

Inconsistencies in evaluation of different facial profiles by dental professionals and lay Iraqi sample for attractiveness

Received: 26/3/2012

Accepted: 21/10/2012

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Abstract

Background and objective: Facial appearance is fundamental for communication and interaction with the environment. Attractiveness nowadays reported increasing interest and attention among different ethnicities and varying education level groups. Aim: To study the perception of facial profile attractiveness among Iraqi Orthodontists and Maxillofacial surgeons (as concerned dental professionals) compared to Iraqi lay-individuals.

Methods: Digital facial profile images were taken for a young male and female, altered in 2 degrees of prognathism and retrognathism in 4, 8 mm for each jaw, and combinations, collecting 12 images each, which were "E-mailed" to a sample of 80 Iraqis (from the pool of Baghdad society): 40 dental professionals (20 orthodontists, 20 maxillofacial surgeons), and 40 lay individuals, with equally distributed genders. Rating was carried out for 24 images, scoring each on a numerical scale of 1-10 as the least to the most attractive profile.

Results: Significant difference in perception facial profile was found between genders ($P<0.05$) and among the groups with different dental education ($P<0.001$). General agreement was established in all the sample groups on average facial profile to be the most attractive and on the most retrognathic mandibular profile to be the least attractive.

Keywords: Attractive facial profile, perception of facial profile.

Introduction

Attractiveness is becoming a matter of concern during childhood and adolescence, with a notable contribution by the media, mainly by the television, the cinema, the advertisements and fashion industries, all entering into our life bring facial "standards", that should convey perception of beauty. Esthetic criteria appear to be defined in almost all cultures, while a beautiful face can be considered as a key to success^{1,2}. Clinical specialists working in the facial area, encounter an increasing demand for treatments mainly based on esthetic requests, they should have deep understanding of those quantifiable, objective facial characteristics that are considered by the public as "attractive"³. This study aimed to assess the perception of facial profile attractiveness among Iraqi lay people and the concerned dental professionals (orthodontists and maxillofacial surgeons),

for better esthetic demand and treatment manner.

Methods

With equal gender distribution, 80 Iraqi individuals (20 orthodontists, 20 maxillofacial surgeons and 40 high educated lay people) were selected to rate (via their E-mails), a computer-manipulated profile images of a male and a female volunteer subjects, about facial profile attractiveness. Profile digital images of a female (20 years old), Figure 1-A, and a male (25 years old), Figure 1-B, were taken using digital camera (Sony, CyberShot, DSC, T70). Both volunteers had a pleasant and straight soft tissue profiles, with average proportions. Standardized cephalographs were collected for them both. The cephalographs were scanned and imported into Dolphin software (Dolphin Imaging and Management, Chatsworth, California). The profile

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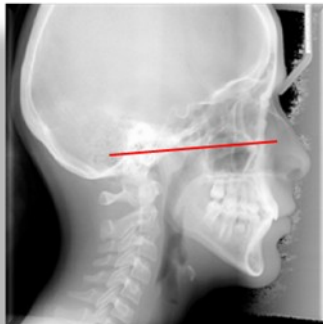
and scanned cephalographs were combined and superimposed.



A



B



C

Figure 1: Profile digital image of: a female volunteer (20 years old, A) and a male volunteer (25 years old, B), both with pleasant and straight soft tissues profile and average proportions. Movements (C) were tracked relative to Frankfort Horizontal reference plane.

Different maxillary and mandibular retrognathic, prognathic and combination

relationships were prepared⁴. An on-screen gauge was used to track these movements relative to Frankfort Horizontal reference plane, Figure 1-C. The positions of the maxilla and the mandible were changed in a 4 mm increment. The 4 mm alteration is based on a previous study showing that orthodontists and lay people are sensitive to changes of 3 mm or more⁵. Altered profiles from the original one are: prognathism (+), retrognathism (-) of the maxilla or the mandible in 4 and 8 mm, and combinations of 4 mm, collecting 12 profiles including the original one (Average profile) for both genders. The resulted soft tissue morphology reflected the hard tissue movements calculated according to Dolphin software programmed ratio. Then, areas around the alterations were airbrushed to disguise any signs of alteration or unnatural area especially the lips, cheeks and the nose, done by A Photoshop software program. The altered profile images were arranged in a sequence, as the amount of alteration from the original image, Figure 2 A and B, fixed on a survey form, Figure 3, with short notes information for the judges or raters who was of two main categories: (1) Dental specialists (20 orthodontists, 20 maxillofacial surgeons), and (2) lay individuals (randomly selected high educated individuals), both categories were in equal gender. The mean sample age was 35 yrs-3 months (\pm 9 months). The judges or raters were informed to survey the E-mailed forma by testing each image thoroughly and give it a score from a numerical scale of (1-10), arrange from a very unattractive (score 1), to the most attractive one (score 10). Facial attractiveness findings reliability were analyzed by repeated measures analysis of variance ANOVA, with two weeks intervals, for (10) randomly selected raters, with equal genders two from each dental group and 6 lay individuals. This reliability was tested by using intra-class correlation coefficient (ICC) with 95% confidence interval statistics, two-way mixed, as raters were random and pictures were fixed.



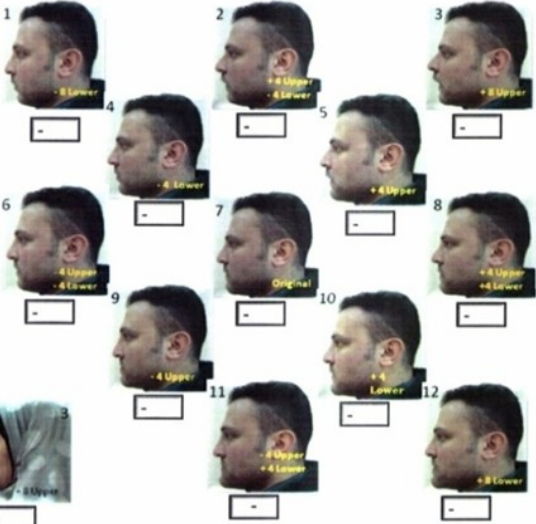
Figure 2-A: The male altered profile images arranged in a sequence due to the amount of alteration from the original image.



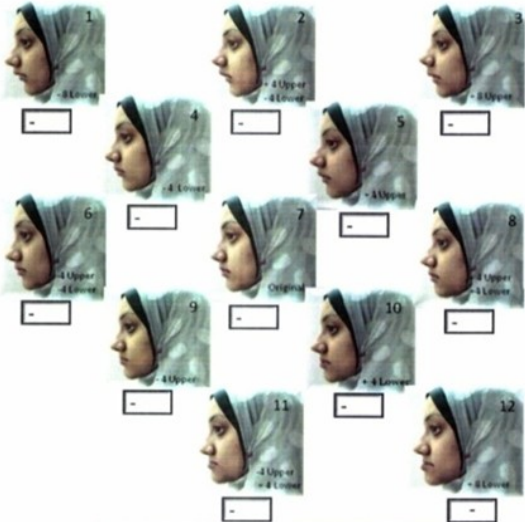
Figure 2-B: The female altered profile images arranged in a sequence due to the amount of alteration from the original image.

Facial Profile Attractiveness Survey

As a requirement of research, for the perception of attractiveness among Iraqis, please rate each image alone in scoring from (1 - 10) for a very unattractive to the most attractive images. Please click and choose a score for each.



1 2 3
 4 5 6
 7 8 9
 10 11 12



1 2 3
 4 5 6
 7 8 9
 10 11 12

هذه الصور لشباب و شابه تم تغييرها بواسطة الكمبيوتر بتقديم و تأخير الفكين العلوي و السفلي و بدرجتين (٤ و ٨ ملم) وذلك لقياس الجماليه لدى العراقيين.
 اعط رأيك بجماليه كل صورته بمقياس (1 - 10) الذي يمثل الاقل الى الاكثر جمالا.

Name:

Age :

Gender:

Education:

To be filled by the surveyor: خاص بالباحث:

No.	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
M												
F												

Figure 3: The forma that has been e-mailed to the raters.

Results

Intra-rater reliability

The intra-rater reliability in this study was 0.925with (ICC).

Variation in reliability among different groups was tested using Pair wise comparisons. Different variables affecting the raters perception was tested using ANOVA.

There was significant difference in perception when considering different profiles,

gender and education of the raters, Table 1.

The Line graphs

The Overall rating of different profiles, Figure 4, showed that the average or the unaltered profiles, Figures1- A and B, was the most attractive, and the extreme class II profiles to be the least attractive.

Table 1: Different variables affecting the raters perception (subjectsprofile, gender and education of the raters) was tested using ANOVA.

Effect	P- value	Sig.
Profile : Profile	3.78	***
Profile : Gender	1.12	*
Profile : Education	2.55	***

*Significant ($P < .05$)

*** Significant ($P < .001$)

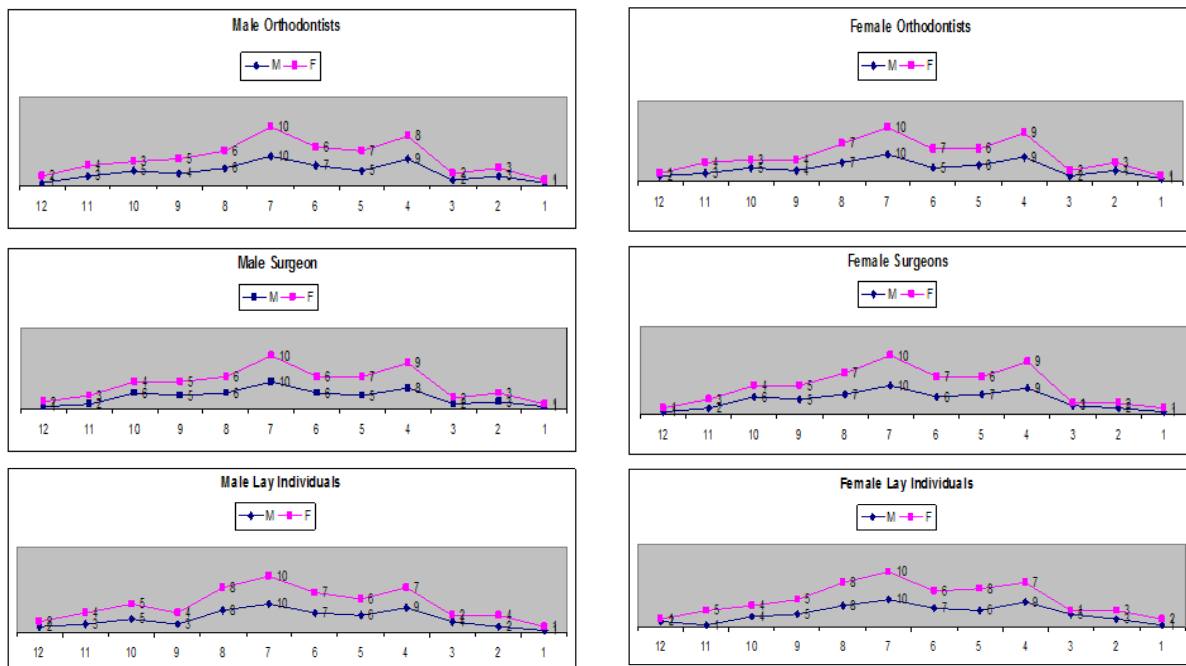


Figure 4: Line graphs showing the mean rating of the male and female profile images carried out by both genders in each group (orthodontists, maxillofacial surgeons, and lay individuals).

Discussion

Validity and Reliability:

Concerns about validity and reliability of measuring subjective interaction through an objective tool continue to remain unresolved. Personal variations, semantic variations and misinterpretation cannot be eliminated, but previous studies showed that using a pool of judges, colored picture slides and numerical scale for each image, provide a valid, reproducible and representative method of rating both dental and facial esthetic⁶. This study showed high intrarater reliability of facial profile attractiveness (ICC= 0.925), variation in reliability in different groups was shown in Pair wise comparisons. Negligible difference was found.

Rating of Facial Profiles:

Analysis of variance of the data gathered Table 1, showed significant difference when different profiles were rated ($P < 0.001$), meaning that different profiles perceived differently. Statistically significant difference in rating of profile images was found between different gender groups ($P < 0.05$) and among groups with different "dental" educational background ($P < 0.001$). Unaltered female facial profile with average proportions ranked first by all groups. This finding agrees with previous studies that found preference for average proportion profiles⁷⁻⁹. All groups came to agree on the worst profile, which was the 8 mm of mandibular retrognathism in the male subject. Findings in this study agree with previous studies that obvious Class II is perceived to be unpleasant by different comparison groups. Czarnicki et al. showed that 62% of their "sample judges" rated, severe mandibular retruded profile, to be the least attractive¹⁰⁻¹². In general, professionals gave higher rating when compared to lay people for their favorable pattern (the best perceived profile by dental group scored higher than that of the lay people). They both agreed on the most and least attractive profiles. Agreement between dental professionals and lay people on judgment of facial

profile attractiveness has been reported in previous studies^{5,7,13,14}. Strong correlations were found in the profile assessment between orthodontics and oral surgeon, with minor tendency for the surgeons from both genders to simple mandibular retrognathism, particularly for female profile. Bimaxillary protrusion has some likelihood among lay persons with higher rating than the professionals. These are going on with the finding of Sohet et al.,¹⁵ they confirm the slight tilt of the surgeons, to mild skeletal Class II, especially for the females, for its childish-look.

Many factors might contribute significantly to facial attractiveness other than profile outline shape, such as the color and shape of the eyes, the color and texture of complexion and the hairstyle, but facial profile as agreed with previous cross-cultural studies, was found to be the most relevant motivating factor in seeking orthodontic treatment. Photographs allow obtaining a true life judgment of profiles, and using single male and single female subjects would minimize variation and act as a control factor for the raters^{1,4,16}. Age of the judges or raters in this study was registered and not considered as a variable, because all the sample were from a limited age group, but it could be very effective, as it has been found that older individuals not rating the same attractiveness as the young¹⁷.

Conclusion

All groups of the sample, judged the average facial profile, as the most attractive. While the extreme class II profile to be the least attractive. Such studies can introduce closer vision of the concerned dental professionals (Orthodontists and Maxillofacial surgeons), compared to lay individuals, in the perception of the facial profile attractiveness in Iraqi society.

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