

# Beauty Lies in the “Eyebrow” of the Beholder: A Public Survey of Eyebrow Aesthetics

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**Background:** Several studies have attempted to define the dimensions of an aesthetically pleasing eyebrow. However, these dimensions represent the views of plastic surgeons and cosmetologists, not necessarily the general public. We hypothesized that many patients who present to their plastic surgeon for periorbital rejuvenation actually want their eyebrows to be in a more natural position than was represented in the studies we surveyed.

**Objective:** A study was designed to define the dimensions of an aesthetically pleasing eyebrow from the perspective of the general public. This was achieved by surveying individuals in our local community.

**Methods:** One hundred individuals were surveyed and asked to rank 27 photographs (including photographs of pre- and post-operative patients and of models) on a scale of 1 to 10 and grade each photograph as either “attractive” or “unattractive”. Each survey taker provided extensive background information. The photographs receiving the highest number of points and “attractive” grades were then analyzed for eyebrow dimensions. The following distances were measured: medial canthus (MC) to medial eyebrow (ME), lateral limbus (LL) to lateral eyebrow (LE), and eyebrow arch position (EAP) to eye width (EW). Ratios were determined using the EW for comparison. We also evaluated the EAP in relation to the LL.

**Results:** The eyebrow dimensions (mean  $\pm$  SD) of the most highly ranked female photographs were as follows: MC-ME:EW ratio  $0.573 \pm 0.126$ , LL-LE:EW ratio  $0.668 \pm 0.083$ , and EAP:EW  $0.703 \pm 0.1$ . The eyebrow dimensions (mean  $\pm$  SD) of the most highly ranked male photographs were as follows: MC-ME:EW ratio  $0.547 \pm 0.177$ , LL-LE:EW ratio  $0.58 \pm 0.171$ , and EAP:EW  $0.63 \pm 0.175$ . The EAP in relation to the LL was found to be  $0.925 \pm 0.884$  cm lateral to the LL in women, and  $1.05 \pm 1.04$  cm lateral to the LL in men.

**Conclusions:** Previously published dimensions of an aesthetically pleasing eyebrow, as defined by plastic surgeons and cosmetologists, differ from dimensions currently defined as attractive by the general public in our study.

(Aesthetic Surg J 2005;25:348-352.)

In describing the ideal eyebrow, art historian Johann Winckelmann (1717-1768) stated, “The perfect brow formed a delicate arch just over the brow bone. A particularly appealing feature was an eyebrow that grew together over the nose.”<sup>1</sup> Although these features may no longer represent current aesthetic taste, this description was possibly the first attempt to describe the dimensions of an aesthetically pleasing eyebrow. In 1974, Westmore<sup>2</sup> outlined more applicable characteristics of an aesthetically pleasing eyebrow (Figure 1). Since then, others have described additional features that make an eyebrow attractive.<sup>3-5</sup>

During a review of the many postoperative brow lift results displayed in digital archives or on Web sites by plastic surgeons who have attempted to mimic these dimensions, it was the impression of the senior author (S.A.K.) that the eyebrows appeared unaesthetic and resulted in a look of “continual surprise.” A major reason for these

unfortunate results may be that popular aesthetic standards, with respect to the final position of the eyebrows, were not taken into account sufficiently by the plastic surgeon. Many of the results considered aesthetically pleasing in the plastic surgery literature are not based on the opinion of the general public, but rather on the analyses of plastic surgeons and cosmetologists. In our opinion, many patients who present to their plastic surgeon for periorbital rejuvenation want their eyebrows to be in a more natural position than was represented in the results we surveyed. Therefore, we conducted a survey to discover what makes an eyebrow aesthetically pleasing to the general public.

## Methods

### Data collection

Data were collected between March 1 and May 31, 2003. The surveys were distributed by the lead author

(J.E.S.) to 100 randomly selected people from the local community. The Johns Hopkins Hospital Institutional Review Board approved the study procedures.

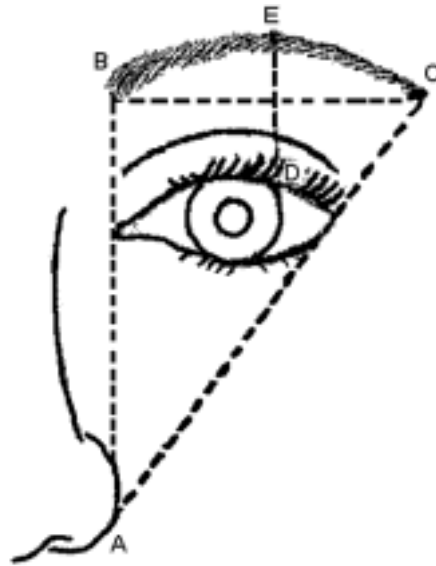
### Population sample

Before completing the survey, each participant provided background information, including sex, age, income, marital status, level of education, and ethnicity. As compared with the US population represented in the March 2002 Current Population Survey,<sup>6</sup> our sample underrepresented Hispanics (1% vs 6% in the US survey), Native Americans (0% vs 1%), people aged 54 to 71 (8% vs 16%), people aged older than 71 years (2% vs 7%), people earning less than \$40,000/year (29% vs 72%), those with a high school education (9% vs 32%), and those with a college education (36% vs 43%). Our sample closely represented Caucasians (69% vs 69%; Figure 2), African Americans (10% vs 12.3%), Asian/Pacific Islanders (4.3% vs 5%), women (58% vs 51%), men (42% vs 49%), those who are married (55% vs 54%), and those who are single (46% vs 45%). Finally, our sample over-represented people aged 15 to 35 years (57% vs 42%), people aged 36 to 53 years (33% vs 23%), people making greater than \$40,000/year (71% vs 28%), and those with a professional education (45% vs 9%). Although our population sample does not mirror the US population in several respects, we would conjecture that it more closely reflects those segments of the population seeking aesthetic surgery.

### Photographs

We used a survey that included photographs and 2 methods of photographic evaluation. The survey included 27 photographs, each of which included the upper two thirds of the face (forehead, eyebrows, eyes, and nose). The photographs included 4 popular celebrities, 3 models, 5 preoperative photographs (including 1 from the American Society for Aesthetic Plastic Surgery [ASAPS] Web site), and 15 postoperative photographs (including 2 from the ASAPS Web site). Twenty-one of the photographs were of women, and 6 were of men.

Each participant was asked to grade each photograph as either “attractive” or “unattractive” and then to rank each photograph from 1 to 10 (1 being the least attractive and 10 being the most attractive). The photographs receiving the highest number of points and “attractive” grades were then analyzed for eyebrow dimensions. The eyebrow dimensions that were measured included the following: medial canthus (MC) to medial eyebrow (ME), lateral limbus (LL) to lateral eyebrow (LE), and eyebrow



**Figure 1.** Westmore's illustration of the dimensions of an attractive eyebrow. From Westmore,<sup>2</sup> with permission.

arch position (EAP) to eye width (EW). Ratios were determined using the eye width (EW) for comparison. We also evaluated the EAP in relation to the LL.

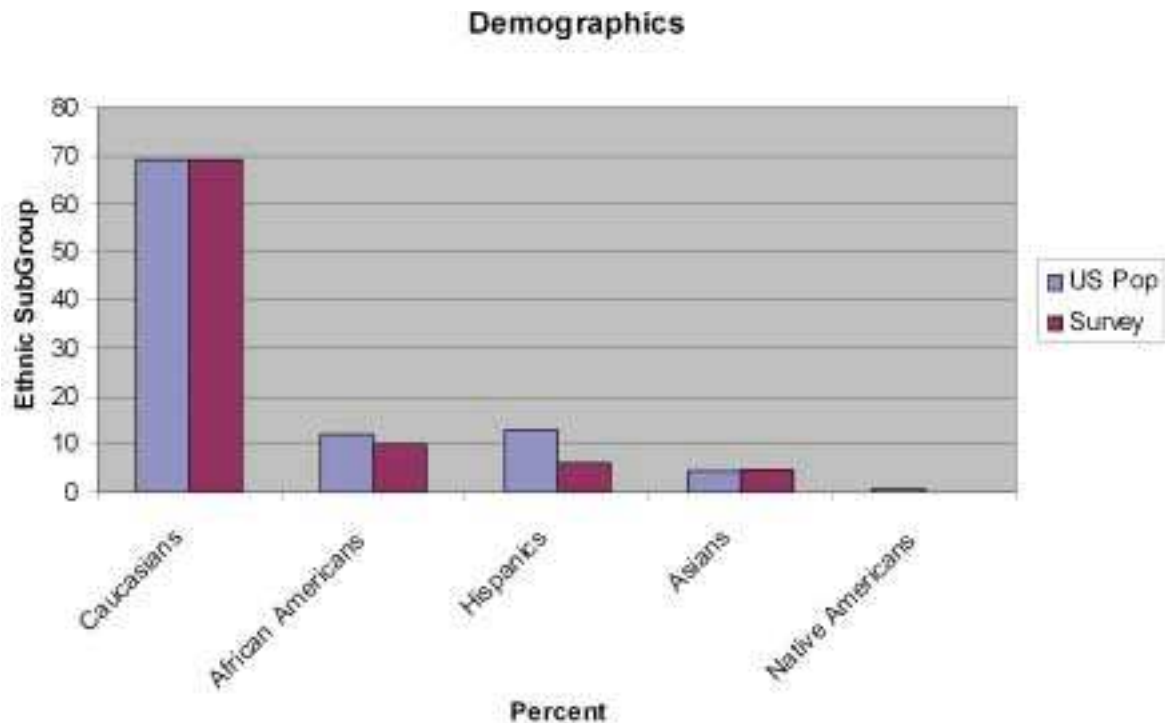
### Statistical analysis

Data were analyzed using Intercooled Stata 6.0 (Stata Corp, College Station, TX) and Microsoft Excel (Microsoft Co, Redmond, CA). First, the intra-rater reliability was tested for our survey instrument by retesting 8 participants 1 week apart. Observations made 1 week apart by the same participants were highly correlated. A paired 2-tailed *t* test indicated that the repeat observations were not statistically different from their initial observations, both when tested by a numeric score for each photograph (1 to 10) and dichotomously (attractive or unattractive). The correlation coefficient (*r*) equaled 0.71. At this point, the survey was expanded to the full-study design of 100 participants.

Inter-rater reliability was high as well, assessed with a mean standard deviation of 1.6 points (range 1.1 to 2.2) for each photograph across 100 observers. Measurements were performed on the most attractive photographs as identified by a score >7. These photographs were noted to have a standard deviation of approximately 1.7. The anthropometrics of these photographs were analyzed with descriptive statistics.

### Results

Examples of the most highly ranked photographs are represented by Figures 3 and 4. The eyebrow dimen-



**Figure 2.** Percentages of ethnic groups in population sample.



**Figure 3.** Example of one of the highest ranked female photographs from the survey. The photo is of model Michelle Bourke, taken by Vincent J. Yodis. Copyright Vincent J. Yodis. Used with permission.

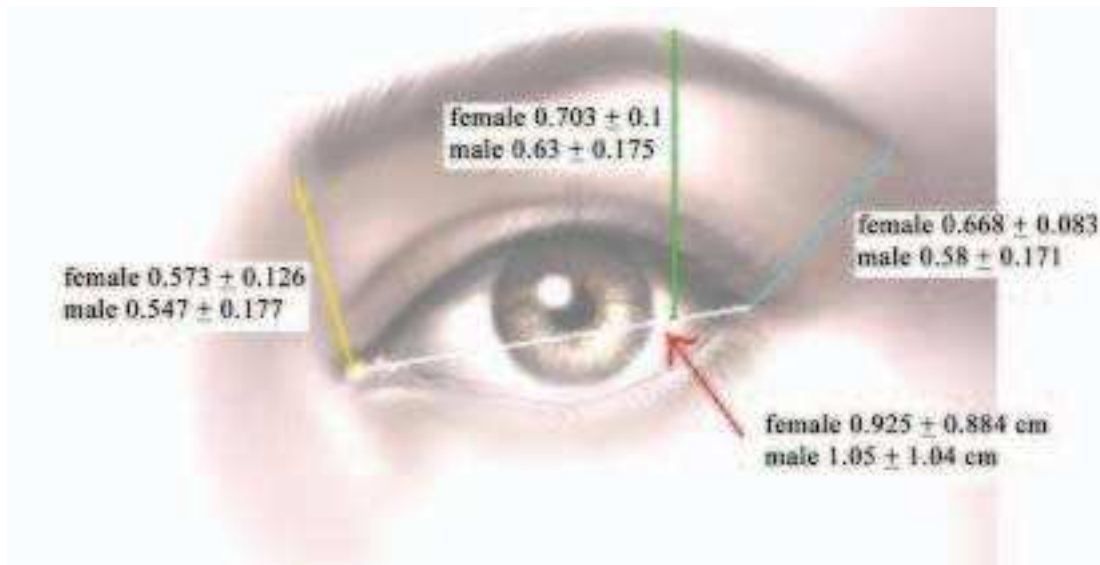


**Figure 4.** Example of one of the highest ranked male photographs from the survey. The photo is of model Lester James Brandt. Copyright Lester James Brandt. Used with permission.

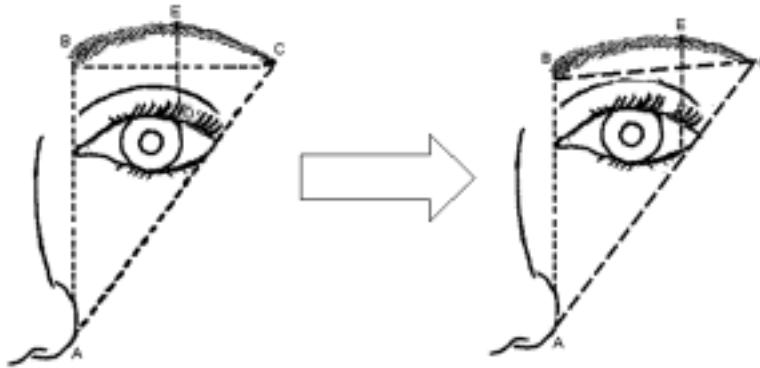
sions (mean  $\pm$  SD) of the most highly ranked female photographs were as follows: MC-ME:EW ratio  $0.573 \pm 0.126$  (Figure 5), LL-LE:EW ratio  $0.668 \pm 0.083$ , and EAP:EW  $0.703 \pm 0.1$ . (Figure 3) The eyebrow dimensions (mean  $\pm$  SD) of the most highly ranked male photographs were as follows: MC-ME:EW ratio  $0.547 \pm 0.177$ , LL-LE:EW ratio  $0.58 \pm 0.171$ , and EAP:EW  $0.63 \pm 0.175$ . The EAP in relation to the LL was found to be  $0.925 \pm 0.884$  cm lateral to the LL in women, and  $1.05 \pm 1.04$  cm lateral to the LL in men (Figure 5).

## Discussion

This study confirms our initial opinion of eyebrow aesthetics, in that we found the general public's idea of an aesthetically pleasing eyebrow to be different from typical brow lift results. The general public prefers the eyebrow to be placed in a lower position than is currently seen in the plastic surgery literature. Many eyebrows we observed postoperatively were placed too high, resulting in a look of constant surprise. It was observed that an arch positioned more laterally in relation to the lateral



**Figure 5.** Eyebrow dimensions of the most highly ranked photographs. Ratios are mean  $\pm$  SD. MC-ME:EW (yellow line): female  $0.573 \pm 0.126$ , male  $0.547 \pm 0.177$ ; LL-LE:EW (blue line): female  $0.668 \pm 0.083$ , male  $0.58 \pm 0.171$ ; EAP:EW (green line): female  $0.703 \pm 0.1$ , male  $0.63 \pm 0.175$ ; EAP in relation to the LL (red arrow): female  $0.925 \pm 0.884$  cm; male  $1.05 \pm 1.04$  cm.



**Figure 6.** Our rendition of Westmore's illustration with the following changes: first, the overall position of the eyebrow is lower; second, the arch is more lateral in relation to its position over the lateral limbus; and third, the lateral eyebrow is higher than the medial eyebrow. The second and third changes have been previously described. Modified from Westmore,<sup>2</sup> with permission.

limbus was also preferred. Although this feature is more subtle than current measurements (those currently defined by existing dimensions), this modification produces a more aesthetically pleasing aspect to the eyebrow. These changes can be applied to Westmore's illustration of an attractive eyebrow (Figure 6).

The ratios defined by this study are useful for comparison of eyebrow position preoperatively and are not intended for intraoperative use. Their use preoperatively may serve as a guide to create more pleasing eyebrow aesthetics. The application of these ratios in the operating room might assist in creating an aesthetically pleasing eyebrow, but it might also distract from creating an overall facial appearance that is aesthetically pleasing and

symmetric. These measurements may also turn out to be more applicable for facial shaping using botulinum toxin than they are for operative planning for a surgical brow lift.<sup>7</sup> However, we did find it useful to measure the distance from the MC to the ME and from the lateral canthus to the LE for comparisons.

Several aspects of this preliminary study may be amenable to improvement. For instance, the number of photographs and the number of people analyzing them could be increased, providing more accurate dimensions of the "perfect" eyebrow and more closely representing the percentages found in a population survey. Also, it would be interesting to obtain the opinions of respondents from different countries. This would provide plastic surgeons in different parts of the world

with an idea of how to create aesthetically pleasing eyebrows for patients in specific regions or cultural areas, as assessed by the general public in each of these locales. The plastic surgeon's goal is to achieve a desirable aesthetic outcome. The results will be judged by plastic surgeons, but more importantly by patients and those in their general community. Patients who present to a plastic surgeon wish to become more attractive by their own standards and, usually, by commonly held standards. The opinions of the general public as to what is or is not aesthetically pleasing should be considered more often during preoperative planning.

### Conclusion

Previously published dimensions of an aesthetically pleasing eyebrow as defined by plastic surgeons and cosmetologists differ from those currently defined as attractive by the general public. Our study confirmed that placement of the eyebrow in a lower position than has been previously thought to be ideal, including a lower eyebrow arch position, may actually result in an eyebrow that is more attractive to the majority of people. Further, placing the arch position more lateral to the lateral limbus than currently is preferred by many surgeons may also be of benefit. The distance from medial canthus to medial eyebrow and lateral canthus to lateral eyebrow may be used as new reference points for future studies of eyebrow aesthetics.

As aesthetic surgeons, we may sometimes allow satisfaction with our technical achievement to overshadow an honest evaluation of the aesthetics of our results. In the final analysis, the most successful aesthetic result is one that is confirmed by onlookers. ■

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Accepted for publication April 4, 2005.

This paper was presented at The Aesthetic Meeting of the American Society for Aesthetic Plastic Surgery, Vancouver, British Columbia, Canada, April 2004.

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doi:10.1016/j.asj.2005.05.002