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Short Communication

Mate value at a glance: Facial attractiveness reveals women's waist-to-hip ratio and men's household income

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ABSTRACT

Can people make valid inferences about the person's mate value by a glance of his/her face? Eighty-seven independent coders rated how attractive neutral facial pictures of 297 (152 males) undergraduate students were, after viewing each image for 3 s. The facial attractiveness rating significantly correlated with important sex-specific mate qualities. In case of female targets, facial attractiveness predicted their body shape (waist-to-hip ratio; WHR), whereas among males, it correlated with their household income. The results remained after controlling for the positive affectivity reflected in the facial image. It appears that sex-specific markers of mate value are implicitly ingrained in attractive facial features.

1. Introduction

Human faces vary in terms of attractiveness. Facial attractiveness is often used as a heuristic cue to evaluate a person, such that attractive people are likely to be seen as possessing more positive qualities than others (Feingold, 1992; Langlois et al., 2000; Maestripieri, Henry, & Nickels, 2017). One fundamental reason underlying this bias is that facial attractiveness could convey a person's value as a mate (Fink & Penton-Voak, 2002). Past research on face-based inferences of mate value has found a link between facial attractiveness and various physical variables, such as health (Shackelford & Larsen, 1999), longevity (Henderson & Anglin, 2003), and physical strength (Fink, Neave, & Seydel, 2007).

The current study was designed to replicate and expand past findings in several directions. First, we examined whether one's face even reflects non-physical attributes associated with mate quality, such as income. One recent study (Bjornsdottir & Rule, 2017) showed that people can accurately categorize targets as rich or poor from their facial photos. Although the target's sex was not analyzed in the above study, it is known that social class is more crucial to men's than women's mate quality (Buss & Schmitt, 1993). This research examined the possibility that facial attractiveness might serve as a more reliable cue for inferring men's, compared to women's, social class.

Second, past studies on facial attractiveness and mate value focused heavily on opposite-sex ratings (e.g., female raters evaluating male faces; e.g., Fink et al., 2007). In this research, we analyzed the face ratings obtained from same- as well as opposite-sex raters, allowing us to address two questions: (a) is mate value reflected by the face detectable only to an opposite-sex perceiver, or also to a same-sex person? (b) is the mate quality signal conveyed by the face of men versus women similar or different? When it comes to the first question, we believe the latter is likely. This is because being aware of a romantic rival's mate value can be adaptive, allowing the person to allocate mating efforts to a more appropriate target (Puts, Barndt, Welling, Dawood, & Burriss, 2011). Thus, regardless of whether the facial image belongs to a same-sex (potential rival) or an opposite-sex (potential mate) person, we expected that coders would be able to make meaningful inference about mate value from the target's face.

In regards to the second question, Hume and Montgomerie (2001) found that facial attractiveness signaled different aspects of mate quality in women and men; it only predicted the self-reported bodily mass of females, but not males (however, see Shoup & Gallup, 2008). We sought to replicate this finding, using a more objective and validated bodily index of physical attractiveness. Two sexually dimorphic bodily characteristics, women's waist-to-hip ratio (WHR) and men's shoulder-to-hip ratio (SHR), were measured in the lab by trained research assistants. Women's WHR becomes more accentuated during puberty, acting as an indicator of a female's reproductive potentials (Singh, 1993). In the male's case, his shoulders broaden during puberty, increasing his SHR. WHR and SHR are reliable physical markers of female's and male's mate value, respectively (e.g., Hughes & Gallup, 2003).

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As a non-physical aspect of mate-value, the target person's socioeconomic status (SES) was measured through commonly used items (household income, parents' level of education attainment; Côté et al., 2017). As a mate value signal, physical cues (e.g., WHR) are relatively more important for evaluating women, whereas social status matters more for men (Buss & Schmitt, 1993). We examined whether perceivers are able to detect the important sex-specific information (women's WHR and men's SES) from a brief observation of the target's face.

Finally, this research also provides an opportunity to test the robustness of prior work on mate value judgments that were conducted mostly in Western cultures. Although there seems to be a general cross-cultural consensus in physical attractiveness ratings (e.g., Gallup & Frederick, 2010), our study conducted among a rarely examined sample (Korean college students) offer additional empirical data to the literature.

Is sum, we examined if sex-specific mate value is reliably detected from one's face. According to work on thin-slice judgments (e.g., Carney, Colvin, & Hall, 2007), people are able to glean a considerable amount of information about a target person even from a brief 'slice' of her expressive behavior. Extending this idea, we examined if people are able to detect a person's mate quality from a brief observation of his/her face. In particular, we focused on the intriguing possibility that the 'attractive face' might point to slightly different information, depending on the target person's sex. It was expected that facial attractiveness would significantly predict women's WHR, whereas among men, their SES level.

2. Methods

2.1. Participants

As part of a large research project, 301 undergraduates participated in exchange for $10. Five participants were excluded either because of missing data ($n = 2$) or were extreme outliers (3 + *SD* WHR from the mean, $n = 3$). Among the final sample of 296 participants, we analyzed the reports of 152 male participants ($M_{age} = 18.89$, $SD_{age} = 1.01$) and 144 female participants ($M_{age} = 18.65$, $SD_{age} = 0.74$).

2.2. Measures

In the questionnaire package, the following variables were relevant to our interest: Demographic factors (i.e., age, sex), physical attributes (i.e., waist, shoulder, and hip measures), and socioeconomic attributes (i.e., yearly household income, parents' education level).

2.2.1. Physical attributes

The circumferences of shoulder, waist, and hip were measured by trained research assistants. Based on past studies (Hughes & Gallup, 2003), shoulder circumference was taken at the greatest width of the shoulders while the participant stood with arms relaxed to the sides. Waist circumference was measured at the narrowest site and at the midpoint between the floating rib and the iliac crest, and hip circumference was measured at the widest point around the greater trochanter. Women's WHR and men's SHR, the sex-specific physical markers of attractiveness, were derived from these measurements.

2.2.2. Socioeconomic attributes

Participants' yearly household income was coded into six categories (cf. Kraus, Piff, & Keltner, 2009): (1) under $15,000, (2) $15,000–$35,000, (3) $35,000–$75,000, (4) $75,000–$100,000, (5) $100,000–$150,000, and (6) over $150,000. Also, parental education was coded into five categories: (1) elementary or below, (2) junior high school, (3) high school, (4) college/university, and (5) graduate school.

2.3. Attractiveness ratings

After completing the survey, facial photos were taken, using a tripod-mounted camera adjusted for each participant's height and centered on the nose-tip. Participants were instructed to maintain a neutral expression. Eighty-seven independent coders (female = 40; $M_{age} = 20.37$, $SD_{age} = 1.08$) viewed each of the 296 photos (cropped to include only the head) for 3 s with a resolution of 640 × 480 pixels, and offered attractiveness rating on a 7-point scale (1 = *very unattractive*, 7 = *very attractive*). In addition to a candy bar, the coders were offered an additional monetary incentive (lottery raffle) to encourage attention. The intra-class correlation (ICC) was high (0.91) and the attractiveness ratings provided by multiple coders were averaged for each target person. Because the attractiveness scores were highly correlated between female and male coders ($r = 0.88$, $p < 0.001$), we mainly used the collapsed ratings in our analyses.

2.4. Happiness ratings

Given that happy-looking faces are judged as more attractive (O'Doherty et al., 2003), we asked 8 coders to rate how happy each facial image appeared to be. The overall results, with or without controlling for this happiness expressed in the photos, were largely identical.

3. Results

Mean attractiveness scores for each target were computed. On average, coders rated female faces ($M = 3.74$, $SD = 0.66$) being more attractive than male faces ($M = 3.58$, $SD = 0.58$), $t(294) = -2.12$, $p = 0.035$. The facial attractiveness rating was correlated with the targets' demographic and mate value measures. The zero-order and partial (controlling for facial happiness) correlations are presented in Table 1. *P*-values were adjusted using a Bonferroni correction.

As expected, facial attractiveness significantly predicted ($r = -0.32$, $p < 0.001$) a physical feature that is critical for women's mate value (WHR). It did not predict ($r = 0.14$, ns) a counterpart feature of men's physical attractiveness (SHR), presumably because bodily characteristics, compared to women, are less diagnostic of men's mate value. On the other hand, a contrasting sex-difference emerged for the SES variables. Among men, facial attractiveness significantly predicted their household income ($r = 0.27$, $p = 0.001$) and mother's educational level ($r = 0.25$, $p = 0.002$). Among women, however, none of these SES variables were predicted by facial attractiveness. The findings concerning income and WHR remained after controlling for judged happiness of each target. In short, from a brief observation of a person's face, people seem to draw sex-specific inferences about the target's mate value.

4. Discussion

We found that people are able to detect a person's mate value through his/her face. An attractive face seems to reveal sex-specific mate value indices (Buss & Schmitt, 1993). Women with an attractive face had an appealing physical feature (lower WHR), but her face offered little clue about her social class. In contrast, men's facial attractiveness predicted their social class, but was not associated with their bodily feature (SHR). Between the two SES variables, income was more consistently predicted by facial attractiveness than parent's education level. It has been suggested that developmental stability associated with social class can be conveyed by facial features (Simmons, Rhodes, Peters, & Koehler, 2004). According to our study, it appears that perceivers seem to catch this association between face and social class more easily when observing men's than women's face. Also, whether the target was appraised by a same- or an opposite-sex person did not make notable difference in the current results.

Table 1
Zero-order and partial correlations of attractiveness ratings with target variables.

Variable	Coder's attractiveness ratings					
	Zero-order			Partial		
	Total	Women	Men	Total	Women	Men
Women						
Age	−0.01	0.04	−0.06	0.01	0.08	−0.07
WHR	−0.32***	−0.30***	−0.31***	−0.31***	−0.28***	−0.31***
Household income	0.06	0.06	0.06	−0.07	−0.06	−0.07
Father's education level	0.06	0.08	0.03	0.02	0.05	−0.01
Mother's education level	−0.02	−0.01	−0.04	−0.08	−0.06	−0.10
Men						
Age	0.03	0.04	0.04	−0.02	−0.02	−0.02
SHR	0.14	0.12	0.16	0.04	0.01	0.06
Household income	0.27**	0.25**	0.28**	0.30***	0.27**	0.28**
Father's education level	0.20	0.16	0.22**	0.17	0.12	0.21
Mother's education level	0.25**	0.22**	0.26**	0.21	0.17	0.24**

Note. *P* values were adjusted using a Bonferroni correction. Partial correlations were computed by controlling for judged happiness. WHR = waist-to-hip ratio, SHR = shoulder-to-hip ratio.
** $p < 0.01$.
*** $p < 0.001$.

Our finding replicates an earlier work by Hume and Montgomerie (2001) on facial attractiveness and mate quality. They found that facial attractiveness of women correlated with self-reported physical qualities (i.e., body mass index; BMI) but not with SES. Men's attractiveness, however, was predicted by SES, but not by BMI nor health problems. By measuring a well validated index of attractiveness (WHR) through trained assistants rather than self-reports, we found highly consistent results. Also of note, we were able to replicate the signaling value of facial attractiveness in an Asian sample that might endorse slightly different values or standards of beauty than Western respondents (Wheeler & Kim, 1997).

A few limitations should be noted. Although photos were taken in a standardized (e.g., lightning) manner, we did not eliminate external features such as eyeglasses, jewelry, or hair ornaments. More controlled facial stimuli (e.g., cropped with an oval mask) could be used in future work. Also, by focusing on the well-replicated predictors of physical mate value, we only measured women's WHR and men's SHR in the study. Adding female SHR and male WHR as predictors may provide a comprehensive picture of the sex-specific physical associations with facial attractiveness. Also, replication should be sought with more diverse samples in terms of age, education, and backgrounds.

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Ethics statement

This study was carried out in accordance with the recommendations of the Yonsei University Research Ethics Committee. The protocol was approved by the Yonsei University Institutional Review Board. Participants gave written informed consent in accordance with the Declaration of Helsinki.

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