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Gender and the Physiognomy of Dominance and Attractiveness

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Facial composites constructed from Identi-Kit materials were used to assess the impact of characteristically mature and immature eyebrows, eyes, lips, and jaws on perceptions of social dominance and attractiveness. Male and female faces were identically composed except for hair. Subjects rated faces on scales for dominance and attractiveness. Mature traits were hypothesized to make all faces look dominant and male faces appear attractive. Female faces were predicted to look attractive when displaying immature, nondominant facial cues. The results confirmed that mature traits generally raised dominance and attractiveness ratings for male faces. The traits that successfully raised dominance ratings for male faces made females look less attractive. Eye size had the most reliable effect on both dominance and attractiveness ratings for female faces. Eyes that make females look nondominant also made them look attractive. The results were generally consistent with sociobiological arguments generating predictions.

INTRODUCTION

Researchers interested in human social perception have posed questions like "What face is perceived to correspond with what personality type?" (e.g., Secord et al., 1954) or "What face is perceived as beautiful?" (e.g., Cross and Cross, 1971; Wagatsuma and Kleinke, 1979). These questions, however, have not been accompanied by explanations of how physiognomic traits ought to affect human perceptions. Among nonhuman species, the function of some morphological traits is to signal the social dominance that normally emerges with sexual maturity and age. For example, dominance is conveyed by plumage coloration in Harris sparrows (Rohwer and Rohwer, 1978), horn size in mountain sheep (Giest, 1971) and greying in the mountain gorilla (Schaller, 1963). The present research examines human physiognomic traits which, from an evolutionary perspective, are predicted to alter perceptions of human social dominance, nondominance, and attractiveness.

Psychologists have a time-tested interest in studying the social impact of how people appear. The nature of this interest has shifted, however. Earlier researchers (Kretschmer, 1925; Sheldon, 1942) attempted to define and link "basic" human physiques with "basic" personalities. More recent investigators focused on how a person's physical characteristics influenced the attributions others made about them (Berscheid and Walster, 1974). This research suggests that our physical appearance often determines how we are treated and how we behave (e.g., Dion, 1973; Langlois and Downs, 1979; Mazur et al., 1984). Because dominance relationships are such an important feature of human sociability, it is

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surprising that links between dominance perceptions and physical appearance are largely unexplored.

Human dominance *gestures* have been identified (e.g., Argyle et al., 1970; Dovidio and Ellyson, forthcoming; Keating et al., 1981a; Weisfeld and Beresford, 1982), but few studies have examined whether physical traits send similar messages. Yet several ethologists have speculated that certain morphological traits serve as social signaling devices among humans and are rooted in our evolutionary past (Eibl-Eibesfeldt, 1975; Guthrie, 1970; Lorenz, 1943; Wickler, 1967). Traits associated with physical maturity and strength may have acquired a signaling function for dominance among humans as they have, in an analogous fashion, among other species. For example, individuals with prominent, square jaws may appear "dominant" because jaw growth indicates maturing dentition and fully developed teeth are used for intimidation among many primates (Guthrie, 1970).

There is tentative evidence of cross-cultural consistency in dominance perceptions of physiognomic characteristics. In a study designed to investigate facial gestures, Keating et al. (1981b) used portrait photographs of adults posing different gestures. Observers from diverse countries judged whether the faces looked "dominant." When the data were analyzed so as to control for the influence of facial gestures, some cross-cultural patterns of response emerged. Regardless of gestures, certain models were perceived as dominant-looking by a majority of observers from at least ten of the eleven national/cultural samples. The physiognomic characteristics of faces that produced cross-sample agreement in dominance perceptions were examined. Attention was directed toward the traits Guthrie (1970) conjectured would universally appear dominant or nondominant. The results indicated that traits associated with age (receded hairlines and proportionally thin lips) and with the suggestion of physical strength (wide faces and square jaws) were linked to dominance perceptions.

Several problems cloud these findings, however. For purposes of the facial-*gestures* study, the faces were actually shown to observers in pairs. Thus, observers judged whether one model looked "more dominant" than another, and we cannot know whether the observed consistency in attributing dominance to certain models (from certain pairs) was due mostly to traits of the model, traits of the model's pairmate, or some interaction of the two. Another problem was that no attempt was made to sample proposed dominance characteristics when photographs were selected as stimuli. This means that the stimulus-faces may not have represented these characteristics very well. Finally, the method for "controlling" gestures in order to examine physiognomic cues was imperfect (see Keating et al., 1981b).

Morphological cues of nondominance or subordination have received more attention than those of dominance, perhaps because of the Lorenzian notion of the "cute response" (see Eibl-Eibesfeldt, 1975:400). Lorenz (1943) postulated that certain infantile features evolved their appealing nature because they operated as cues for caretaking responses. Consistent with Lorenz's notion, several investigators found that the babyishness of cephalic shape determined perceived cuteness for schematic drawings (Alley, 1981; Brooks and Hochberg, 1960; Hildebrandt and Fitzgerald, 1979). Preferences for photographs of infant rather than adult faces of both human and nonhuman species were reported for postpubescent human males and females (Fullard and Reiling, 1976). Sternglanz et al. (1977) collected "attractiveness" ratings from college students who viewed schematized baby faces with systematically varied features (e.g., chin size, eye shape, iris size, etc.). Feature variations which produced the highest attractiveness ratings were consistent with Lorenz's propositions (Sternglanz et al., 1977).

Thus it appears that specific physiognomic characteristics are identified with helplessness or nondominance and that they hold a certain appeal for us, perhaps for the reasons Lorenz (1943) proposed. Guthrie (1970) has taken this argument a step further. He suggests that youthful traits maintain some of their appeal when portrayed by adults and may be the basis of human "beauty."

But would similar physiognomies be equally appealing when portrayed by either sex? Sociobiologists have proposed some basic sex differences in reproductive strategies which may help to identify cues that are differentially perceived as attractive for males and females. In animal societies in which males compete among one another for resources and females (Clutton-Brock and Harvey, 1976), "dominant" individuals are those achieving relatively greater access to both (Wilson, 1975). Dominant males are more successful in attracting mates and in forming coalitions with other males (DeVore, 1971; Wilson, 1975). Attractive-male morphologies would likely be associated with the physique promoting successful competition (e.g., physical strength and sexual maturity).

Females in animal societies frequently acquire access to resources indirectly through the social manipulation of dominant males. If immature characteristics generally elicit caretaking and cooperative responses, and

stem aggressive/competitive responses (Eibl-Eibesfeldt, 1975), perhaps human female mimicry of childlike characteristics serves this social purpose. Female mimicry of juvenile characteristics plays an important role in establishing pair bonds among many nonhuman species (Eibl-Eibesfeldt, 1975; Wilson, 1975). Analogously, juvenile characteristics that serve as cues for nondominance and caretaking should make human females appear *more* attractive.

In the present study, human faces constructed from Identi-Kit materials were used to investigate physiognomic cues predicted to alter perceptions of dominance, nondominance and attraction. (Identi-Kits are typically used by police departments to construct facial composites of criminal suspects.) From a sociobiological perspective, likely dominance cues are traits associated with physiognomic characteristics, such as jaw prominence, that promote successful intraspecific competition. Identi-Kit faces with prominent, square jaws were therefore hypothesized to appear more dominant than those with more rounded ones. Dominance cues are also likely to involve traits that accompany status differentiators such as age. The amount of facial hair increases following puberty (especially in males), and so faces with bushy or thick eyebrows were expected to appear dominant relative to those with thin eyebrows (Guthrie, 1970). Large eyes, another juvenile trait, were predicted to look nondominant relative to small eyes (Eibl-Eibesfeldt, 1975; Guthrie, 1790; Lorenz, 1943; Sternglanz et al., 1977). Thick or pudgy lips are also characteristic of babies and were expected to diminish dominance ratings for adult faces (Keating et al., 1981b). Dominance cues were expected to be associated with attractiveness for male faces but not for females. Nondominance cues were predicted to correspond with perceived attractiveness for female faces and make male faces less attractive.

METHODS

Subjects

Subjects were 145 male and 154 female undergraduate students who received laboratory credit in introductory psychology for participating in the study.

Stimuli

Facial features were manipulated with the aid of Smith-Wesson Identi-Kit Model II. Identi-Kit materials make possible the construction of faces that vary from one another in single or multiple aspects. Faces are assembled from a series of transparent overlays, each overlay providing a different facial component (eyes, eyebrows, nose, mouth, hair, jaw, etc.). Assembled faces are impressively lifelike and, when photographed, resemble real portrait photographs.

Four basic face types were created with Identi-Kit components. Each of the four face types was distinguished by a particular, randomly selected nose and hairline, but the eyebrows, eyes, lips and jaw used to construct different versions of each face type were standardized. For each of these four facial features, three levels or grades were selected from the available Identi-Kit components. Three pairs of eyebrows, similarly shaped, varied from thin to thick. Three similarly shaped pairs of eyes measured from small to large. Three sets of lips varied from thin to thick. Only two jaws were selected from the Identi-Kit, and they differed in "squareness" but measured the same width from jowl to jowl. (The rounded jaw was considered more average or "middle-grade.") Thus, each of the four facial features was graded primarily along one dimension (shape or size).

The feature gradations were used to alter each of the four basic face types in the following manner. Each face type, with its unique nose and hairline, was given all middle-grade features but one, and photographed with black and white slide film. So, for example, every one of the four face types was photographed with medium-grade lips, eyes, and brows but an extremely square jaw. Next, the rounded jaw was substituted for the square one (all other features remained middle-grade). Then, with all other feature gradations set in the average range, each face type was photographed first with large then with small eyes, thin then thick brows, and thin then thick lips. This procedure resulted in eight assemblages of each basic face type that contrasted two gradations of four different features, one at a time.

In addition to the eight single-feature manipulations, each of the four basic face types was photographed with multiple, *simultaneous* feature manipulations. The faces were first photographed with all four "mature" features (i.e., thick brows, small eyes, thin lips, square jaw) and then with all four immature features (i.e., thin brows, large eyes, thick lips, round jaw) (an addition of eight stimulus-photographs).

In order to create male and female sets of stimuli, each face type and all of its feature manipulations were photographed with a unique female and unique male hairline selected at random from the Identi-Kit. The only distinction between the female and male face types was hairline. Figure 1 shows examples of some stimulus-photographs.

Figure 1. Representative Examples of Facial Stimuli (Female faces appear on top, males on the bottom. From left to right: all average, immature, and mature features)

The female and male faces were separated into sex-segregated stimulus-sets. Every set contained just one, single-feature manipulation (four photographs) but included both of the multiple-feature manipulations for each face type (eight photographs). Thus there were 12 "critical" faces or manipulations per set. Six distractor faces were interspersed among the critical photographs in every set. Each distractor (identical for all sets) was randomly assembled from the Identi-Kit components and had a unique nose and hairline. Distractors depicted average levels of the standardized brows, eyes, lips, and a round jaw. Distractor faces helped mask the regularity of single-feature manipulations and gave all subjects experience with middle-grade features as a basis for comparison with the other feature gradations. The twelve critical faces (four single-feature and eight multiple-feature manipulations) plus six distractor faces were arranged in a fixed, randomly determined order of presentation.

Procedure

Subjects were called to the laboratory in groups of roughly five to ten. Groups were randomly assigned to view only one of the eight single-feature manipulations. For example, while all groups viewed the same eight multiple-feature manipulations and six distractor faces, one group had included in its set four critical face types with thick brows, another saw the faces with thin brows or large eyes or small eyes, etc. This procedure guarded against demand characteristics that could occur with repeated presentations of the same face type containing easily recognizable, single manipulations. Subjects were also randomly assigned to view either male or female stimulus-faces. Between seven and fourteen

male subjects and seven to twelve female subjects typically viewed one of the eight, single-feature manipulations for either male or female stimulus-faces. Altogether, 32 separate subject groups were defined (8 single-feature manipulations × 2 face-sex conditions × 2 subject-sex designations).

At the laboratory, subjects were greeted by a male experimenter and taken to a classroom reserved for the slide presentation. The experiment was introduced as a "first impressions" study. Subjects were told that they would view and rate pictures of faces. The experimenter said:

> I am interested only in your first impressions, your basic impressions of how faces look. You will see black and white pictures of faces. In this way, things like eye color, complexion, and hair color will not distract you from a general impression of the face. I want you to judge each facial configuration independently of the others and as a whole. That is, I want you to indicate your first overall impression of each face independently.

To familiarize subjects with the stimuli, the entire series of 18 slides was briefly shown (each face was presented for five seconds).

All subjects first judged the series of 18 faces for dominance. Subjects were told:

> Right now, you will be making judgments of dominance and submissiveness. Before we begin, consider this description of a dominant-looking person: A dominant-looking person is someone who looks important, influential and in charge of others. A submissive-looking person is someone who appears to be easily influenced or controlled by others. Keeping this description of dominance and submissiveness in mind, please rate the faces.

Subjects then familiarized themselves with the rating scales. The scales ranged from 1 (very submissive) to 4 (neither dominant nor submissive) to 7 (very dominant). A Kodak carousel slide projector was used to show each stimulus-series. Subjects recorded their dominance ratings during the 15-second presentation period for each face.

The dominance scales were collected after all judgments had been made. Subjects were only then informed that they would judge the attractiveness of the same faces, and the attractiveness scales were distributed. Subjects were told:

> Consider this description of an attractive-looking person: An attractive-looking person is someone who is good-looking or appealing or pleasing to look at. An unattractive-looking person is someone who looks unappealing or unpleasant. Keeping this description of attractiveness and unattractiveness in mind, please rate the faces.

Subjects familiarized themselves with the attractiveness rating scales. The scales ranged from 1 (very unattractive) to 4 (neither attractive nor unattractive) to 7 (very attractive). Attractiveness was rated during 15-second presentations, the scales were collected and subjects were thanked, debriefed, and dismissed.

RESULTS

All statistical tests were based on subjects' dominance or attraction ratings averaged across the four face types. Each subject thus contributed three dominance judgments: one averaged across a single-feature manipulation, another averaged across the multiple-feature manipulation revealing mature features, and the third based on the multiple-feature manipulation comprising immature features. Three attraction judgments were constructed in a similar fashion for each subject. Separate analyses were performed for dominance and attraction judgments.

Dominance Judgments

Multiple-feature variations. All subjects rated the face types when composed of multiple mature and multiple immature traits. These two levels of the multiple-feature manipulation, sex of stimulus-face and sex of subject comprised a 2 × 2 × 2 factorial design with repeated measures on the first factor. An analysis of variance revealed the predicted main effect for the multiple-feature manipulation ($F(1,295) = 587.36, p < .001$) (see Table 1).

Faces portraying the multiple-feature manipulation comprising mature features solicited higher mean dominance ratings than those depicting immature features (Ms = 5.8 and 3.2, respectively). The influence of the multiple-feature manipulation was generally consistent across male and female stimulus-faces: the face-sex by multiple-feature manipulation interaction was nonsignificant ($F(1,295) = 2.33$, $p > .05$). No other significant effects emerged (all p's $> .05$: see Table 1).

Single-feature variations. Four between-subjects factors contributed to the analysis of single-feature variations: Which feature (brows, eyes, lips or jaw) deviated from middle-grade ("Feature"), whether that manipulation was infantile or not ("Manipulation"), whether subjects were male or female and viewed either male or female stimulus-

Table 1. Summary of Analysis of Variance for the Multiple-Feature Variations of Faces Rated for Dominance

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	p
Face Sex (A)	4.31	1	4.30	3.47	.070
Subject Sex (B)	0.07	1	0.06	0.06	.810
A × B	0.15	1	0.15	0.12	.720
Error	364.51	295	1.24		
Manipulation (C)	625.89	1	625.89	587.36	.001
A × C	2.49	1	2.49	2.33	.130
B × C	0.49	1	0.49	0.46	.500
A × B × C	2.98	1	2.98	2.80	.100
Error	314.35	295	1.07		

faces. Thus, the test of single-feature variations was framed as a 4 × 2 × 2 × 2 analysis of variance. Table 2 depicts the results of this analysis for dominance judgments.

As shown in Table 2, a significant main effect emerged for Manipulation but so did a two-way interaction between Manipulation and Feature ($F(3,267)=12.14, p < .001$). This result suggests that the mature/immature manipulation operated differently for different features. A feature-by-feature examination of the simple main effects revealed that the mature versions of eyes and lips had the predicted effect on dominance ratings while the mature versions of brows and jaw did not. Specifically, dominance ratings were higher for faces with small eyes (M = 4.66) rather than large eyes (M = 3.65) ($F(1,78) = 41.04, p < .001$) and for faces with thin lips (M = 4.32) rather than thick ones (M = 3.53) ($F(1,62) = 16.62, p < .001$). Mean dominance ratings for faces with thick (M = 4.02) or thin brows (M = 4.14) did not differ ($F(1,76) < 1.0$), nor did ratings for square (M = 4.04) or round jaws (M = 4.05) ($F(1,75) < 1.0$).

The overall analysis for dominance judgments also revealed a significant main effect for Face-Sex and a Face-Sex by Manipulation interaction (see Table 2). These variables combined with Subject Sex to produce a significant three-way interaction ($F(1,267) = 3.73, p < .05$). The impact of Manipulation and Subject Sex was examined separately for male and female stimulus-faces. For male faces, the effect of maturity of features interacted with subject sex ($F(1,148) = 4.71, p < .05$). Whereas both male subjects ($F(1,69) = 29.28, p < .001$) and female subjects ($F(1,79) = 4.91, p < .05$) gave significantly higher dominance ratings to male faces with mature compared to immature facial features, the impact of mature features was greater on male subjects' ratings (M = 4.71) than on females' ratings (M = 4.32) ($F(1,74) = 6.26, p < .01$). The results for female faces were different. Across all four facial features there were no reliable effects for Manipulation ($F(1,143) = 2.59, p > .05$) or subject sex ($F(1,143) < 1.0$) and no interaction ($F(1,143) = 1.94, p > .05$).

Table 2 also indicates a significant Face-Sex by Feature interaction. This result was hard to interpret in the absence of a significant higher-order interaction including these two factors plus Manipulation and therefore was not analyzed further.

In sum, the analyses for dominance judgments indicated that the combination of mature

Table 2. Summary of Analysis of Variance for the Single-Feature Variations of Faces Rated for Dominance

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	p
Face Sex (A)	5.43	1	5.43	11.12	.001
Subject Sex (B)	.68	1	.68	1.39	.240
Manipulation (C)	10.62	1	10.62	21.76	.000
Feature (D)	2.17	3	.72	1.48	.220
A × B	.22	1	.22	.45	.505
A × C	2.28	1	2.28	4.66	.032
B × C	0.00	1	0.00	0.01	.932
A × D	4.36	3	1.45	2.98	.032
B × D	2.62	3	.87	1.79	.150
C × D	17.79	3	5.93	12.14	.000
A × B × C	1.82	1	1.82	3.72	.050
A × B × D	3.40	3	1.13	2.32	.080
A × C × D	.30	3	.10	.20	.894
B × C × D	2.28	3	.76	1.55	.201
A × B × C × D	1.44	3	.48	.98	.402
Error	130.36	267	.49		

brows, eyes, lips and jaw predictably raised dominance ratings for male and female faces. When single mature and immature features were contrasted, however, only the results for eyes and lips supported predictions across both male and female faces. In fact, across all four single-feature conditions combined, the maturity–immaturity manipulation had the predicted impact on the dominance perceptions of male faces but no reliable impact on perceptions of female faces.

Attraction Ratings

Multiple-feature manipulation. A mean attraction rating was calculated for every subject for each of the two levels of the multiple-feature manipulations. The multiple-feature manipulation, sex of stimulus-face and sex of subject combined in a $2 \times 2 \times 2$ factorial design with repeated measures on the first factor. Table 3 gives summary statistics for the analysis of variance on attraction ratings.

The analysis of variance established the predicted multiple-feature manipulation by sex of stimulus-face interaction (see Table 3), but these factors also combined with subject sex to produce a significant three-way interaction, ($F(1,295) = 4.62, p < .05$). The influence of the multiple-feature manipulation and subject sex was analyzed separately for male and female faces. A significant two-way interaction between these factors emerged for male faces ($F(1,150) = 8.41, p < .01$). As predicted, male faces with mature features were rated as more attractive relative to faces with immature features by both male subjects ($F(1,70) = 76.46, p < .001$.) and female subjects ($F(1,80) = 140.96$, $p < .001$). Female subjects, however, gave a significantly higher mean attraction rating (4.4) to male faces with mature features than male subjects did (3.9) ($F(1,50) = 7.29, p < .01$). Females and males rated male faces with immature features similarly (Ms = 2.48 and 2.62, respectively) ($F(1,150) < 1.0$).

The analysis for female faces failed to reveal the predicted effect for multiple-feature manipulation ($F(1,145) < 1.0$), indicating that mean attraction ratings for faces with mature (3.76) and immature (3.69) features were virtually identical. No significant effect for subject sex emerged nor did any interaction. Thus the four immature features that were expected to heighten the attractiveness of female facial composites failed to do so, at least when shown in combination with one another.

Single-feature variations. As for dominance judgments, the analysis of single-feature manipulations on ratings of attractiveness comprised four between-subjects factors: facial "Feature," "Manipulation" (mature/immature), Face Sex, and Subject Sex. The results of this $4 \times 2 \times 2 \times 2$ analysis of variance are presented in Table 4.

Table 4 reveals main effects for Feature, Face Sex and Subject Sex as well as significant two-way interactions involving some of these factors. In particular, the analysis established the predicted Face Sex by Manipulation interaction for attractiveness ratings ($F(1,267) = 15.72, p < .001$). The nature of this interaction was as predicted. Across all single-feature groups, male faces were rated as more attractive when displaying mature (M = 4.2) rather than immature (M = 3.82) features ($F(1,150) = 9.05, p < .005$). Female facial composites were rated as more attractive when immature (M = 3.76) rather than mature (M = 3.5) characteristics were portrayed ($F(1,145) = 3.92, p < .05$).

The significant Manipulation by Feature interaction shown in Table 4 indicated that the effect of maturity of feature differed somewhat for brows, eyes, lips and jaws. Feature-by-feature analyses of effects were performed separately for male and female stimulus-faces since face-sex differences were predicted for judgments of attractiveness (and despite the nonsignificant triple interaction between Face Sex, Manipulation and Feature, $p = .23$, see Table 4). The results for male faces indicated that mature lips and jaw boosted attraction ratings, as predicted, although mature brows and eyes did not. Thin lips (M = 4.24) made

Table 3. Summary of Analysis of Variance for the Multiple-Feature Variations of Faces Rated for Attractiveness

Source	Sum of Squares	Degrees of Freedom	Mean Square	*F*	*p*
Face Sex (A)	26.78	1	26.78	22.23	.000
Subject Sex (B)	2.68	1	2.68	2.23	.137
A × B	.24	1	.24	.20	.654
Error	355.31	295	1.20		
Multi-Feature (C)	103.62	1	103.62	122.39	.000
A × C	87.02	1	87.02	102.78	.000
B × C	3.69	1	3.69	4.36	.038
A × B × C	3.91	1	3.91	4.62	.032
Error	121.19	149	0.81		

Table 4. Summary of Analysis of Variance for the Single-Feature Variations of Faces Rated for Attractiveness

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	p
Face Sex (A)	9.54	1	9.54	18.72	.000
Subject Sex (B)	3.42	1	3.42	6.71	.010
Manipulation (C)	.72	1	.72	1.41	.236
Feature (D)	6.98	3	2.33	4.56	.004
A × B	.17	1	.17	.33	.568
A × C	8.01	1	8.01	15.72	.000
B × C	.00	1	.00	.00	.968
A × D	11.19	3	3.73	7.32	.000
B × D	.40	3	.13	.26	.852
C × D	11.80	3	3.93	7.72	.000
A × B × C	.08	1	.08	.16	.689
A × B × D	2.05	3	.68	1.34	.261
A × C × D	2.21	3	.74	1.45	.230
B × C × D	2.60	3	.87	1.70	.167
A × B × C × D	1.70	3	.57	1.11	.345
Error	136.07	267	.51		

male faces appear more attractive than thick ones (M = 3.28) ($F(1,30) = 11.68$, $p < .005$). Square jaws (M = 4.47) tended to produce higher attractiveness ratings than rounded jaws (M = 4.0) ($F(1,36) = 3.69$, $p < .06$). Mean attraction ratings for male faces with small (4.19) compared to large (3.93) eyes differed in the predicted direction, but not significantly ($F(1,40) = 1.39$, $p = .24$). Means for faces with thick (3.97) and thin (3.93) brows did not differ ($F(1,38) < 1$).

For female faces, eyes produced the clearest results and supported predictions. Female faces with large eyes were rated as more attractive (M = 4.6) than those with small eyes (M = 3.59) ($F(1,36) = 24.31$, $p < .001$). Square-jawed females were rated as less attractive (M = 3.15) than those with round jaws (M = 3.41), as predicted, but the difference was not significant ($F(1,37) = 1.20$, $p = .28$). Mean ratings for female faces with thick (3.35) and thin (3.67) brows were also in the predicted direction but only marginally significant ($F(1,36) = 2.65$, $p = .11$). Lips reversed the pattern: unexpectedly, thin lips were perceived as more attractive (M = 3.94) than thick ones (M = 3.37) ($F(1,30) = 4.95$, $p < .05$).

The Face Sex by Feature interaction shown in Table 4 was difficult to interpret in the absence of a significant triple interaction between these factors and Manipulation and was not analyzed further.

DISCUSSION

The manipulation of physiognomic traits altered the social perceptions of faces constructed from Identi-Kit materials. For both male and female faces, the combination of brows, eyes, lips and jaw designed to look adultlike rather than childlike boosted dominance ratings, as predicted. Furthermore, variations in eye size or lip thickness alone were reliable dominance cues. These findings are consistent with the sociobiological arguments guiding the selection of trait manipulations. Dominance was conveyed by the relatively small eyes and thin lips associated with adult development. Nondominance was signalled by the large eyes and thick lips associated with the prepubescent young of our species.

The results for male and female faces judged for dominance diverged when traits (especially brows and jaws) were varied one at a time. The generalizable "maturity" effect that emerged from all four traits for male faces failed to do so for female faces. This discrepancy indicates better success in identifying male compared to female physiognomic dominance cues. Perhaps maturing female faces are better characterized by features other than brows and jaws. The results of recent research by McArthur and Apatow (forthcoming) indicate what some of these traits might be. These researchers determined that the length and vertical placement of features affected both maturity and dominance judgments of female as well as male schematic faces.

As predicted, the mature physiognomic traits that made male faces look more dominant also made them look more attractive. This pattern was found for faces with multiple-feature combinations of mature traits and generally across all single-feature manipulations for male faces. The generalizability of this effect, however, rested predominantly on manipulations of lips and jaw.

For female faces, the effect of singly manipulated mature features was to lower ratings for attractiveness, while immature features raised them, as predicted. This pattern was obtained across all four features, although

analyses for each separate feature suggested that eyes largely carried the effect, with marginal support from jaw and brows.

The multiple-feature combinations of mature or immature traits failed to have the expected effect on attractiveness ratings for females. Female faces were rated similarly for attractiveness regardless of which multiple-feature combination of facial elements was shown. Analysis of the single-feature variations suggests reasons why the composition of immature traits failed to be perceived as more attractive. First, thick lips unexpectedly lowered attraction ratings for female faces relative to thin-lipped faces. The lips selected as thick may have been too extreme to create an acceptable face. Second, thin brows and round jaws raised attraction ratings as predicted, but marginally. The attractiveness of the immature multiple-feature versions of female faces may, therefore, have been muted when the impressions created by lips, brows and jaw weakened that of eyes.

Single-feature variations in eye size produced clear-cut results and supported the predictions. Large eyes made faces look submissive relative to small eyes for both male and female stimuli. Large eyes also made female but not male faces look more attractive compared to small eyes. The results for female facial attractiveness parallel findings for schematized baby faces (Sternglanz et al., 1977), while the data for males do not. Taken together, these studies suggest that large eyes are not attractive in and of themselves, but convey different social messages depending on facial contexts like gender and age. The results from a recent study by McArthur and Apatow (forthcoming) support this conclusion.

In general, traits that served as dominance cues for male faces made female faces look *less* attractive and male faces look *more* attractive. Female faces were perceived as attractive when displaying traits that made male faces appear submissive (a "Tootsie Effect") and unattractive (Keating, forthcoming). Perhaps the neotenous traits displayed by females of nonhuman species are analogous to the human situation.

The notion that perceptions of dominance and attractiveness are differently related for males and females implies that the basis of attraction may rest, in part, on perceptions of dominance. When a woman looks too "masculine" or a man too "feminine" perhaps what is violated is not only a gender distinction but a dominance or status distinction as well. "Feminine" or nondominant characteristics may make males look weak but make females look appealing. Dominance cues may be attractive when portrayed by males but not when portrayed by females. Thus our initial impressions of others fuse physical attractiveness with stereotypic gender expectations for social dominance.

These arguments are supported by common observations of feminine beauty techniques. The typical prescription for "beauty" in Western culture includes making eyes look larger and brows thinner and arched. These techniques could be viewed as a sort of culturally prescribed neoteny (Guthrie, 1970). The present study suggests that such interpersonal perceptions are not arbitrary, cultural inventions but are patterned by primate evolution. At present, cross-cultural research is underway to test the limits of this premise.

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