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Judging a Man by the Width of His Face: The Role of Facial Ratios and Dominance in Mate Choice at Speed-Dating Events

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Abstract

Previous research has shown that men with higher facial width-to-height ratios (fWHRs) have higher testosterone and are more aggressive, more powerful, and more financially successful. We tested whether they are also more attractive to women in the ecologically valid mating context of speed dating. Men's fWHR was positively associated with their perceived dominance, likelihood of being chosen for a second date, and attractiveness to women for short-term, but not long-term, relationships. Perceived dominance (by itself and through physical attractiveness) mediated the relationship between fWHR and attractiveness to women for short-term relationships. Furthermore, men's perceptions of their own dominance showed patterns of association with mating desirability similar to those of fWHR. These results support the idea that fWHR is a physical marker of dominance. This is the first study to show that male dominance and higher fWHRs are attractive to women for short-term relationships in a controlled and interactive situation that could actually lead to mating and dating.

Keywords

good genes, sexual selection, dominance, facial width-to-height ratio, speed dating, mate selection, evolutionary psychology, face perception

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Several testosterone-linked traits have been proposed as indicators of genetic fitness (Gangestad & Simpson, 2000). For instance, fluctuating asymmetry of bilateral features such as fingers and eyes is thought to reflect developmental instabilities and genetic abnormalities, and thus may be a summary indicator of genetic quality in various species (Møller & Thornhill, 1998). In humans, men with more symmetrical and masculine faces are thought to have greater genetic resistance to pathogens during development despite having higher levels of testosterone, which arguably suppresses immunocompetence (Gangestad & Simpson, 2000). Indeed, symmetrical and masculine men are most attractive to women around the time of ovulation, which indicates that these men are preferred when women are most likely to conceive (Little & Jones, 2012; Penton-Voak et al., 1999). Behavioral traits like social dominance have also been discussed as indicators of genetic fitness (Gangestad & Simpson, 2000).

Dominance

Dominant men are sexually attractive to women (Sadalla, Kenrick, & Vershure, 1987) and are preferred as mates by women who are ovulating or considering short-term relationships (Gangestad, Garver-Apgar, Simpson, & Cousins, 2007; Gangestad, Simpson, Cousins, Garver-Apgar, & Christensen, 2004). Dominance can be ascertained by observing a man's social presence and intrasexual competitiveness (e.g., Gangestad et al., 2004; Sadalla et al., 1987); however, research suggests that it can also be assessed simply by looking at a man's face. Mueller (1996) found that military officers with more dominant-looking

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faces achieved higher ranks throughout their careers. Facial masculinity, which is highly correlated with facial dominance (Perrett et al., 1998), is linked to perceptions of good health (Rhodes et al., 2007; cf. Boothroyd, Jones, Burt, & Perrett, 2007) and is hypothesized to indicate good genes because immune-system-compromising testosterone is required to maintain masculine features (Thornhill & Gangestad, 1999).

Men's facial dominance may be an honest signal not only of good health, but also of formidability as an intrasexual competitor, which could be helpful in gaining access to mates (intrasexual selection) and attracting women (intersexual selection; Puts, Jones, & DeBruine, 2012). Supporting these hypotheses, results have shown that women are more likely to have copulatory orgasms with men who are more dominant (Puts, Welling, Burriss, & Dawood, 2012). Given that orgasms may help direct sperm toward the dominant follicle around ovulation, female copulatory orgasms with such men may be selecting for health and prowess in intrasexual competition (Puts, Welling, et al., 2012).

An alternative hypothesis, which is not mutually exclusive, is that females might prefer dominance in men for direct benefits, for example, provision of physical protection (Snyder et al., 2011).

Facial Width-to-Height Ratio

Recently, researchers have examined a possible physical marker of dominance: the ratio of facial width to upper-facial height (distance between upper lip and brow), which becomes larger in men after pubertal testosterone exposure (Verdonck, Gaethofs, Carels, & de Zegher, 1999) and is linked to men's reactive testosterone levels (Lefevre, Lewis, Perrett, & Penke, 2013).[1] Although research has suggested a link between facial width-to-height ratio (fWHR) and dominance, this link has not been explored directly (e.g., Carré & McCormick, 2008, looked at the effects of self-perceived dominance and fWHR on aggression, but did not report the relationship between their predictors). Related work indicates that fWHR may be positively associated with status and resources. For instance, fWHR predicts self-perceived power (Haselhuhn & Wong, 2012) and chief executive officers' financial performance (Wong, Ormiston, & Haselhuhn, 2011). Furthermore, men with higher fWHRs are less likely to die from contact violence, which suggests either that they are more formidable fighters or that their skulls are more resistant to blows (Stirrat, Stulp, & Pollet, 2012).

Although men with higher fWHRs may be healthier, more formidable, and more likely to achieve high status, there are downsides to choosing such men as mates. For example, higher fWHRs have been linked to greater aggressiveness in various contexts (Carré & McCormick, 2008; Carré, McCormick, & Mondloch, 2009). Also, men with higher fWHRs are more deceptive (Haselhuhn & Wong, 2012) and less trustworthy (Stirrat & Perrett, 2010). Furthermore, more dominant men are perceived as less faithful and less investing as fathers (Johnston, Hagel, Franklin, Fink, & Grammer, 2001). Thus, it makes adaptive sense for women to extract genetic qualities from such men through short-term relationships, rather than to enter into long-term relationships with them, because aggression and defection costs are more relevant in long-term relationships. Additionally, direct benefits of dominance, such as the provision of physical protection, might sometimes outweigh low prospects of long-term investment, which would again support female choice of dominant males for short-term relationships.

The Current Study

Although the roles of male dominance in human mating and fWHR in male status have been explored separately, they have not been examined together in a face-to-face dating context (though Hill et al., 2013, investigated males' dominance, facial shape, and attractiveness to females). It is unclear whether there are circumstances in which women find high fWHRs in men to be attractive. We conducted the present study to provide a novel investigation of the role of men's fWHRs and dominance in actual mating evaluations and choices made in an ecologically valid, live-interaction context: speed dating. In speed-dating events, people chat face-to-face with and assess a multitude of potential mates. We predicted that in this initial mate-selection context, a man's high fWHR would lead women to perceive him as dominant, and thus make him more desirable as a short-term, but not long-term, mate.

Furthermore, given the importance of dominance in mate value and mating strategies, it may be adaptive for men to assess their own dominance accurately. Therefore, we expected men's self-perceived dominance to similarly predict women's interest in them for short-term relationships, but not long-term relationships or friendships. We did not specifically predict that women would be more likely to choose to see more dominant (as indexed by self- or other-ratings) or high-fWHR men again because such decisions probably reflect a mixture of long- and short-term mating interests.

Method

A young subsample of the Berlin Speed Dating Study was used in order to match speed daters' ages to facial raters' ages. Seventy-eight men (ages 20–32 years, $M = 26.5$) and 81 women (ages 18–30 years, $M = 25.4$) participated in

one of seven speed-dating events. All were single and received no compensation for participating other than the chance to find a real-life partner; thus, it is likely that the choices were primarily motivated by actual mating interests. In a preevent questionnaire, participants self-rated their dominance via the assured-dominant and unassured-submissive (reverse-scored) circumplex portions of the German Revised Interpersonal Adjective Scales (IAS-R; Ostendorf, 2001). They rated how accurately each adjective described them on a 5-point scale (1 = *extremely inaccurate*, 5 = *extremely accurate*; α = .81). Standardized frontal facial photographs (neutral expression) were taken of the participants under uniform lighting conditions against a white background before each event (see Asendorpf, Penke, & Back, 2011).

Speed dates took place in semiprivate booths, with each interaction lasting 3 min and a bell signaling the end of each date. Men rotated from booth to booth while women remained seated. Between dates, participants recorded whether or not they wanted to go on another date with the person just seen and how interested they were (1 = *not at all interested*, 5 = *very interested*) in a potential short-term relationship, long-term relationship, and friendship with that person. Within 24 hr of each event, participants mutually interested in seeing each other again received one another's contact details via e-mail (Asendorpf et al., 2011).

Following Weston, Friday, and Liò's (2007) procedures, for each male face we used Psychomorph to measure the distance between the top of the lip and lower part of the brow (facial height) and the distance between the most lateral points of the face by the ears (bizygomatic width). Bizygomatic width was divided by facial height to determine fWHR.

Independent raters (11 male, 44 female, 1 of unknown sex; ages 19–25 years, M = 19.6) rated each male facial photo for dominance (1 = *very subordinate*, 7 = *very dominant*). Another set of independent raters (16 male, 15 female; ages 22–35 years, M = 26.39) rated each male facial photo on aggressiveness ("How aggressive would this person be if provoked?"; from Carré et al., 2009; 1 = *not at all aggressive*, 7 = *very aggressive*). A third set of independent raters (7 male, 4 female; ages 20–40 years, M = 29.45) rated each male face for facial adiposity (1 = *very underweight*, 7 = *very overweight*; Coetzee, Perrett, & Stephen, 2009). A fourth set of raters (15 females; ages 19–34 years, M = 22.67) rated each male face for attractiveness (1 = *not attractive at all*, 7 = *very attractive*; see Asendorpf et al., 2011). Interrater reliability was high for all four dimensions (αs = .96, .91, .95, and .89, respectively).

Results

Male fWHR

The fWHR measure is based on bone structure shaped by testosterone at adolescence (Verdonck et al., 1999). Because facial fat artificially inflates fWHR (Lefevre et al., 2013), we controlled for rated facial adiposity (perceived underweight-overweight) in all analyses involving fWHR. Facial adiposity was correlated with fWHR, $r(78) = .58$, $p < .001$, but not with any dependent variables. Perceived aggressiveness was correlated with fWHR when we controlled for facial adiposity, $r(75) = .23$, $p < .05$ (see Table 1 for zero-order correlations between fWHR and facial ratings). Women's ratings of their interest in a man for a short-term and a long-term relationship, as well as the percentage of women who chose to see a man again, were log-transformed to achieve normality.

When examining the effect of fWHR on female interest in men, we controlled for the men's ages because previous studies have found that age contributes to perceptions of dominance and attractiveness. We also controlled for men's physical attractiveness, to eliminate physical attractiveness as a confounding factor (e.g., Boothroyd et al., 2007). Table 2 presents the results of multiple linear regressions predicting the effect of fWHR on perceived dominance and speed-dating outcomes. The table shows that higher fWHR significantly predicted greater perceived dominance, women's interest in a short-term

Table 1. Zero-Order Correlations Among Facial Width-to-Height Ratio (fWHR) and Facial Ratings

Variable	fWHR	Dominance	Aggressiveness	Facial adiposity
Dominance	.22*			
Aggressiveness	.15	.78*		
Facial adiposity	.58*	−.03	−.06	
Physical attractiveness	−.18	.22†	−.15	−.29*

Note: N = 78 for all ratings except ratings of dominance, for which N = 77 because of a technical error in data collection.
†$p < .10$. *$p < .05$.

Table 2. Results of Multiple Linear Regressions Investigating the Effect of Facial Width-to-Height Ratio (fWHR) on Perceived Dominance and Speed-Dating Outcomes

	Perceived dominance, R^2 = .15, $F(4, 72)$ = 3.05*			Female interest in long-term relationship, R^2 = .38, $F(4, 73)$ = 11.30**			Female interest in short-term relationship, R^2 = .31, $F(4, 73)$ = 8.23**			Female interest in friendship, R^2 = .28, $F(4, 73)$ = 7.23**			Percentage of times chosen, R^2 = .36, $F(4, 73)$ = 10.20**		
Predictor	*b*	*SE b*	β	*b*	*SE b*	β	*b*	*SE b*	β	*b*	*SE b*	β	*b*	*SE b*	β
Age	0.03	0.04	0.09	0.02	0.01	0.32**	0.01	0.01	0.21*	0.07	0.03	0.23*	0.01	0.00	0.26**
Attractiveness	0.22	0.11	0.23*	0.09	0.02	0.51**	0.08	0.02	0.44**	0.39	0.09	0.45**	0.05	0.01	0.47**
Adiposity	–0.19	0.14	–0.19	–0.02	0.02	–0.12	–0.05	0.02	–0.25†	–0.12	0.12	–0.13	–0.03	0.01	–0.23†
fWHR	1.92	0.69	0.38**	0.14	0.10	0.15	0.29	0.11	0.31**	0.81	0.56	0.18	0.16	0.06	0.30**

Note: All analyses controlled for rated facial adiposity, rated attractiveness, and age. Women's ratings of their interest in a man for a short-term and a long-term relationship, as well as the percentage of women who chose to see a man again, were log-transformed.
†$p < .10$. *$p < .05$. **$p < .01$.

relationship (log-transformed), and being chosen more often for a second date (log-transformed). A repeated measures general linear model was used to determine whether women preferred high-fWHR men for short-term more than long-term relationships. Relationship type (short-term vs. long-term) was a within-subjects variable, and fWHR, age, attractiveness, and adiposity were entered as covariates. There was only one significant within-subjects effect: an interaction between fWHR and relationship type, $F(1, 73) = 3.99$, $p < .05$. Together with the regression results, the interaction indicates that men with higher fWHRs are not more attractive for long-term relationships, but are more attractive for short-term relationships, as predicted.

Mediation models

We tested multiple potential mediators of the effect of fWHR on short-term attractiveness by calculating bias-corrected bootstrapped (1,000 iterations) confidence intervals (CIs) using Hayes's (2013) Process macro for SPSS. Significant results were obtained for a model wherein higher fWHR leads to perceptions of greater dominance, causing women to find men more physically attractive, and resulting in their having greater interest in the men for short-term relationships. When physical attractiveness was not entered into the model, perceived dominance mediated the relationship between fWHR and women's interest in a short-term relationship, R^2 = .20, indirect effect = .10 (95% CI = [.02, .24]), $p < .05$. Physical attractiveness did not mediate the relationship between fWHR and women's interest in a short-term relationship, but it did mediate the relationship between perceived dominance and women's interest in a short-term relationship. As shown in Figure 1, the indirect effect of fWHR on women's interest in a short-term relationship through perceived dominance and physical attractiveness was significant, indirect effect = .03 (95% CI = [.01, .11]), $p < .05$.[2] The remaining direct effect of fWHR on women's interest in a short-term relationship was also significant, $t(71) = 2.04$, $p < .05$. The direct and indirect effects of fWHR combined explained 34% of the variance in women's interest in a short-term relationship with a man. Thus, results support our model that a higher male fWHR leads to perception of greater dominance, which increases physical attractiveness to women, which in turn makes men more attractive for short-term relationships.

Self-rated dominance

Self-rated dominance was positively correlated with other-perceived dominance at a marginally significant level, $r(76) = .20$, $p = .09$. There was no correlation

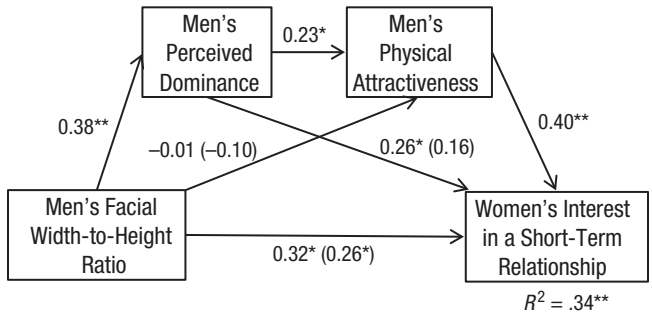

Fig. 1. Mediation model showing the relationship between men's facial width-to-height ratios and women's interest in the men for short-term relationships as mediated by the men's perceived dominance and physical attractiveness. The model controlled for men's facial adiposity and age. Standardized regression coefficients are shown (*$p < .05$; **$p < .01$). The values in parentheses are the direct effects.

between self-rated dominance and fWHR (controlling for adiposity), $r(74) = -.05$, n.s. Self-rated male dominance was correlated with women's interest in a short-term relationship, $r(77) = .24$, $p < .05$, but not with their interest in a long-term relationship, $r(77) = .01$, $p = .91$. Moreover, an analysis of ratings of interest (controlling for adiposity, age, and attractiveness) revealed a significant interaction between relationship type and self-rated dominance, $F(1, 72) = 12.46$, $p < .01$. Thus, as predicted, self-rated dominance was more related to women's interest for a short-term relationship than to interest for a long-term relationship. There was no correlation between men's self-perceived dominance and women's interest in the men for a friendship, $r(77) = -.13$, $p = .25$, or the percentage of times a man was chosen for a second date, $r(77) = -.02$, $p = .89$. In summary, results tentatively indicated that men's ratings of their own dominance tracked women's perception of their dominance, and that men's fWHR and self-rated dominance showed similar patterns of association with desirability as a mate.

Discussion

The results support our proposed model, according to which fWHR is a physical marker of male dominance, and men with high fWHRs are attractive to women for short-term, but not long-term, relationships. More generally, the findings support the hypothesis that dominance is a sexually selected trait indicating genetic quality (Thornhill & Gangestad, 1999). The results are also consistent with the non-mutually exclusive explanation that women may favor dominant-looking men to gain protection in a short-term context at the expense of securing long-term investment. Moreover, sexually dimorphic traits in men, particularly their faces, may have been shaped by intrasexual selection, and then become attractive to women secondarily (Puts, Jones, & DeBruine, 2012). This study is significant because it is the first to show that high fWHR is associated with attractiveness to women for short-term, but not long-term, relationships, and the first to examine the role of both dominance and fWHR in a controlled and interactive mate-selection context.

Although fWHR and other-perceived dominance were related, fWHR and self-rated dominance were not. This may be because fWHR indicates physical dominance (e.g., men with high fWHRs are less likely to die from contact violence than men with low fWHRs; Stirrat et al., 2012), whereas the IAS-R measures social dominance (Ostendorf, 2001). Both fWHR and other-perceived dominance were significantly correlated with other-perceived aggressiveness after controlling for facial adiposity, but self-rated dominance was not. Similarly, Carré and McCormick (2008) found that fWHR predicted aggressive behavior, but trait dominance as measured by the International Personality Item Pool scales did not. Further research could investigate the independence and accuracy of self-assessment of distinct types of dominance.

Additional mediators of the relationship between fWHR and women's interest in men for short-term relationships could be explored, as dominance and physical attractiveness did not fully mediate this relationship. Are men with wider faces healthier? Do they seem like good protectors or providers? Men with wide faces are not more physically attractive to women, but are preferred for short-term relationships and future dates. Future research should further explore these issues.

Future studies could also investigate how ovulation affects women's interest in dominance cues in interactive contexts. Gangestad et al. (2004) began this process by videotaping men answering questions posed by a woman allegedly choosing among multiple men for a lunch date. Each man indicated why he would be a better date than his competitors. Female raters, particularly when they were ovulating, preferred men high in social presence and direct intrasexual competitiveness more for short-term than for long-term relationships. Thus far, however, no live-interaction studies have examined whether perceived dominance or high fWHR is preferred by women during ovulation. More research is needed to ensure that the extensive lab-based findings regarding dominance and ovulation extend to real-world scenarios.

Conclusion

Women perceived men with wide faces as dominant and were attracted to them for short-term relationships. The results complement and extend the large body of work on facial metrics and attraction, as well as recent work on mate choice in live-interaction mate-selection contexts, and highlight the importance of deducing why dominant men are alluring to women.

Author Contributions

K. A. Valentine and D. I. Perrett developed the study concept. All authors contributed to the study design. Testing and data collection were performed by K. A. Valentine and L. Penke. K. A. Valentine performed the data analysis under the supervision of D. I. Perrett, L. Penke, and N. P. Li. K. A. Valentine drafted the manuscript, and N. P. Li, D. I. Perrett, and L. Penke provided critical revisions. All authors approved the final version of the manuscript for submission.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

Notes

1. Measured from skulls, this ratio is not sexually dimorphic, but is associated with sex differences in contact-violence mortality (Stirrat, Stulp, & Pollet, 2012).

2. Coefficients in the figure differ from those in Table 1 because one man did not receive dominance ratings as a result of a technical error and Hayes's Process macro excludes missing data (hence, $n = 77$ for the mediation model).

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