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## Vocal Attractiveness

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### Synonyms

[Voice attractiveness](#)

### Definition

The desirability of vocalizations to potential mates

### Introduction

Vocalizations across a wide array of taxa exhibit sexually dimorphic acoustic parameters that emerge at sexual maturity and covary with mating and reproductive success (Andersson 1994). Indeed, the conspicuity of vocal sexual dimorphisms in some species prompted Darwin to speculate on the influence of sexual selection (Darwin 1871), conjecturing that deep male vocalizations tend to evolve in the context of intrasexual rivalry as a means of exaggerating apparent size. This hypothesis has been supported by subsequent

research on many species, though human voices also influence attractiveness to potential mates and may thus reflect aspects of mate quality, including underlying genes (Puts et al. 2016). Indeed, human vocal attractiveness has been the focus of an expanding literature exploring both vocal cues of mate quality and the acoustic parameters most predictive of an attractive voice.

Vocal attractiveness predicts mating success in modern human populations. Men and women with attractive voices report more sex partners, begin having sex earlier in life, and are likelier both to have and be extra-pair mates (Hughes et al. 2004). Thus, it is plausible that vocal attractiveness influenced reproductive success ancestrally. Some voices may be preferred because they convey information on nongenetic benefits, such as current fertility and provisioning ability, as well as genetic benefits conferred to offspring. For example, in both sexes, vocal attractiveness is associated with low somatic fluctuating asymmetry (Hill et al. [in press](#)), a reliable index of developmental stability across species that in humans has been associated with measures of health and quality (Van Dongen and Gangestad 2011).

### Vocal Attractiveness in Men

Associations between vocal acoustic parameters and hormone levels also suggest that voices transmit information on heritable health. Simultaneously high levels of the “male” sex hormone

testosterone and low levels of the stress hormone cortisol have been linked to greater immune function and attractiveness in men (Rantala et al. 2012) and have predicted lower fundamental frequency (the acoustic correlate of pitch) in men's voices (Puts et al. 2016). This latter result is particularly relevant because fundamental frequency appears to play a major role in predicting men's vocal attractiveness to women. Correlational (e.g., Hodges-Simeon et al. 2010) and experimental findings (e.g., Feinberg et al. 2005) initially suggested that both low fundamental frequency and low formants (the acoustic correlate of timbre) increase men's vocal attractiveness to women. However, in recent research, fundamental frequency, but not formants, predicted men's vocal attractiveness to women when other acoustic parameters were statistically controlled (Puts et al. 2016).

In addition to potentially conveying information on health, the voice may transmit information on physical formidability. Upper-body strength and fighting prowess can be accurately assessed from the male voice (Sell et al. 2010), and masculine voices in men are related to greater body size and other measures of threat potential (Pisanski et al. 2014; Puts et al. 2012). Male voices thus provide information to potential mates not only about men's ability to provision and defend them but also about their propensity for sexual coercion. Indeed, Li et al. (2014) found that images of male-on-female aggression elicited feelings of disgust and anger that appeared to disrupt women's preference for masculinized voices. By contrast, men's voices do not appear to reflect fertility, as measured by semen quality (Simmons et al. 2011).

Women's preferences for low male fundamental frequency have been positively related to their own vocal femininity (Vukovic et al. 2010), as well as to both self-rated attractiveness (Vukovic et al. 2008) and assessments of facial attractiveness made by others (O'Connor et al. 2012). One interpretation of these results is that women who are higher in mate value can obtain and retain higher-quality mates, and women's preferences are thus calibrated according to their own mate value. However, women's self-rated health has

negatively predicted the strength of their preferences for vocal masculinity in short-term, uncommitted relationships, perhaps because unhealthy women benefit most from recruiting heritable immunocompetence for their offspring (Feinberg et al. 2012). Thus, while women of higher mate value may generally exhibit stronger preferences for high-quality males, this effect related to the costs of winning high-quality mates may be counteracted by a difference in the benefits of doing so. In addition, women have been found to display a heightened attraction to masculine male fundamental and formant frequencies during the late follicular (i.e., fertile) phase of the ovulatory cycle (Feinberg et al. 2006; Puts 2005), as well as when assessing men's voices for a short-term, purely sexual relationship (Puts 2005). This is consistent with a female strategy to procure high-quality genes at the time when those genes can be utilized and when direct benefits from men may not be forthcoming.

These associations suggest that a masculine voice may have increased ancestral men's reproductive success by helping its bearers win mating opportunities via female mate choice. Indeed, men with lower mean fundamental frequency (Puts 2005) and less variation in fundamental frequency (Hodges-Simeon et al. 2011) report more sex partners. In at least one natural fertility population, men with voices low in fundamental frequency realized greater reproductive success (Apicella et al. 2007). It is possible, however, that associations between a masculine voice and men's mating and reproductive success are more strongly mediated by success in male intrasexual competition, as Darwin hypothesized. In fact, Hill et al. (2013) found that male vocal masculinity predicted dominance, but not attractiveness, and only the former predicted self-reported number of sex partners.

## Vocal Attractiveness in Women

Women's voices, too, may convey to potential mates information on nongenetic benefits. For example, female fundamental frequency decreases with age (Nishio and Niimi 2008), and

women's voice attractiveness appears to peak during their most fertile years, the mid- to late twenties (Röder et al. 2013; Wheatley et al. 2014). Women's vocal attractiveness is also associated with a low waist-to-hip ratio (Hughes et al. 2004) and peaks during the late follicular phase of the ovulatory cycle (Pipitone and Gallup 2008), both of which suggest that women's voices are cues to fertility. Indeed, the ovulatory shift in female vocal attractiveness is mediated by changes in the production of the reproductive hormones estradiol and progesterone (Puts et al. 2013; fundamental frequency did not covary with these hormones, however). In addition, women's vocal attractiveness is positively related to their facial attractiveness (Collins and Missing 2003), although it is unclear the degree to which this correlation reflects overlapping vocal and facial cues to fertility, genetic quality, or other components of mate quality.

Men prefer higher (i.e., more feminine) fundamental (Apicella and Feinberg 2009; Feinberg et al. 2008) and especially formant (Collins and Missing 2003; Puts et al. 2011) frequencies in women's voices. Women perceive female vocal femininity in both of these acoustic parameters as being attractive to men and sounding flirtatious (Puts et al. 2011), perhaps as a means of identifying the sexual competitors who pose the greatest threat. Men display stronger preferences for vocal femininity when evaluating women for a short-term, purely sexual relationship as opposed to a long-term, committed relationship (Puts et al. 2011) and when women exhibit interest in them (Jones et al. 2008), suggesting a male strategy to pursue female reproductive capacity more when expected paternal investment is low and when men's mating effort is likelier to be successful.

## Considerations and Future Directions

It is important to note that because men and women's voice preferences have likely exerted important selective pressures on vocal traits in each sex, the vocal attractiveness literature has focused on heterosexual mate choice. Research

on voice preferences among nonheterosexual individuals, however, can inform our understanding of a host of biobehavioral phenomena and has indicated that gay men convey vocal cues to their sexual orientation (Valentová and Havlíček 2013), exhibit more female-typical fundamental frequency (Baeck et al. 2011), and find vocal masculinity in men attractive (Valentová et al. 2013). In other ways, however, gay men are more sex typical, and scant research has yet been undertaken on voice preferences among lesbians or those of either sex with a bisexual orientation.

An additional consideration in interpreting research on vocal attractiveness is the literature's appreciable methodological variation, which limits inferences of species typicality in vocal traits. For example, the duration of experimental stimuli (Ferdenzi et al. 2013), articulatory clarity (Kempe et al. 2013), accent (Babel et al. 2014), and breathiness (Xu et al. 2013) have all been shown to influence attributions of attractiveness, and the literature has included variation in each while not always emphasizing the influence such variation may have on findings. Future work should address this by including recordings taken from a greater breadth of populations so as to capture more variation in language, as well as speech nonconformity and its covariates (e.g., social status). Additionally, research should illuminate the connections between variation in vocalization and variation in anatomical substrates, for example, as they relate to developmental stability.

## Cross-References

- ▶ [Animal Signaling](#)
- ▶ [Facial Attractiveness](#)
- ▶ [Mate Value](#)
- ▶ [Nonverbal Indicators of Dominance](#)
- ▶ [Ovulatory Shifts in Psychology](#)
- ▶ [Sex Differences](#)
- ▶ [Sexual Selection](#)
- ▶ [Vocal Indicators of Dominance](#)

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