ELSEVIER

Evolution and Human Behavior 33 (2012) 260–267

Evolution and Human Behavior

Original Article

# Cross-cultural effects of color, but not morphological masculinity, on perceived attractiveness of men's faces

Ian D. Stephen[a,*], Isabel M.L. Scott[b], Vinet Coetzee[c], Nicholas Pound[d], David I. Perrett[e], Ian S. Penton-Voak[f]

[a]School of Psychology, University of Nottingham Malaysia Campus, Semenyih, Malaysia
[b]Department of Archaeology and Anthropology, University of Bristol, Bristol, UK
[c]Department of Genetics, University of Pretoria, Pretoria, South Africa
[d]Department of Psychology, Brunel University, Uxbridge, UK
[e]School of Psychology, University of St Andrews, St Andrews, UK
[f]Department of Experimental Psychology, University of Bristol, Bristol, UK

Initial receipt 8 March 2011; final revision received 17 October 2011

**Abstract**

Much attractiveness research has focused on face shape. The role of masculinity (which for adults is thought to be a relatively stable shape cue to developmental testosterone levels) in male facial attractiveness has been examined, with mixed results. Recent work on the perception of skin color (a more variable cue to current health status) indicates that increased skin redness, yellowness, and lightness enhance apparent health. It has been suggested that stable cues such as masculinity may be less important to attractiveness judgments than short-term, more variable health cues. We examined associations between male facial attractiveness, masculinity, and skin color in African and Caucasian populations. Masculinity was not found to be associated with attractiveness in either ethnic group. However, skin color was found to be an important predictor of attractiveness judgments, particularly for own-ethnicity faces. Our results suggest that more plastic health cues, such as skin color, are more important than developmental cues such as masculinity. Further, unfamiliarity with natural skin color variation in other ethnic groups may limit observers' ability to utilize these color cues.


*Keywords:* Color; Masculinity; Attractiveness; Health; Face; Perception

## 1. Introduction

A number of researchers have examined the aspects of facial appearance that affect perceived attractiveness, focusing primarily on facial shape cues such as symmetry (Perrett et al., 1999) and averageness (Rhodes, Sumich, & Byatt, 1999). Sexual dimorphism in shape has also received much research interest, with studies finding that the femininity of women's faces is closely associated with their rated attractiveness (Perrett et al., 1998; Rhodes, 2006). However, findings regarding the attractiveness of masculine features in male faces have been more mixed.

It has been suggested that facial masculinity should enhance attractiveness in men due to an immunohandicapping effect of testosterone ensuring that only high-quality males can achieve a strongly masculine appearance during development (Hamilton & Zuk, 1982; Lozano, 1994; see Rhodes, 2006). There is some evidence that facial masculinity is associated with levels of circulating testosterone in men (Pound, Penton-Voak, & Surridge, 2009). However, some studies have found that women prefer more *feminine* male faces (Perrett et al., 1998) or found no preference for masculinity (Rhodes, Chan, Zebrowitz, & Simmons, 2003). Further studies have found that women's preferences for masculinity fluctuate, for example, (a) over the course of the menstrual cycle, with reduced preference for femininity in the follicular (fertile) phase and femininity preferred in the luteal phase (Johnston, Hagel, Franklin, Fink, & Grammer, 2001; Jones et al., 2005; Penton-Voak & Perrett, 2000; Penton-Voak & Perrett, 2001; Penton-Voak et al., 1999; Scarbrough & Johnston, 2005); (b) depending

* Corresponding author. Tel.: +603 8924 8730.
*E-mail address:* ian.stephen@nottingham.edu.my (I.D. Stephen).

1090-5138/$ – see front matter © 2012 Elsevier Inc. All rights reserved.
doi:10.1016/j.evolhumbehav.2011.10.003

on the type of relationship sought, with masculinity preferred for short-term relationships and femininity preferred for long-term relationships (Little, Cohen, Jones, & Belsky, 2007); (c) dependent on the attractiveness of the *woman*, with more attractive women preferring more masculine men (Penton-Voak et al., 2003). All of these papers posit a trade-off between gaining the "good genes" benefits of mating with masculine men and the negative personality traits (such as aggression and violence) that are associated with masculine men.

However, although it is possible that, for adult males in many species, aspects of anatomical masculinity may be reliable cues to health status during development, their importance may be limited in the presence of more salient cues to current health. This is particularly likely to be the case in situations where fluctuations in pathogen pressure and health status are rapid relative to host life span (Adamo & Spiteri, 2005, 2009; Scott, Pound, Stephen, & Penton-Voak, 2010) and female mate choice for multiple cues is constrained (Kokko, Brooks, Jennions, & Morley, 2003). Mathematical models developed recently indicate that, for most animals, females can derive fitness benefits from paying attention to the current condition of potential mates, but may derive little or no additional benefit from attending to cues to past immune function (Adamo & Spiteri, 2005, 2009). Consequently, relatively stable traits that are likely not influenced substantially by short-term fluctuations in adult health (e.g., degree of anatomical masculinization; Bulygina, Mitteroecker, & Aiello, 2006) should be of less importance to females than other more condition-dependent cues to current health. Moreover, this tendency should be more pronounced in animals with long life spans and slow reproduction, such as humans (Scott et al., 2010).

Further, recent theoretical work has suggested that the primary selective force driving the evolution of more robust features in male faces may have been intrasexual competition rather than female choice (Puts, 2010). Puts (2010) points out that the high degree of sexual dimorphism in muscle mass (similar to the dimorphism seen in gorillas; Zihlman & MacFarland, 2000) and the ability to control access to females predict that male–male contest competition would have been more important in the evolution of masculine traits than female choice. This prediction is supported by the finding that male sex-typicality on a number of traits, including beard growth (Neave & Shields, 2008), masculine voice (Puts, 2006), masculine face (DeBruine et al., 2006), and brawny build (Frederick & Haselton, 2007), increases ratings of dominance more than it does attractiveness (Puts, 2010). However, women are able to control mating to an extent, for example, by extra-pair copulations, and consequently are predicted to favor males with healthy appearance (Puts, 2010). This adds further to the expectation that men's masculinity will contribute little to attractiveness, with women preferring cues to current health, such as color.

Recent work has shown that the distribution and homogeneity of skin color across the face contributes to perceptions of health, age, and attractiveness of human faces (Fink, Grammer, & Thornhill, 2001, Fink, Grammer, & Matts, 2006; Matts, Fink, Grammer, & Burquest, 2007; Stephen & McKeegan, 2010), with more homogenous skin color and chromophore distribution associated with higher-rated attractiveness (Fink et al., 2001; Matts et al., 2007). Overall skin color has also been shown to affect the apparent health—and likely attractiveness (Jones, Little, Burt, & Perrett, 2004)—of human faces, with redder, yellower, and lighter skin appearing healthier (Stephen, Law Smith, Stirrat, & Perrett, 2009). The enhanced healthy appearance obtained from increased skin redness has been attributed to increased skin blood perfusion and oxygenation, which are associated with current cardiac and respiratory health (Stephen, Coetzee, Law Smith, & Perrett, 2009), and the enhanced healthy appearance associated with increased skin yellowness has been attributed to increased levels of carotenoids, which are associated with increased resistance to reactive oxygen species (Dowling & Simmons, 2009; Stephen, Coetzee, & Perrett, 2001). It is thought that color provides an indicator of current health since the levels of pigmentation in the skin react rapidly to changes in health status. Skin carotenoid levels change within days in response to changes in dietary intake (Stahl et al., 1998) and parasitic infestation (Koutsos, Calvert, & Klasing, 2003); melanin levels increase in the skin within an hour of exposure (Robins, 1991); blood oxygenation and perfusion change rapidly in response to a number of stimuli, such as exercise and illness (Paxton, Redd, Steketee, Otieno, & Nahlen, 1996).

Scott et al. (2010) have recently shown that masculinity—a possible cue to health status during development—may not be an important predictor of attractiveness when more salient cues to current condition, such as color, are available and that many previous findings may have been dependent largely on the experimental methods employed (e.g., using stimuli in which masculinity has been varied while other cues have been held constant). However, Scott et al. (2010) used relatively wealthy participants from highly developed environments with good access to healthcare for both the stimuli and the choosers. Masculinity preferences have been shown to vary cross-culturally, with masculinity preferred more in countries with lower standards of health than in countries with high standards of health (DeBruine, Jones, Crawford, Welling, & Little, 2010; Penton-Voak et al., 2004; Scott, Swami, Josephson, & Penton-Voak, 2008), though this effect may in fact reflect different levels of income inequality, with more masculine features preferred in more unequal countries (Brooks et al., 2010). Potentially, masculinity may be associated with the ability to obtain and defend resources when male–male competition is high (Puts, 2010; as is the case in cultures with high resource inequality), though health standards predict masculinity preference better than do measures of violence within the United States when income inequality is controlled (DeBruine et al., 2011).

Here, we replicate and extend the work of Scott et al. (2010) using two color-calibrated image sets taken from a