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The role of masculinity and distinctiveness in judgments of human male facial attractiveness

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Masculinity and distinctiveness have been found to influence the attractiveness of human male faces. The relationship between masculinity and distinctiveness, however, has received little attention. In Expt 1, we examine how current averaging techniques and manipulated sexual dimorphism influence ratings of attractiveness, masculinity, and distinctiveness. In agreement with previous studies, composite faces were found to be more attractive than individual faces. Averaging resulted in increased ratings of attractiveness but decreased ratings of masculinity and distinctiveness. This supports both that attractiveness is related to averageness and findings showing a preference for feminine traits in male faces. When controlling for attractiveness, no significant relationship was found between masculinity and distinctiveness. Manipulating sexual dimorphism did not alter distinctiveness ratings, indicating that feminized and masculinized faces are equally distinctive. These results are suggestive that masculinity and distinctiveness are separable components in face perception. In Expt 2, we look to improve on previous studies utilizing composite faces by examining how averaging in texture-only or shape-only changes perceptions of attractiveness, masculinity, and distinctiveness. Averaging in both shape and texture were found to increase attractiveness independently, showing that the increased attractiveness of composites is due to the combined action of these two manipulations.

The human face plays an important role in social interaction and is also implicated in eliciting a particular response from certain observers—sexual attraction. In recent years, an evolutionary view has been proposed to help us understand why some faces are perceived to be more attractive than others (e.g. Cunningham, Barbee, & Pike, 1990; Grammer & Thornhill, 1994; Perrett *et al.*, 1998; Thornhill & Gangestad, 1993, 1999). There is a diversity of non-human species that rely on external factors to attract mates. One mechanism proposed to account for the evolution of these characteristics is that traits influencing attractiveness are associated with either phenotypic or genotypic

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quality (e.g. Møller, 1990, 1992). This 'quality' is often thought to be heritable, and so the attractiveness of these traits is considered an advertisement of 'good genes'. The evolutionary view of human facial attractiveness proposes that attractiveness is linked to the advertisement of good genes (see Thornhill & Gangestad, 1999, for a review). Observers are expected to prefer the owners of attractive facial features as mates, because of the heritable benefits to potential offspring that such facial traits advertise.

Several studies have proposed that the masculinity and the averageness of faces are linked to heritable benefits and so should be found attractive (e.g. Grammer & Thornhill, 1994; Thornhill & Gangestad, 1993). The exact roles of these two factors are interwoven in an ongoing debate.

Averageness is related to how closely a face resembles the majority of other faces within a population and has been proposed to be an attractive trait, because averageness may be associated with increased resistance to pathogens. Genetic heterozygosity (diversity) brings about an alignment of features that is close to a population average (Thornhill & Gangestad, 1993), and individuals possessing characteristics close to a population mean are therefore proposed to be less likely to carry harmful genetic mutations. Average faces being found attractive would also be consistent with certain theories of cognitive processing (see Langlois & Roggman, 1990; Langlois, Roggman, & Musselman, 1994).

Using unaltered male faces, it has been shown that attractive faces are less distinctive than less attractive faces (Light, Hollander, & Kayra-Stuart, 1981). Studies have also manipulated the averageness of faces. Francis Galton (1878) used photographic superimposing techniques in a variety of experiments and noted that the faces created from this blending were more handsome than the constituent faces. Recent studies have improved upon these techniques, using computers to create digitally blended composite faces, and have shown that composite faces were judged to be more attractive than the individual faces they were made up from (Langlois & Roggman, 1990; Langlois *et al.*, 1994). The use of composite faces has been criticized, because of the smoothing of skin texture in such faces, which may influence their attractiveness (Alley & Cunningham, 1991), making it unclear whether the increased attractiveness of composites is due to the removal of blemishes or that averageness of shape is indeed attractive.

Averageness has been shown to be attractive in shape alone using caricatures that can either exaggerate the differences between the shape of a face and an average face shape making faces more distinctive or, in an anti-caricature, move a face closer to the average of the population. Using original, caricatured, and anti-caricatured line-drawn faces, Rhodes and Tremewan (1996) found that as manipulated averageness increased, so did rated attractiveness. Rhodes and Tremewan also found that distinctiveness ratings increased when caricaturing away from averageness suggesting distinctiveness represents the opposite of averageness. Rhodes, Sumich, and Byatt (1999) demonstrate that the higher attractiveness of anti-caricatures persists when manipulating photographic-quality images. Thus, the accumulated evidence does suggest that averageness in shape effects attractiveness.

Some empirical studies, however, have shown that averageness does not increase attractiveness. For example, Grammer and Thornhill (1994) did not find a preference for averageness with increasing number of faces in male composite images. Averageness also appears not to be the only factor in making a face attractive. Perrett, May, and Yoshikawa (1994) and Perrett *et al.* (1998) have found that average faces can be improved upon showing that composites made of highly attractive individuals in a face set are more attractive than the average of the entire face set and that when individuals

are allowed to manipulate prototypes for apparent masculinity, they choose faces that are more feminine, not the original average face, as most attractive.

That averageness should be attractive also has its theoretical critics. Alley and Cunningham (1991) have argued that very attractive faces should, in some instances, possess features that are more exaggerated than the average of a population. There are numerous examples of this in nature, such as long feathers in peacocks' tails, large antlers in deer, and vivid coloration in male birds of many species. Mature features in adult human faces result from the masculinization or feminization of secondary sexual characteristics that occurs at puberty, resulting in sexual dimorphism in facial appearance. Larger jawbones, more prominent cheekbones, and thinner cheeks are all features of male faces that differentiate them from female faces (e.g. Enlow, 1990). These differences in face shape arise, in part, because of the action of androgens such as testosterone (Enlow, 1990). Masculine traits may represent a handicap to an organism (Zahavi, 1975), since high levels of testosterone depress the immune system. Thus, only healthy individuals can afford to produce masculine traits. In this way, these 'honest' handicaps are proposed to indicate the fitness (or immuno-competence) of the owner and are likely to be found attractive by members of the opposite gender (e.g. Grammer & Thornhill, 1994; Thornhill & Gangestad, 1999).

Masculine features, such as a large jaw and a prominent brow ridge, are reliably associated with ratings of dominance in photographic, Indentikit and composite stimuli (Berry & Brownlow, 1989; Berry & Wero, 1993; Perrett *et al.*, 1998). It might be expected that females would find features demonstrating health and dominance, such as the masculine features discussed above, attractive, and indeed there is some evidence that masculine male faces are found attractive (e.g. Cunningham *et al.*, 1990; Grammer & Thornhill, 1994).

Despite some findings showing a preference for more masculine and dominant male faces, several studies have shown that feminine faces and faces of low dominance are found attractive (e.g. Berry & McArthur, 1985; Perrett *et al.*, 1998). Cunningham *et al.*, (1990) have suggested that a resolution to this conflict may be that very attractive male faces possess a combination of both masculine and feminine features, and so reflect multiple motives in female mate choice (i.e. the desire for a dominant and a co-operative partner, Penton-Voak *et al.*, 1999).

Recently, computer graphics have been used to explore the influence of increasing masculinity in faces. Perrett *et al.* (1998) use computer transformation techniques to morph composite faces along a masculine/feminine dimension, creating both masculinized and feminized versions of male faces. It was found that both males and females agreed that a slightly feminized face shape (mean −15%feminized) was more attractive than an average male face shape. This suggests that male facial attractiveness judgments may depend on more than just immuno-competence-related benefits. Increasing masculinity was found to decrease perceptions of co-operation, honesty, and parental ability, whereas feminization increased the attribution of these traits. If females value co-operation, honesty, and parental ability in mates, this may make masculine male faces less attractive than feminine male faces.

Although preferences for variations along a masculinity/femininity dimension have been taken as evidence against the suggestion that averageness is attractive (Cunningham *et al.*, 1990; Perrett *et al.*, 1994, 1998), there is some evidence to suggest that both averageness and masculinity may influence the attractiveness of male faces. O'Toole *et al.* (1998) found that both ratings of masculinity and a measure of recognizability (distinctiveness) independently influenced the attractiveness of male faces. Thus, a

preference in some circumstances for feminine face shapes may not necessarily conflict with the averageness being attractive.

The current study explored the interplay between masculinity and distinctiveness (used here as the opposite of averageness) and their combined effects on judgments of male facial attractiveness. We examine how current averaging techniques influence ratings of masculinity and explore its relationship with attractiveness and distinctiveness in both real and composite faces. Manipulations of sexual dimorphism have been found to impact on attractiveness ratings, and here, we use similar methodologies to examine how changing sexual dimorphism impacts on perceptions of distinctiveness to test the hypothesis that masculinity/femininity may be an orthogonal dimension to distinctiveness. The current study also looks to improve on previous studies utilizing composite faces by examining how averaging in texture only or shape only changes perceptions of attractiveness, masculinity, and distinctiveness.

METHOD

Experiment 1. Attractiveness, masculinity, and distinctiveness ratings for original and composite faces

It is possible that a combination of averageness and enhancements of secondary sexual characteristics could be found attractive in male faces. This was investigated by examining how attractiveness, masculinity, and distinctiveness change with increasing averageness and the inter-relations between the three variables.

Stimuli

The study used 12 black and white images of young male adults, photographed in full-face view, and with a neutral expression under standardized lighting conditions. Images were selected at random from a larger set of facial photographs. Three levels of composite were used: 3-face, 6-face, and 12-face. The original 12 faces were each randomly assigned into four groups of three faces to make up the 3-face composite. These four groups of three were randomly split into two groups of 6 to make up the two 6-face composites. The 12-face composite was made up of all 12 original faces. Increasing the number of faces in the composites represents increasing levels of averageness.

The composite faces were created by software developed by the second author. Key locations (173 points) were manually marked around the main features (e.g. points outline, eyes, nose, mouth) and the outline of each face (e.g. jaw line, hair line). The average location of each point in the 3, 6, or 12 faces was then calculated. The features of the individual faces were then morphed to the relevant average shape before superimposing the images to produce a photographic quality result. Three of the composites produced can be seen in Fig. 1.

The 7 composite faces were transformed to create a masculinized and a feminized version of each (– 30% and + 30% masculine), making 14 new faces. The faces were transformed using the vector difference in shape between an average male (50 male faces) and average female (50 female faces) face. This study used faces that had been moved to 30%more masculine and 30%more feminine. Examples of the transformation can be seen in Fig. 2. The final image set was 12 original faces, 7 unaltered composite faces, 7 composite feminized faces, and 7 composite masculinized faces.

Figure 1. Progression of composites. (A) Composite of 3 faces, (B) composite of 6 faces, and (C) composite of 12 faces.

Procedure

A total of 34 participants (18 female and 16 males, mean age = 20.8 years, SD = 3.2) were asked to rate the faces for masculinity and attractiveness. Ten different participants (5 female and 5 male, mean age = 24.1 years, SD = 3.8) rated the faces for distinctiveness. All participants were student volunteers from the University of Stirling who had

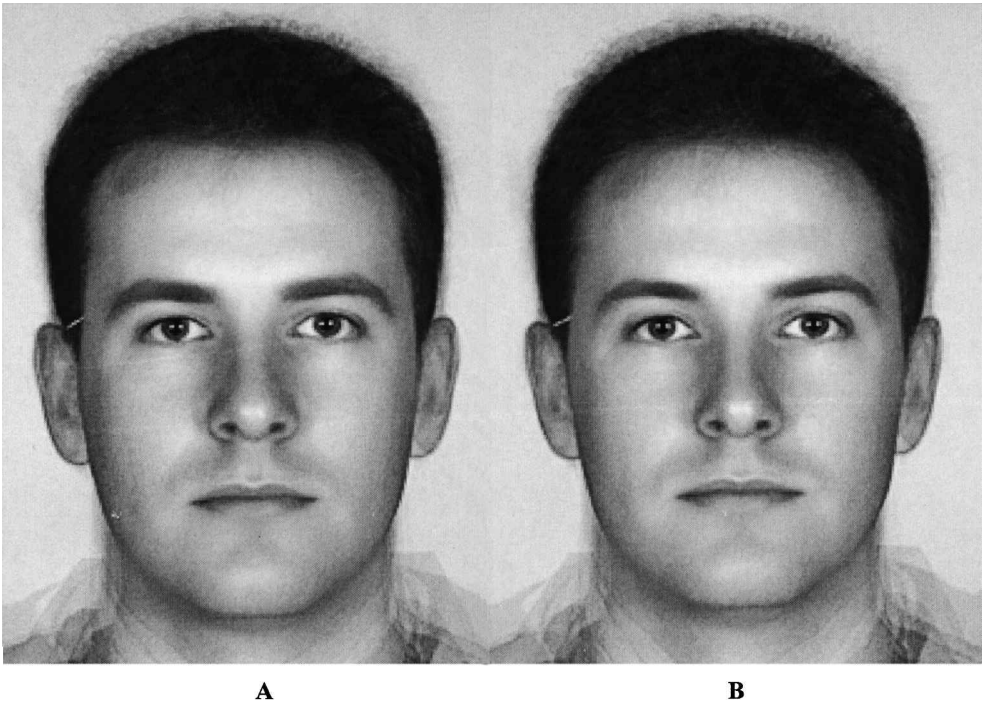

Figure 2. Transformed composite of 12 faces. (A) Masculinized face and (B) feminized face.

the experimental procedure explained to them before consenting to take part. The rights of participants were protected.

The faces were presented sequentially on a computer screen in a random order. Participants rated all faces on a single dimension at a time on a 7-point scale (1 — low, 4 — medium, and 7 — high) and were allowed to view the face as long as they wished. Pressing of a key between 1 and 7 brought up the next face to be judged, and the computer recorded their response. Participants rated the faces for both attractiveness and masculinity, and the order of dimension being rated was random between participants. Independent judges rated the faces for distinctiveness using the same procedure.

Results

Reliability analysis using coefficient α revealed a high inter-rater reliability for masculinity, distinctiveness, and attractiveness ratings (attractiveness, $\alpha = .98$, masculinity, $\alpha = .96$, distinctiveness, $\alpha = .94$). For analysis, the scores of the original and unmodified composites were examined separately from the scores of the masculinized and feminized composites.

Original faces and unmodified composites

For each of the three types of rating, a one-way ANOVA was carried out on the effects of the independent variable 'level of composite' (i.e. 4 levels: original images, composites of 3, 6, and 12 faces — mean scores are shown in Fig. 3). Masculinized and feminized images were not included in this analysis. Analysis was performed within participant (i.e. for each participant one average rating was entered into the ANOVA for each of the four levels of composite) with attractiveness, masculinity, or distinctiveness as the dependent variable. Level of composite had a significant overall effect on ratings of attractiveness (F)3,132) = 80.8, $p < .001$), masculinity ($F(3,132) = 64.2$, $p < .001$), and distinctiveness ($F(3,39) = 35.6$, $p < .001$).

Planned comparisons were carried out between ratings of faces of different composite level. For attractiveness ratings all levels of composite were rated as significantly different ($p < .001$), except for composites made of 6 faces and 12 faces, which did not differ significantly in attractiveness ($p = .07$). For masculinity ratings, all levels of composite were rated as significantly different ($p < .001$). For distinctiveness ratings, all levels of composite were rated as significantly different ($p < .05$), except for composites made of 6 faces and 12 faces ($p = .88$). It can be seen from Fig. 3 that there is a steady rise in rated attractiveness and a decrease in both rated masculinity and distinctiveness as the number of the faces in the composite increases.

To explore the relation between masculinity, distinctiveness, and attractiveness, Pearson product-moment correlation coefficients were calculated for each type of rating. All three variables were found to be strongly inter-related. Attractiveness was negatively related to both masculinity ($r_{19} = -.92$, $p < .001$) and distinctiveness ($r_{19} = -.89$, $p < .001$). Masculinity and distinctiveness were significantly positively related ($r_{19} = .86$, $p < .001$). Multiple regression analysis predicting attractiveness from masculinity and distinctiveness showed that both these variables were highly significant predictors of attractiveness ($F(2,16) = 59.4$, $p < .001$) accounting for 88%of the variance in attractiveness ($r^2 = .88$). Controlling for distinctiveness, a significant negative relationship was found between facial attractiveness and facial masculinity

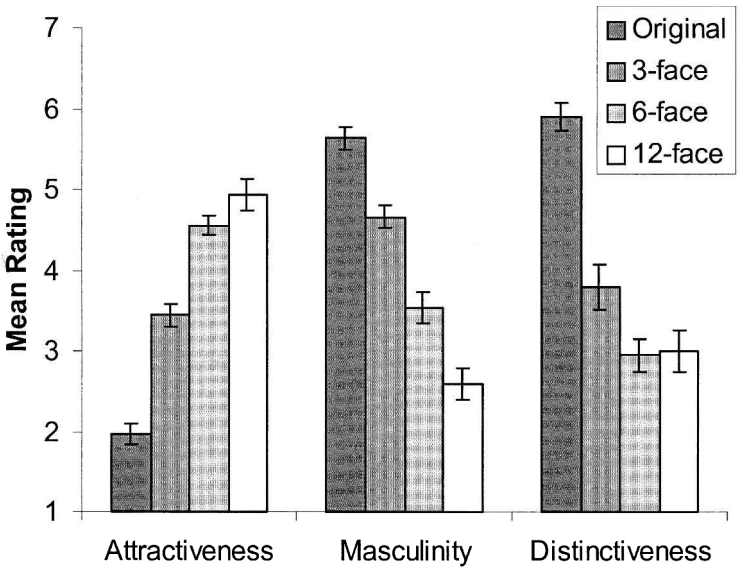

Figure 3. Mean ratings (averaged across rater, ±1 SE) of original, 3-face, 6-face, and 12-face composites for attractiveness, masculinity, and distinctiveness.

($\beta = -.67$, $p = .004$). Controlling for facial masculinity, a significant negative relationship was found between facial attractiveness and facial distinctiveness ($\beta = -.35$, $p = .032$). A partial correlation controlling for facial attractiveness revealed no significant relationship between facial masculinity and facial distinctiveness ($r_{19} = .24$, $p = .33$).

Discussion

Attractiveness increased and both masculinity and distinctiveness decreased as the number of faces contributing to the composite increased. These findings support Langlois and Roggman's (1990) experiments showing an increase in attractiveness when making composite faces, although averaging more than six faces appeared to have no further effect. The study also provides further support for Perrett *et al.*'s (1998) finding that feminine faces are found to be more attractive than masculine faces, and composites were rated as significantly more feminine and more attractive than original faces. The finding that ratings of distinctiveness decreased with an increasing number of images in a composite is in agreement with Langlois *et al.* (1994), who found that averaged faces were rated as significantly more familiar than individual faces (familiarity being one component of distinctiveness, Bruce, Burton, & Dench, 1994).

These relationships were dependent on the number of faces in the composite presented. 'Higher' composites were rated as more attractive, less masculine, and less distinctive than 'lower' composites and the original faces. That distinctiveness and attractiveness were still correlated when controlling for masculinity indicates that the effects of averageness are not solely due to the feminizing effects of averaging, and likewise, when controlling for distinctiveness, masculinity and attractiveness were still correlated, indicating that the effects of masculinity on attractiveness were not entirely

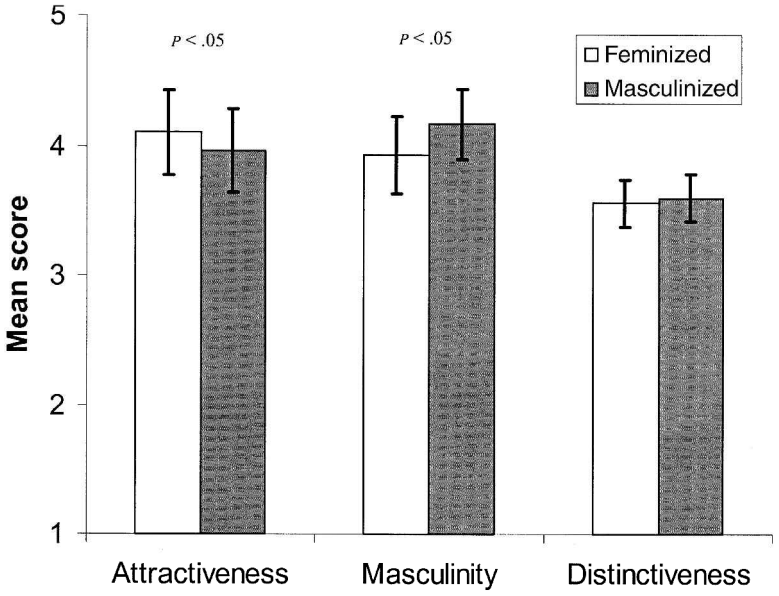

Figure 4. Mean ratings (averaged across face type, ±1 SE) of attractiveness, masculinity, and distinctiveness for masculinized and feminized faces.

due to changes in distinctiveness. Interestingly, when controlling for the attractiveness of a face, no relationship was found between masculinity and distinctiveness for this sample of faces. This implies that the significant zero-order correlation between masculinity and distinctiveness may be mediated by attractiveness, and it is possible, as indicated above, that masculinity and distinctiveness can have independent effects on face processing, including attractiveness judgments.

Comparisons of transformed faces (masculine versus feminine)

The scores for the attractiveness, masculinity, and distinctiveness of the 7 feminized and 7 masculinized composites were averaged to produce an overall mean score for the feminized and masculinized versions for each participant. Paired sample *t*-tests were carried out within participant, with masculine/feminine change as the independent variable. The tests compared each participant's average rating of the feminized faces with the average ratings of the masculinized faces on the dependent variables of attractiveness, masculinity, and distinctiveness.

A significant effect of masculinity/femininity change was found for ratings of both masculinity ($t_{33} = 2.6$, $p = .014$) and attractiveness ($t_{33} = 2.2$, $p = .038$) with the feminized faces being rated as less masculine and more attractive than the masculinized faces. No significant effect of masculinity/femininity change was found for ratings of distinctiveness ($t_9 = .4$, $p = .71$). The mean scores are shown in Fig. 4.

Discussion

Masculinizing and feminizing composite male faces had a significant influence on judgments of attractiveness and masculinity. The feminized faces were rated as significantly more feminine than the masculinized faces, showing that the transforms

produced perceptual changes in the correct direction. Feminized faces were also rated as significantly more attractive than masculinized faces, supporting Perrett *et al.*'s (1998) finding, though using different methods. Here, attractiveness ratings of individually altered faces were compared, rather than judges choosing their preferred face shape from a continuum.

Masculinizing and feminizing face shape had no significant effect on ratings of distinctiveness. In agreement with this, the first part of this experiment demonstrates that judgments of distinctiveness and masculinity were not related when controlling for attractiveness. It has been suggested that a preference for a feminine face over an average face shape is evidence against the averageness being attractive (Perrett *et al.*, 1998). Making a face more feminine/masculine may move it away from the male average, but an observer may not perceive it as being less average (or more distinctive), only as more feminine/masculine. Looking at different prototypes, if we made an average male and an average female face, because the gender ratio is 1:1, neither should be more or less representative of an average human face than the other (i.e. an average woman and an average man will certainly appear different but not necessarily as more or less distinctive than the other). That variations in masculinity are not interpreted as changing distinctiveness is supported by O'Toole *et al.* (1998), who report that recognition memory for faces was unrelated to judged masculinity of normal male faces. From this, and the findings of the present study, it could be tentatively suggested that averageness might be considered as a separate dimension to masculinity in face perception. The detection of structures related to male and female facial traits may be independent of the detection of structures related to identity and the averageness/distinctiveness of faces.

Experiment 2: Average shape and average texture changes

It has been suggested that idiosyncratic facial irregularities typical of real faces, such as skin blemishes, are removed in the production of composites and that this smoothing of skin texture may be responsible for some of the attractiveness of composites (Alley & Cunningham, 1991; Benson & Perrett, 1992; Perrett, May, & Yoshikawa, 1994). The current study looked to improve on earlier studies by examining the contributions of averageness in terms of face texture and face shape by presenting participants with independent manipulations of each.

Stimuli

The original faces used in Expt 1 were altered so as to have either average texture or average shape using the same morphing technique outlined above. Each original face had two versions created from it. One version possessed the average texture of 12 faces while retaining the shape of the original (Fig. 5B). The alternative version possessed the average shape of the 12 faces but retained the texture of the original face (Fig. 5C). These 24 faces were created using a similar method to that used in Expt 1.

Procedure

A similar procedure to that used in Expt 1 was employed to present the faces to participants. Given that two similar faces were presented and that there were a small number of these faces, the stimuli were divided between two sets. One group of participants (6 females, 4 males, mean age = 36.8, SD = 5.3) saw half of the faces

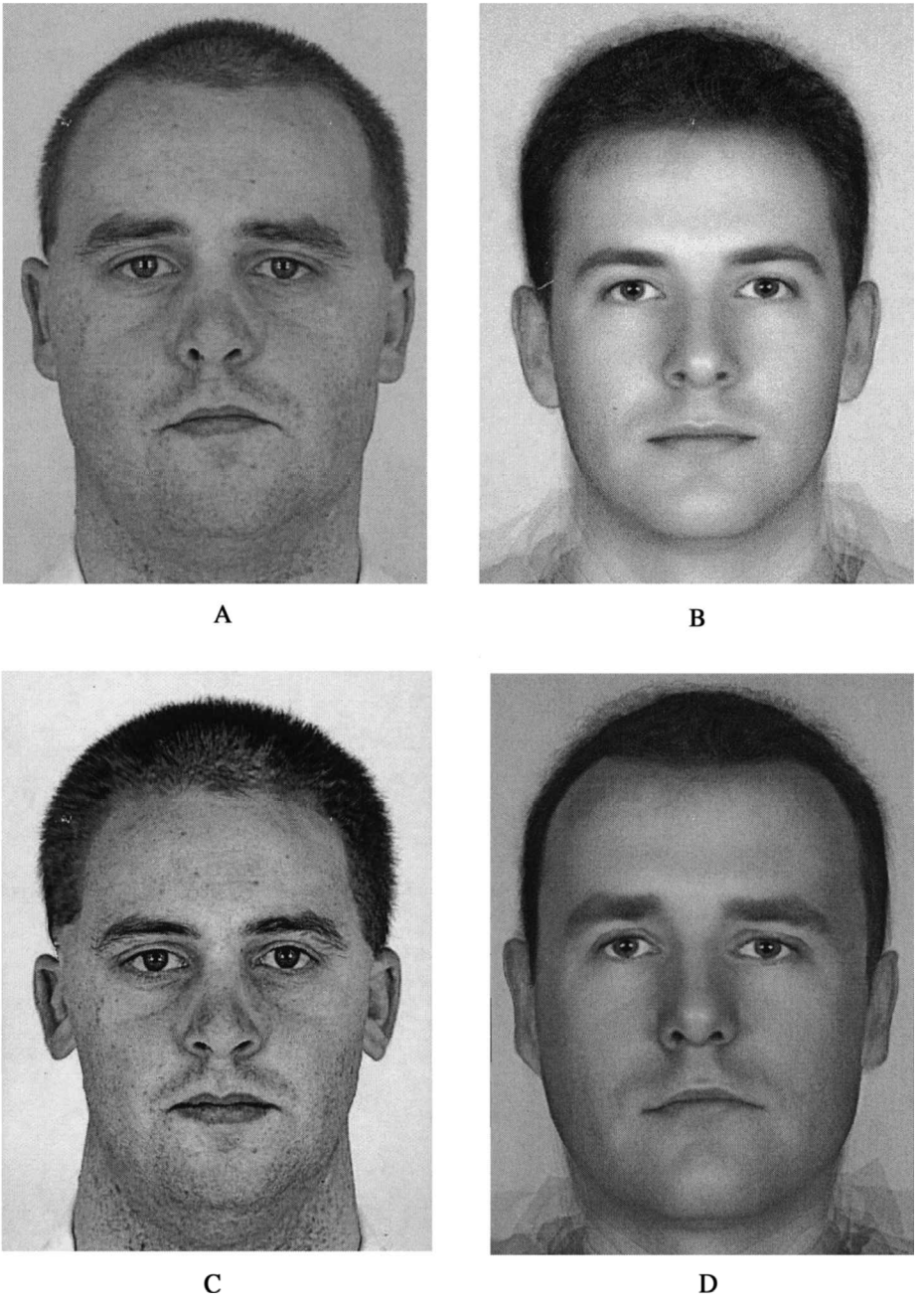

Figure 5. Independent manipulations of shape and texture. (A) Original face, (B) shape and texture composite (12-face composite), (C) original texture and 12-face shape, and (D) original shape and 12-face texture.

altered only for texture (face 1–6 texture change) and the other half of the faces altered only for shape (face 7–12 shape change). The other group of participants (5 females, 5 males, mean age = 40.2, SD = 7.2) saw the remaining face images. Participants were asked to rate all average texture and average shape faces for attractiveness, masculinity, and distinctiveness. Participants rated all faces on a single dimension at a time, and the order of dimensions was random between participants. A reliability analysis using coefficient α revealed a high inter-rater reliability for attractiveness and masculinity (attractiveness, $\alpha = .75$, masculinity, $\alpha = .86$). The inter-rater reliability was lower for distinctiveness ($\alpha = .64$) but still indicated a moderately high amount of agreement between participants.

Results

The scores of raters were averaged by face to provide mean scores for attractiveness, masculinity, and distinctiveness for average shape and average texture faces. Comparisons were made by face — each type of face (original, average texture, average shape) had 12 versions and so 12 average ratings from across raters. The mean scores for the original faces were taken from Expt 1. The mean ratings for the four types of face (shape and texture composite included for comparison) are shown in Fig. 6.

Independent sample *t*-tests were carried out between faces with type of change as the independent variable comparing the mean scores of the average shape and average texture faces with each other and against the scores for the original 12 faces from which they were derived with attractiveness, masculinity, or distinctiveness as the dependent variable.

The mean attractiveness of the average shape and the average texture faces was significantly higher than that of the mean of the original faces (texture: $t_{22} = -5.19$, $p < .001$; shape: $t_{22} = -6.75$, $p < .001$). The average shape faces were not found to

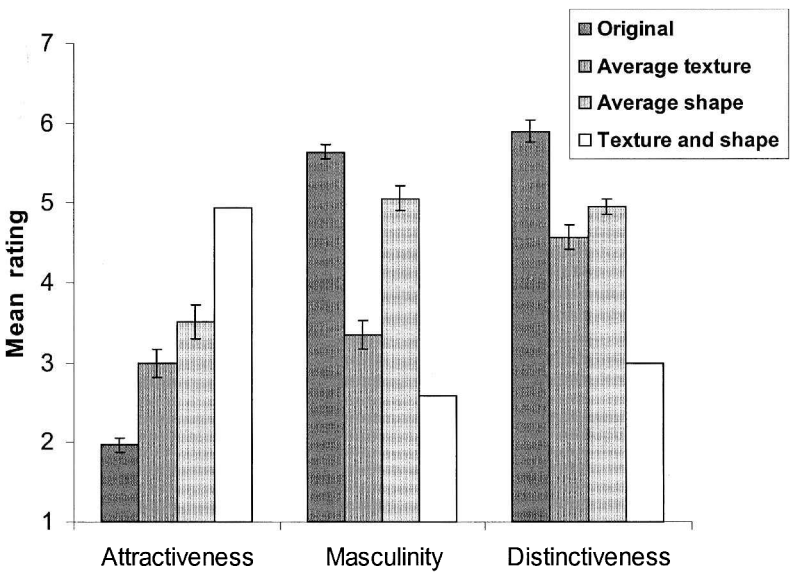

Figure 6. Mean ratings (averaged across face type, ±1 SE) of original, average texture, average shape, and average shape and texture faces for attractiveness, masculinity, and distinctiveness.

differ significantly in mean attractiveness from the faces with average texture ($t_{22} = -1.87$, $p = .075$). The mean masculinity of the average shape and the average texture faces was significantly higher than that of the mean of the original faces (texture: $t_{22} = 11.35$, $p < .001$; shape: $t_{22} = 3.99$, $p = .004$). The average shape faces had a significantly higher mean masculinity than the average texture faces ($t_{22} = -7.09$, $p < .001$). The mean distinctiveness of the average shape and the average texture faces was significantly lower than that of the original faces (texture: $t_{22} = 6.37$, $p < .001$; shape: $t_{22} = 5.51$, $p < .001$). The average shape faces had a significantly higher mean distinctiveness than the average texture faces ($t_{22} = -2.10$, $p = .048$).

Discussion

Averaging texture and average shape was found to impact on ratings of attractiveness, masculinity, and distinctiveness. Faces with an average shape were found to be significantly more attractive than the faces with original shape, which indicates that, independent of texture changes, average shape faces are more attractive than less average faces (face A vs. B and C vs. D in Fig. 5). The finding that texture changes do result in a significantly more attractive face supports Alley and Cunningham's (1991) conjecture that the smooth skin texture of average faces (demonstrated by Benson & Perrett, 1992) does contribute to their attractiveness (face A vs. C and B vs. D in Fig. 5).

Texture changes had a much larger influence over masculinity ratings than shape changes. Average texture (creating a smooth looking complexion) may be a characteristic associated with females more than males, and it may be smoothing texture changes that are most influential in making composite faces appear more feminine. The faces with average shape were also rated as significantly more distinctive than the faces with average texture, which may be due to the removal of individual pigmentation and some shape cues, derived from 3D shadowing effects, in the average texture images. No significant difference was found for attractiveness, indicating that averaging shape and averaging texture produce similar enhancements to attractiveness.

GENERAL DISCUSSION

The current study supports the notion that both masculinity and distinctiveness play an important role in judgments of male facial attractiveness. The attractiveness of faces is changed when perceived masculinity and distinctiveness are manipulated. Interestingly, when controlling for attractiveness, masculinity and distinctiveness varied independently in the faces presented. The finding that manipulations of masculinity in faces had a significant effect on judgments of masculinity (and also influenced judgments of attractiveness), whereas these manipulations had no influence on ratings of distinctiveness, supports the notion that masculinity and distinctiveness are separable components in face perception. This can help resolve the conflict between claims that different factors underlie attractiveness: there can exist both a preference for averageness and a preference for femininity of shape in male faces.

The second aspect of the study, manipulating shape and texture independently, showed that both factors have significant effects on attractiveness, masculinity, and distinctiveness. The separation of average shape from average texture may represent a significant improvement over past studies of averageness in faces. A combination of shape and texture modification results in a greater change than either modification

alone, which indicates that both of these changes are important in the changing of the perception of composite faces. The finding that attractiveness increases with both face shape and face texture averaging supports both Langlois and Roggman's (1990) finding that averageness is attractive and also Alley and Cunningham's (1991; also Benson & Perrett, 1992) contention that texture accounts for some of the attractiveness of composite faces. Within an evolutionary framework, blemish-free skin may have been an important cue to health in our ancestral past, indicating absence of disease or damage. Averaging texture had as large an effect as increasing averageness of shape on attractiveness, indicating that the role of texture appears to be an important and understudied component of facial attractiveness.

Femininity in male faces was found to be attractive in both experiments via two types of manipulation. Both averaging and manipulation of sexual dimorphism in face shape can increase femininity and attractiveness. The femininity of average faces is mainly due to changes in skin texture, whereas femininity manipulations change shape alone, and so both feminine shape and average texture cues (smooth skin) are found attractive in male faces.

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