The Acoustic Landscape of Voice Quality

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What is Voice Quality?

- Describes how the vocal folds vibrate.
- Used for both paralinguistic (Laver 1968, Podesva 2016) and phonological contrasts (Esposito & Khan 2020).
- Long been established that phonation contrasts have correlates in the acoustic signal (e.g., (Fischer-Jørgensen 1968)).

Modeling Voice Quality

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- Gordon & Ladefoged (2001) list several types of measures types that can be used:
  - periodicity
  - energy
  - spectral tilt
  - pitch
  - duration

- Linguists have used these measure, or combinations of them, to model voice quality in a variety of languages (e.g., **blankenshipTimingNonmodalPhonation2002**, **brunelleTonePhonationSoutheast2016**, **espositoAcousticElectroglottographicStudy2012**)

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Summary

- The first main message of your talk in one or two lines.
- The second main message of your talk in one or two lines.
- Perhaps a third message, but not more than that.

- Outlook
  - Something you haven't solved.
  - Something else you haven't solved.

References I

Esposito, Christina M. & Sameer ud Dowla Khan. 2020. The cross-linguistic patterns of phonation types. *Language and Linguistics Compass* 14(12). https://doi.org/10.1111/lnc3.12392.

Fischer-Jørgensen, Eli. 1968. Phonetic Analysis of Breathy (Murmured) Vowels in Gujarati. *Annual Report of the Institute of Phonetics University of Copenhagen* 2. 35–85. https://doi.org/10.7146/aripuc.v2i.130674.

Gordon, Matthew & Peter Ladefoged. 2001. Phonation types: a cross-linguistic overview. *Journal of Phonetics* 29(4). 383–406. https://doi.org/10.1006/jpho.2001.0147.

Laver, John D. M. 1968. Voice Quality and Indexical Information. *British Journal of Disorders of Communication* 3(1). 43–54. https://doi.org/10.3109/13682826809011440.

Podesva, Robert J. 2016. Stance as a Window into the Language-Race Connection: Evidence from African American and White Speakers in Washington, DC. In H. Samy Alim, John R. Rickford & Arnetha F. Ball (eds.), *Raciolinguistics: How Language Shapes Our Ideas About Race*, 203–219. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780190625696.003.0012.

Variable Importance