Comparison of vowel acoustics in children from the Northern, Midland, and Southern regions of the United States

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Background

- Regional dialects
  - Northern Cities Vowel Shift
  - /u/ fronting
  - /aɪ/ monophthongization
  - Extensive study of these features in adults (Labov et al., 2006)

- Development in children
  - Features of local dialect emerge between 5-11 years of age (Labov, 1964)
Research Questions

• Do the acoustic properties of the children’s speech show features of their respective regional dialects?
• Do these features become stronger with age?
Methods

- 61 4-11 year old boys and girls from the North (20), Midland (29), and South (12)
- Said color names into microphone
- /æ/ pronunciation, /u/ fronting, /aɪ/ monophthongization
- Formant measurements
  - F1 = tongue height
  - F2 = tongue frontness
Methods
Results

Mean /æ/-/ɛ/ distance by region

main effect of region:
[F(2, 38) = 4.09, p = 0.025]
Results

Mean /i/-/u/ F2 distance by region

main effect of region:
[F(2, 40) = 2.20, n.s.]
Results

Mean /ai/ trajectory by age and region

main effect of region:
[F(2, 40) = 6.31, p = 0.004]

main effect of age:
[F(3, 40) = 3.19, p = 0.034]

region X age:
[F(6, 40) = 1.07, n.s.]
Conclusions

• Do the acoustic properties of the children’s speech show features of their respective regional dialects?
  – Evidence of Northern Cities Vowel Shift
  – No effect of region on /u/ fronting
  – Further research needed for /ai/ monophthongization

• Do these features become stronger with age?
  – No clear patterns for age
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