1. The Digital Archive of Southern Speech

Corpus
- Audio corpus of semi-spontaneous linguistic atlas interviews (Kretzschmar et al. 2012)
- 64 American speakers native to 8 Gulf States
- 34 men, 30 women, born 1886 – 1965
- Mixture of ethnicities, social classes, education levels, ages
- DASS is undergoing transcription, forced alignment, and acoustic analysis (see post 5aSC9)

Research questions
- Vowels and vowel shifting in DASS
- How do geography, age, gender, socioeconomic status, etc. impact the vowel space?
- Do European Americans show the Southern Vowel Shift (Labov et al. 2006)?
- Do African Americans show the African American Vowel Shift (Thomas 2007)?

2. Mapping the vowel space

Data: Mahalanobis-filtred, single-point F1, F2 measurements used for vowel plots
- Plots show means and 1-SD ellipses for stressed vowels (pre-sonorant nuclei) excluded
- Sample of individuals from 3 states show vowel spaces across sexes & ethnicities
- EA speakers (cf. SVS) may show more front-vowel overlap, back-vowel fronting
- AA speakers (cf. AAVS) may show front-lax vowel raising, /a/-fronting

3. Pillai scores quantify vowel overlap

- Single-point F1, F2 values of vowel pairs input to MANOVA, providing a Pillai score
- High scores indicate distinctiveness, while low scores suggest overlap or vowel merger (Hall-Lew 2010, Hay et al. 2006). Scores range from -1 (vowel height reversal) to 1.
- Trends are consistent with chronology and strength of Southern Shifting features
- Front vowels: 2-sided t-test shows /ɛ/ are more distinct than /ɛ/ (p < 0.001)
- Back vowels: /ɛ/ undergoes greater fronting (towards /ɛ/) than /ɛ/ (p < 0.001)
- AA speakers have higher /ɛ/ vs EA speakers (p < 0.05)
- Men have higher Pillai scores for all pairs (p < 0.05) except /ɛ/ (p > 0.05)

4. Front vowel trajectories

- Vowel formant dynamics reveal dialectal (Fox & Jaczewsic 2009), phonological differences
- Time-course F1, F2 plotted for 3 tense vowels /ɛ/, /ɛ/, and 3 lax vowels /ɛ/, /ɛ/
- Stressed vowels only; trajectories represent speaker means
- Tense vowels plotted are all pre-voiceless, because of conditioned /ɛ/ monophthongization
- Tense vowels move toward a high front vowel; lax vowels centralize
- Future work will use sociolinguistic variables to model trajectory shape

5. Realization of /ɛ/

- Monophthongization of /ɛ/ to /ɛ/ is common in Southern speech. What occurs in DASS?
- Formant angle of F2 calculated between 20%, 80% time points (Fox & Jaczewsic 2009)
- Results confirm phonological patterns of glide weakening (cf. Labov et al. 2006): lowest formant angles (ɛ) before sonorants, highest (ɛɛ) before voiceless obstruents
- pairwise t-test with Bonferroni correction confirms that angles differ significantly across plots (p < 0.01) except for pre-voiced vs. final contexts (p > 0.05)
- Monophthongization is (a) variably implemented, (b) variable by speaker and region
- Speakers from Appalachia have most widespread, unconditioned monophthongization

6. Conclusions

- Single-point data reveal both high variability and vowel shifting in naturalistic speech
- /ɛ/ has higher nucleus than /ɛ/ for some speakers, consistent with SVS and AAVS
- Time-course data reveal trajectory direction differences between tense & lax vowels
- Formant angles confirm conditioned weakening of /ɛ/ /ɛ/ [ɛ], with speaker variation
- As transcription and alignment continue, the data set will grow to 64 speakers
- Use our QR code to interact with this growing dataset in your web browser

References & Acknowledgments

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