



Morphological differences between Chinese and Caucasian faces and influence of BMI

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Contents



1. Background
2. Objectives
3. Material & Methods
4. Results
5. Conclusion



Background



The canons of beauty developed by artists during the **Renaissance** are well documented and imposed themselves for centuries despite the lack of anthropometric data

With internationalisation of media, concepts of beauty are becoming more and more **globalised** leading to a certain **homogenisation** of physical appearance : same advertisement around the world

Background



Influence of the west : Growing concern for beauty + appeal for scientific approach



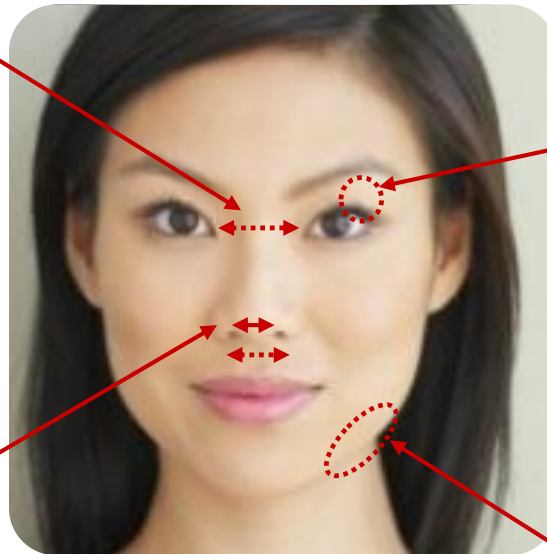
Background

- **A previous anthropometric study** shows that, compared to Caucasian women, Chinese women presents :

Wider intercanthal distance

Most differences identified relate to the nose:

less prominent, a wider nasal base, flared alae, a less defined nasal tip, more horizontally oriented nostrils...



Differences in the eyelids (lack of supratarsal crease or double eyelid)

A different profile of the lower part of the face

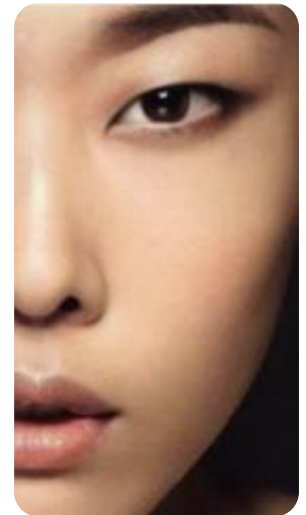
Objectives

The goal of this study is to identify :

The morphological differences between face of Chinese and Caucasian women

and to


Determine how overweight influences morphological characteristics within each group



Material & Methods

- **Subjects**

120 women from two ethnic groups :



60 Caucasian women between 25 to 40 yo (32,9 +/- 4,5 yo)



Normal BMI (n=30)

*18,5-25 kg/m²

Higher BMI (n=30)

*25,5-30 kg/m²



Living in France: Region of Paris



60 Chinese women between 25 to 40 yo (32,6 +/- 4,7 yo)



Normal BMI (n=30)

*18-22,5 kg/m²

Higher BMI (n=30)

*23-25 kg/m²



Living in China: Region of Shanghai (Han ethnic)

* According to WHO's standards

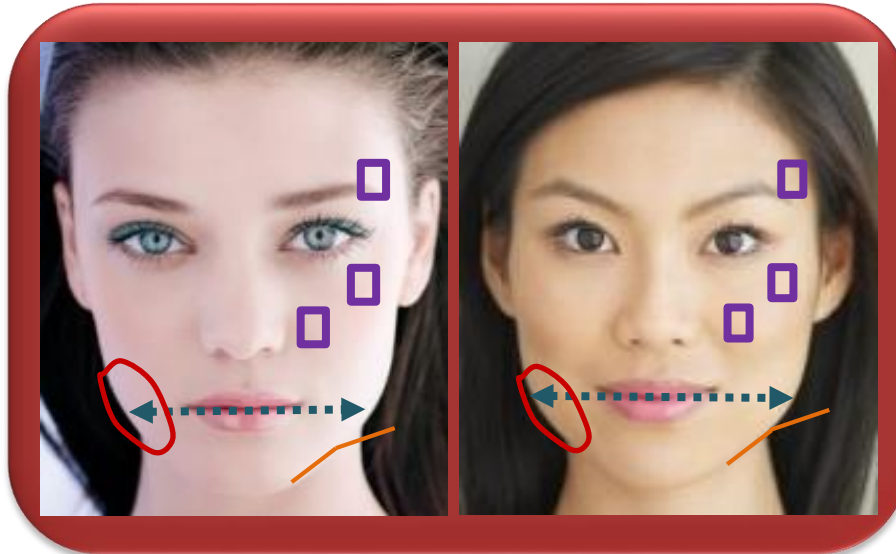
Material & Methods

- **Measurements**

- Thickness of the hypodermis

Ultrasound Scan, 16MHz

- Topography / Volume
Fringe projection technique



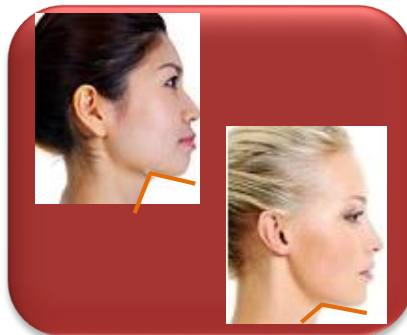
Individual high resolution pictures of front face

(3744 x 5616 px)

←---→ width of the face at the corner of the mouth

∟ Cheek/chin angle

Right half-face pictures (right profile)

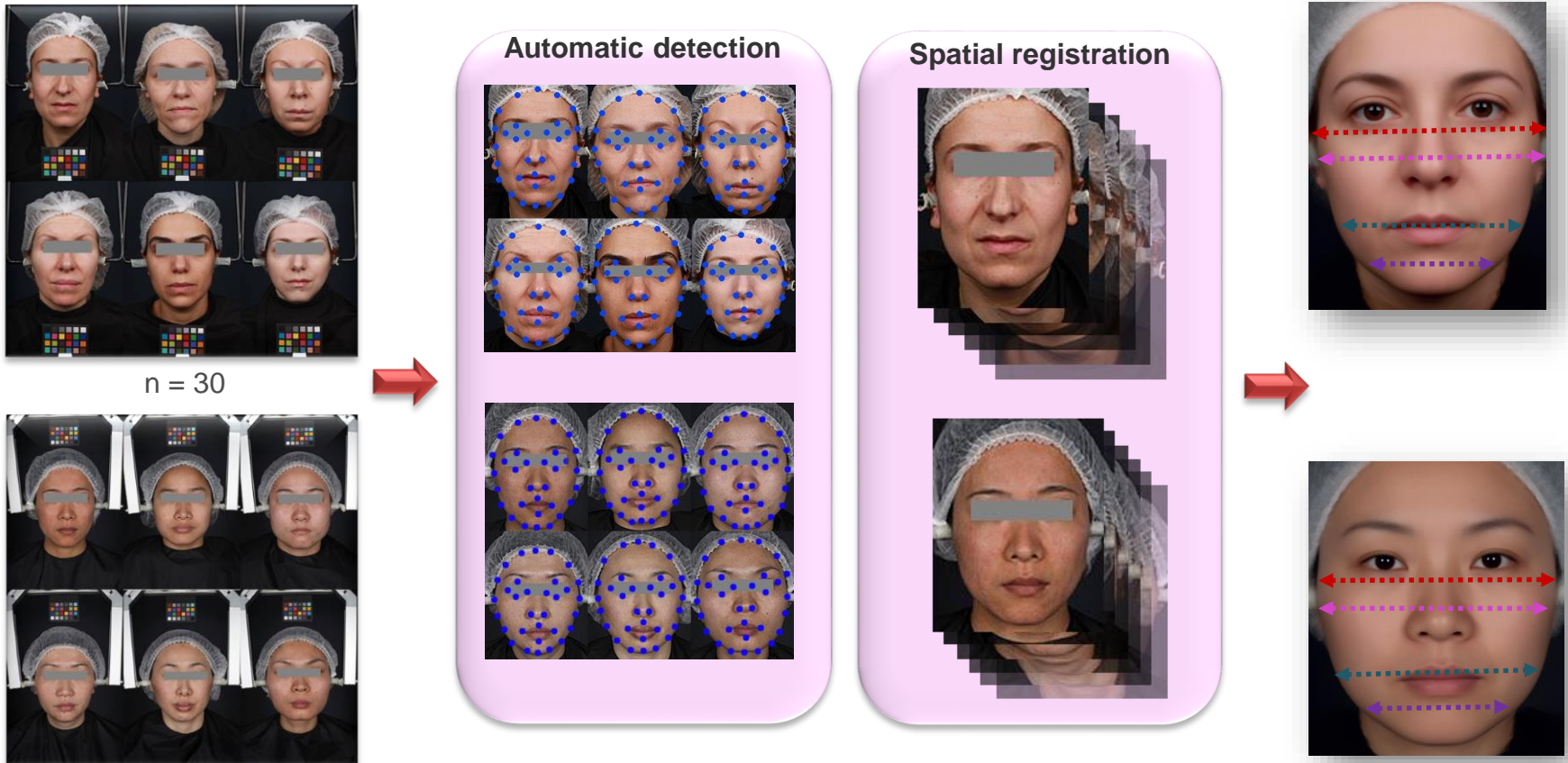


∟ Neck/chin angle

Measures are been conducted on the 4 panels: normal and higher BMI for Caucasian and Chinese

Material & Methods

- Four high definition average faces reconstruction (one for each sub-group)



Average Face Algorithm



France

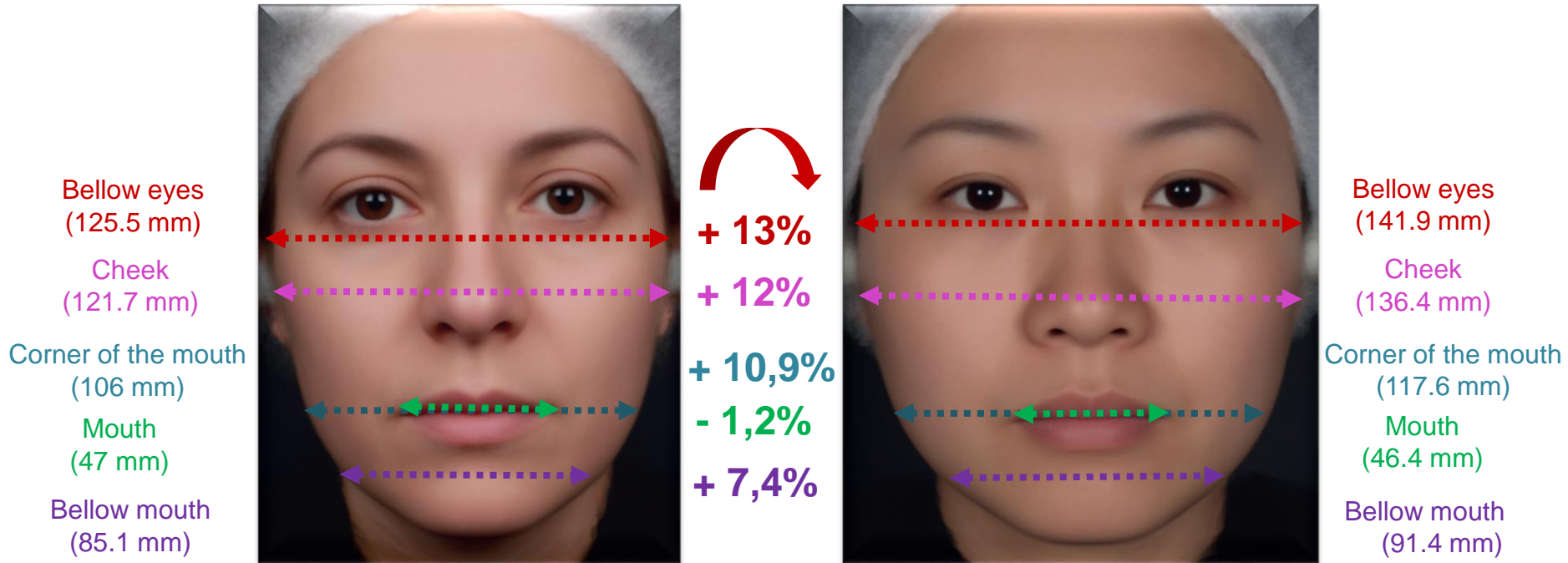


China

Results

- Width of Chinese and Caucasian Faces

Normal BMI



Only the width of the mouth itself is smaller in Chinese faces (-1.2%) previously noted

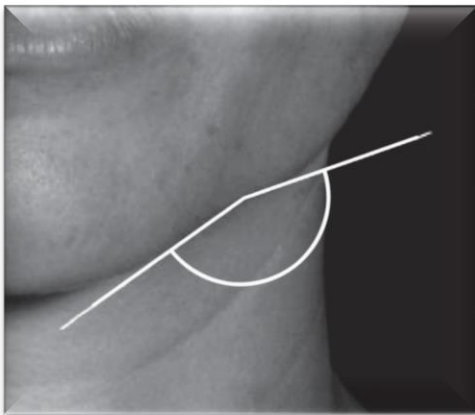
Faces of Chinese women are larger and rounder

Results

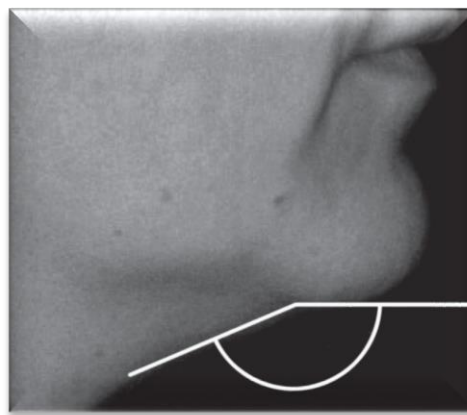
- Cheek/chin and neck/chin bending angles

Normal BMI

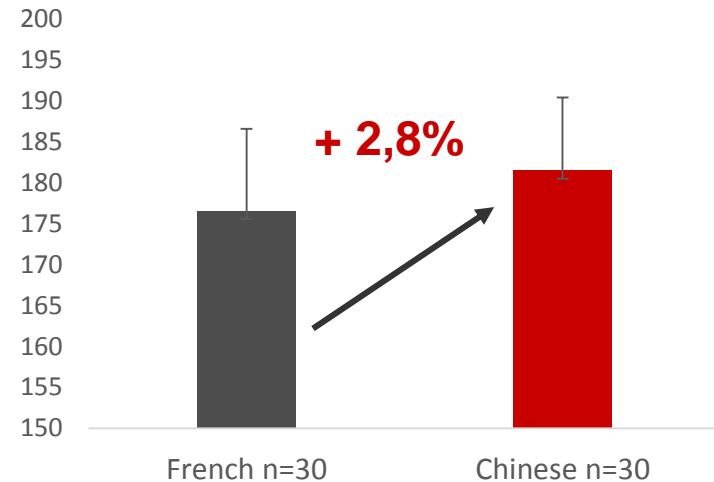
Cheek / chin angle



Neck / chin angle



No significant difference between the two groups

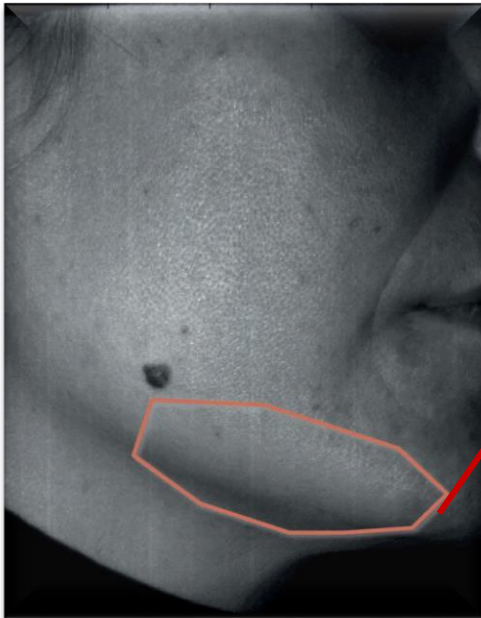


The neck/chin angle is significantly larger in the Chinese group (+ 2.8%).

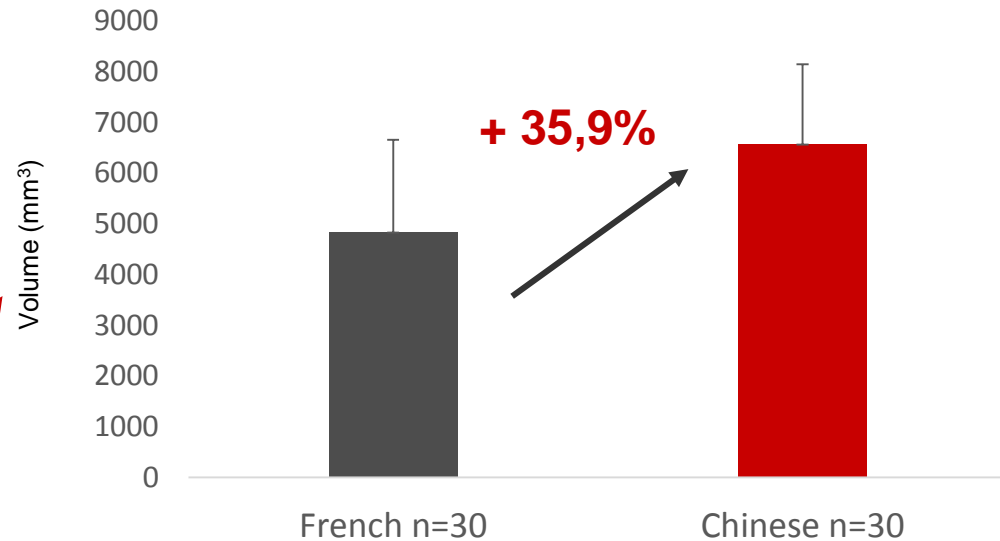
Results

- Maxillary area of the face in the Chinese and the French group

Normal BMI



3D

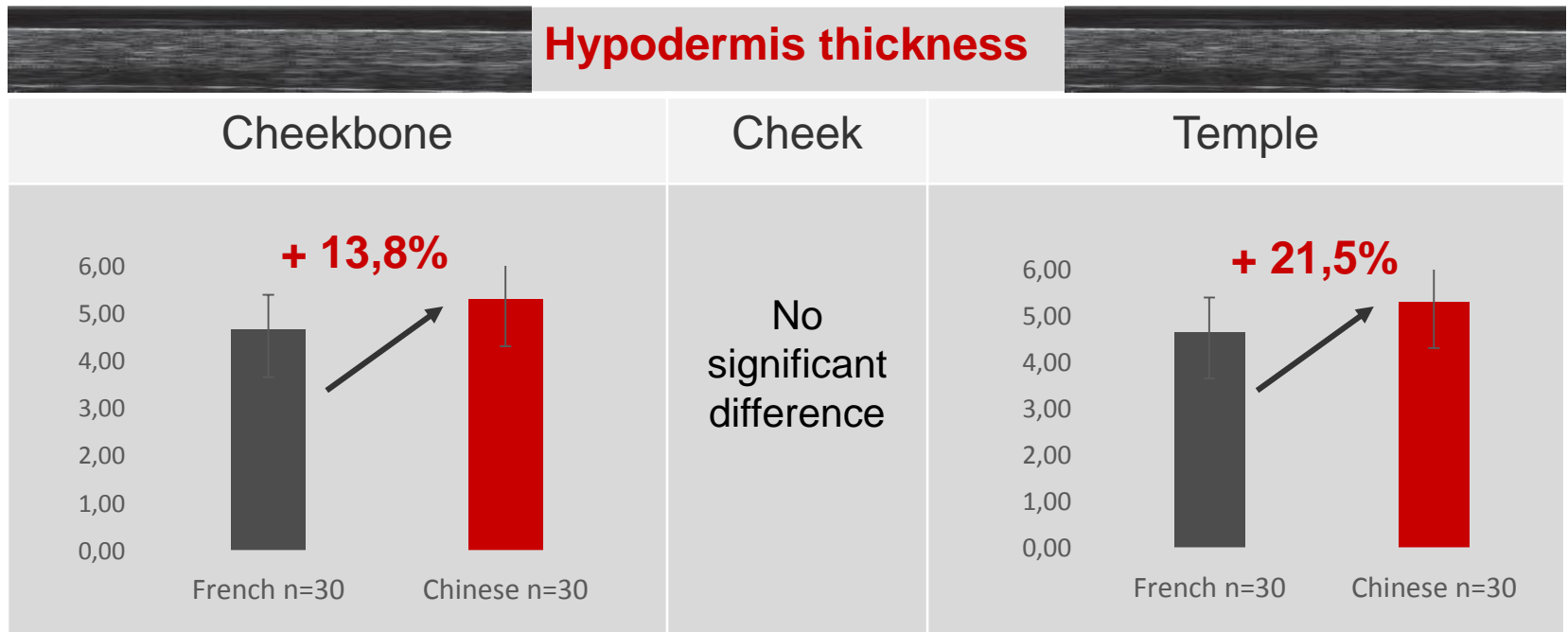


Finally, fringe projection technique revealed that ptosis at the bottom of the face is **35,9%** more important in Chinese Faces

Results

- Skin structure by ultrasound

Normal BMI



The **hypodermis is thicker** in the Chinese group at the level of the cheekbone (+13,8%) and at the temple (+21,5%)

Results

- The influence of BMI on these morphological characteristics



Results

- The influence of BMI on these morphological characteristics



Results

Influence of BMI ↗

Bellow eyes

+ 0,9%

Cheek

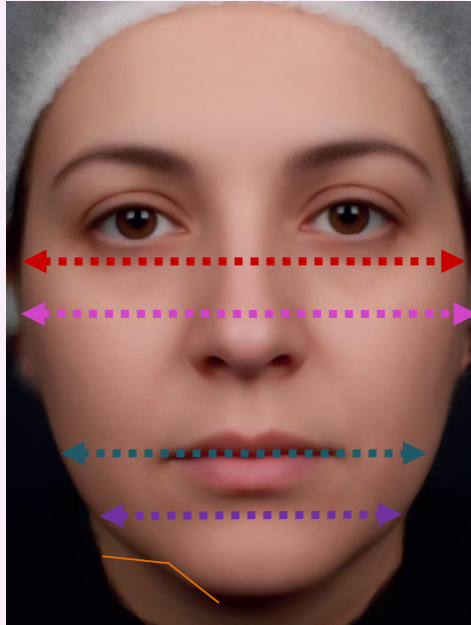
+ 1,6%

Corner of the mouth

+ 1,1%

Bellow mouth

+ 2,8%

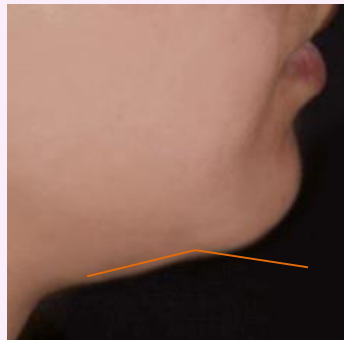


Cheek/chin angle

- 4,1%

Neck/chin angle

- 4,6%



Influence of BMI ↗

Bellow eyes

+ 0,7%

Cheek

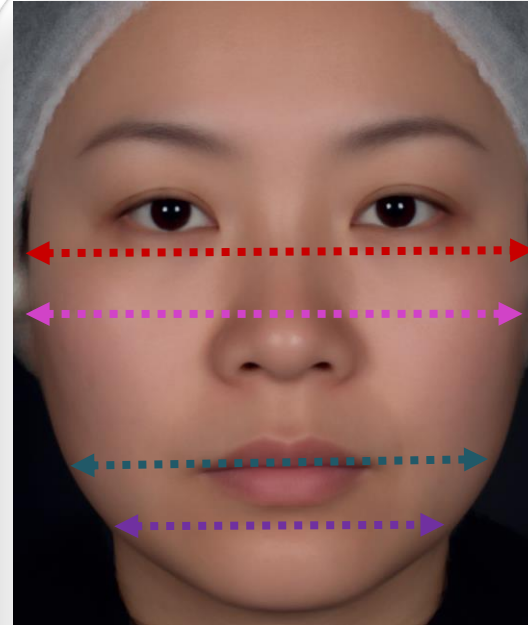
+ 2,5%

Corner of the mouth

+ 2,7%

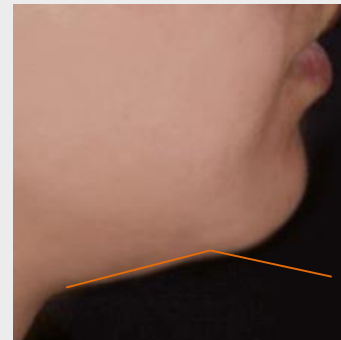
Bellow mouth

+ 4,3%



Neck/chin angle

- 2,2%



Conclusion

- Development of a **new algorithm** to produce high resolution reconstructed **average front faces** :
very well defined / especially remarkable by their quality and the morphological similarities between the images obtained
- Thanks to this **quality**, we reveal yet **unidentified differences** in the facial morphology of Chinese and Caucasian women
- Width of Chinese women faces **are larger** at all point measured, making them **look larger and rounder**
- Increase in **BMI impacts** differently Chinese and Caucasian
- These differences will help to **find appropriate responses** to reconstructive surgery and aesthetic concern





Thank you for your attention!

Any questions?



8 & 9
JUN
2015
CERGY PONTOISE

