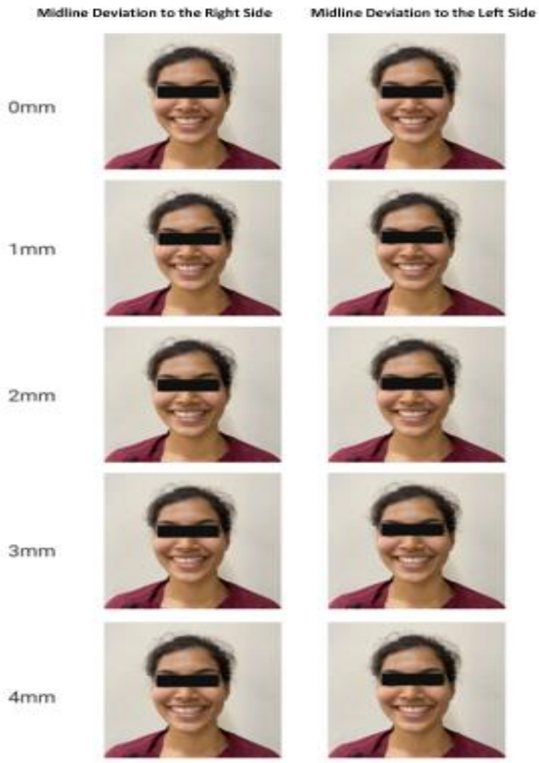


Mesoprosopic Facial form

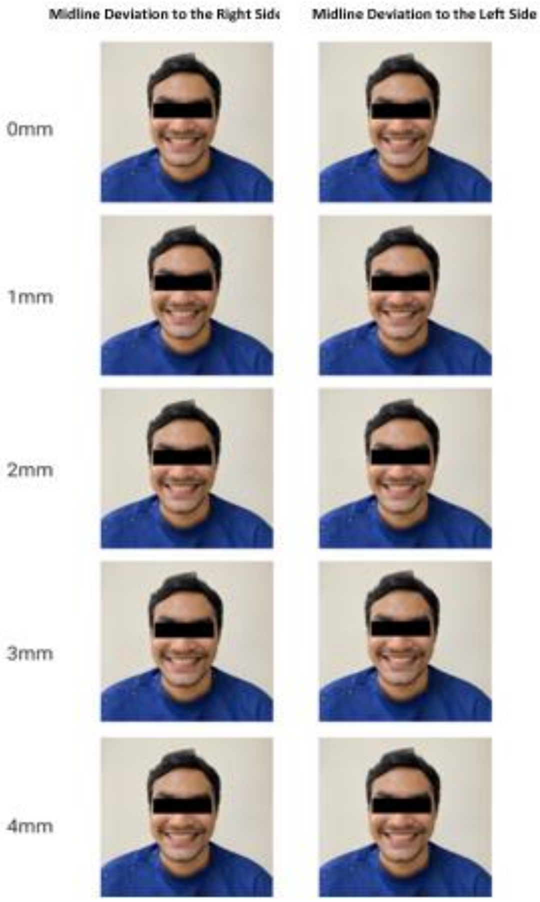
Leptoprosopic Facial form

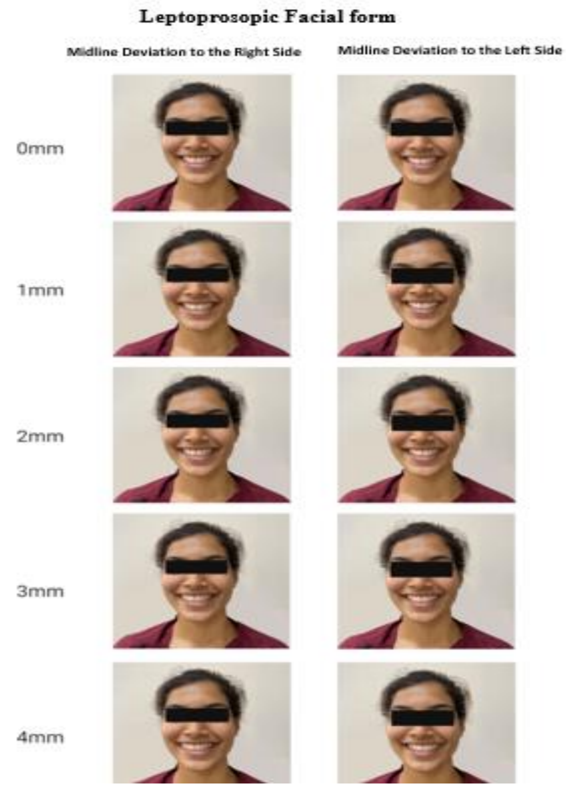
Euryprosopic Facial form

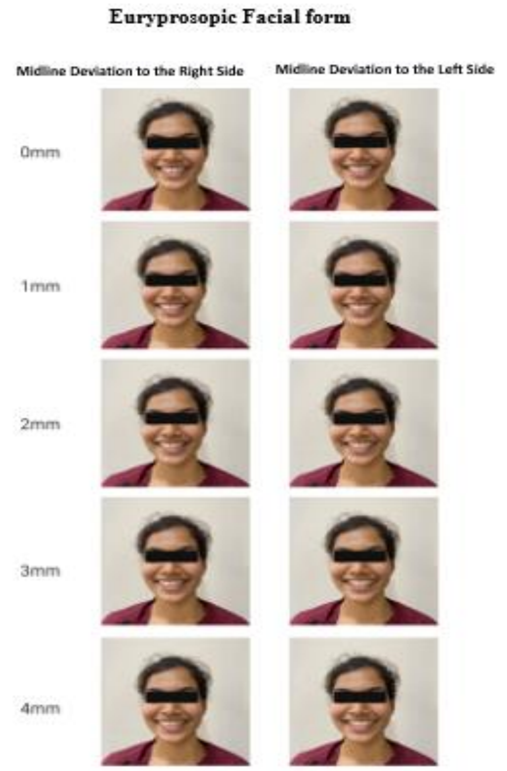
Mesoprosopic Facial form

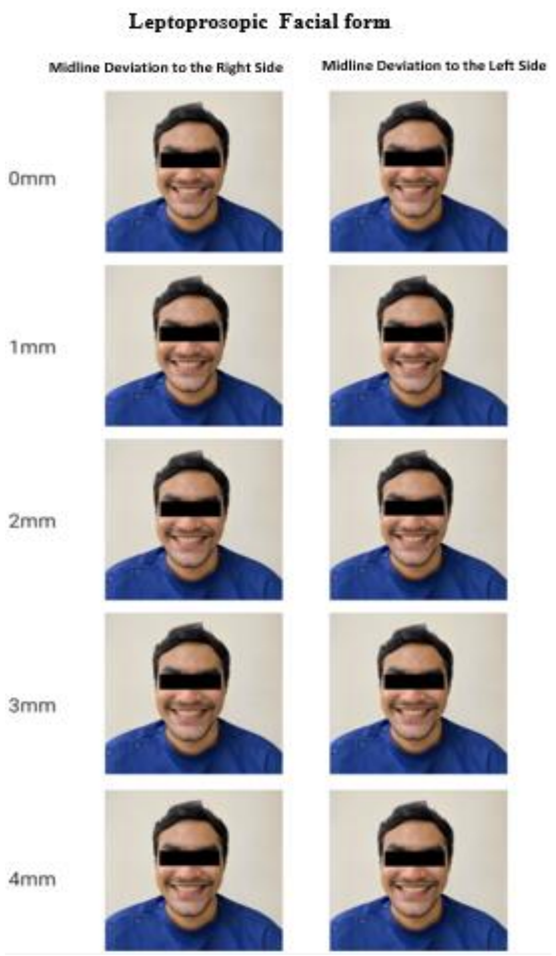


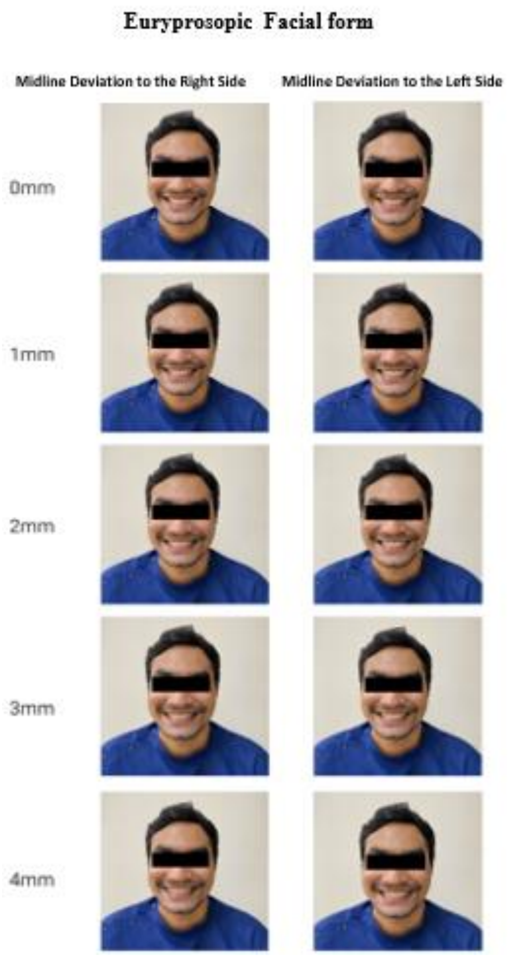
Mesoprosopic Facial form




Leptoprosopic Facial form
Midline Deviation to the Right Side
Midline Deviation to the Left Side
0mm
1mm
2mm
3mm
4mm


Euryprosopic Facial form
Midline Deviation to the Right Side
Midline Deviation to the Left Side
0mm
1mm
2mm
3mm
4mm


Leptoprosopic Facial form
Midline Deviation to the Right Side
Midline Deviation to the Left Side
0mm
1mm
2mm
3mm
4mm


Euryprosopic Facial form
Midline Deviation to the Right Side
Midline Deviation to the Left Side
0mm
1mm
2mm
3mm
4mm

RESULTS:

Mean and Standard Deviation of the required images:

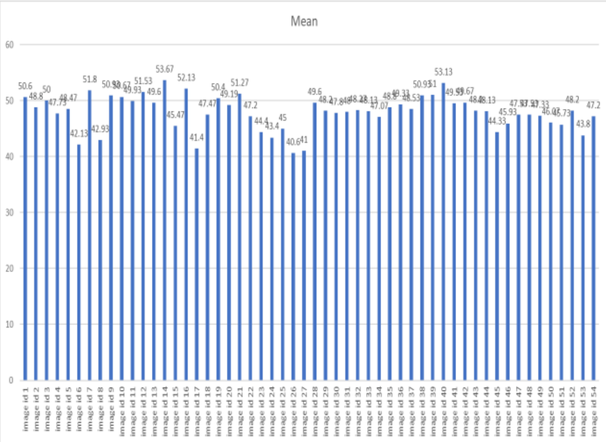
	N	Minimum	Maximum	Mean	Std. Deviation
image id 1	150	0	80	50.60	14.982
image id 2	150	0	90	48.80	16.092
image id 3	150	10	100	50.00	15.457
image id 4	150	0	100	47.73	16.143
image id 5	150	0	90	48.47	17.407
image id 6	150	10	90	42.13	16.733
image id 7	150	0	90	51.80	16.388
image id 8	150	0	90	42.93	17.361
image id 9	150	10	100	50.93	16.923
image id 10	150	20	90	50.67	16.330
image id 11	150	10	100	49.93	17.126
image id 12	150	10	100	51.53	18.051
image id 13	150	10	100	49.60	18.749
image id 14	150	10	100	53.67	16.846
image id 15	150	10	100	45.47	16.932
image id 16	150	10	100	52.13	17.669
image id 17	150	10	90	41.40	18.790
image id 18	150	10	90	47.47	19.634
image id 19	150	10	100	50.40	21.640
image id 20	150	10	100	49.19	20.347
image id 21	150	10	100	51.27	20.864
image id 22	150	0	90	47.20	18.065
image id 23	150	0	100	44.40	20.480
image id 24	150	0	90	43.40	17.979
image id 25	150	0	90	45.00	19.687
image id 26	150	0	100	40.60	19.941
image id 27	150	0	100	41.00	21.480
image id 28	150	0	100	49.60	20.591
image id 29	150	0	100	48.20	18.934
image id 30	150	10	100	47.80	17.140
image id 31	150	10	90	48.00	16.988
image id 32	150	10	80	48.27	17.017
image id 33	150	10	90	48.13	15.986
image id 34	150	0	90	47.07	17.010
image id 35	150	10	90	48.80	18.643
image id 36	150	10	100	49.33	17.443
image id 37	150	0	90	48.53	18.112
image id 38	150	10	90	50.93	17.622
image id 39	150	0	90	51.00	17.175
image id 40	150	0	100	53.13	19.042
image id 41	150	0	90	49.53	16.843
image id 42	150	0	90	49.67	18.076
image id 43	150	0	90	48.20	18.284
image id 44	150	10	90	48.13	18.037
image id 45	150	0	90	44.33	17.889
image id 46	150	0	100	45.93	22.258
image id 47	150	0	100	47.53	22.041
image id 48	150	0	90	47.53	23.082
image id 49	150	0	90	47.33	22.245
image id 50	150	0	100	46.07	22.373
image id 51	150	0	100	45.73	22.023
image id 52	150	0	90	48.20	21.677
image id 53	150	0	90	43.80	21.942
image id 54	150	0	90	47.20	22.795

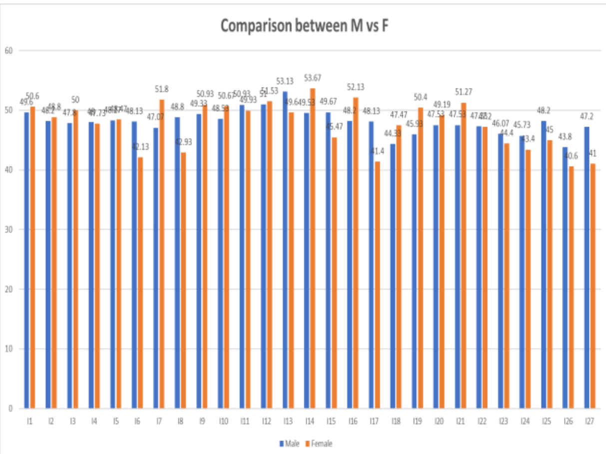
Comparison between Male vs Female Mean and Standard Deviation:

	Gender	N	Mean	Std. Deviation	Std. Error Mean	T value	p value of t test
I1	M	150	49.60	20.591	1.681	-.481	.631#
	F	150	50.60	14.982	1.223		
I2	M	150	48.20	18.934	1.546	-.296	.768#
	F	150	48.80	16.092	1.314		
I3	M	150	47.80	17.140	1.399	-1.167	.244#
	F	150	50.00	15.457	1.262		
I4	M	150	48.00	16.988	1.387	.139	.889#
	F	150	47.73	16.143	1.318		
I5	M	150	48.27	17.017	1.389	-.101	.920#
	F	150	48.47	17.407	1.421		
I6	M	150	48.13	15.986	1.305	3.175	.002**
	F	150	42.13	16.733	1.366		
I7	M	150	47.07	17.010	1.389	-2.454	.015*
	F	150	51.80	16.388	1.338		
I8	M	150	48.80	18.643	1.522	2.821	.005**
	F	150	42.93	17.361	1.418		
I9	M	150	49.33	17.443	1.424	-.806	.421#
	F	150	50.93	16.923	1.382		
I10	M	150	48.53	18.112	1.479	-1.071	.285#
	F	150	50.67	16.330	1.333		
I11	M	150	50.93	17.622	1.439	.498	.619#
	F	150	49.93	17.126	1.398		
	F	150	49.93	17.126	1.398		
I12	M	150	51.00	17.175	1.402	-.262	.793#
	F	150	51.53	18.051	1.474		
I13	M	150	53.13	19.042	1.555	1.619	.106#
	F	150	49.60	18.749	1.531		
I14	M	150	49.53	16.843	1.375	-2.125	.034*
	F	150	53.67	16.846	1.375		
I15	M	150	49.67	18.076	1.476	2.077	.039*
	F	150	45.47	16.932	1.382		
I16	M	150	48.20	18.284	1.493	-1.895	.059#
	F	150	52.13	17.669	1.443		
I17	M	150	48.13	18.037	1.473	3.166	.002**
	F	150	41.40	18.790	1.534		
I18	M	150	44.33	17.889	1.461	-1.445	.150#
	F	150	47.47	19.634	1.603		
I19	M	150	45.93	22.258	1.817	-1.762	.079#
	F	150	50.40	21.640	1.767		
I20	M	150	47.53	22.041	1.800	-.678	.498#
	F	150	49.19	20.347	1.661		
I21	M	150	47.53	23.082	1.885	-1.470	.143#
	F	150	51.27	20.864	1.704		
I22	M	150	47.33	22.245	1.816	.057	.955#
	F	150	47.20	18.065	1.475		
I23	M	150	46.07	22.373	1.827	.673	.501#
	F	150	44.40	20.480	1.672		
I24	M	150	45.73	22.023	1.798	1.005	.316#
	F	150	43.40	17.979	1.468		
I25	M	150	48.20	21.677	1.770	1.338	.182#
	F	150	45.00	19.687	1.607		
I26	M	150	43.80	21.942	1.792	1.322	.187#
	F	150	40.60	19.941	1.628		
I27	M	150	47.20	22.795	1.861	2.424	.016*
	F	150	41.00	21.480	1.754		

4069

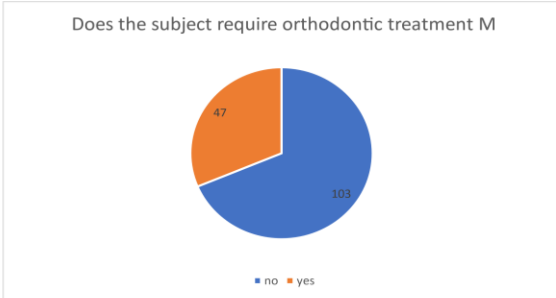
All 2-way interaction effects (gender with 3 facial type, gender with midline deviation 1mm 2mm 3mm and 4mm, and facial type 3 deviation) were statistically significant. The male photograph was more attractive than the female photograph. For the male and female subject, both mesoprosopic and euryprosopic facial forms were significantly less attractive as compared to leptoprosopic facial form. At 2mm and 4mm midline deviations significant differences were found. At a midline deviation of 4 mm euryprosopic facial type was less attractive than other facial types. According to the study it showed that orthodontic therapy is required for the female subject.

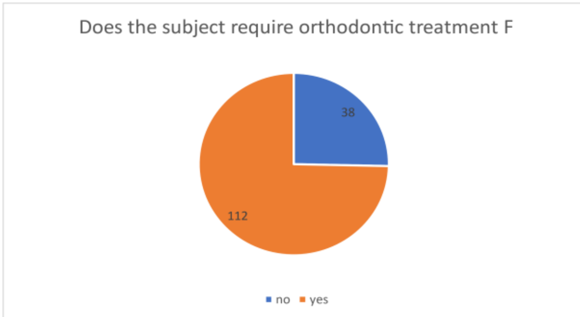




Mean attractiveness ratings for the female subject						
	Mesoprosopic		Leptoprosopic		Euryprosopic	
Midline shift (mm)	Mean	SD	Mean	SD	Mean	SD
0	50.60	14.982	50.67	16.330	50.40	21.640
1 RS	48.80	16.092	49.93	17.126	49.19	20.347
1 LS	50.00	15.457	51.53	18.051	51.27	20.864
2 RS	47.73	16.143	49.60	18.749	47.20	18.065
2 LS	48.47	17.407	53.67	16.846	44.40	20.480
3 RS	42.13	16.733	45.47	16.932	43.40	17.979
3 LS	51.80	16.388	52.13	17.669	45.00	19.687
4 RS	42.93	17.361	41.40	18.790	40.60	19.941
4 LS	50.93	16.923	47.47	19.634	41.00	21.480

Mean attractiveness rating for the male subject						
	Mesoprosopic		Leptoprosopic		Euryprosopic	
Midline shift (mm)	Mean	SD	Mean	SD	Mean	SD
0	49.60	20.591	48.53	18.112	45.93	22.258
1 RS	48.20	18.934	50.93	17.622	47.53	22.041
1 LS	47.80	17.140	51.00	17.175	47.53	23.082
2 RS	48.00	16.988	53.13	19.042	47.33	22.245
2 LS	48.27	17.017	49.53	16.843	46.07	22.373
3 RS	48.13	15.986	49.67	18.076	45.73	22.023
3 LS	47.07	17.010	48.20	18.284	48.20	21.677
4 RS	48.80	18.643	48.13	18.037	43.80	21.942
4 LS	49.33	17.443	44.33	17.889	47.20	22.795





DISCUSSION:

According to group ($p<0.01$) i.e highly significant difference seen, mesoprosopic right sided midline deviation with 3mm for male is more attractive than that of female. Right sided leptoprosopic midline deviation with 4mm for male is more attractive than that of female. Mesoprosopic right sided midline deviation with 4mm for male is more attractive than that of female.

According to group ($p<0.05$) i.e significant difference seen, left mesoprosopic 3mm midline deviation for female is attractive than male. Left leptoprosopic 2mm midline deviation for female is attractive than male. Right leptoprosopic 3mm midline deviation for male is attractive than female. Left euryprosopic 4mm midline deviation for male is attractive than female.

At a 2mm midline deviation left leptoprosopic is more acceptable for the female and right leptoprosopic more acceptable for the male overall. Leptoprospic is more pleasing in both male and female subjects for facial form. Male photograph was more attractive overall. At a 4mm midline deviation for female left euryprosopic is least accepted and unattractive over all. At a 4mm midline deviation for male right euryprosopic is least accepted and unattractive over all.

CONCLUSIONS:

The male was more attractive overall. Leptoprosopic facial form was most accepted.

Right sided midline deviation of 2mm with leptoprosopic facial form was most attractive for males and left sided midline deviation of 2mm with leptoprosopic facial form was most attractive for females.

At a deviation of 4 mm, the euryprosopic face was significantly less attractive than the other facial types.

For the male and female subject, both mesoprosopic and euryprosopic facial forms were considered significantly less attractive.

Female required orthodontic therapy.

REFERENCES:

Perceptions of midline deviations among different facial types Ryan P. Williams, Daniel J. Rinchuse, Thomas G. Zullo,

Coincidence of Dental Midline with Facial Midline in a Sample of Pakistani Population

Mehwish Khan and Syed Murtaza Raza Kazmi

Smile attractiveness perception regarding buccal corridor size among different facial types

Vahid Mollabashi, Masoud Abolvardi, Marzieh Akhlaghian, Mohammad Ibrahim Ghaffari,

Prevalence of maxillary midline shift in female patients reported to Saveetha Dental College S. Priyadharshni, A. Sumathi Felicita

Thresholds of Abnormality Perception in Facial Esthetics among Laypersons and Dental Professionals: Frontal Esthetics

Raed H. Alrbata, Ayham Kh. Alfaqih,Mohammad R. Almhaidat, and Ahmad M. Al-Tarawneh

The Influence of the Smile on the Perceived Facial Type Esthetics

Waeil Batwa

ASSESSMENT OF PERCEPTION OF SMILE ATTRACTIVENESS - A VIDEOGRAPHIC STUDY

Dr. Madhusudhan V, Dr. Jibin K Sabu, Dr. Prasanna TR, Dr. Mohammed Ramees Dr. Chethan Kumar and Dr. Swaroop S

Simplifying Laboratory Communication: The Dental Midline Position, Incisal Cant and Incisal Horizontal Plane

by Leendert (Len) Boksman,DDS, BSc, FADI, FICD

eISSN 1303-5150