The development of perceptual dialect categories from childhood through adulthood

Qingyang Yan[a], Cynthia G. Clopper[a], Laura Wagner[b]

[a] *Department of Linguistics, Ohio State University* [b] *Department of Psychology, Ohio State University*

Introduction

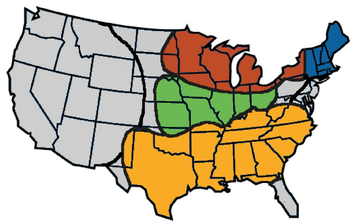
- Adult listeners are able to perceive subtle dialect differences and accurately categorize speakers according to their dialects (Clopper & Pisoni, 2004, 2007).
- Children are sensitive to some large acoustic-phonetic differences (e.g., international dialects, Wagner, Clopper, & Pate, to appear), but they are less sensitive to more nuanced differences among regional dialects and not as good as adults at identifying regional dialects (Williams, Garrett, & Coupland, 1999).
- The current study investigates the developmental trajectory of perceptual dialect categories from childhood (8 years old) through adulthood using an auditory free classification task.
- **What do listeners of different ages know about regional dialect variation in their native language?**
- **How do dialect perception skills develop as an individual's linguistic experience expands?**

Methods

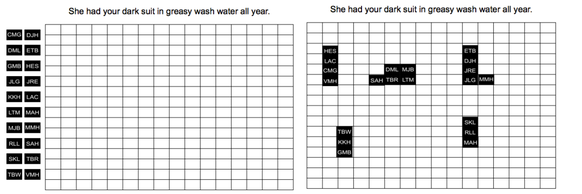
- Data collection: Buckeye Language Network's Language Sciences Research lab at the Center of Science and Industry (COSI), Columbus, OH, USA.
- Listeners: Visitors to COSI; monolingual speakers of American English.

Listener Age	Female Talker	Male Talker	Total
Elementary School (8-11, mean=9.4 years)	51	49	100
Middle & High School (12-17, mean=14.0 years)	50	50	100
Adult (18-86, mean=38.1 years)	110	90	200

- Talkers: 20 male and 20 female talkers from TIMIT corpus (Fisher, Doddington, & Goudie-Marshall, 1986). 5 talkers from each of 4 dialect regions (New England, North, Midland, and South) in the US.



- Stimulus Sentence: "She had your dark suit in greasy wash water all year".
- Procedure: Participants listened to the stimulus sentence and were asked to put all of the talkers from the same part of the country in a group together.



Stimulus presentation before (left) and after (right) the free classification task

Results

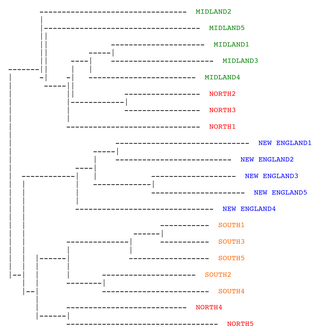
- The main effect of listener age on **number of talker groups** ($F(2,397)=3.3$, $p < 0.05$)
  - Middle & high school and adults made fewer talker groups than elementary school ($p < 0.05$ for both age comparisons)
- The main effect of listener age on **accuracy** (% correct pairings-% errors) ($F(2,397)=25.4$, $p < 0.001$)
  - Middle & high school and adults were more accurate than elementary school ($p < 0.001$ for both age comparisons)
- The main effect of talker gender and the interaction were not significant for either measure.

Clustering solution for each age group

(additive similarity tree)

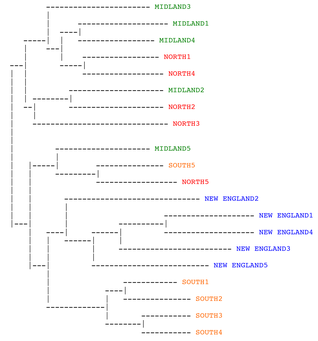
Female talkers

Listeners: Elementary School (r^2=0.82)

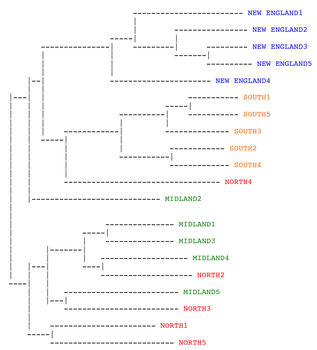


Male talkers

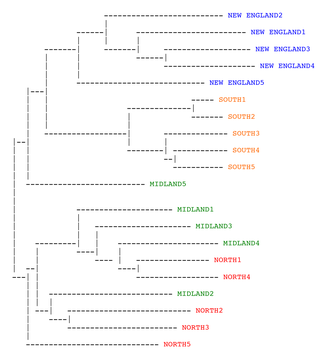
Listeners: Elementary School (r^2=0.72)



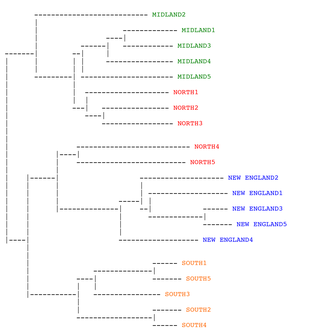
Listeners: Middle & High School (r^2=0.88)



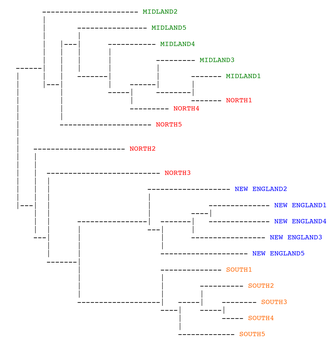
Listeners: Middle & High School (r^2=0.87)



Listeners: Adults (r^2=0.94)



Listeners: Adults (r^2=0.97)



Conclusions

- Elementary school children were less effective in classifying talkers than the older children and adults in the free classification task:
  - They made more groups of talkers, suggesting that they were attentive to differences between dialects.
  - They were significantly less accurate in categorizing the unfamiliar talkers by regional dialect.
  - The r-squares of the similarity trees increase over age for both female and male talkers, indicating an increase in model fit with age.
- The perceptual dialect similarity spaces for listeners of different ages were qualitatively similar for both female and male talkers.
  - Four main perceptual clusters were found: New England, South, "major" North and Midland, and "minor" North and Midland.
- School-age children's skills with regional dialect perception are still developing, but are close to adults'.

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