

## Correlated preferences for men's facial and vocal masculinity

David R. Feinberg<sup>a,\*</sup>, Lisa M. DeBruine<sup>b</sup>, Benedict C. Jones<sup>b</sup>, Anthony C. Little<sup>c</sup>

<sup>a</sup>*Department of Psychology, Neuroscience, and Behaviour, McMaster University, Canada*

<sup>b</sup>*School of Psychology, University of Aberdeen, UK*

<sup>c</sup>*School of Psychology, Stirling University, UK*

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### Abstract

Previous studies have reported variation in women's preferences for masculinity in men's faces and voices. Women show consistent preferences for vocal masculinity, but highly variable preferences for facial masculinity. Within individuals, men with attractive voices tend to have attractive faces, suggesting common information may be conveyed by these cues. Here we tested whether men and women with particularly strong preferences for male vocal masculinity also have stronger preferences for male facial masculinity. We found that masculinity preferences were positively correlated across modalities. We also investigated potential influences on these relationships between face and voice preferences. Women using oral contraceptives showed weaker facial and vocal masculinity preferences and weaker associations between masculinity preferences across modalities than women not using oral contraceptives. Collectively, these results suggest that men's faces and voices may reveal common information about the masculinity of the sender, and that these multiple quality cues could be used in conjunction by the perceiver in order to determine the overall quality of individuals.

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### 1. Introduction

Among humans, face, voice, and body attractiveness are influenced by their degree of masculinity or femininity (DeBruine et al., 2006; Fan, Dai, Liu, & Wu, 2005; Fan, Liu, Wu, & Dai, 2004; Feinberg, DeBruine, Jones, & Perrett, in press; Feinberg et al., 2006b; Feinberg, Jones, Little, Burt, & Perrett, 2005b; Perrett et al., 1998; Rhodes, Hickford, & Jeffery, 2000). In turn, it has been demonstrated that sex hormones (primarily testosterone, progesterone, and estrogen) are related to the degree of masculinity and femininity displayed by men's and women's faces (Law-Smith et al., 2006; Penton-Voak & Chen, 2004; Roney, Hanson, Durante, & Maestripieri, 2006), voices (Abitbol, Abitbol, & Abitbol, 1999; Alonso & Rosenfield, 2002; Brukert, Lienard, Lacroix, Kreutzer, & Laboucher, 2006; Dabbs & Mallinger 1999; Feinberg, Jones DeBruine, et al., 2006), and bodies (Jasienska, Ziolkiewicz, Ellison, Lipson,

& Thune, 2004). It is likely that males displaying testosterone-dependent traits to a greater degree can afford to produce such traits despite the immunosuppressive effects (Folstad & Karter, 1992; Thornhill & Gangestad, 1999), antisocial behavior (Archer, Biring, & Wu, 1998; Book, Starzyk, & Quinsey, 2001; Gonzalez-Bono et al., 1999; O'Connor, Archer, & Wu, 2004; Rowe, Maughan, Worthman, Costello, & Angold, 2004; Studer, Aylwin, & Reddon, 2005; Tremblay et al., 1998), and tendency to take risks (Archer, 1999; Booth et al., 1999) that are thought to be associated with high testosterone levels. Thus, facial and vocal masculinity may be considered cues of costly testosterone levels. Furthermore, men in a natural-fertility population with low voice pitch have higher reproductive success than men with relatively high voice pitch do (Apicella et al., 2007).

There is substantial evidence that people who are attractive in one domain (e.g., face, voice, or body) are also attractive in other domains (Collins & Missing, 2003; Feinberg, Jones, DeBruine et al., 2005; Hughes, Dispenza, & Gallup, 2004; Saxton, Caryl, & Roberts, 2006; Thornhill & Grammer, 1999). Indeed both men's (Saxton et al., 2006) and women's (Collins & Missing, 2003; Feinberg,

\* Corresponding author.

E-mail address: feinberg@mcmaster.ca (D.R. Feinberg).

Jones, DeBruine, et al., 2005) facial attractiveness are positively correlated with the attractiveness of their voices. Both men and women with attractive voices and faces also tend to have attractive body configurations, such as low fluctuating asymmetry in women (Hughes, Harrison, & Gallup, 2002) and a masculine upper-body shape in men (Hughes et al., 2004).

The findings described above suggest that humans display multiple cues to the same underlying quality. However, a few key questions regarding the evolution of multiple quality cues in humans remain unresolved. While many studies show that women have consistent preferences for masculine men's voices across studies (Collins, 2000; Feinberg, Jones, Law-Smith, et al., 2006; Feinberg et al., 2004; Saxton et al., 2006), different studies have yielded preferences in women for masculine (DeBruine et al., 2006; Johnston, Hagel, Franklin, Fink, & Grammer, 2001), average (Cornwell et al., 2004; Swaddle & Reiersen, 2002), and feminine (Perrett et al., 1998; Rhodes, Hickford, & Jeffery, 2000) men's faces. It has been suggested that differences in the computer graphic methods that have been used in different studies of preferences for masculinity in men's faces may explain these variable findings for women's face preferences (Penton-Voak & Chen, 2004; Rhodes, 2006; Swaddle & Reiersen, 2002). However, studies using the same method to manipulate masculinity in male faces have found different general preferences: DeBruine et al. (2006) reported a general preference for masculinity among women, Cornwell et al. (2004) found that average faces were generally preferred by women to feminized or masculinized versions, and Perrett et al. (1998) reported that women demonstrated strong aversions to masculinity in men's faces. More important, DeBruine et al. (2006) compared the strength of women's preferences for masculine faces using different types of computer graphic methods, finding that women who preferred facial masculinity did so for each type of manipulation.

Given that both male vocal and facial masculinity are influenced by testosterone, and masculinity and femininity affect voice and face attractiveness, why are women's preferences for masculinity in the voice consistently above chance, but women's preferences for masculinity in the face vary considerably more from study to study? Studies have revealed a great deal of individual variation in female preferences for both facial and vocal masculinity. Sources of variation in women's preferences for male vocal masculinity that have been identified to date include relationship context (Puts, 2005), menstrual cycle phase (Feinberg, Jones, Law-Smith, et al., 2006; Puts, 2005), and height (Feinberg, Jones, Little, et al., 2005). Women prefer masculinity more when in the most fertile menstrual cycle phase (Feinberg, Jones, Law-Smith, et al., 2006; Puts, 2005) and when rating voices as potential short-term partners (Puts, 2005). Taller and heavier women also prefer men with voice characteristics rated as more masculine sounding (Feinberg, Jones, Little, et al., 2005). Similar sources of systematic variation in face

preferences have also been found (see Table 1 for an extensive list of studies).

This overlap in sources of individual differences (i.e., menstrual cycle and relationship context) between face and voice is consistent with the hypothesis that preferences for masculinity in men's faces and voices may be concordant, despite variation across studies in women's generalized preferences for male facial masculinity. Indeed, previous studies showing positive associations between the strength of women's preferences for masculinity in men's faces and both putative male pheromones (Cornwell et al., 2004) and the reported masculinity of partnered women's romantic partners (DeBruine et al., 2006) suggest correlated preferences for masculinity in different domains. Nevertheless, while Feinberg, Jones, Law-Smith, et al. (2006) found that women with the *lowest* average estrogen levels demonstrated the largest cyclic shifts in vocal masculinity preferences, Welling et al. (2007) found that women with the *highest* average estrogen levels demonstrated the largest cyclic shifts in facial masculinity preferences (see also Johnston et al., 2001, for further evidence that particularly feminine women

Table 1  
Potential sources of variation in women's preferences for male facial masculinity

Potential source of variation in facial masculinity preference	Direction of relationship with facial masculinity preferences	Study
Being in a committed relationship	–	Little et al. (2002)
Rating faces in a relationship context		
Short-term	+	Little et al. (2002)
Long-term	–	
Oral contraceptive use	Can mask masculinity preferences	Little et al. (2002)
Self-rated attractiveness	+	Little et al. (2001)
Women's attractiveness as rated by men	+	Penton-Voak et al. (2003)
Waist–hip ratio	–	Penton-Voak et al. (2003)
Menstrual-cycle phase	– at nonfertile phases	Frost (1994), Johnston et al. (2001), Penton-Voak and Perrett (2000), Penton-Voak et al. (1999) Jones, Little, et al. (2005)
State progesterone level	– as progesterone increases	
State testosterone level	+ as testosterone increases	Welling et al. (2007)
Second-to-fourth digit ratio	+	Scarborough and Johnston (2005)
Age	+	Little et al. (2001)
Paternal investment	–	Penton-Voak et al. (2004)

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