

## Publication

## Are there vocal cues to human developmental stability? Relationships between facial fluctuating asymmetry and voice attractiveness

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Fluctuating asymmetry (FA), deviation from perfect bilateral symmetry, is thought to reflect an organism's relative inability to maintain stable morphological development in the face of environmental and genetic stressors. Previous research has documented negative relationships between FA and attractiveness judgments in humans, but scant research has explored relationships between the human voice and this putative marker of genetic quality in either sex. Only one study (and in women only) has explored relationships between vocal attractiveness and asymmetry of the face, a feature-rich trait space central in prior work on human genetic quality and mate choice. We therefore examined this relationship in three studies comprising 231 men and 240 women from two Western samples as well as Hadza hunter-gatherers of Tanzania. Voice recordings were collected and rated for attractiveness, and FA was computed from two-dimensional facial images as well as, for a subset of men, three-dimensional facial scans. Through meta-analysis of our results and those of prior studies, we found a negative association between FA and vocal attractiveness that was highly robust and statistically significant whether we included effect sizes from previously published work, or only those from the present research, and regardless of the inclusion of any individual sample or method of assessing FA (e.g., facial or limb FA). Weighted mean correlations between FA and vocal attractiveness across studies were  $-.23$  for men and  $-.29$  for women. This research thus offers strong support for the hypothesis that voices provide cues to genetic quality in humans.

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