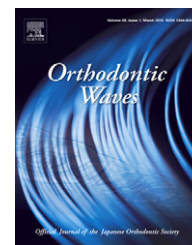


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## Research paper

# Facial attractiveness influenced by lower face vertical proportions and mandibular prominence

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## ABSTRACT

**Background and purpose:** There is a lack of scientific evidence to guide the orthodontist on the range of skeletal discrepancy that is esthetically acceptable. Hence, this study was designed to conceptualize the acceptable values of skeletal discrepancy for a lay person by determining the most attractive facial profile and lower face vertical proportion.

**Methods and subjects:** Hundred lay persons rated the attractiveness of a series of silhouettes with varying profiles and lower face proportions. A series of nine images were generated using SNB values  $\pm 10^\circ$  from the normal with the range divided into equal intervals of  $2.5^\circ$ . Another set of nine images were produced with lower anterior face height/total anterior face height (LAFH/TAFH) ranging from 47 to 63% at equal intervals of 2%. The participants scored the attractiveness of each image using visual analog scale of 0–10 and also indicated whether they would seek treatment if the image was their own profile.

**Results:** Profile images with Eastman normal values (SNB –  $78^\circ$ , LAFH/TAFH –  $55\% \pm 2SD$ ) were rated as most attractive. Images with SNB values greater than  $78^\circ$  were considered more attractive and less likely to be needing treatment than corresponding images with SNB values lesser than  $78^\circ$ . Images with reduced lower face proportion were considered to be more attractive and less likely to be needing treatment than corresponding images with increased lower face proportion.

**Conclusions:** Sagittal skeletal discrepancies were regarded by lay people as more unattractive than vertical discrepancies.

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## 1. Introduction

In non growing patients with sagittal and vertical skeletal discrepancies, the orthodontist is often faced with the choice of either accepting the skeletal discrepancy or correcting it using orthodontic camouflage treatment or more complex surgical orthodontic treatment. The decision is partly

influenced by the risks of surgical treatment and magnitude of skeletal discrepancy [1].

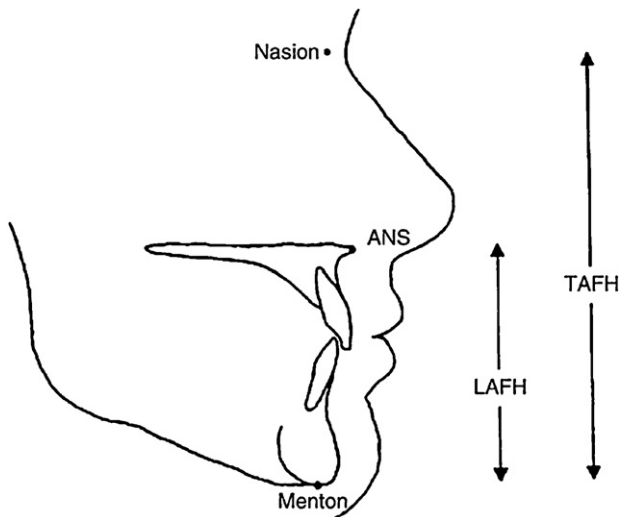
The decision to intervene or not relies heavily on the subjective judgment of the clinicians involved and the patients perception of their facial appearance. Unfortunately, however there is a lack of scientific evidence to guide the clinician on the range of skeletal discrepancy that is esthetically acceptable [2].

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**Fig. 1 – Points to calculate lower face vertical proportion.**

Defining beauty and attractiveness is a complex topic, but it is increasingly recognized that what is beautiful or attractive to the orthodontist or surgeon based on their experience and/or training may not agree with what the patient or other individuals think as beautiful or attractive [3]. Other studies have confirmed that dental professionals are conditioned to take an overly critical view of any deviation from normal facial appearance [4,5].

The present study is an attempt to conceptualize the acceptable values of skeletal discrepancy for a lay person by determining the most attractive facial profile relationship and lower face vertical proportion and the acceptable range in an objective manner.

## 2. Materials and methods

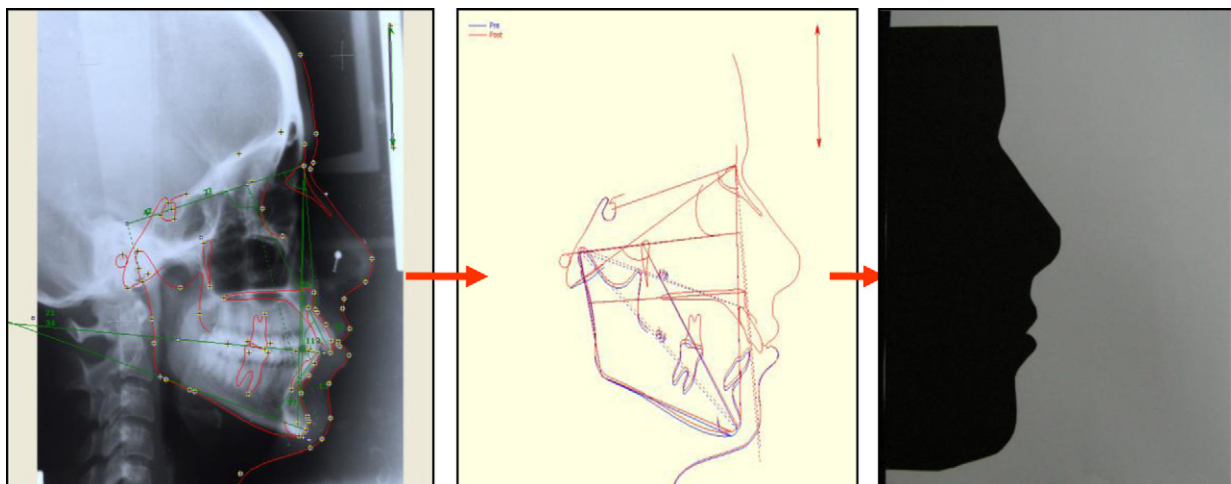
After obtaining the ethical approval from the local ethical committee, profile images were generated from cephalometric

Image	SNA (°)	SNB (°)	ANB (°)
A	81	88	-7
B	81	85.5	-4.5
C	81	83	-2
D	81	80.5	0.5
E (Eastman normal)	81	78	3
F	81	75.5	5.5
G	81	73	8
H	81	70.5	10.5
I	81	68	13

films of patients whose main dentoskeletal cephalometric measurements matched the Eastman normal values (SNB – 78°, lower anterior facial height/total anterior facial height: LAFH/TAFH – 55% ± 2SD) (Fig. 1). The films were digitized using VISTADENT OC software (VistaDent OC orthodontic imaging; TechnoCenter, GAC Orthodontic Software Solutions, Birmingham, Alabama) and silhouette profile image was produced (Fig. 2).

A series of nine images were generated using SNB values ±10° from the normal with the range divided into equal intervals of 2.5° (Table 1 and Fig. 3). Another set of nine images were produced with lower anterior face height/total anterior face height (LAFH/TAFH) ranging from 47 to 63% at equal intervals of 2% with skeletal class I antero-posterior relationship (Table 2 and Fig. 4).

Hundred lay persons (40 males and 60 females) of Asian origin randomly selected from people accompanying the patients in the dental college, with a mean age of 20 years were enrolled as judges in the study. The profiles were shown randomly to the judges. They were asked to rate each profile image of both the groups on a visual analog scale of 0–10 (0 – very unattractive, 10 – very attractive). For each image, the participants were also asked to indicate, using the response choices of ‘yes’ or ‘no’, whether they would seek treatment if that image represented their own profile.



**Fig. 2 – Generation of profile image: silhouette profile image was produced by digitizing the cephalometric films using VISTADENT OC software.**

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