

Vocal excellence is not a matter of subjective intuition, but a precise mechanical configuration. This document compiles reference studies quantifying the impact of physiology and acoustics on perceptions of authority, attractiveness, and competence.

1. Harmonic Richness and Projection

The Speaker's Formant

Source: The Science of the Singing Voice — Pr. Johan Sundberg

Quantifies the acoustic advantage of a voice rich in harmonics. Boosting high frequencies allows the voice to "pierce" through background noise without forcing, protecting the vocal apparatus from fatigue.

Metric: Spectral boost between 2.5 kHz and 3.5 kHz.

[Access Study](#) →

Vocal Quality and Universal Preferences

Source: Male Vocal Quality & Preferences (2019) — Suire, Raymond, Barkat-Defradas

Establishes that harmonic clarity (the absence of breathiness or glottal "noise") is the primary driver of perceived trustworthiness and aesthetic appeal.

Metric: High HNR (Harmonics-to-Noise Ratio).

[Access Study](#) →

2. Attractiveness and Morphology

Female Vocal Attractiveness: Pitch and Formants

Source: Vocal Attractiveness in Women (2013) — Smith, Puts, Hodges-Simeon

Identifies that the attractiveness of female voices relies on a high fundamental frequency combined with wider formant dispersion, signaling biological youth and optimal glottal tone.

Metric: $F_0 > 220$ Hz and expanded D_f .

[Access Study](#) →

Dominance and Formant Dispersion

Source: Vocal Parameters Predict Perceptions (2010) — Hodges-Simeon et al.

Demonstrates that vocal tract geometry (a lowered larynx) is the number one predictor of perceived social dominance, whereas acoustic stability dictates attractiveness.

Metric: Narrower Df and Jitter < 1%.

[Access Study](#) →

3. Breath Management and Stability

Deep Breathing and Phonatory Consistency

Source: Consistency of phonatory features (2001) — Thomasson, Sundberg

Proves that active abdominal support stabilizes subglottic pressure, eliminating the pitch micro-fluctuations that betray poor breath management.

Metric: Constant pressure and radical reduction of Jitter.

[Access Study](#) →

4. Dynamics and Charismatic Prosody

Frequency Standard Deviation in Charismatic Speech

Source: Charismatic Speech Study (2020) — Signorello et al.

Quantifies the end of monotony: charismatic voices use an expanded frequency range to maintain audience engagement and enhance information retention.

Metric: F0-SD > 25% of the mean.

[Access Study](#) →

5. Stress and Register Instability

Prosody and Stress Biosignals

Source: Frontiers in Network Physiology — Fooks, Niebuhr

Peripheral laryngeal tension (anxiety) triggers sudden register shifts and melodic breaks. These signals are instantly perceived by listeners as a loss of control.

Metric: Inter-register instability and micro-breaks.

[Access Study](#) →

6. Assertiveness and Terminal Contours

The Impact of Falling Inflections

Source: Perceptions of Dominance — Puts & Hodges-Simeon

The "terminal fall" (a drop in pitch at the end of a sentence) signals total mastery of airflow and larynx position, establishing natural authority and leadership stature.

Metric: Marked final drop in fundamental frequency (F0).

[Access Study](#) →

7. Vocal Fry: A Professional Hurdle

Impact of Vocal Fry on Employability

Source: Vocal Fry & Labor Market Success (2014) — Anderson et al.

Demonstrates that using the pulse register (fry) degrades perceptions of competence and authority, drastically reducing professional success prospects.

Metric: Phonation < 70 Hz (Mechanism 0).

[Access Study](#) →