Finding our voice in longitudinal sociophonetic analysis

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We will consider issues that are unique to longitudinal acoustic analysis across childhood, adolescence, and early adulthood when physical changes to vocal tract morphology strongly affect the acoustic signal across time points. Although applicable to all life-stages, the consideration of changing vocal tract morphology is particularly important during these time periods to discriminate between physiological changes and changes attributable to social variation. To address this issue we first describe typical paths of development for vowel spaces, measuring changes to the total size of the vowel space as well as a selection of individual vowels. We then consider the effectiveness of normalization techniques in reducing variability attributable to developmental patterns in the data. Finally, we consider how best practices for longitudinal statistical analyses of acoustic data may be applied to non-acoustic analyses. Particularly, we stress the importance of recognizing that longitudinal measures are nested within speakers and time points thus requiring random components capable of modelling these relationships in statistical models.