The Impact of Geographic, Ethnic, and Demographic Dynamics on the Perception of Beauty

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Background: Beauty lies in the eyes of the beholder, but influenced by the individual’s geographic, ethnic, and demographic background and characteristics. In plastic surgery, objective measurements are used as a foundation for aesthetic evaluations. This study assumes interdependence between variables such as country of residence, sex, age, occupation, and aesthetic perception.

Methods: Computerized images of a model’s face were generated with the ability to alter nasal characteristics and the projection of the lips and chin. A survey containing these modifiable images was sent to more than 13,000 plastic surgeons and laypeople in 50 different countries, who were able to virtually create a face that they felt to be the aesthetically “ideal” and most pleasing. Demographic information about the interviewees was obtained.

Results: Values of various aesthetic parameters of the nose were described along with their relationship to geography, demography, and occupation of the respondents. Interregional and ethnic comparison revealed that variables of country of residence, ethnicity, occupation (general public vs surgeon), and sex correlate along a 3-way dimension with the ideal projection of the lips and the chin. Significant interaction effects were found between variables of country of residence or ethnicity with occupation and sex of the respondents.

Conclusions: What are considered the “ideal” aesthetics of the face are highly dependent on the individual’s cultural and ethnic background and cannot simply and solely be defined by numeric values and diverse proportions. As confirmed with this study, ethnic, demographic, and occupational factors impact peoples’ perception of beauty significantly.

Key Words: Beauty, facial aesthetics, ethnic and cultural background, demographic impact, academic practice, private practice, interaction effect, international

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METHODS

Computerized images of a white woman’s face were generated using digital imaging software. The viewer was asked to alter various elements in the shape and dimension of the face. The modifications imitate structural lip and chin characteristics typically adjusted in aesthetic procedures to remodel a patient’s face. Specifically, the respondents were asked to adjust each photograph by either augmenting or reducing the projection of the lips and the chin (Fig. 1), with every measure on the 6-point scale representing 1 gradient of augmentation or reduction of the specific facial characteristic.

FIGURE 1. Distribution of respondents’ ethnicities.
TABLE 1. Tests of Between-Subjects Effects, Country of Residence, Sex, and Occupation—Ideal Lip Projection

| Source                      | Type III Sum of Squares | df | Mean Square | F   | P     | Partial η² | Noncentrality Parameter | Observed Power* |
|-----------------------------|-------------------------|----|-------------|-----|-------|------------|-------------------------|-----------------|                 |
| Corrected model            | 113.195†                | 31 | 3.651       | 1.778 | 0.006 | 0.043      | 55.103                  | 0.997           |                 |
| Intercept                  | 27.35                   | 1  | 27.35       | 12.314 | 0     | 0.011      | 13.314                  | 0.954           |                 |
| Sex                        | 0.072                   | 1  | 0.072       | 0.035 | 0.851 | 0.008      | 0.035                   | 0.054           |                 |
| Occupation                 | 12.287                  | 1  | 12.287      | 5.981 | 0.015 | 0.005      | 5.981                   | 0.686           |                 |
| Country                    | 21.063                  | 8  | 2.633       | 1.282 | 0.249 | 0.008      | 10.253                  | 0.598           |                 |
| Sex × occupation           | 7.914                   | 1  | 7.914       | 3.852 | 0.05  | 0.003      | 3.852                   | 0.501           |                 |
| Sex × country new          | 9.163                   | 8  | 1.145       | 0.558 | 0.813 | 0.004      | 4.461                   | 0.263           |                 |
| Occupation × country new   | 10.089                  | 7  | 1.441       | 0.702 | 0.671 | 0.004      | 4.911                   | 0.307           |                 |
| Sex × occupation × country new | 27.352               | 5  | 5.47        | 2.663 | 0.021 | 0.011      | 13.315                  | 0.815           |                 |
| Error                      | 2489.747                | 1212 | 2.054      |      |       |            |                         |                 |
| Total                      | 2644                    | 1244 |            |      |       |            |                         |                 |
| Corrected Total            | 2602.942                | 1243 |            |      |       |            |                         |                 |

*Computed using α = 0.05.
†R² = 0.043 (adjusted R² = 0.019).

The online questionnaire, containing these photographs, also gathered demographic data about the interviewee, including information on sex, age, country of residence, and ethnic background.

The authors send the online survey (http://plastics.yale.edu/~jong/nose/) to more than 13,000 people, including plastic surgeons and laypeople in more than 50 countries. Plastic surgeons were targeted through national surgery societies with more than 500 listed members, and the general public was randomly contacted via social and professional networks.

Data were collected in North America (Canada, United States), Latin America, and the Caribbean (Argentina, Brazil, Chile, Colombia, Dominican Republic, Ecuador, Panama, Peru, and Venezuela), Western Europe (Austria, Belgium, Croatia, United Kingdom, France, Germany, Greece, Hungary, Italy, Norway, Poland, Portugal, Spain, Sweden, Switzerland, the Netherlands, and the United Kingdom), Oceania (Australia), Eastern Asia (China, Japan, Republic of Korea), Southern Asia (India, Iran, Pakistan), Southeastern Asia (Thailand, Vietnam), Western Asia (Cyprus, Iraq, Israel, Jordan, Kuwait, Lebanon, Turkey, United Arab Emirates), and Northern Africa (Egypt, Morocco, Tunisia). National response threshold for inclusion was set at 25. Countries were grouped together based on regional definitions set by the United Nations. The geographic categorization includes physicians and the general public from different countries.

The geographic categorization includes physicians and the general public from more than 50 countries. Plastic surgeons were targeted through national surgery societies with more than 500 listed members, and the general public was randomly contacted via social and professional networks.

The age of the respondents ranged from 18 to 87 years, with a mean age of 40 years. The mean age of plastic surgeons was significantly higher than that of the general public (50.2 vs 30.3 years).

With 71%, 512 whites made up the largest ethnic group among all plastic surgeons, followed by 15% of Hispanics (n = 115). Similar trends were observed for the general public (Fig. 1).

Most plastic surgeons who replied to the survey live in North America (n = 332), predominantly in the United States (n = 320), followed by Latin America and the Caribbean (n = 252), primarily from Brazil (n = 142) and Colombia (n = 53). The spatial distribution of responses from the general public is also dominated in North (n = 329) and South America (n = 137). The majority of the responses were received from the United States (n = 322) and Peru (n = 124).

Given the findings from the first analysis on the relationship between variables including sex, country of residence, ethnicity, occupation, and history of rhinoplasty with respect to preferred nasal shapes and dimensions, in a second step the authors analyzed the data for interaction effects. The variables in question included country of residence, sex, age, and occupation.

RESULTS

The authors received a total of 1226 responses (response rate of 9.6%). Seven hundred twenty (612 male and 108 female) plastic surgeons and 506 (145 male and 361 female) people from the general public responded to the survey. Of all respondents, 39% were female.

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Given the findings from the first analysis on the relationship between variables including sex, country of residence, ethnicity, occupation, and history of rhinoplasty with respect to preferred nasal shapes, in a second step the authors analyzed the dependence among these variables, using 3-way interaction effects, to see whether its interaction further clarifies the relationship.
Impact of Country of Residence, Occupation, and Sex on Perceptions of Ideal Lip Projection

Analyzing statistics regarding the impact of country of residence, occupation (general public vs surgeon), and sex on the ideal projection of the lips, significant 3-way interaction effects were found ($F_{5,1212} = 2.44$). Marked differences along this dimension occur across countries among plastic surgeons and the general public with respect to their sex ($P = 0.021$).

It appears that male respondents from the general public in the United States and Brazil prefer greater lip projections than do female respondents (Table 1). These findings elucidate significant 3-way interaction effects, which have been confirmed statistically using tests of simple main effects.

In visual terms, the difference is greatest between civilian men and women in Brazil, with females preferring less projected lips, 2 interval points below the male preference. Interestingly, this trend is opposite for surgeons. Among plastic surgeons, in both countries, females preferred greater lip projections.

Comparing men and women of both occupational categories, men and women in the United States show similar trends regarding their preference of lip projection, reflected by steep positive slopes. This, however, is not the case in Brazil, where civilian men and male surgeons seem to content in their assessment of ideal lip projection, whereas women’s preferences show significant differences depending on their occupation. The negative slope of male preferences is almost equal to zero, that is, agreement among male civilians and plastic surgeons, whereas analysis for female preferences results in a steeper positive slope, that is, major discrepancies between female aesthetic perceptions.

Interestingly, opposite trends emerge when interpreting statistics from Australia, Mexico, and Peru. Here, females among the general public preferred greater lip projection compared with male respondents, and among surgeons, the males were the ones who preferred more pronounced lips than females. The regression for the sexes results in a steep negative slope for female respondents and in a steep positive slope for the males.

Impact of Ethnicity, Occupation, and Sex on Perceptions of Ideal Chin Projection

Another significant interaction effect of the variables country of residence, occupation, and sex was observed regarding ideal chin projection ($F_{5,1212} = 2.44$). Marked differences along this dimension occur across countries among plastic surgeons and the general public with respect to their sex ($P = 0.033$).

In the United States and Brazil, surgeons, regardless of their sex, agree on the ideal chin projection. In the United States, surgeons selected a more pronounced chin projection than the general public. Among the latter, females prefer slightly larger chins than do males. Sex differences regarding this dimension were greater among men, resulting in a steeper positive slope (Fig. 2).

In Brazil, civilians display a marked difference across sexes compared with surgeons. Females from the general public preferred far greater chin projection compared with male respondents (Fig. 3 and Table 2). The visual difference is of 6 alteration points (Fig. 4).

Again, perceptions in Australia, Mexico, and Peru follow an opposite trend. Significant differences can be seen among the sexes and occupational classes. In Australia, female civilian respondents prefer greater chin projections than do males, whereas female surgeons prefer less chin projection than do males (Fig. 5).

Impact of Ethnicity, Occupation, and Sex on Perceptions of Ideal Chin Projection

In another multiple variable analysis regarding ideal chin projection, the authors introduced the variable of ethnicity. Also in this case, the relationship between sex, occupation, and ethnicity proved to be significant ($F_{6,1216} = 2.74$). Major differences among the various
TABLE 3. Tests of Between-Subjects Effects, Ethnicity, Sex, and Occupation—Ideal Chin Projection

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>P</th>
<th>Partial η²</th>
<th>Noncent. Parameter</th>
<th>Observed Power*</th>
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<tbody>
<tr>
<td>Corrected model</td>
<td>284.306†</td>
<td>27</td>
<td>10.53</td>
<td>4.535</td>
<td>0 0.091</td>
<td>122.438</td>
<td>1</td>
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<tr>
<td>Intercept</td>
<td>153.895</td>
<td>1</td>
<td>153.895</td>
<td>66.275</td>
<td>0</td>
<td>0.052</td>
<td>66.275</td>
<td>1</td>
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<tr>
<td>Sex</td>
<td>11.132</td>
<td>1</td>
<td>11.132</td>
<td>4.794</td>
<td>0.029</td>
<td>0.004</td>
<td>4.794</td>
<td>0.59</td>
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<tr>
<td>Occupation</td>
<td>37.427</td>
<td>1</td>
<td>37.427</td>
<td>16.118</td>
<td>0</td>
<td>0.013</td>
<td>16.118</td>
<td>0.98</td>
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<tr>
<td>Ethnic new</td>
<td>29.303</td>
<td>6</td>
<td>4.884</td>
<td>2.103</td>
<td>0.05</td>
<td>0.01</td>
<td>12.619</td>
<td>0.761</td>
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<tr>
<td>Sex × occupation</td>
<td>2.295</td>
<td>1</td>
<td>2.295</td>
<td>0.988</td>
<td>0.32</td>
<td>0.001</td>
<td>0.988</td>
<td>0.168</td>
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<tr>
<td>Sex × ethnic new</td>
<td>27.442</td>
<td>6</td>
<td>4.574</td>
<td>1.97</td>
<td>0.067</td>
<td>0.01</td>
<td>11.818</td>
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<td>Occupation × ethnic new</td>
<td>13.263</td>
<td>6</td>
<td>2.211</td>
<td>0.952</td>
<td>0.457</td>
<td>0.005</td>
<td>5.712</td>
<td>0.382</td>
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<td>Sex × occupation × ethnic new</td>
<td>38.123</td>
<td>6</td>
<td>6.354</td>
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<tr>
<td>Total</td>
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*Computed using α = 0.05.

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poses another selection bias. Furthermore, because of the use of modified computer images for alteration and evaluation, these findings may not translate one-to-one to humans. However, one strength of this study is that all respondents performed their evaluations using the exact same images; thus, they were all confronted by the same conditional factors.

CONCLUSIONS

Metrics on beauty are not universally applicable, and this study aimed to clarify which beauty lies in which beholder’s eye. This study emphasized the importance of considering individual preferences and their underlying demographic, geographic, and ethnic dynamics.29–32 Its findings may aid in sensitizing the plastic surgeons’ eyes and help in further defining the common denominator between patients and surgeons with respect to aesthetic facial plastic surgery.

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Management of a Bulky Capillary Hemangioma in the Parapharyngeal Space With Minimally Invasive Surgery

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Abstract: In this article, the authors report their management with minimally invasive surgery of a bulky capillary hemangioma in the

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