

# Volitional exaggeration of body size through fundamental and formant frequency modulation in humans

Pisanski K.

Mora E.C.

Pisanski A.

Reby D.

Sorokowski P.

Frackowiak T.

Feinberg D.R.

Several mammalian species scale their voice fundamental frequency (F0) and formant frequencies in competitive and mating contexts, reducing vocal tract and laryngeal allometry thereby exaggerating apparent body size. Although humans' rare capacity to volitionally modulate these same frequencies is thought to subserve articulated speech, the potential function of voice frequency modulation in human nonverbal communication remains largely unexplored. Here, the voices of 167 men and women from Canada, Cuba, and Poland were recorded in a baseline condition and while volitionally imitating a physically small and large body size. Modulation of F0, formant spacing (?F), and apparent vocal tract length (VTL) were measured using Praat. Our results indicate that men and women spontaneously and systemically increased VTL and decreased F0 to imitate a large body size, and reduced VTL and increased F0 to imitate small size. These voice modulations did not differ substantially across cultures, indicating potentially universal sound-size correspondences or anatomical and biomechanical constraints on voice modulation. In each culture, men generally modulated their voices (particularly formants) more than did women. This latter finding could help to explain sexual dimorphism in F0 and formants that is currently unaccounted for by sexual dimorphism in human vocal anatomy and body size. © The Author(s) 2016.