



Contemporary Koreans' Perceptions of Facial Beauty

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Original Article

Background This article aims to investigate current perceptions of beauty of the general public and physicians without a specialization in plastic surgery performing aesthetic procedures.

Methods A cross-sectional and interviewing questionnaire was administered to 290 people in Seoul, South Korea in September 2015. The questionnaire addressed three issues: general attitudes about plastic surgery (Q1), perception of and preferences regarding Korean female celebrities' facial attractiveness (Q2), and the relative influence of each facial aesthetic subunit on overall facial attractiveness. The survey's results were gathered by a professional research agency and classified according to a respondent's gender, age, and job type (95% ± 5.75% confidence interval). Statistical analysis was performed using SPSS ver. 10.1, calculating one-way analysis of variance with post hoc analysis and Tukey's t-test.

Results Among the respondents, 38.3% were in favor of aesthetic plastic surgery. The most common source of plastic surgery information was the internet (50.0%). The most powerful factor influencing hospital or clinic selection was the postoperative surgical results of acquaintances (74.9%). We created a composite face of an attractive Korean female, representing the current facial configuration considered appealing to the Koreans. Beauty perceptions differed to some degree based on gender and generational differences. We found that there were certain differences in beauty perceptions between general physicians who perform aesthetic procedures and the general public.

Conclusions Our study results provide aesthetic plastic surgeons with detailed information about contemporary Korean people's attitudes toward and perceptions of plastic surgery and the specific characteristics of female Korean faces currently considered attractive, plus trends in these perceptions, which should inform plastic surgeons within their specialized fields.

Keywords Beauty / Face / Perception / Korean / Plastic surgery

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INTRODUCTION

It is well-known that the main goals of doctor-patient communication are creating a good interpersonal relationship, facilitating

exchange of information, and including patients in appropriate decision making [1]. This is especially important for doctors specializing in the field of aesthetic plastic surgery or performing these procedures. Because beauty perceptions and standards

continuously change over time and from one generation to the next, aesthetic plastic surgeons must discern people's perceptions of beauty and interpret contemporary trends in aesthetic preferences, enabling us to better meet the expectations of the general public. In clinical practice, it is often observed that traditional beauty standards or data regarding ideal facial configurations does not correspond with the actual desires of the general public. In addition, sometimes there are discrepancies in beauty standards and preferences between aesthetic plastic surgeons and the general public. Furthermore, we as board certified plastic surgeons do not have information on how general physicians feel about facial beauty. Notions of facial attractiveness have been influenced by developments in society which potentially play a role in influencing the perception of attractiveness [2]. This article aimed to describe the contemporary perceptions of Korean people based on a cross-sectional questionnaire study and investigated whether any noticeable difference in beauty perceptions exists between general physicians interested in aesthetic plastic surgery procedures and ordinary citizens. This article will help board-certified plastic surgeons understand the contemporary aesthetic desires of the general public and the concepts of beauty of general physicians.

METHODS

Study and questionnaire design

We distributed a self-administered questionnaire using purposive sampling to identify the range of perceptions of beauty among people in Seoul, South Korea. The questionnaire was designed and detailed feedback was obtained from piloting the questionnaire with several clerks at Hugel, Inc. A final revision of the questionnaire was completed based on the pilot data before use.

Participants and data collection

Study participants were invited to take part in this questionnaire by research specialist clerks from Panel Marketing Interactive, Co. Ltd, Seoul, Korea (PMI). Doctors who participated in the Hugel Expert Leaders Forum in 2015 also filled out this questionnaire. In addition, clerks from Hugel, Inc. randomly distributed the questionnaire to general physicians interested in aesthetic plastic surgery and procedures, patients seeking aesthetic surgery and procedures, and ordinary citizens residing in Seoul. The questionnaires were collected from those who voluntarily completed them. During the survey, informed consent was individually obtain for participants of this study about the purpose of this study, the manner and form in which data will be collected, confidential or privacy issues from Hugel Inc. There were no

other eligibility criteria for participation, but board-certified dermatologists and board-certified plastic surgeons were excluded from this study. Identical questionnaires on beauty perceptions were distributed to all respondents.

Survey characteristics

Participants were asked to record their age group, gender, and job characteristics. Age groups were subdivided into 4 groups ('20D', less than 30 years old; '30D', age from 30 to 39; '40D', age from 40 to 49; and '50D', 50 years and older). The job characteristics were classified into 40 groups according to the International Standard Classification of Occupations (ISCO-08) and the Korean Standard Classification of Occupations (KSCO) [3]. The structured questionnaire and interview investigation was performed in Seoul, South Korea. The questionnaires consisted of various questions about beauty perceptions and cognition. As shown in Table 1, we categorized and subdivided the questionnaire into three categories. First, we asked respondents about their general attitude regarding plastic surgery and how they make their decisions on plastic surgery. Second, to identify people's concrete perceptions of facial attractiveness, we asked respondents to nominate named celebrities, based on their beauty perceptions of who was attractive. Thirty-nine famous Korean female celebrities' facial photographs were cropped to the same size. The Korean celebrities' names are listed in the footnotes of Table 1. Respondents were asked to rate the facial attractiveness of each celebrity on a scale of 1–100. Respondents were instructed to give a score of 100 to the celebrity they considered to have the most beautiful face and to rate the rest of the samples relatively (a face with an assigned score of 60 was considered to have average attractiveness).

We also asked respondents to choose a representative celebrity that they deemed most beautiful or attractive. Then, since we wanted to assess the concrete shape or configuration of each attractive facial aesthetic subunit, we requested that all parts of Q2, which asked about each subunit, be answered. Third, we wanted to investigate the relative importance or influence of each facial aesthetic subunit (e.g., eye shape, nose shape, or chin shape) on overall perceived facial attractiveness. The questions regarded the degree of influence each aesthetic subunit has on overall facial attractiveness. Respondents were instructed to answer all questions by rating how much they felt a particular facial feature/characteristic influenced overall attractiveness. Respondents answered on a Likert scale of 1–10 where 1 was "never important" and 10 was "very important." The facial features/characteristics that were included in the questionnaire were: skin condition, eyes, nose, lips, cheekbones, lower jaw, harmony and balance of facial features (i.e., eyes, nose, and lips), facial ex-

Table 1. Questionnaire

Question	Response method
<p>Q1: General attitude about plastic surgery</p> <p>Are you in favor of or against plastic surgery?</p> <p>How do you get information about aesthetic plastic surgery? Please select the most important one among internet, acquaintances or relatives, books or magazines, TV broadcasting, surgical results of other people, and other sources.</p> <p>Which information do you regard as usually correct among the above information sources?</p> <p>If you are going to undergo aesthetic plastic surgery, what are the three most important factors to consider? Please check them in order of importance: postoperative surgical results, recommendations from acquaintances, fame of a surgeon, consultation with a doctor, fees for an operation, size and scale of a clinic, existence of doctors' medical accidents or malpractice, clinic's service convenience, distance to the clinic, guardian's recommendation and decision, and other factors.</p>	<p>Likert</p> <p>Select one</p>
<p>Q2: Peoples' preferences on every facial aesthetic subunit for Korean female celebrities</p> <p>Please choose only one celebrity among the 39 famous female celebrities presented. If there is another celebrity you prefer, please write in her name.</p> <p>People were then asked to answer the following questions: Who has the most attractive face? Who has the most attractive eyes? Who has the most attractive nose? Who has the most attractive lips? Who has the most attractive cheeks? Who has the most attractive facial volume? Who has a beautiful skin condition? Whose eyes are the most attractive? Whose chin is the most attractive? Whose face has a V-shaped jaw? Who is the most beautiful woman that has a traditional Korean face? Who has the most Westernized face? Who do you think that most Chinese people like? Who do you think that most White people like?</p>	Select one
<p>Q3: The individual aesthetic influence of each facial subunit perceived by the general public</p> <p>The respondents reply on the relative importance of skin condition; eyes; nose; lips; malar shape; shape of the jaw; harmony among the eyes, nose, and lips; facial expression; facial volume; and youthful appearance on overall facial attractiveness.</p>	Likert
<p>Likert: a set of bipolar adjective pairs (using a 10-point Likert response scale with semantic differential), 39 Korean female celebrities comprise the following: Gain, Nam-joo Kim, Min-jung Kim, So-hyun Kim, Tae-hee Kim, Hye-soo Kim, Hee-sun Kim, Hee-ae Kim, Nana, Se-bin Myung, Geun-Young Moon, Chae-won Moon, Bo-young Park, Han-byul Park, Sulli, Seol-hyun Kim, Yu-ri Sung, Yaejin Son, Hye-gyo Song, Suji, En-ha Shim, Yuri, Yui, In-na Yoo, Jin Yoo, Som Lee, Young-ae Lee, Jaekyung, In-hwa Jeon, Ji-hyun Jeon, Jessica, Yeo-jung Jo, Ji-woo Choi, Crystal, Taeyeon, Yeon-soo Ha, Ga-in Han, Hyeri, Shin-he Hwang.</p>	

pression, facial volume, and degree of youthfulness (as a trending word of Korean language, "Dhong-ahn," which means child-like appearance).

Data analysis

The questionnaire's results were gathered by PMI, a research agency, in September 2015. The statistics have a 95% confidence level with an error of $\pm 5.75\%$. The data was collected and a general statistical analysis was performed by PMI. Additional statistical analysis and verification was performed by one of the authors of the article. Statistical analysis was performed to assess the difference in the attractiveness evaluation scores based on respondents' gender, age group, and job characteristics. The respondents' jobs were categorized into two main groups: doctors and the public. One-way analysis of variance with post hoc analysis and Tukey's t-test using SPSS ver. 10.1 (SPSS Inc. Chicago, IL, USA) were performed to evaluate group differences.

RESULTS

A total of 290 questionnaires were completed and analyzed. Among the 290 respondents (141 males and 148 females, one person did not identify their gender), there were 199 members of the general public (68.6%) and 72 doctors (24.8%; among doctors, 83.5% had a board certification other than dermatology

or plastic surgery and 16.5% were general physicians). Nineteen people did not report their job characteristics. The general demographic characteristics have been summarized in Table 2. The survey was categorized and conducted to assess three study objectives and results have been summarized in the tables. The three study objectives are as follows: (1) general attitude about plastic surgery (Table 3), (2) people's preferences regarding facial aesthetic subunits among Korean female celebrities, and (3) the individual power or relative influence each facial aesthetic subunit has on the perception of overall beauty or attractiveness as perceived by the general public (Table 4).

Q1: General attitudes about plastic surgery (Table 3)

As described in Table 3, 38.3% of respondents were in favor of aesthetic plastic surgical procedures and the percentage of people against plastic surgery was only 2.8%. As detailed in Fig. 1, among all respondents, 38.3% responded that they were in favor of aesthetic plastic surgery, 37.2% were neutral, and 2.8% opposed. Fig. 1 also shows us that there was no statistical difference in the attitude about plastic surgery between genders.

Regarding sources of plastic surgery information, most people obtain information about aesthetic plastic surgery or procedures from mass media such as the internet (50.0%), TV broadcasting (20.6%), and newspapers or magazines (7.8%), indicating that 78.4% of respondents report mass media as their main source of information. 28.4% of people obtain information from acquaintances

Table 2. Respondents' demographic characteristics

Category	No. (%) (n = 290)
Sex	
Male	141 (48.6)
Female	148 (51.0)
Not stated	1 (0.3)
Age range (yr)	
10–19	2 (0.7)
20–29	92 (31.7)
30–39	91 (31.4)
40–49	56 (19.3)
≥ 50	48 (16.6)
Not stated	1 (0.3)
Job	
Doctors	72 (24.8)
Total	
Other board-certified doctors ^{a)}	64 (22.0)
General physicians	8 (2.8)
General public	199 (68.6)
Specialized job	24 (8.3)
Service or sales work	25 (8.7)
Clerical work	63 (21.7)
Technical post	10 (3.4)
Physical labor	41 (14.1)
Other types of work	36 (12.4)
Not stated	19 (6.6)

General demographic characteristics inform us that the number of female respondents (51.0%) was larger than that of males (48.6%). Regarding age groups, 63.8% of respondents were less than 30 years old: 29 and under (32.4%), 30–39 years old (31.4%), 30–39 years old (19.3%), and 50 and above (16.6%). Regarding job characteristics, 68.6% of responders were not doctors, and 24.8% were doctors working in the aesthetic plastic surgery field. In descending order, respondents consisted of doctors (24.8%), service or sales workers (21.7%), manual laborers (14.1%), and others (12.4%).
^{a)}This refers to doctors with a specialization other than plastic surgery.

tances or their relatives. Concerning the trustworthiness of information sources, people regarded postoperative surgical results of other people (58.1%) as the most valuable information. Recommendations from acquaintances or relatives (18.4%) were somewhat important also. People regarded, in descending order, mass media such as TV broadcasting (12.9%), the internet (6.9%), and newspapers or magazines (5.1%) as not being trustworthy information sources. The three most powerful factors influencing respondents' final decisions on hospital or clinic selection were postoperative surgical results of acquaintances (74.9%), existence of doctors' medical accidents or malpractice (48.4%), and the fame of the doctor (43.7%). These were followed by relatively minor factors including cost of the procedure (36.7%), consultation with a doctor (27.4%), recommendation from acquaintances (26.9%), size and scale of the clinic (16.3%), quality of service (10.2%), and distance to the clinic or hospital (4.2%).

Table 3. Q1: General attitude about plastic surgery

Questionnaire	No. (%)
Are you in favor of or against plastic surgery?	
In favor	111 (38.3)
Neutral	108 (37.2)
Opposed	8 (2.8)
Depends on the circumstances	57 (19.7)
Not sure	2 (0.7)
Non-respondents	4 (1.4)
The way of obtaining information about aesthetic plastic surgery	
Internet	109 (50.0)
Relatives or acquaintances	62 (28.4)
TV broadcasting	45 (20.6)
Newspapers or magazines	17 (7.8)
Other sources	9 (4.1)
Non-respondents	5 (2.3)
Trustworthiness of information	
Surgical results of other people	126 (58.1)
Recommendation from acquaintance or relative	40 (18.4)
TV broadcasting	28 (12.9)
Internet	15 (6.9)
Newspapers or magazines	11 (5.1)
Other sources	9 (4.1)
Selection criteria for clinic choice	
Postoperative surgical outcomes of relatives or acquaintances	161 (74.9)
Existence of doctors' medical accidents or malpractice	104 (48.4)
Fame of the doctor	94 (43.7)
Charges or cost	79 (36.7)
Consultation with the doctor	59 (27.4)
Recommendation from acquaintance	58 (26.9)
Size and scale of the clinic	35 (16.3)
Clinic's convenient service	22 (10.2)
Distance to the clinic	9 (4.2)
Other criteria	2 (0.9)

When we investigated perceptions about aesthetic plastic surgery procedures, more people (38.2%) were in favor of aesthetic plastic surgical procedures than against (2.8%). Most people obtained information from the internet (50.0%), acquaintances or relatives (28.4%), and TV broadcasting (20.6%) in descending order. Regarding the trustworthiness of information sources, the largest proportion of people regarded the postoperative surgical results of their acquaintances and relatives (58.1%) to be trustworthy, followed by recommendations from acquaintances (18.4%), and TV broadcasting (12.9%) in descending order. In terms of clinic selection criteria, the three most influential factors were the postoperative surgical results of people's acquaintances and relatives (74.9%), existence of doctors' medical accidents or malpractice (48.4%), and the fame of a surgeon (43.7%).

Q2: People's preferences on facial aesthetic subunits among Korean female celebrities

Of the 39 photographic samples of Korean celebrities, the 10 celebrities with the highest attractiveness scores, in descending order, were Tae-hee Kim (90.8%), Ji-hyun Jun (89.9%), Hye-kyo Song (89.4%), Ga-in Han (87.9%), Chae-won Moon (86.0%), Young-ae Lee (85.3%), Hee-sun Kim (84.8%), Yaejin Son (84.6%), Suzy Bae (83.8%), and Hye-soo Kim (81.3%). Respondents were requested to select only one celebrity whom

Table 4. Q3: Statistical analysis for the degree of influence particular facial features have on overall facial attractiveness or beauty

Variable (mean ± standard deviation)	Sex		Age group				Job	
	Male	Female	20D	30D	40D	50D	P	D
Skin condition (9.24 ± 1.12)								
Mean	9.05	9.41	9.40 (a,b)*	9.51 (a)	8.98 (a,b,c)	8.70 (c)	9.34	8.93
t or F (P)	-2.778 (0.006)*		5.618 (0.001)*				-2.147 (0.034)*	
Eyes (8.61 ± 1.38)								
Mean	8.64	8.59	8.67	8.80	8.26	8.55	8.63	8.57
t or F (P)	0.299 (0.765)		1.838 (0.140)				-0.336 (0.737)	
Nose (8.04 ± 1.46)								
Mean	8.05	8.03	7.97	8.12	7.96	8.11	7.93	8.37
t or F (P)	0.136 (0.892)		0.253 (0.895)				2.272 (0.024)*	
Lips (7.21 ± 1.75)								
Mean	7.46	6.97	7.17	7.22	7.04	7.45	7.16	7.37
t or F (P)	2.356 (0.019)		0.486 (0.692)				0.875 (0.382)	
Cheekbones (6.84 ± 1.84)								
Mean	6.82	6.85	6.90	6.89	6.62	6.87	6.82	6.89
t or F (P)	-0.122 (0.903)		0.328 (0.805)				0.270 (0.787)	
Lower jaw (7.11 ± 1.69)								
Mean	7.06	7.15	7.07	7.31	6.91	7.02	7.12	7.02
t or F (P)	-0.461 (0.645)		0.745 (0.526)				-0.200 (0.842)	
Harmony (9.32 ± 1.2)								
Mean	9.47	9.18	9.28	9.44	9.38	9.09	9.33	9.34
t or F (P)	2.095 (0.037)*		0.994 (0.396)				-0.080 (0.937)	
Facial expression (8.7 ± 1.46)								
Mean	8.73	8.66	8.73	8.71	8.60	8.70	8.76	8.50
t or F (P)	0.389 (0.697)		0.090 (0.966)				-1.259 (0.209)	
Facial volume (7.68 ± 1.49)								
Mean	7.62	7.73	7.66	7.72	7.73	7.57	7.58	7.79
t or F (P)	-0.670 (0.504)		0.153 (0.927)				1.083 (0.281)	
Youthfulness (7.67 ± 1.78)								
Mean	7.92	7.44	7.32 (a,b)*	8.18 (b)	7.67 (a,b)	7.42 (a)	7.60	7.79
t or F (P)	2.304 (0.022)*		4.070 (0.007)*				0.758 (0.449)	

The facial features with the greatest contribution to overall facial attractiveness were harmony of facial features, skin condition, and facial expression, with the mean scores being 9.32 ± 1.2, 9.24 ± 1.12, and 8.70 ± 1.46, respectively. In descending order, males evaluated harmony of facial features (9.47), skin condition (9.05), and facial expression (8.73), while females considered skin condition (9.41), harmony of facial features (9.18), and facial expression (8.66) as facial features/characteristics that have the greatest contribution to overall facial attractiveness or beauty. In terms of job type, there were differences in the responses as well. The public rated harmony of features (9.33) and skin condition (9.34) as the two most important features, followed by facial expression (8.76) and eyes (8.63). Doctors ranked harmony of facial features (9.34), skin condition (8.93), and eyes (8.57) as features that have the highest degree of influence on overall facial attractiveness or beauty.

20D, 29 and under; 30D, respondents aged 30–39; 40D, respondents aged 40–49; 50D, 50 years old and above; P, general public; D, doctors.

*Statistically significant variables, P < 0.05.

they felt had the most beautiful facial components or individual aesthetic subunits such as facial shape, eyes, nose, lips, cheekbones, and so on, as listed in Q2 in Table 1. The comprehensive questionnaire results regarding the 39 celebrities and their most preferred facial components have not been included in this article. The top four celebrities or those supported by at least a fifth of the respondents are mentioned. The top four celebrities ranked as having the most beautiful facial shape are Tae-hee Kim (40.7%), Ji-hyun Jun (21.4%), Hye-kyo Song (21.0%), and Chae-won Moon (20.3%). The celebrities considered to have the most beautiful nose, in descending order, are Ga-in Han (42.8%), Tae-hee Kim (27.2%), Chae-won Moon (25.5%), and Ji-hyun Jun (23.1%). Hye-kyo Song (26.2%) and Ji-hyun Jun

(20.7%) were regarded as having the most attractive lips. People regarded Chae-won Moon (36.6%) and Tae-hee Kim (22.1%) as having the most beautiful cheekbones. In terms of facial volume, Chae-won Moon (28.6%), Tae-hee Kim (24.5%), and Hye-kyo Song (21.0%) were regarded as having the most attractive facial volume. People chose Ji-hyun Jun (25.5%), Sulli (25.2%), and Nam-joo Kim (23.1%) as celebrities representative of the so-called V-line lower face. Young-ae Lee (49.7%) and In-hwa Jeon (23.4%) were considered to embody traditional Korean beauty the most. However, respondents regarded Nana (47.2%), Shin-hye Hwang (26.6%), and Ga-in Han (24.8%) as women exemplifying Western beauty and responded that Nana (23.8%), Gain (21.7%), and Ji-hyun Jun (21.7%)

Fig. 1. General attitudes about plastic surgery

Regardless of job type, 38.3% responded that they were in favor of aesthetic plastic surgery, 37.2% were neutral, and 2.8% opposed. When it came to job type, however, 51.4% of doctors in this study versus 33.2% of the general public responded that they were in favor of aesthetic plastic surgery. The public was more likely to be neutral (40.7% vs. 29.2%), opposed to (3.5% vs. 1.4%), or state that their opinion depends on the circumstances (21.6% vs. 13.9%) compared to the doctors in this study. In terms of gender differences (data not shown), 39.7% males versus 37.2% females responded that they were in favor of medical aesthetic procedures. 36.2% of males and 38.5% of females responded that they are neutral, 4.3% of males versus 1.4% of females responded that they are opposed to, and 19.1% of males and 20.3% of females stated that their opinion depends on the circumstances regarding medical aesthetic procedures.

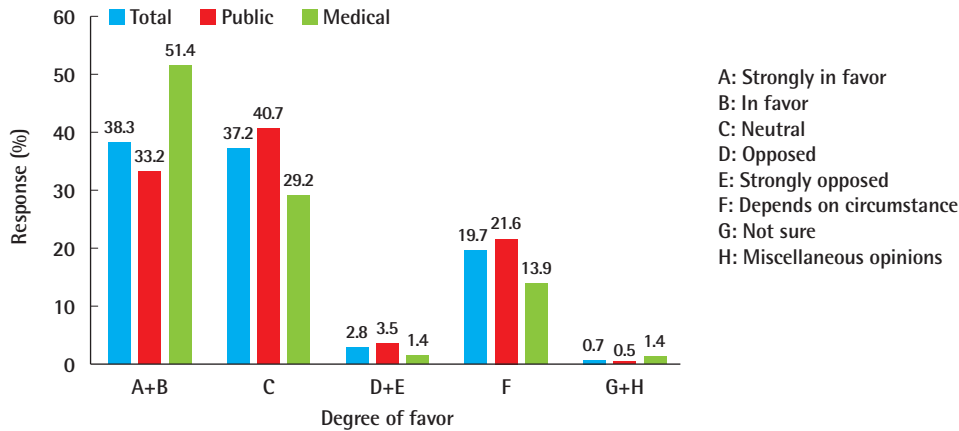


Fig. 2. A composite of an attractive Korean face

This composite face was generated from the faces of the top 10 most attractive celebrities' according to respondents (Tae-Hee Kim, Ji-Hyun Jun, Hye-Kyo Song, Ga-In Han, Chae-Won Moon, Young-Ae Lee, Hee-Sun Kim, Yaejin Son, Eun-Ha Shim, Ye-Seul Han, Suzy Bae, and Hye-Soo Kim) along with four recommended celebrities' faces such as Ji-min Han, Min-a Shin, Ye-seul Han, and Hyo-joo Han. This composite can be considered a facial image reflective of the facial appearance typically preferred by Korean people today.



would be considered the most beautiful Korean celebrities from a Western point of view. When respondents were requested to provide names of additional celebrities that they would like to

add to the sample list of attractive Korean celebrities, Ji-min Han (30.2%), Min-a Shin (27.0%), Ye-seul Han (19.0%), Hyo-joo Han (17.5%), and Min-jung Lee (12.7%) were mentioned.

From Q2, to visualize the current accepted configuration that represents Korean facial beauty concretely, one of our authors generated a composite face of attractive Korean female celebrities using the sample average morphing method [4]. The facial photographs used were selected when more than 15% of all respondents agreed that they represented Korean beauty. The process of average morphing works as follows: Before morphing the faces, we must obtain very standardized facial photographs with as high resolution as possible. After importing two facial photographs into computer software, automatic photographic size adjustment and cropping were initiated without changing the aspect ratio of the original photographs. Then, using a magnification tool, independent facial fiducials or feature landmarks, which are generally used in facial photogrammetry, are manually designated by very small dots generated by pointing a computer mouse at each location on two facial photographs shown on the right and left screens. From our experience, to create less blurred faces, because automatic facial feature tracking methods are not correct, we recommend using a manual landmarking method and designating facial fiducials accurately for at least 150 facial landmarks. From this, we found we were able to obtain an average morphing face synthesized by the computer algorithm embedded in the software. The composite face was synthesized from faces from the 12 celebrities' faces rated as most attractive

(Tae-hee Kim, Ji-hyun Jun, Hye-kyo Song, Ga-in Han, Chaewon Moon, Young-ae Lee, Hee-Sun Kim, Yaejin Son, Eun-ha Shim, Ye-seul Han, Suzy Bae, and Hye-soo Kim) and three celebrities' faces recommended by respondents (Ji-min Han, Min-a Shin, and Hyo-joo Han). Standardized facial photographs were acquired from the internet by searching the celebrities' names. Then, an attractive composite face was created (Fig. 2). The composite face is an example of an attractive Korean face based on the contemporary aesthetic preferences of Korean people.

Q3: The individual influence of each facial aesthetic subunit as perceived by the general public

We performed statistical analyses to investigate whether there are significant differences in the influence of individual aesthetic subunits on overall perceived facial attractiveness according to demographic characteristics. The results are summarized in Table 4. Female respondents (9.41) perceived that skin condition is much more important to the perception of facial attractiveness than male respondents did (9.05, $t = -2.778$, $P = 0.006$). Meanwhile, male respondents (7.46) regarded the shape of the lips as a much more important factor in determining facial attractiveness than female respondents (6.97, $t = 2.356$, $P = 0.019$). In addition, there are significant statistical differences between the genders with regard to the influence of facial balance or harmony (male, 9.47; female, 9.18; $t = 2.095$, $P = 0.037$) and the trait of a youthful appearance on attractiveness (male, 7.92; female, 7.44; $t = 2.304$, $P = 0.022$). This suggests that male respondents regard those factors as being much more important for facial attractiveness than female respondents do. When we analyzed the results according to age group, the relative degree of importance was somewhat different. Respondents ages 20 to 29 (20D) regarded skin condition as the most important factor for facial attractiveness, but there was a different degree of importance according to age group (30D, 9.51; 20D, 9.40; and 40D, 8.98; 50D, 8.70; $F = 5.618$, $P = 0.001$). As a post hoc analysis for evaluating group differences, Tukey's test revealed that 20D respondents regarded skin condition as a far more important factor for facial attractiveness than respondents aged over 50 did. Statistics also revealed that 30D respondents regarded skin condition as a far more important factor in determining facial attractiveness than 40D and 50D respondents did. Meanwhile, regarding the characteristic of a youthful appearance, its influence on facial attractiveness was statistically different according to the age group. There was a statistically significant group difference in perception about the importance of youthfulness for facial attractiveness between the 20D and 30D groups (20D, 7.32; 30D, 8.18; 40D, 7.67; 50D, 7.42; $F = 4.070$,

$P = 0.007$). Regarding job variables, the general public (9.34) regarded skin condition as a far more important factor for facial attractiveness than doctors (8.93) did ($t = -2.147$, $P = 0.034$). However, the shape of the nose was regarded as a far more important factor for facial attractiveness by doctors (8.37) than by the general public (7.93, $t = 2.272$, $P = 0.024$).

DISCUSSION

There are many reports that suggest that perceptions of the attractiveness of faces vary with the gender and race of the respondent [5-9]. Beauty is an emergent concept composed of objective, subjective, and relational dimensions, and aesthetic plastic surgeons must understand the characteristics of beauty comprehensively [10,11]. To meet such artistic and scientific demands, being able to understand peoples' cognition, preferences, and perceptions is very important to plastic surgeons.

Our questionnaire was categorized and distributed to meet three study objectives. Regarding people's general attitude about plastic surgery, we found that 38.3% of respondents were in favor of aesthetic plastic surgical procedures and only 2.8% of respondents were against them. From a 2015 Gallup Korea consumer awareness report on appearance and plastic surgery [12], 25% of 1,500 respondents said that appearance is 'very important' (61% respondents: important to some degree) and only 13%–14% of people regarded people's appearance as not very or never important. The report noted that 65% of male and 66% of female respondents felt that it is acceptable for anyone to undergo plastic surgery to improve their chances of getting a job or for marriage, percentages that have increased gradually since 1994 (48% of males and 38% of females). The report informed us that 1% of male respondents and 14% of female respondents had experienced plastic surgery. If we removed gender factors, 2% (1994), 5% (2004), and 7% (2015) of respondents had experienced plastic surgery. Although Western news outlets have reported that South Korea has the highest per capita rate of plastic surgery in the world [13,14], their statistics might have been overestimated or there might have been statistical errors because the statistics referenced are based on data from the International Society of Aesthetic Plastic Surgery (ISAPS). The ISAPS's statistics are based on survey results from plastic surgeons throughout the world that responded about the number and type of cosmetic procedures they performed over a 1-year period. The ISAPS wrote that their survey participants personally completed a questionnaire that primarily focused on the number of specific surgical and non-surgical procedures performed every year. They also wrote that they sent an invitation to approximately 35,000 plastic surgeons worldwide to participate in the study

but only a total of 1,398 plastic surgeons responded [15]. The response rate was only 3.99%. We do not consider these statistics to be an accurate representation of views on plastic surgical procedures because there is bias based on the respondents' profession and attitude toward e-mail questionnaires. We found that although a significant proportion of the Korean population is in favor of plastic surgery, a survey from Gallup revealed that only a relatively small proportion of the population had undergone plastic surgery. Interestingly, a similar questionnaire study designed for the Caucasian population [16] revealed that 20% of respondents were currently considering plastic surgery and 78% stated that they would consider it in the future. Although small, the study demonstrates that the seemingly extraordinary boom in plastic surgery in Korea may not be as unique as originally perceived. From our survey, it was interesting to find that almost half of our sample of doctors (49.6%), which included those interested in cosmetic surgery or procedures but who do not have a specialization from the plastic or dermatologic board, were not in absolute favor of plastic surgery. Many doctors who participated in this study stated they were neutral (37.2%) and some stated that the decision about plastic surgery depends on the circumstances (21.6%), which indicates that many doctors are opposed to the public undergoing thoughtless or imprudent plastic surgery. These practitioners may be dealing with some deal of stress because they are performing cosmetic surgery or procedures after abandoning their own medical specialization (which is currently legal in South Korea).

In terms of people's method for getting information about aesthetic plastic surgery, we found that the mass media was the primary source, reaching 78.4%. Among media channels, the internet (50.0%) was the most important information source, followed by TV broadcasting (20.6%), and newspapers or magazines (7.8%). However, we know that a considerable amount of plastic surgery information from the internet is either misleading or inaccurate. For example, Jejurikar et al. [17] reported that when they evaluated 215 websites about breast surgery information, 24 were irrelevant and 41 contained no medical information. In addition, they found that almost 34% contained false or misleading information about breast surgery. The same phenomenon was observed in website information about liposuction [18]. Unfortunately, the misinformation on plastic surgery can be a grave hindrance with regard to forming good patient and doctor relationships. It is important that official societies of plastic surgeons be actively involved in the design, dissemination, and evaluation of web-based plastic surgery information. We also found, regarding the trustworthiness of information sources, that people regard postoperative surgical outcomes of other people (58.1%) and recommendations from acquaintanc-

es or relatives (18.4%) as critical information for choosing a clinic. In general, people felt that the mass media could not give trustworthy information. Only 12.9% of the respondents regarded information from TV broadcasting as trustworthy. The internet (6.9%) and newspapers or magazines (5.1%) were regarded as untrustworthy. Among hospital or clinic selection criteria, people reported that the three most powerful factors were postoperative surgical results of acquaintances (74.9%), existence of doctors' medical accidents or malpractice, and fame of a doctor. Our results are very consistent with findings from a Western study about the various factors influencing the selection of a plastic surgeon [16]. Currently, social media has become commonplace in our society, and its role in plastic surgery practice development and communication will become more prominent [18,19]. Internet advertising is increasingly prevailing in Korea and becoming a major financial burden for managing a private clinic. We found that people are gradually deciding that such advertising information cannot be a deciding factor when selecting a plastic surgeon, but rather, proof of good surgical results from doctors without malpractice or medical accidents and recommendations from acquaintances and relatives are more influential deciding factors.

To visualize the configuration of the face currently considered beautiful by Koreans, we produced a composite of the faces of attractive Korean female celebrities reflective of the respondents' beauty preferences based on the responses provided to Q2. The composite serves an example for us to better understand people's beauty desires. Comparing our results to reports published in 2006 [20], we found that Koreans still prefer a small face; wide forehead; smooth malar bones; narrow nose; large eyes; narrow, short, and small chin; wide mouth with a thin upper lip; U- or V-shaped lower face; oval-shaped mandible; relatively pale and fair complexion; clear skin; and stereoscopic soft tissue. These findings are mostly consistent with the results published by Yoon et al. [21] in 2010 as well.

Regarding the individual influence of each facial aesthetic subunit as perceived by the general public, though we did not survey certified plastic surgeons, our results reinforce the data in the reference studies performed in 2010 [21,22], showing a consensus with certified plastic surgeons, who usually regard structural factors such as aesthetic appearance of the eyes and a harmonized shape of the face as rather important factors in the cognition of facial attractiveness. Among the limitations of our study is the unique demographic profile of the respondents. An inevitable limitation of our study method is that the preference for famous female entertainers' faces could be more reflective of the entertainers' social status or personal favorability rather than facial beauty itself; therefore, our survey analysis and the com-

posite face should not be considered an absolute standard.

In summary, we found new information on people's perceptions of overall facial attractiveness. Specifically, skin condition and facial expression are far more important contributors to facial attractiveness than other factors, and beauty perceptions differ somewhat according to the gender of the respondent. Our study informs us that contemporary Koreans place a high importance on skin condition in their assessment of facial beauty, and they take into consideration not only static or structural facial beauty but also the facial expressions they consider attractive. We predict that Korean beauty trends will gradually change from a focus on static and structural aspects to dynamic aspects of beauty such as facial expressions in the future. Based on this, an increased demand for minimally invasive aesthetic plastic surgical procedures such as refinement and rejuvenation of facial skin can be expected. This is the right time for board certified plastic surgeons to reinforce and broaden our specialized fields to meet contemporary demands based on contemporary concepts of beauty. We have found that the general public in South Korea has traditional and unique beauty preferences. We have also found that the structural characteristics of attractive Korean female faces have remained unchanged, which was evidenced by the composite face we generated. In addition, it is worth noting that skin condition and facial expression have become important considerations in evaluating facial attractiveness. Beauty perception and cognition were found to differ by the gender of the respondent, but there was little difference in beauty perceptions between the doctors in this study and the general public. Our study results provide aesthetic plastic surgeons with detailed information about contemporary Korean people's attitudes, perceptions, and trends with regard to plastic surgery and the peculiar characteristics of female Korean faces that are currently considered to be attractive, which should assist plastic surgeons in finding greater focus in their specialized fields or identifying areas that merit more attention.

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