



## The effects of facial hair manipulation on female perceptions of attractiveness, masculinity, and dominance in male faces

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### ABSTRACT

The aim of this study was to examine the effects of systematic alterations in male facial hair on female perceptions. A within-subjects design employed one condition (facial hair) incorporating five levels (clean-shaven, light stubble, heavy stubble, light beard and full beard). All levels were applied to three different facial designs, constructed using FACES software. The resulting 15 male faces were rated by 60 females on various attributes. Male faces displaying a full beard were considered the most masculine, aggressive, socially mature, and older. Males with a light beard were considered the most dominant. Males with light stubble were considered to be the most attractive, light stubble was also preferred for both short- and long-term relationships. These findings are discussed in terms of age preferences and good-genes models.

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### 1. Introduction

Certain physical and behavioural features are thought to be adaptations arising via intersexual selection – the tendency of members of one sex to preferentially select certain members of the opposite sex as mating partners (Buss & Barnes, 1986). Darwin referred to intersexual selection as ‘female choice’, because in many species females are more selective in their mate choices than males, and this is thought to reflect differences in parental investment and reproductive success (Buss & Schmitt, 1993). Female animals prefer males who display certain physical characteristics. These features are assumed to be under the control of the gonadal sex-steroids beginning at puberty when the individual enters the reproductive market. These features are thought to form ‘honest’ signals, because the sex-steroids also have immunosuppressant actions, and only individuals in good health and with efficient immune systems can cope with the ‘handicap’ of producing and maintaining such signals (Folstad & Karter, 1992; Zahavi, 1975).

In humans, various facial and bodily characteristics are thought to form a single (condition dependent) sexual ornament advertising health and fertility (Fink & Neave, 2005; Thornhill & Gangestad, 1993; Thornhill & Grammer, 1999). Much research utilising a range of methodologies has focused upon facial and bodily attractiveness (for review see Etcoff, 1999) and considerable research has been directed towards those facial characteristics that appear to influence

perceptions of attractiveness. For example, researchers have discussed the significant effects of facial averageness and symmetry on judgements of attractiveness (for reviews see Fink & Neave, 2005; Rhodes, 2006). An additional feature thought to be of importance for females’ rating male faces relates to sexual dimorphism, i.e. the degree of masculinity expressed by various facial features. Testosterone (in association with growth hormone at puberty) is assumed to affect a number of facial features that determine perceived masculinity, in particular the lateral growth of the cheekbones, jawbone and chin, the forward growth of the eyebrow ridges, and the lengthening of the lower face, leading to a more robust face shape. The absence of androgens, or the presence of estrogens is thought to lead to a more gracile face shape with high eyebrows, smaller and more rounded jaw line, and fuller lips (Enlow, 1996). Masculinized facial features that have developed as a consequence of higher levels of circulating testosterone (or greater receptor sensitivity to existing levels) are thought to act as honest indicators of good genes (Thornhill & Gangestad, 1993).

Female preferences for masculine traits in male faces is however equivocal. Ratings of attractiveness have been found to positively correlate with masculinity (e.g. Cunningham, Barbee, & Pike, 1990; Neave, Laing, Fink, & Manning, 2003). In addition, some studies have reported an overall preference for masculinized male faces (Johnson, Hagemel, Franklin, Fink, & Grammer, 2001; Keating, 1985) and that certain masculine features (e.g. large chins) are attractive in male faces (Cunningham et al., 1990; Grammer & Thornhill, 1994; Scheib, Gangestad, & Thornhill, 1999). However, other studies have indicated that females prefer more feminized

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male faces (e.g. Penton-Voak, Jacobson, & Trivers, 2004) and it has been suggested that such preferences may reflect desirability for more positive personality traits, indicating a more reliable partner and a potentially better parent (Perrett et al., 1998). A possible confound here relates to the fact that female preferences for male faces may not remain static, but instead may fluctuate across the menstrual cycle depending upon the female's fertility. Thus, preferences for masculinity (in short-term partners) appear to peak around ovulation when the female is at maximum fertility (Penton-Voak & Perrett, 2000; Penton-Voak et al., 1999); this fluctuation in masculine preferences being argued to reflect a good-genes model (Gangestad, Garver-Apgar, Simpson, & Cousins, 2007).

The focus of this current study is not facial masculinity *per se*, but rather on one signal of facial masculinity. The presence of facial hair ('beardedness'), is a powerful sociosexual signal, and an obvious biological marker of sexual maturity (Randall, 2004). In evolutionary terms this sexually dimorphic trait provides no obvious survival advantages for a male, but is a likely candidate for sexual selection (Barber, 1995). Guthrie (1970) suggested its value in signalling aggression during inter-male fighting, perhaps by the perceived enhancement of the lower jaw, emphasising the teeth as weapons. This indicates that facial hair may have been sexually selected by females on the basis of associated male success, despite its threatening appearance. Clean-shaven faces therefore may suggest appeasement, as well as being an obvious sign of sexual immaturity (Guthrie, 1970). Research to date has indicated that female attitudes towards male facial hair are not always consistent, some studies report positive associations between facial hair and certain behavioural/personality attributes, whilst others find negative associations.

For example, Kenny and Fletcher (1973) reported that bearded males were considered more enthusiastic, sincere, generous, extraverted, masculine, inquisitive, and stronger than clean-shaven males. Pellegrini (1973) noted that attributions of masculinity, maturity, attractiveness, dominance, self-confidence, and courage were enhanced as the extent of beardedness increased from clean-shaven to moustache, and through goatee to full beard. Similarly, Addison (1989) found that bearded males were perceived as being more masculine, aggressive, and dominant than clean-shaven men. Reed and Blunk (1990) reported that facial hair led to increased perceptions of attractiveness, competency and composure. Alternatively, Feinman and Gill (1977) found that females expressed dislike for a potential partner possessing a full beard; however, these results were obtained via vignettes that provided only written descriptions of the males.

Muscarella and Cunningham (1996) examined the effects of facial and cranial hair manipulation on physical and social perceptions. Two levels of facial hair were employed, short dark beard and clean-shaven. Different combinations of facial and cranial hair were applied to six male faces (using wigs and fake facial hair) the resulting photographs then being rated by females. Males with facial hair were perceived as being more aggressive, older, less attractive, and were subject to reduced perceptions of social maturity in comparison to clean-shaven faces. Wogalter and Hosie (2001) demonstrated that clean-shaven faces were regarded as being significantly more youthful, attractive, and sociable than bearded faces. Finally, Shannon and Stark (2003) reported equivocal results for beardedness and attractiveness, and failed to show that facial hair was associated with negative personal attributes.

A likely explanation for the somewhat conflicting results described above relates to the different methodologies employed to display facial hair. Some studies have only employed two levels – clean-shaven versus full beard (e.g. Addison, 1989; Kenny & Fletcher, 1973; Wogalter & Hosie, 2001), whilst others have used more conditions: Reed and Blunk (1990) and Shannon and Stark (2003) had three levels, whilst Pellegrini (1973) had four levels

of facial hair. All studies have employed different methodologies to create and present the stimuli. Thus, Pellegrini (1973) used photographs, Reed and Blunk (1990) used drawings, Wogalter and Hosie (2001) and Shannon and Stark (2003) employed specialist computer software.

An additional factor to consider is that whilst evolutionary theories emphasise the importance of male status and dominance in male attractiveness, research actually suggests that this only holds true up to a certain point. On one hand, a female might desire a male who is strong, mature, and dominant, but is also perhaps seeking a faithful, cooperative, and caring partner. Indeed, it has been shown that male faces combining elements of both mature and childlike features are perceived as being the most attractive (Cunningham et al., 1990). Previous studies assessing the impact of facial hair of female perceptions of male faces have typically utilised conditions including clean-shaven, moustache, and full beards, faces with varying degrees of stubble have not been assessed. Stubble indicates that whilst a face is not immature, it is also not strongly masculine (i.e. it signals the potential to grow a full beard), then it is important to assess female perceptions of male faces varying in facial hair covering the full range of possibilities.

Therefore, in this study we assess female perceptions of male faces with five levels of facial hair (clean-shaven, light stubble, heavy stubble, light beard and full beard). In line with the majority of previous studies we predict a linear positive relationship between the extent of facial hair and perceptions of aggression, masculinity, dominance, social maturity and perceived age. For ratings of attractiveness however we assume a non-linear (inverted U-shaped) relationship, i.e. that faces with stubble (either light or heavy) will receive the most positive ratings, whilst clean-shaven and bearded faces will receive the lowest ratings. As previous studies have indicated that females prefer more strongly masculinized faces in a short-term partner (e.g. Little, Jones, Penton-Voak, Burt, & Perrett, 2002) then we assume that the clean-shaven face will receive the lowest rating as a preferred short-term partner, but make no specific predictions concerning the extent of stubble/beard in this regard. Similarly, as less masculinized attributes are preferred in a long-term partner (e.g. Waynforth, Delwadia, & Camm, 2005) we assume lower ratings as facial hair increases, but note that the clean-shaven face (perhaps perceived as being too immature) might also receive low ratings.

## 2. Methods

### 2.1. Participants

The sample comprised 76 female undergraduates from Northumbria University, UK, aged 18–44 (mean = 21.7, *SD* = 5.20), 16 acted as raters in an initial pilot phase to establish the final pool of faces, the remaining 60 acted as participants in the final rating phase. All were obtained by means of opportunity sampling and did not receive payment for their participation.

### 2.2. Materials and procedure

The male faces used as stimuli were created using FACES, a software programme enabling the construction of realistic faces from a large database of facial features. This software has been used previously to create stimuli for this type of research (Shannon & Stark, 2003). The faces were constructed to have an apparent age between 18 and 25. In order to ensure that the final set of faces were equivalent in terms of general attractiveness, in an initial phase 10 clean-shaven male faces were constructed. Females (*N* = 16) then rated them for attractiveness using a Likert-type scale (1 = very

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