Eliciting comparable, natural speech from children and adults

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Background

- How does regional dialect perception and production develop throughout the lifespan?
- Perception and production of regional dialect are frequently studied in young children and in adults
  - However, very different methods are used for populations of different ages
  - Additionally, older children are not as well represented in such studies

Ohio Regional Dialect Developmental Repository

- Forthcoming database of United States regional dialect perception and production, collected from monolingual English speakers in Ohio
  - Same tasks for 4-year-olds through 94-year-olds
- Production experiment included to examine regional dialect variability across participants
  - Several major regional dialects are represented in/near Ohio (North, Midland, South)

Challenge 1:
Large age range (4 years – 94 years)

- To examine developmental patterns, our 10 age groups include nearly the whole lifespan

Children	*Adults*
4-5 years old	18-34 years old
6-7 years old	35-49 years old
8-9 years old	50+ years old
10-11 years old	
12-13 years old	
14-15 years old	
16-17 years old	

Challenge 1:
Large age range (4 years – 94 years)

- Our youngest participants cannot read, and others may not be fluent readers
- Our participants have a wide variety of comfort levels with computers
- We are concerned with each participant's own pronunciations, so an auditory prompt is undesirable due to the possibility of accommodation

Challenge 2:
Research setting (science museum)

- Experiment conducted in the Language Sciences Research Lab, which is located inside a science museum in Columbus, Ohio

Challenge 2:
Research setting (science museum)

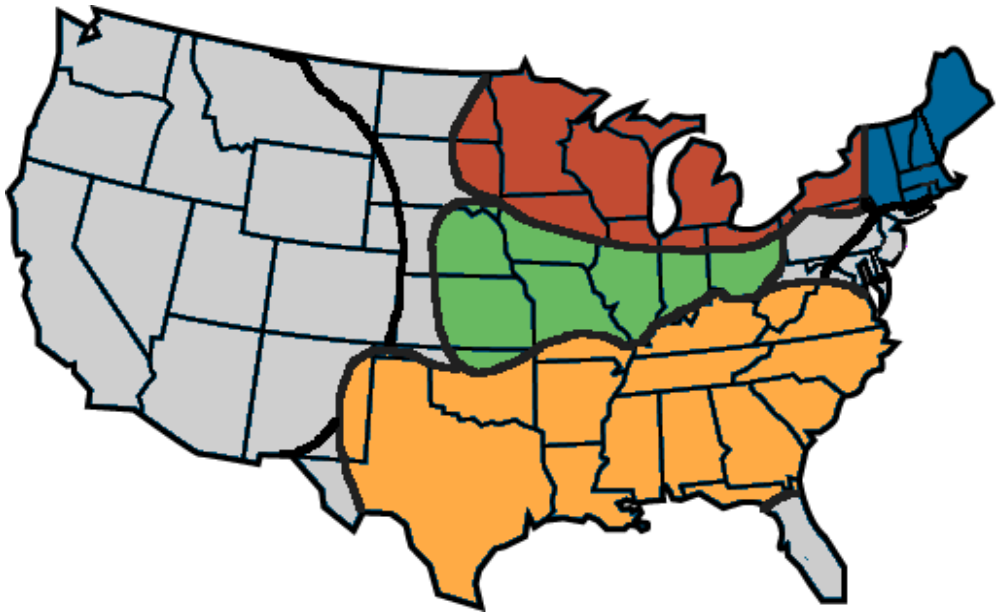
- Great environment to get participants of many ages and demographic backgrounds
- However, experiment competes with museum exhibits and shows for visitors' time and attention, so tasks must be brief and engaging

Production experiment: Tasks

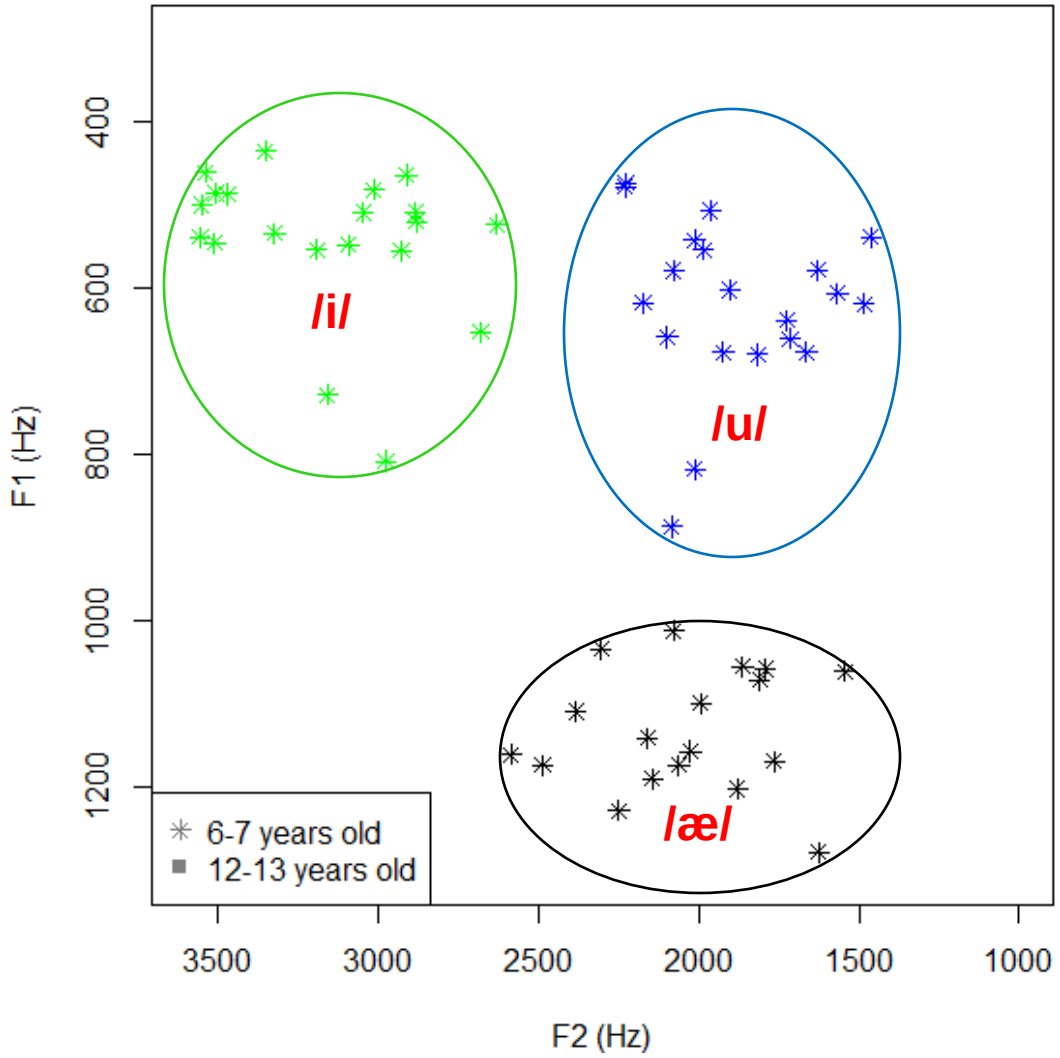
- Color naming
  - Highly controlled content
- Picture-prompted storytelling
  - More open-ended content

Task 1:
Color naming

- Each participant saw a colored rectangle on the computer screen and was recorded saying the name of it
- 10 colors were presented individually, in random order
  - black, red, yellow, orange
  - green, brown
  - blue, white, pink
  - purple

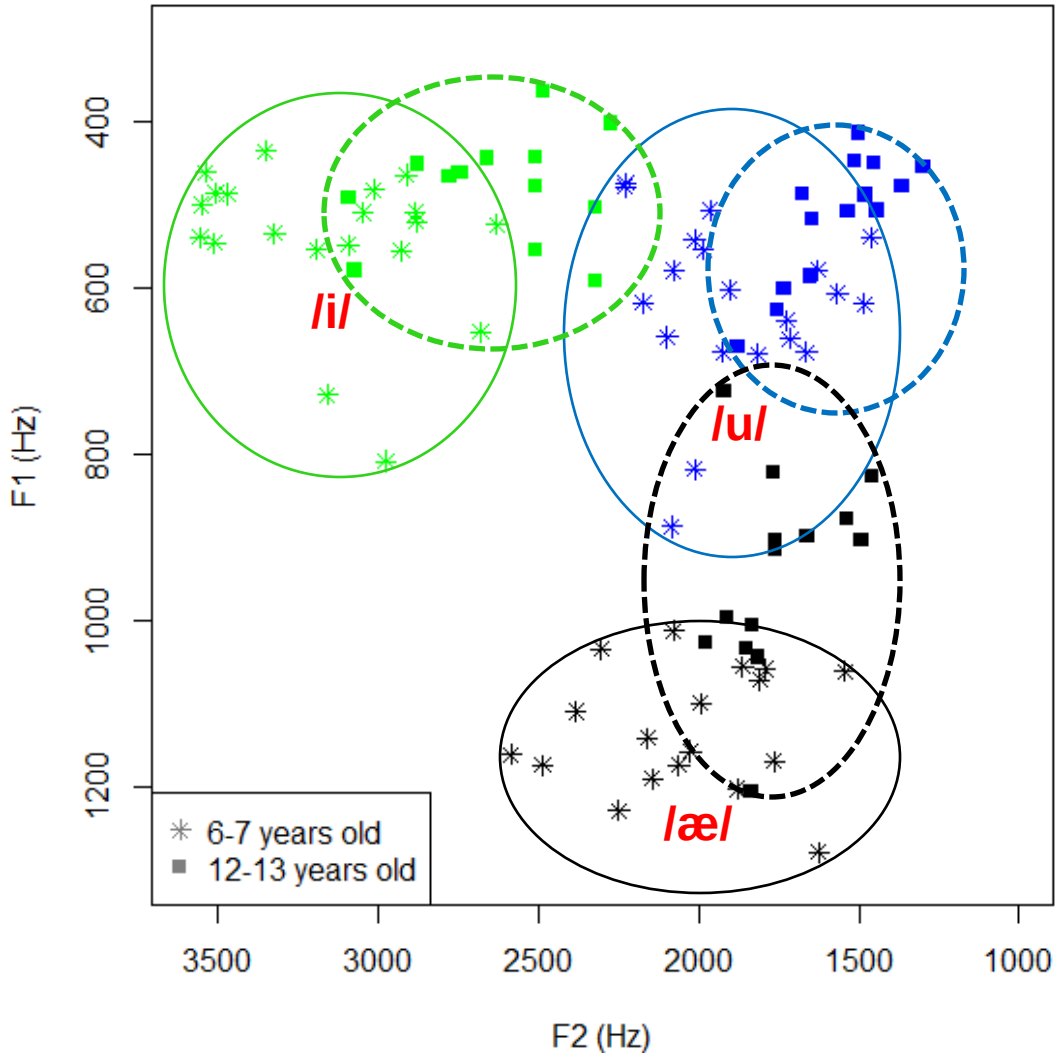


Color naming:
Sample formant measurements



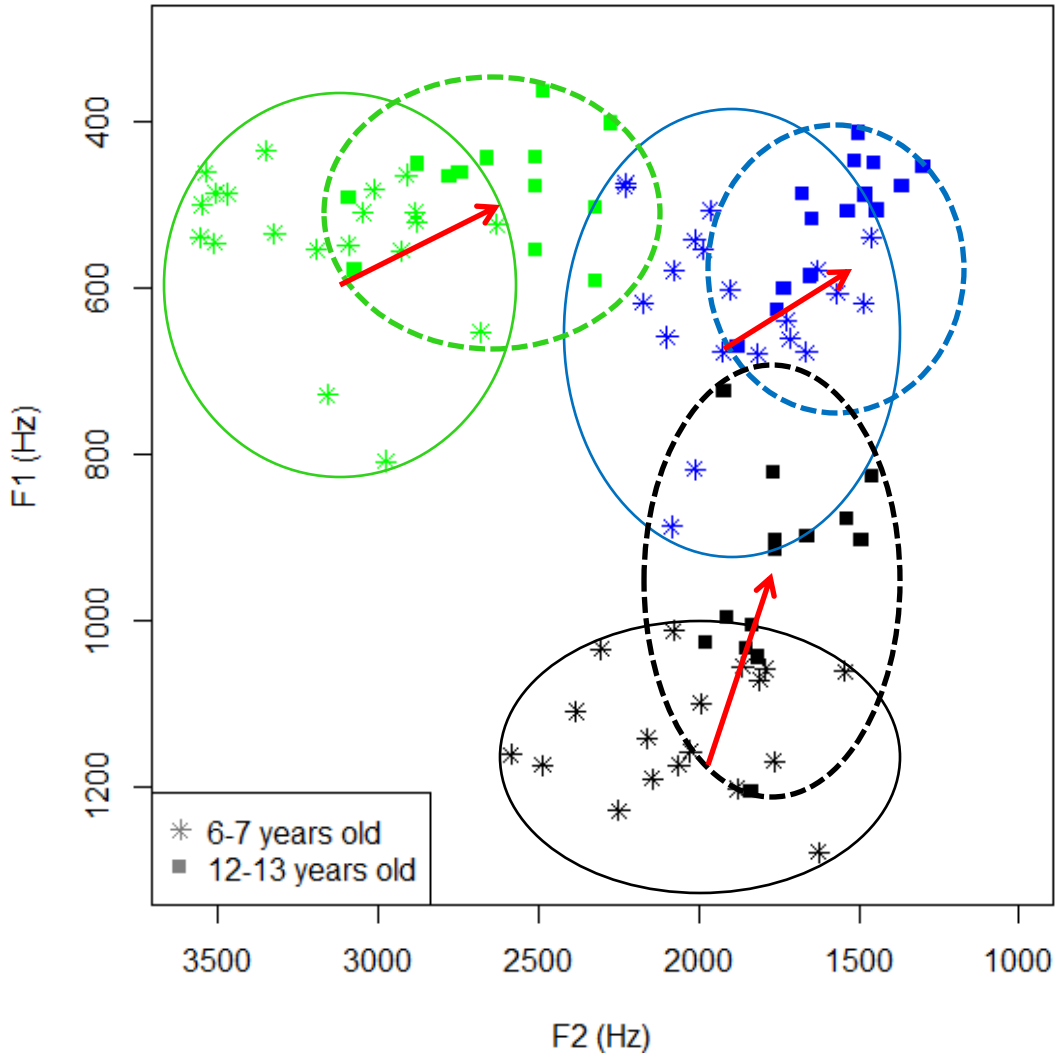
Vowels are where we expect them in F1/F2 space (with /u/ fronting)

Color naming:
Sample formant measurements



Vowels are less disperse for older children

Color naming:
Sample formant measurements



Formant values are lower for older children

Task 1:
Color naming

- Yielded a small number of isolated words from each participant

Task 2:
Picture-prompted storytelling

- Each participant saw illustrations of well-known children's stories and was recorded narrating the stories
- Two stories total, with order counterbalanced across participants
  - *Little Red Riding Hood and the Big Bad Wolf*
  - *Goldilocks and the Three Bears*

Task 2:
Picture-prompted storytelling

- The participant silently looked through the pictures prior to speaking, both to remember the story and to determine how much of the story to tell for each picture
- The task was self-paced, so participants could choose how much to say

Tell us the story of *Little Red Riding Hood and the Big Bad Wolf*!

Tell us the story of *Little Red Riding Hood and the Big Bad Wolf*!

Tell us the story of *Little Red Riding Hood and the Big Bad Wolf*!

Task 2:
Picture-prompted storytelling

- To facilitate comparison across participants, we hoped that participants would produce many of the same words
- The use of well-known stories allowed participants to draw upon canonical dialogue and character names, in addition to objects and actions evident in the pictures themselves

Task 2:
Picture-prompted storytelling

- Stories were chosen for likely target sequences
  - *Little Red Riding Hood and the Big Bad Wolf*
    - "The better to eat you with, my dear", …
    - Little Red Riding Hood, Grandmother, Big Bad Wolf
    - basket, nightgown, ears, eyes, teeth, …
  - *Goldilocks and the Three Bears*
    - "Too hard", "Just right", …
    - Goldilocks, Mama Bear, Baby Bear, …
    - chair, bed, sleeping, …

Picture-prompted storytelling: Canonical dialogue

age 8

age 58

Picture-prompted storytelling: Canonical dialogue

age 8

age 58

age 11

age 66

Picture-prompted storytelling: Canonical dialogue

…too hot.

…too cold.

…just right.

age 8

age 66

Picture-prompted storytelling: Some characters are hard to name

age 8

age 11

age 20

Picture-prompted storytelling: Illustrations may be hard to describe

age 8

age 11

age 20

Task 2:
Picture-prompted storytelling

- Each story yielded 1-2 minutes of speech from each participant
  - Young children tended toward the shorter end of this range
- Open-ended nature of task allowed for variation in many dimensions, not just acoustic
  - Lexical, syntactic, and narrative variation could be studied in these recordings

Production experiment

- We recently completed data collection from 240 participants, and are just beginning analyses
- The methods were successful in that participants of all ages happily and attentively completed both tasks

Conclusion

- Speech prompted visually without reading is appropriate for participants of many ages
- Use of well-known stories increases the likelihood of comparable material across participants, while addressing the challenges posed by the participants' age range and the research setting

Thank you!

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