




The Ideal Chinese Lip: Impact of Lip Contours and Proportions

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Abstract

Background The lips are one crucial determinant of facial attractiveness. Current studies investigating lip attractiveness were mostly conducted in Caucasians, and the results could not directly apply to Asians. Aside from lip proportions, lip contours play an important role in attractiveness but it is unclear how people perceive different lip contours. The aim of this study was to investigate the aesthetic perception of various lip shapes by Chinese to identify the most attractive lip morphology for women and men, respectively.

Methods 303 Chinese participants were invited to rate the attractiveness of identical lip images with different contours and proportions in a young female and a young male. Stratified analyses were performed to assess the effect of gender, age and occupation on the preference of lip shapes.

Results The lips that were rated to be most attractive had a flat upper vermilion border, an M-shaped oral fissure and a U-shaped lower vermilion border in both genders. Most respondents considered an upper-to-lower vermilion proportion of 1:1 to be more attractive, regardless of the gender of the lip models, and the lip thickness-to-width proportions of 1:2 and 1:2.5 were perceived most attractive for female and male, respectively.

Conclusions This study adds to our understanding of how lip contours contribute to attractiveness and that Chinese have distinctive aesthetic preferences for lip morphology, which possibly stem from racial characteristics and cultural differences. With such knowledge, practitioners may better tailor the treatment strategy when performing lip rejuvenation procedures.

Level of Evidence III This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to the Table of Contents or the online Instructions to Authors www.springer.com/00266.

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Introduction

Lips are the visual centre of the human lower third face and play a significant role in facial attractiveness. Full, plump lips with well-defined contours conveying health, youth and beauty are a globally aesthetic pursuit. The increasing popularity of lip rejuvenation procedures, especially lip augmentations with dermal fillers, lip implants and fat grafting [1], has necessitated a better understanding of

factors defining lip attractiveness to achieve natural-looking and aesthetically pleasing outcomes.

While white people are enthusiastic about pursuing full lips, Asians on average have inborn thicker and fuller lips [2, 3]. Moreover, differing from Western aesthetics, Asians prefer more delicate lip shapes. Cherry lips, butterfly lips and oval lips, which all share a small and round lip contour, were highly admired lip makeup styles across different historical periods of China, though such aesthetic tendencies have continuously adapted to modern society in the process of globalization. Therefore, there is no one-fit-all rule in lip beauty standards and copying experience and strategies from Westerners has the risk of westernizing the lips on an Asian face, resulting in an inharmonious look.

Studies defining attractive and youthful lip morphology have mainly focused on proportions and volumes. The golden ratio has been suggested to be ideal for upper-to-lower vermilion height [4], and a PLS below 3 was considered youthful and appealing [5, 6]. Such standards may be approached through lip augmentation and lip lift surgery, accordingly. However, lip contour is as important, if not more, in contributing to lip aesthetics. The lips comprise three curves, including the upper vermilion border, oral fissure and lower vermilion border from cranial to caudal, and lip augmentation may change the shape of these curves. To our knowledge, no study has investigated the relationship of curve shape to lip attractiveness.

Therefore, the objective of this cross-sectional study was to investigate which measurements, including both lip proportions and lip contours, are most liked by Chinese people. The results of this study could be instructive for detail-oriented lip enhancement in this population to achieve their aesthetic goals.

Methods

Subjects

A total of 303 Chinese participants participated in this study. The study group consists of aesthetic specialists (including plastic surgeons, maxillofacial surgeons, dermatologists, aesthetic dentists and cosmetic doctors) and non-aesthetic specialists (including doctors from other departments, in-patients, out-patients, hospital administrators and social workers) recruited from Peking Union Medical College Hospital. They were provided with either an on-site or online survey, which was subdivided into two sections: demographic data including gender, age and occupation, and morphed image panels as detailed below. The study was approved by the institutional review board

of the Peking Union Medical College Hospital (reference number I-22PJ693). All participants were informed about the aim and scope of this study and provided written informed consent.

Lip Shapes Assessed

Facial photos of a young woman (27 year old) and a young man (28 year old) were acquired with consent to the use of their facial images. The original facial photos were cropped to present the lip region only to eliminate interference from other parts of the face while participants rated attractiveness, and then edited with Adobe Photoshop Version 21 (Adobe Systems, Inc., San Jose, Calif.) to display the following features:

Upper Vermilion Border

Three images of lips in frontal view with a concave upper vermilion border (borderline below the straight line connecting mouth corner point and crista philtri point), flat upper vermilion border (borderline aligned with the straight line connecting mouth corner point and crista philtri point) and convex upper vermilion border (borderline above the straight line connecting mouth corner point and crista philtri point), respectively, of both genders were assessed. (Fig. 1)

Oral Fissure

Four images of lips in frontal view with down-turned mouth corners, horizontal mouth corners, up-turned mouth corners and M-shaped oral fissure, respectively, of both genders were assessed (Fig. 2).

Lower Vermilion Border

Two images of lips in frontal view with a V-shaped lower vermilion border (thickest part in the midline of the lower vermilion, showing a borderline with a small curvature) and U-shaped lower vermilion border (thickest part in the paramedial line at both sides of the lower vermilion, showing a borderline with a large curvature), respectively, of both genders were assessed (Fig. 3).

Upper-to-lower Vermilion Proportion

Four images of lips in frontal view with upper-to-lower vermilion proportions of 1:1, 1:1.3, 1:1.6 and 1:1.9, respectively, of both genders were assessed (Fig. 4).

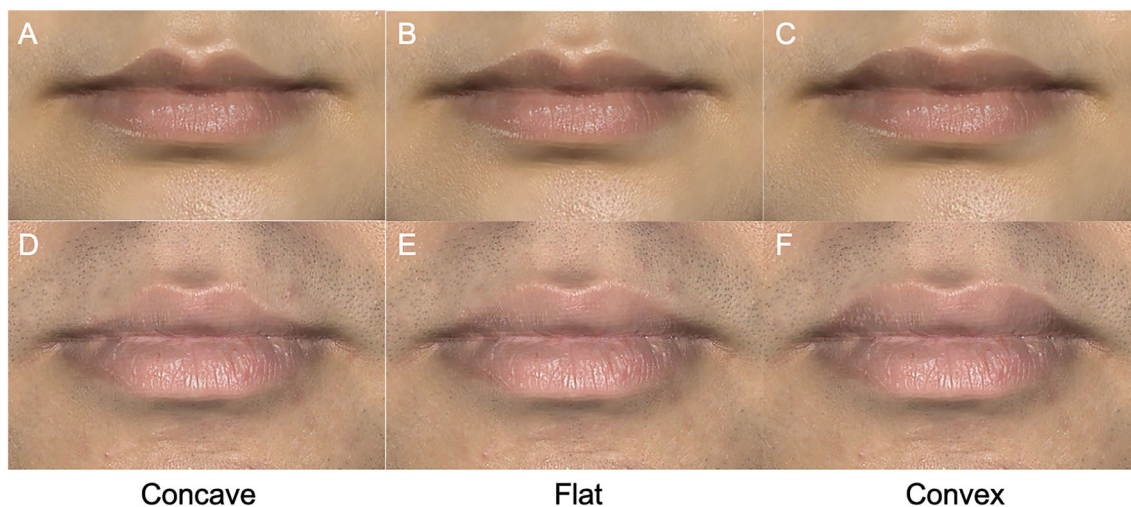


Fig. 1 Images showing the female (A, B and C) and male (D, E and F) lips with three different assessed upper vermilion border shapes: **A, D** concave upper vermilion border, **B, E** flat upper vermilion border and **C, F** convex upper vermilion border

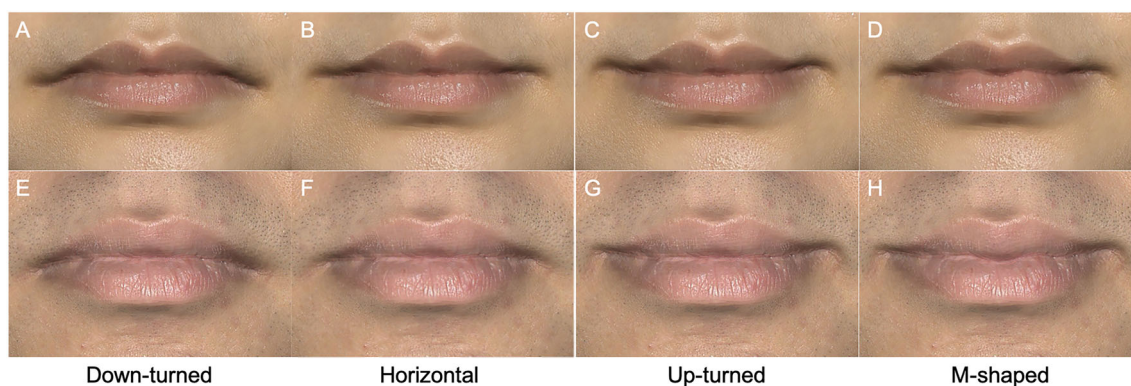


Fig. 2 Images showing the female (A, B, C and D) and male (E, F, G and H) lips with four different assessed oral fissure shapes: **A, E** down-turned mouth corner, **B, F** horizontal mouth corner, **C, G** up-turned mouth corner and **D, H** M-shaped oral fissure

Lip Thickness-to-width Proportion

Four images of lips in frontal view with lip thickness-to-width proportions of 1:4, 1:3, 1:2.5 and 1:2, respectively, of both genders were assessed (Fig. 5).

Aesthetic Rating

Two sets of identical lip images of the female model and the male model were displayed to the respondents via questionnaires. Each set of lip images comprised five groups of photos which differ either in lip contour or lip proportion as above. The images in each group were presented in a random order. Participants were asked to rate these lips regarding their attractiveness according to a ten-point Likert scale with 0 being most unattractive and 9

being most attractive. The lip shape receiving the highest score in each group was considered most attractive by the respondent, and the percentage of each lip shape being chosen as most attractive by all respondents was calculated.

Statistical Analysis

Graphs were generated using the software GraphPad Prism 10 (GraphPad Software Inc., San Diego, CA, USA). The normality of the collected data was examined using the Kolmogorov–Smirnov test. Non-normally distributed data were presented by median (its interquartile range), and nonparametric testing was performed using the Mann–Whitney test. All calculations were performed using IBM SPSS Version 26 (IBM Corp. Armonk, N.Y.). Results with a p value < 0.05 were considered statistically significant.

Fig. 3 Images showing the female (A and B) and male (C and D) lips with two different assessed lower vermilion border shapes: **A, C** V-shaped lower vermilion border and **B, D** U-shaped lower vermilion border

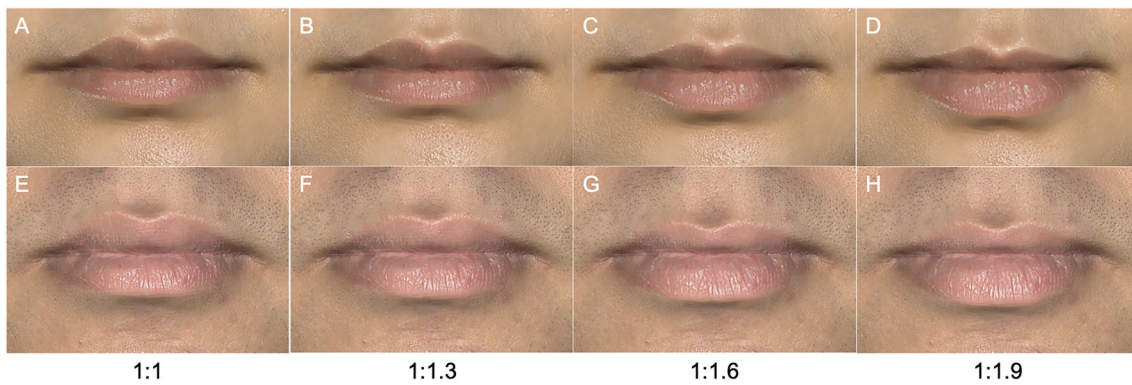
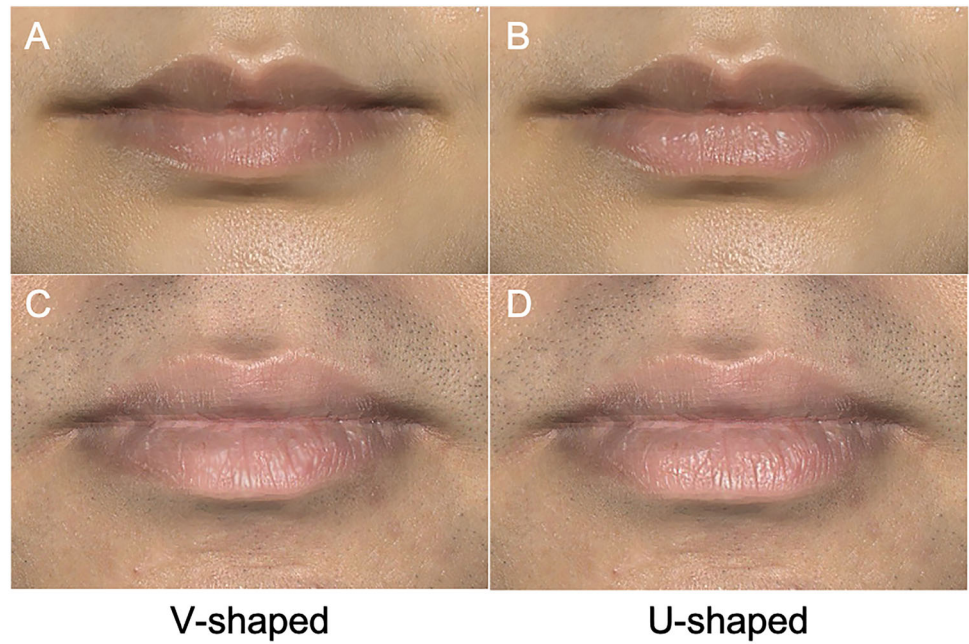


Fig. 4 Images showing the female (A, B, C and D) and male (E, F, G and H) lips with four different assessed upper-to-lower vermilion proportions: **A, E** upper-to-lower vermilion proportion of 1:1, **B, F** 1:1.3, **C, G** 1:1.6 and **D, H** 1:1.9

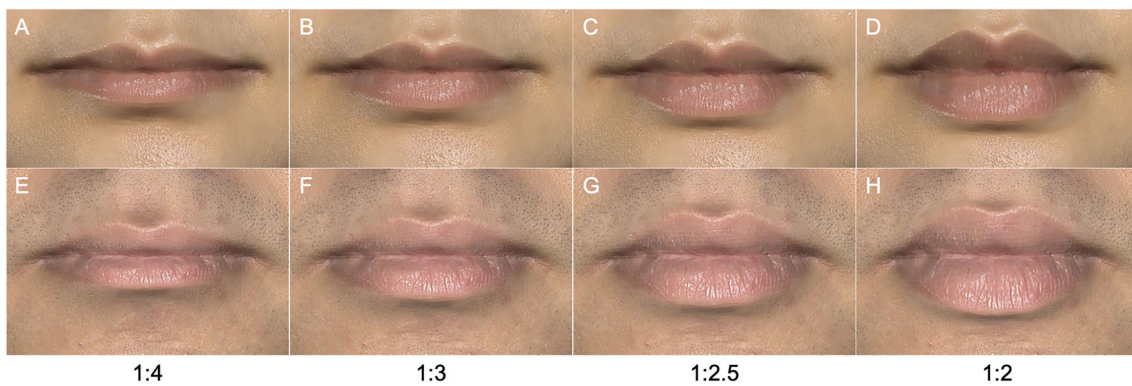


Fig. 5 Images showing the female (A, B, C and D) and male (E, F, G and H) lips with four different assessed lip thickness-to-width proportions: **(A and E)** lip thickness-to-width proportion of 1:4, **B, F** 1:3, **C, G** 1:2.5 and **D, H** 1:2

Results

Demographics of Participants

The demographic data of the 303 respondents are presented in Table 1. 24% of the participants were male and 76% were female. The majority were young adults, with 90% being younger than 40 years old and 10% being 40 years or older. 75 respondents (44 women and 31 men) have a cosmetic surgery background.

Lip Contour

The upper vermilion border shape which received the highest rating was flat in both female and male models with a rating of 7(3) and 5(3), respectively (Fig. 6A). Consistently, the flat vermilion border was considered most attractive by most respondents (45% for the female model and 41% for the male model). The concave upper vermilion border shape received a rating of 6(3) in the female model and 5(2) in the male model, showing no significant difference when compared to the flat upper vermilion border ($p > 0.05$), while the convex upper vermilion border shape had the lowest rating of 5(3) in the female model and 4(3) in the male model ($p < 0.001$).

Most respondents considered that the M-shaped oral fissure was more attractive (30% for the female model and 35% for the male model), which received the highest rating of 7(2) in the female model and 5(3) in the male model (Fig. 6B). Up-turned, horizontal and down-turned mouth corners were rated 6(3), 6(3) and 6(2) in the female model, and only the rating of down-turned mouth corners showed a significant difference when compared to other shapes. Up-turned, horizontal and down-turned mouth corners

received a rating of 5(3), 5(2) and 5(3) in the male model, and no statistically significant difference was seen between the M-shaped oral fissure and up-turned mouth corners or between horizontal and down-turned mouth corners.

As for the lower vermilion border shape, more respondents preferred the U-shaped lower vermilion border (57% for the female model and 52% for the male model). However, the ratings of the V-shape and U-shape were comparable in both the female (7(3) vs. 7(2), $p > 0.05$) and male (5(3) vs. 5(3), $p > 0.05$) models (Fig. 6C).

Lip Proportion

The upper-to-lower vermilion proportion in both female and male models that received the highest rating and was considered most attractive by more respondents was 1:1, with a rating of 7(3) and 5(3), though the proportion of 1:1.3 was not significantly different (6(3) and 5(2), $p > 0.05$) (Fig. 7A). The upper-to-lower vermilion proportion of 1:1.6 had a rating of 5(3) and 4(3), and the ratio of 1:1.9 had the lowest rating of 5(2) and 4(2), respectively.

Attractiveness ratings for lip thickness-to-width proportions of 1:2, 1:2.5, 1:3 and 1:4 were 7(3), 7(3), 6(2) and 4(2) in female model, and 4(3), 6(3), 5(3) and 3(3) in male model, respectively (Fig. 7B). The lip thickness-to-width proportion of 1:2 was chosen by more respondents (39%) as the most attractive for the female model, and the lip thickness-to-width proportion of 1:2.5 was chosen by more respondents (44%) as most attractive for the male model.

Rater Variance

Stratification analyses showed respondents with different gender, age and occupation all preferred the flat upper vermilion border and U-shaped lower vermilion border (Table 2). While females preferred the M-shaped oral fissure for both female and male lips, males liked the up-turned mouth corners more for male lips. As for the lip proportions, male respondents differed in that they preferred an upper-to-lower vermilion proportion of 1:1.3 for male lip. Female respondents preferred a lip thickness-to-width proportion of 1:2 for female lips and 1:2.5 for male lips, while male respondents preferred a lip thickness-to-width proportion of 1:3 for both genders.

Young respondents preferred the M-shaped oral fissure for both female lips and male lips, and older respondents preferred the horizontal mouth corners and up-turned mouth corners for female lips and male lips, respectively. Young respondents liked an upper-to-lower vermilion proportion of 1:1 more for both female and male model while older respondents liked an upper-to-lower vermilion proportion of 1:3 more. Young respondents liked a lip

Table 1 Demographics of respondents

Characteristics	N (%)
<i>Sex</i>	
Male	73 (24.09%)
Female	230 (75.91%)
<i>Age</i>	
<20	21 (6.93%)
20–29	224 (73.93%)
30–39	28 (9.24%)
40–49	13 (4.29%)
50–59	10 (3.30%)
≥60	7 (2.31%)
<i>Occupation</i>	
Aesthetic specialists	75 (24.75%)
Non-aesthetic specialists	228 (75.25%)

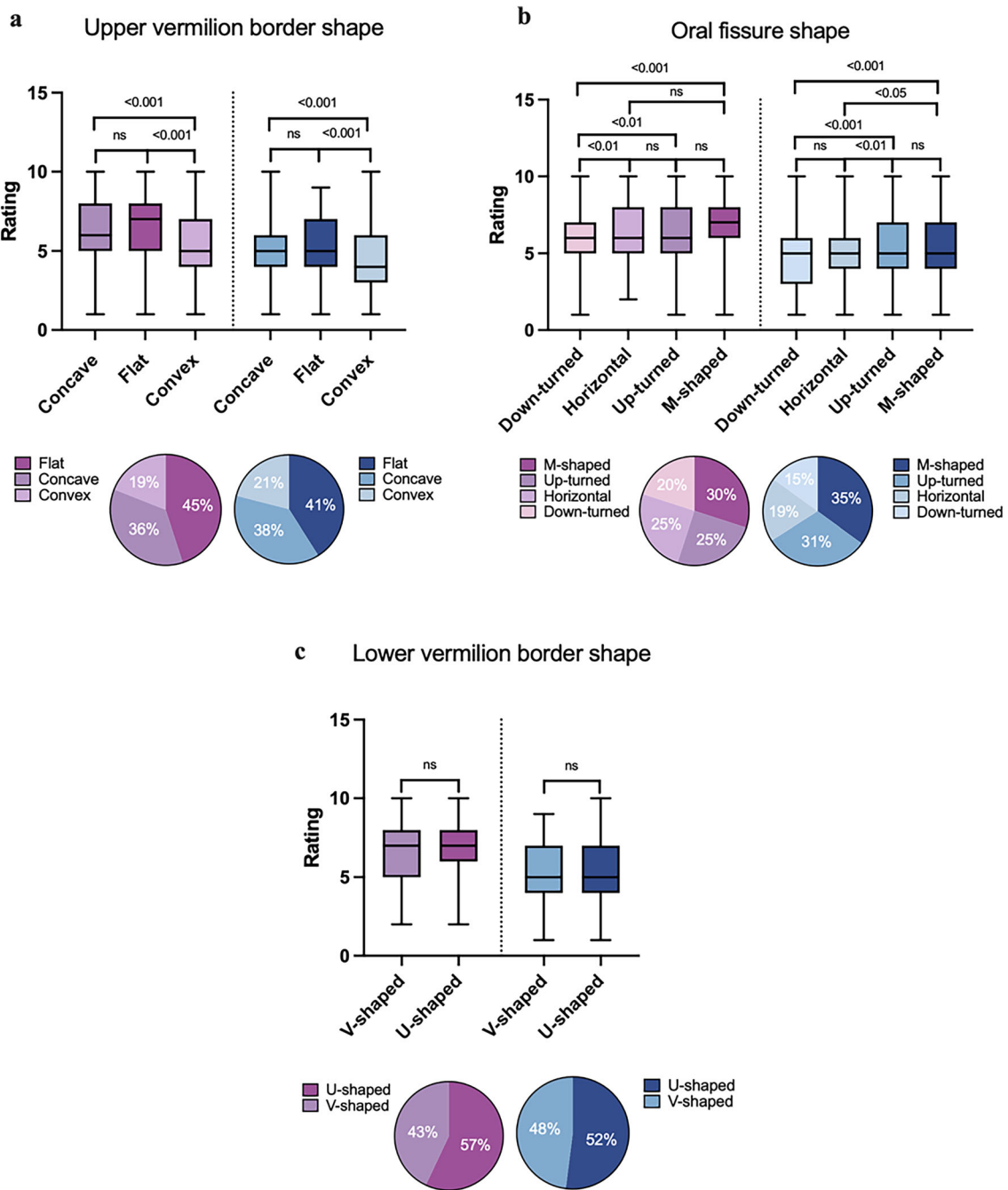


Fig. 6 Rating of different lip contours and corresponding percentage of being chosen most attractive

thickness-to-width proportion of 1:2 for female lips and a lip thickness-to-width proportion of 1:2.5 for male lips; older respondents liked a lip thickness-to-width proportion of 1:2.5 for both genders.

Aesthetic specialists preferred the up-turned mouth corners for female lips and M-shaped oral fissure for male

lips, and non-aesthetic specialists liked the M-shaped oral fissure for both genders. Both aesthetic specialists and others preferred an upper-to-lower vermilion proportion of 1:1 for both female and male lips, and a lip thickness-to-width proportion of 1:2 for female lips and 1:2.5 for male lips.

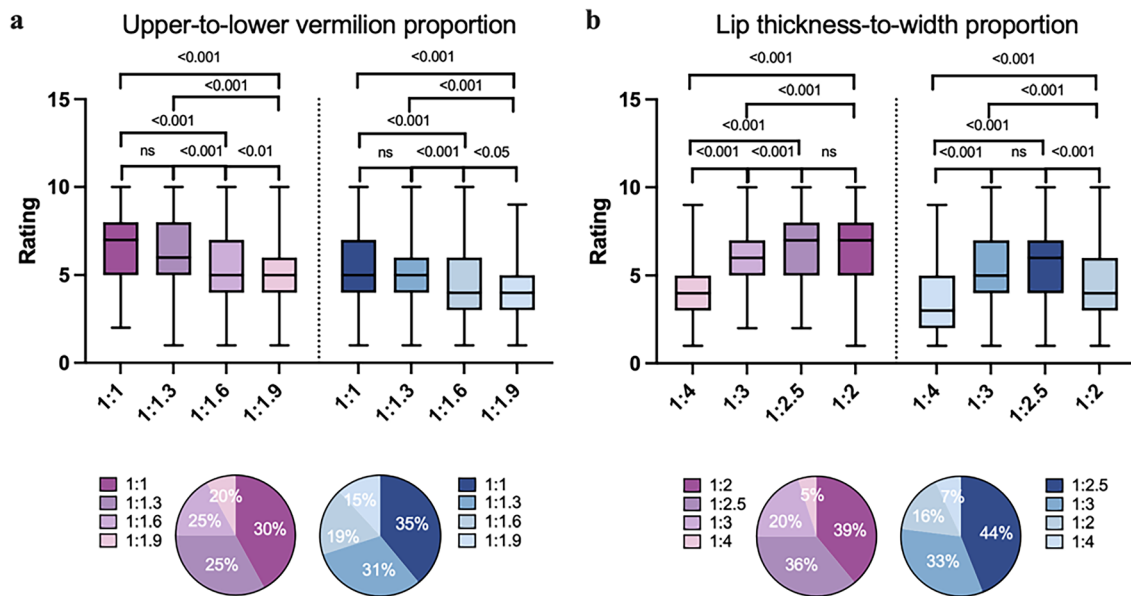


Fig 7. Rating of different lip proportions and corresponding percentage of being chosen most attractive

Table 2 Subgroup analysis of the percentage of being chosen most attractive of various lip shapes

Respondent	Female model		Male model		Female model		Male model		Female model		Male model	
	Female	Male	Female	Male	<40 years	≥40 years	<40 years	≥40 years	Aesthetic specialist	Non-aesthetic specialist	Aesthetic specialist	Non-aesthetic specialist
Concave UVB	37.2	34.0	37.0	40.6	36.8	32.8	38.0	36.7	38.8	35.6	38.9	37.5
Flat UVB	47.0	36.8	41.1	42.0	44.3	46.1	41.5	40.0	39.6	46.1	42.2	41.0
Convex UVB	15.8	29.2	21.9	17.4	18.9	21.1	20.5	23.3	21.6	18.3	18.9	21.5
Down-turned mouth corner	17.9	26.0	14.1	17.7	20.2	16.1	14.3	20.8	16.0	21.1	12.9	15.6
Horizontal mouth corner	25.9	21.5	19.7	15.4	23.4	37.8	18.7	18.6	25.8	24.5	16.2	19.4
Up-turned mouth corner	25.7	23.7	29.5	38.0	25.4	23.3	30.8	38.7	29.3	23.9	35.1	30.4
M-shaped oral fissure	30.5	28.8	36.7	28.9	31.0	22.8	36.2	21.9	28.9	30.5	35.8	34.6
V-shaped												
LVB	43.7	40.4	49.3	45.2	44.1	31.7	48.4	48.3	46.7	41.7	43.3	50.0
U-shaped LVB	56.3	59.6	50.7	54.8	55.9	68.3	51.6	51.7	53.3	58.3	56.7	50.0
ULV-1:1	42.1	40.9	40.2	35.7	42.1	39.2	40.2	28.6	40.4	42.3	37.9	39.5
ULV-1:1.3	32.5	33.6	29.7	36.0	31.5	44.2	30.4	38.6	34.7	32.2	33.7	30.4
ULV-1:1.6	17.2	16.6	18.3	17.0	17.5	13.1	18.0	18.1	17.6	16.9	19.7	17.5
ULV-1:2	8.2	8.9	11.8	11.3	8.9	3.5	11.4	14.7	7.3	8.7	8.8	12.6
LTW-1:2	42.5	28.4	16.1	16.7	40.5	26.7	15.7	20.8	40.2	38.7	14.7	16.7
LTW-1:2.5	37.0	30.9	47.7	30.4	34.6	44.5	44.6	34.2	31.6	36.9	43.8	43.3
LTW-1:3	16.2	33.0	31.6	38.1	19.7	24.4	33.2	32.5	22.2	19.6	32.7	33.3
LTW-1:4	4.3	7.7	4.6	14.8	5.2	4.4	6.5	12.5	6.0	4.9	8.9	6.5

Bold: Lip shape that was considered most attractive by most respondents in each group

Discussion

In the early days of plastic surgery, procedures focused primarily on reconstructive techniques to correct deformities or injuries rather than cosmetic enhancements. Lip surgeries were often performed to repair cleft lips or defects resulting from trauma. As plastic surgery techniques advanced and became more widely available, there was an increasing interest in cosmetic procedures for aesthetic improvement. There was a trend towards achieving a natural-looking lip shape, with procedures aimed at correcting asymmetry or adding subtle volume. In the late twentieth century, youthful and fuller lips became increasingly popular under the influence of cultural icons and celebrities. This led to a rise in procedures such as lip augmentation, which involves the use of implants or injectable fillers to enhance lip volume and achieve a plumper appearance. With the advent of new technologies and materials, lip augmentation has become more accessible and refined. Currently, there has been a shift towards achieving a more defined and sculpted lip shape, with emphasis on creating a balanced and proportionate appearance.

Although, in the Internet era, extensive marketing via social media by the fashion and entertainment industry has tried to create a universal beauty standard as the goal of aesthetic surgery and procedures, the perception of beauty is subjective and highly affected by ethnic, cultural and demographic backgrounds [7]. Asians differ from other races not only in congenital facial features but also in their ideal beauty concepts, including lip aesthetics. By integrating aesthetic preferences from a group of Chinese individuals of varying ages, genders and occupations, this study reveals the most admired lip contours and proportions among Chinese people.

Previous research claimed that the upper-to-lower vermilion proportion that was considered most attractive was the golden ratio (1:1.6) for white females [4] and 0.53 (about 1:1.9) for Caucasian males [8]. This proportion in our study was, however, found to be 1:1 in both female and male models. Similarly, the most liked lip thickness-to-width ratio was reported to be 0.33 (about 1:3) for Caucasian males [8], and our results showed that Asians prefer rounder lips with a ratio of 1:2 in females and 1:2.5 in males. These findings are comparable to Koreans' perceptions [9]. The preference for a thicker upper vermilion and rounder lip shape, in general, conforms to the natural traits of Asian faces. On the one hand, Chinese people have thicker upper vermilions and larger total vermilion heights compared to Caucasians [2, 3, 10, 11]. On the other hand, Asians tend to have a wider midface and lower face

(mandible width) [12], and thus, a rounder lip shape is more harmonious in view of such face shapes.

Existing anthropometric studies of the perioral region mostly focus on numeric data and ignore the structure's contour. Like other facial compartments, human lips have curved contour lines that convey emotions and are related to attractiveness. Our results found that aesthetically pleasant lip contours perceived by most Asians include a flat upper vermilion border, an *M*-shaped oral fissure and a U-shaped lower vermilion border, which are likely to make a neutral or positive impression in non-verbal communication. Interestingly, while round lips are typically favoured, a convex upper vermilion border was least liked by our participants. One possible explanation is that a convex upper vermilion border is not usually seen in Chinese people, which needs statistical support though. Another reason could be rooted in traditional ideals of beauty, where features associated with delicacy or refinement are often prized in Chinese culture. Still, it is worth highlighting that a considerable portion of the respondents preferred different lip contours, and hence individualized aesthetic preferences should be given priority despite popular aesthetic standards. To create these curves, lip filler injections should be targeted in the white roll, median tubercle of the upper lip, paramedian tubercle of the lower lip and oral commissure.

The sexual dimorphism of lips between men and women has been appreciated. In general, men's lips are wider and thicker among different races [2, 13]. Yet, little is known about their perception of attractive lip shapes. Our results showed that the lip contours deemed attractive were similar in males and females, but females were fond of a bigger lip thickness-to-width proportion (i.e. fuller lips) compared to males. Evolutionary psychology suggests that certain features may be perceived as attractive because they signal reproductive fitness. Throughout history, fuller lips have been associated with fertility, sensuality and youthfulness. Besides, women are often the target of beauty and fashion industries; consequently, they may feel a stronger inclination towards public beauty standards, and as they do meet such standards, they may receive positive reinforcement through compliments, social media likes and attention. As for women who are dissatisfied with their own lip shape, they may prefer fuller lips as a way to conform to social beauty standards or enhance their self-perceived attractiveness.

When assessing the preferences of people of different ages, divergence arose in oral fissure shape and lip proportions. Older respondents preferred horizontal mouth corners for female lips and up-turned mouth corners for male lips, while more young respondents liked an *M*-shaped oral fissure more. The concept of an *M*-shaped oral fissure, characterized by a prominent median tubercle,

obvious upper arches and lateral thickening of the upper lip, did not appear until recent years. This may explain its popularity among young adults but not the last generation. Young people also preferred thicker upper lips and thicker lips in general. This is consistent with the natural law of ageing [2]; still, young people are more likely to be influenced by media and celebrities as well as cosmetic advancements, all of which have popularized fuller lips.

Interestingly, there was no difference in preferences for almost all investigated variables between respondents with or without specific medical training in perioral aesthetics. This is understandable as nowadays patients have easy access to updated information on clinicians' websites and social media channels providing the latest perioral procedures and expected outcomes. This shared perception ought to help prevent the awkward situation where practitioners' approaches fail to meet patients' expectations and minimize the risk of patient disappointment or dissatisfaction.

This study has several limitations. First, there are many other contributing factors to lip aesthetics that are not assessed in this study. These include: (1) lip area and volume; (2) measurements on the lateral view, such as lip projection, nasolabial angle and mentolabial angle; (3) facial parameters beyond the perioral region itself, such as the ratio of lip width to intercanthal distance, nasal width and lower face width, and the length and shape of the philtrum; (4) lip hydration and colour. Evaluation on a 3D facial model could be considered in future studies as it shows more detailed information. Another limitation is the lack of diversity in the lip models presented. A dislike for the baseline lip morphology may result in a generally low scoring of all images. To solve this, we took caution when choosing the female and male lip models whose lips should be basically symmetric with balanced skin texture and adequately hydrated. Besides, both lip models are young adults, and thus, how lip beauty is perceived in the aged face is beyond the scope of this study.

Conclusion

No single beauty standard is universally applicable to all races, genders and ages, and thus, understanding and appreciating the factors that determine the attractiveness of lips as perceived by a specific population is crucial for both surgeons and the patients to make informed decisions. The findings presented herein can serve as a useful guideline for lip profiling in Chinese patients, helping to achieve pleasing results that align with the population's facial traits and aesthetic concepts.

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Declarations

Conflict of interest The authors declare that they have no conflicts of interest to disclose.

Ethical Approval This study was approved by the Institutional Review Board of the Peking Union Medical College Hospital (No. I-22PJ693) and conducted in accordance with the Declaration of Helsinki.

Informed Consent All participants provided written consent for the use of their facial images.

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