

# Social differentiation of *bag*-raising in Seattle Caucasians

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# Overview

- Prevelar raising/merger in Seattle Caucasians
  - Nearly all speakers merge /ɛg, eg/ spectrally (F1xF2)
    - Words like *egg, leg, beg* rhyme with *vague, plague, bagel*
    - /ɛg/ raises, /eg/ lowers to merge between non-prevelar /ɛ, e/
    - Both rising diphthongs, but /ɛg/ is shorter in duration
  - Most speakers raise & glide /æɪg/, but to different heights
    - Social differentiation: Age x gender
- Part of larger study (Freeman 2013); similar to findings of other parts of the Pacific Northwest English (PNWE) Project (e.g., Riebold 2014; Squizzero 2009; Wassink et al. 2009; Wassink & Riebold 2013)

# Data Set

- 20 Seattle Caucasians
  - 2 genders x 2 age groups
- Interview, conversation, formal tasks

Generation	Male	Female
Gen 2 (age 37-62)	5	5
Gen 3 (age 18-36)	5	5

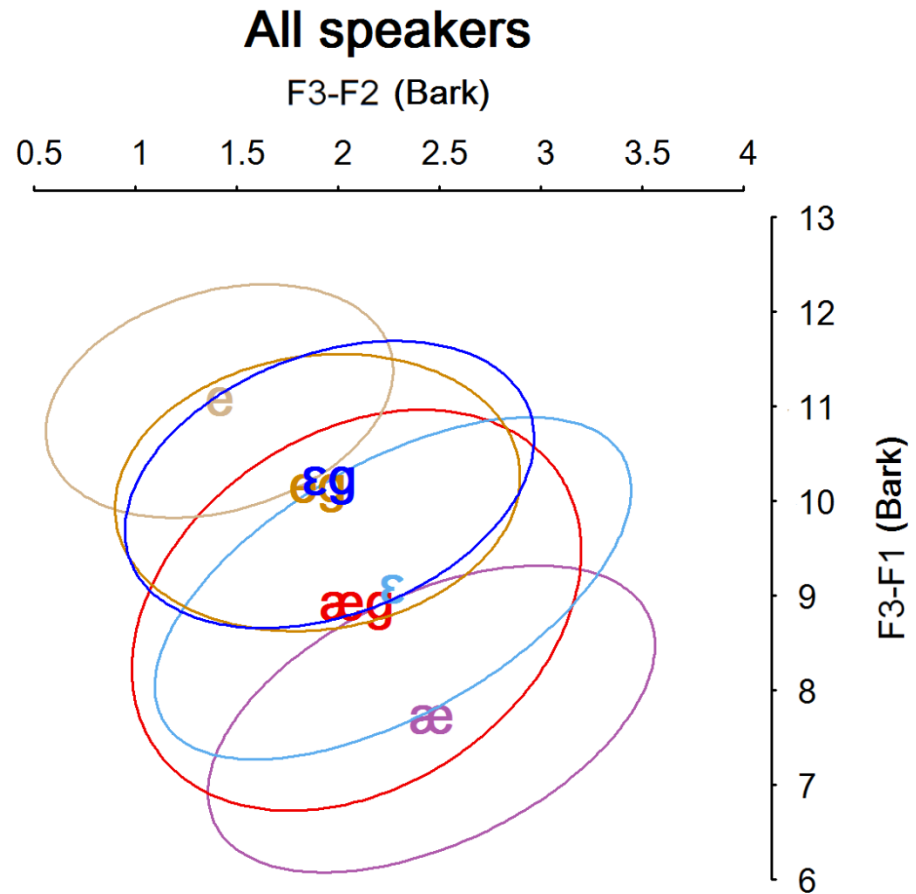
- Target words selected for analysis
  - From reading passage & word list
  - /æ, ε, e/ before /g/
  - /æ, ε, e/ in neutral consonant contexts
    - Exceptions: post-liquids to match *plague* (*leg, lag, drag...*)

# Measurement

- Vowel measures (extracted via Praat script):
  - Duration (ms); F1, F2, F3 at onset, midpoint, offset
    - 20%, 50%, 80% of vowel duration
- F1, F2 normalized with Bark Difference Metric in NORM (Thomas & Kendall 2007)
  - Z-score normalized F3-F2 (front-back) and F3-F1 (height)
- VOIS3D: overlap of vowel distributions (Wassink 2006)
  - Percentage of smaller distribution contained within larger
    - F1 x F2 ellipses of  $2\sigma$  around means
    - 0-20% separate, 21-74% partial overlap, 75%+ merged
- SSANOVA: Models trajectory
  - Best-fit curve connects mean F1 or F2 between time points (onset, midpoint, offset)

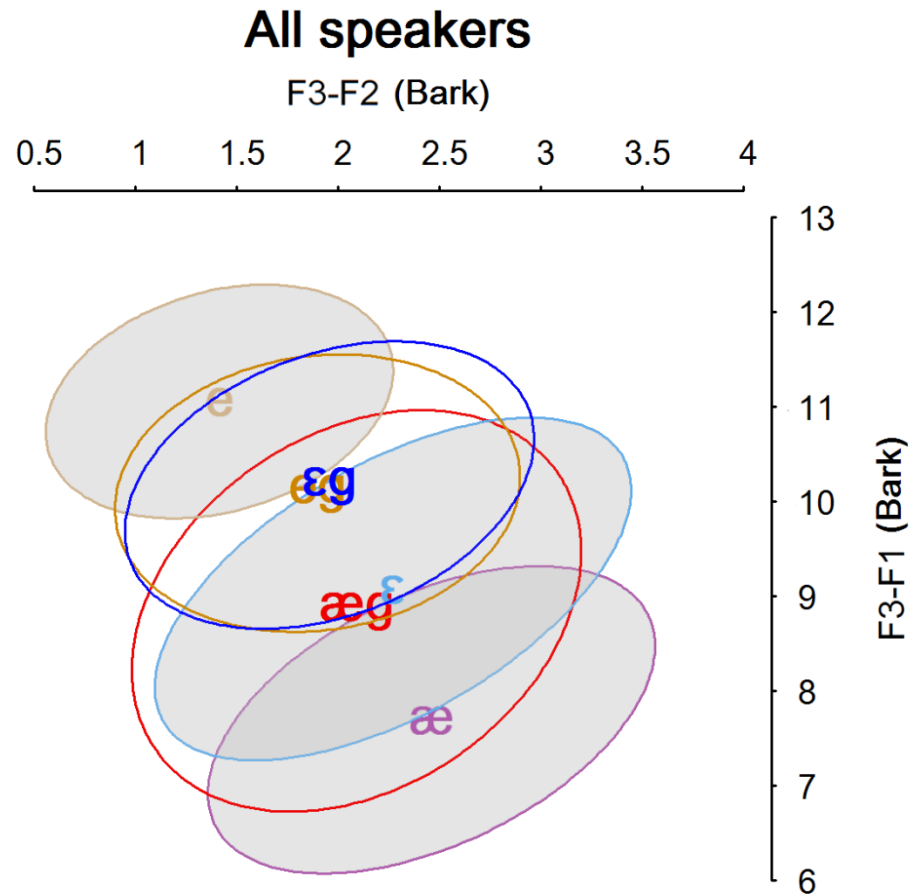
# Results: Midpoint

- 2556 tokens
- Bark-normalized
- Ellipses of  $2\sigma$  around means



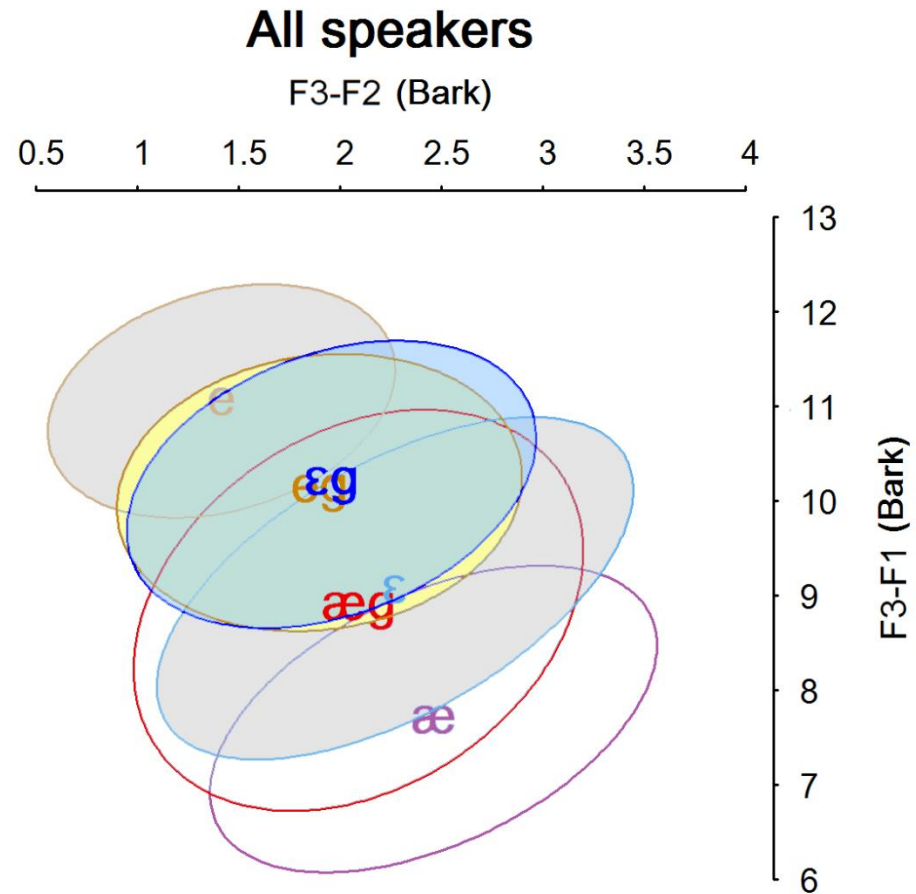
# Midpoint: Plain vowels

- /æ/ and /ɛ/ overlap
  - 39% overlap



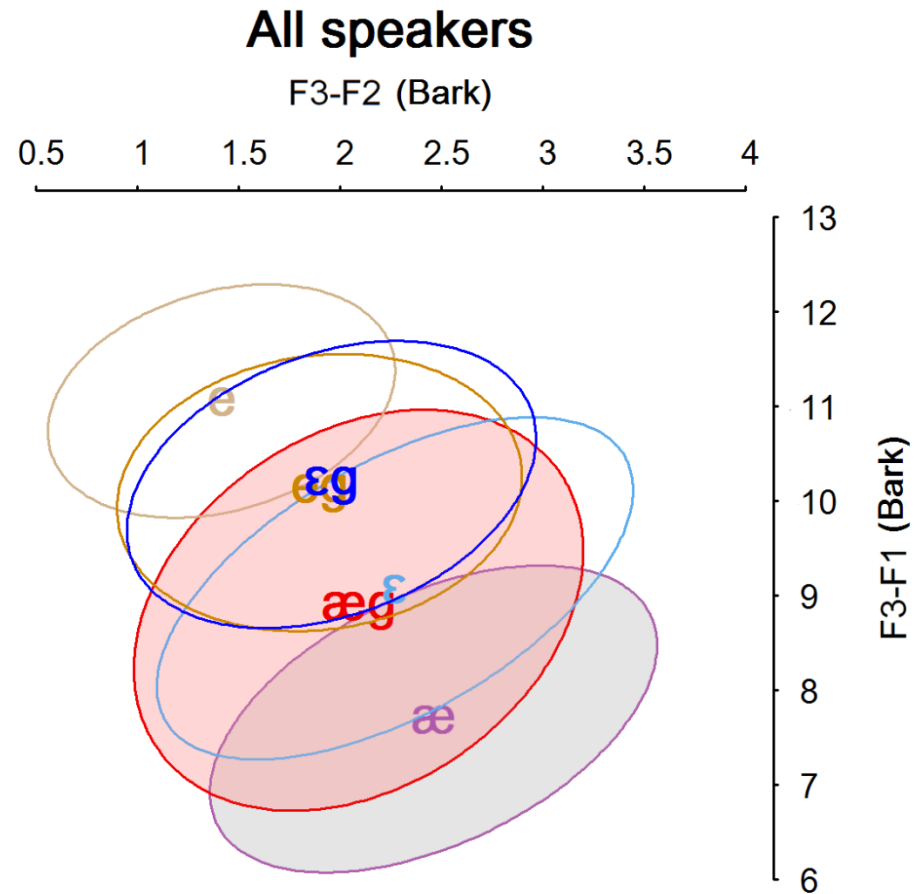
# Midpoint: BEG-BAGEL

- /eg/ and /ɛg/ merged between /e/ and /ɛ/
- 91% overlap
- Rising diphthongs
- /ɛg/ shorter



# Midpoint: BAG

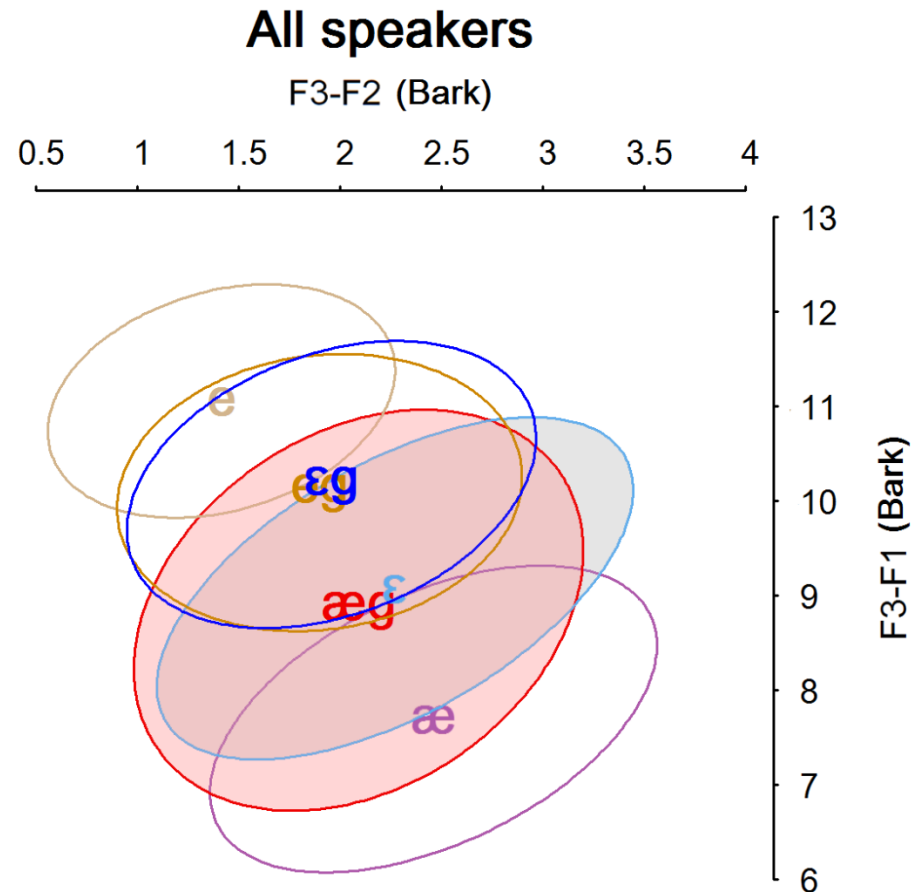
- /æɪg/ raised from /æ/
- 58% overlap





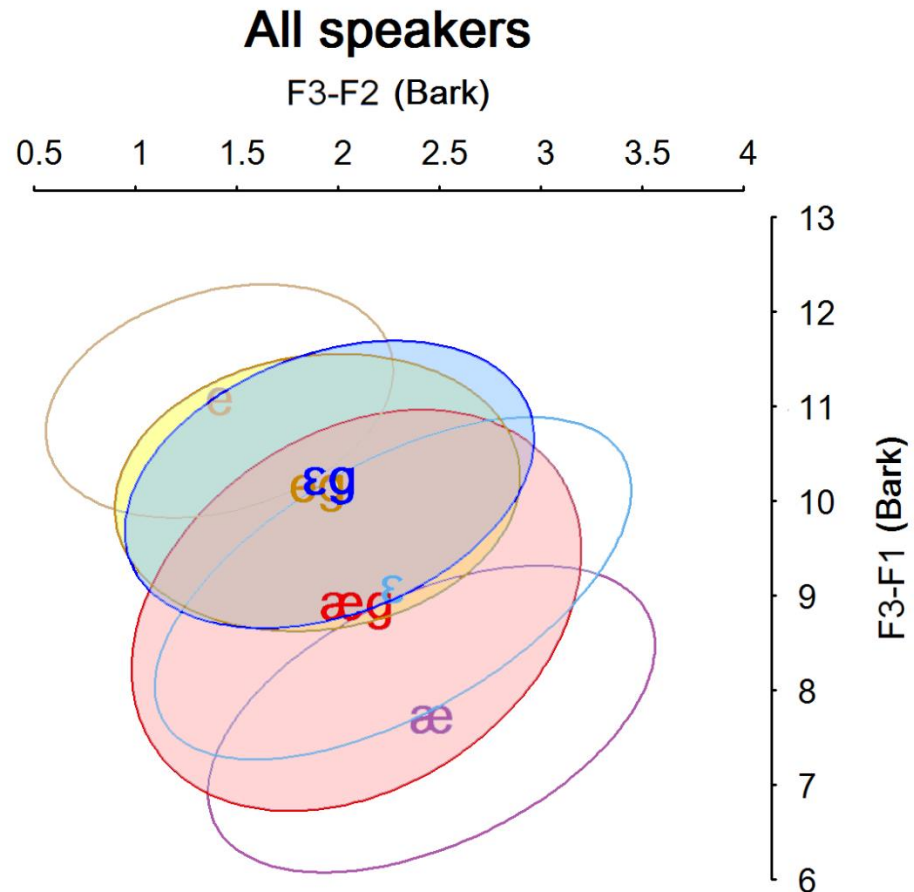
# Midpoint: BAG

- /æɪg/ raised from /æ/
  - 58% overlap
- /æɪg/ overlaps /ɛ/
  - 95% overlap
  - /æɪg/ rising diphthong
  - /ɛ/ shorter



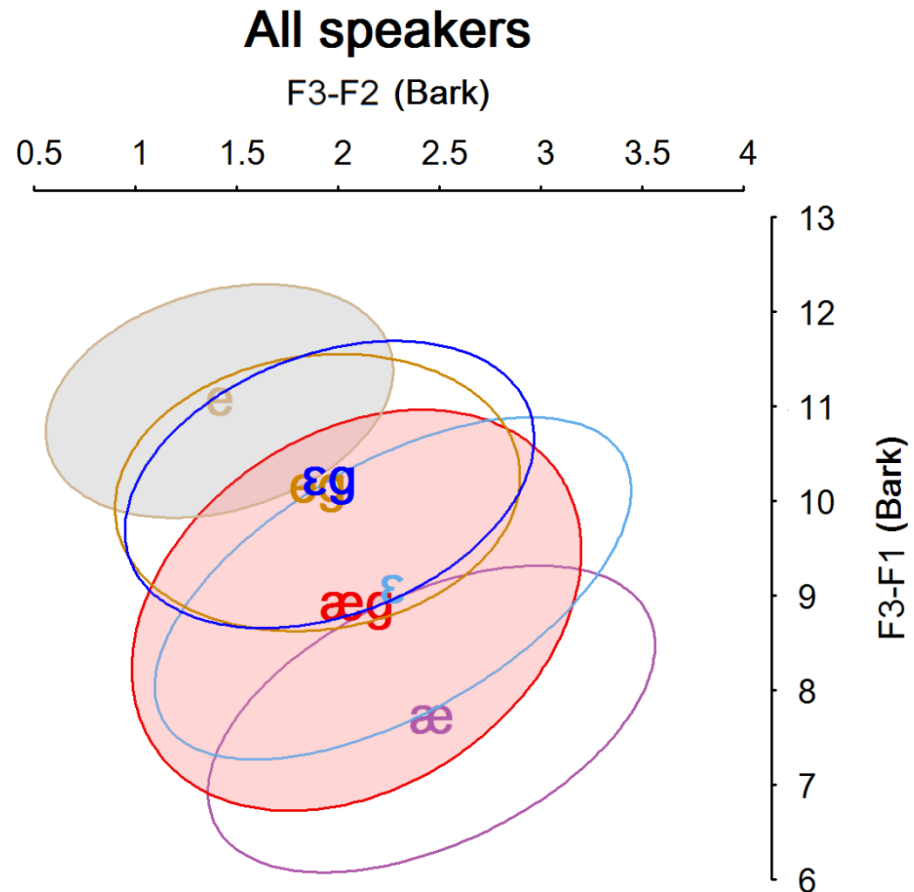
# Midpoint: BAG

- /æɪg/ raised from /æ/
  - 58% overlap
- /æɪg/ overlaps /ɛ/
  - 95% overlap
  - /æɪg/ rising diphthong
  - /ɛ/ shorter
- /æɪg/ overlaps /ɛɪg-ɛɪg/
  - 60%+ overlap
  - /ɛɪg/ shorter

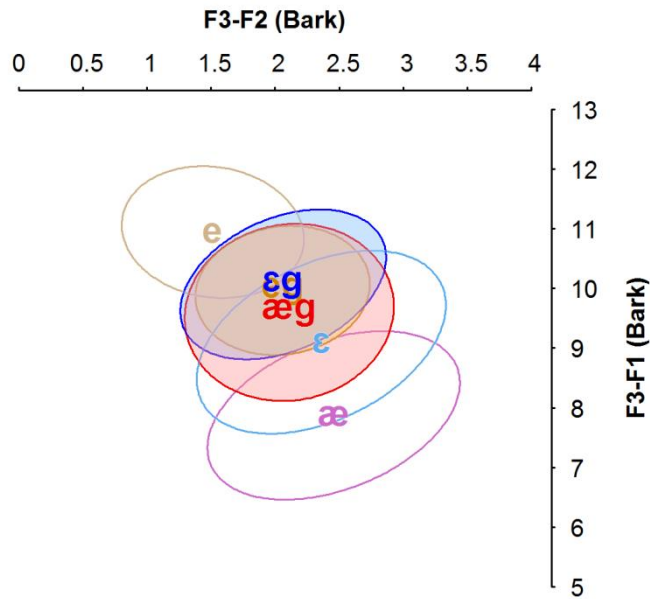


# Midpoint: BAG

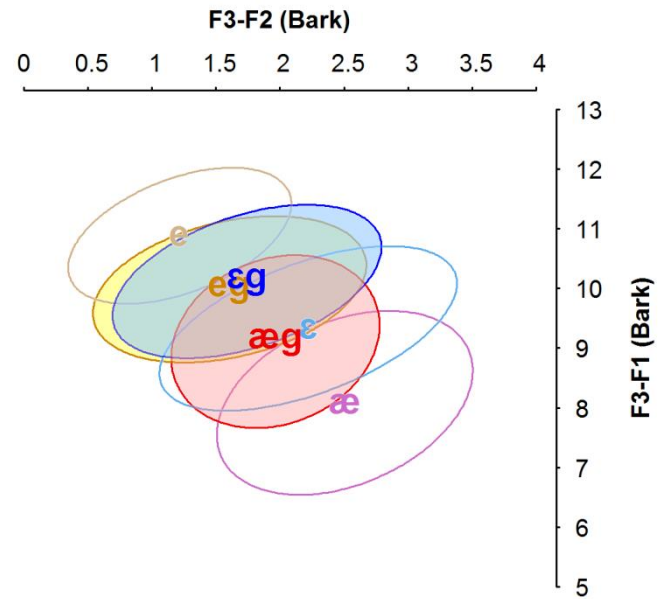
- /æɪg/ raised from /æɪ/
  - 58% overlap
- /æɪg/ overlaps /ɛɪ/
  - 95% overlap
  - /æɪg/ rising diphthong
  - /ɛɪ/ shorter
- /æɪg/ overlaps /ɛɪg-ɛɪg/
  - 60%+ overlap
  - /ɛɪg/ shorter
- /æɪg/ separate from /eɪ/
  - 9% overlap



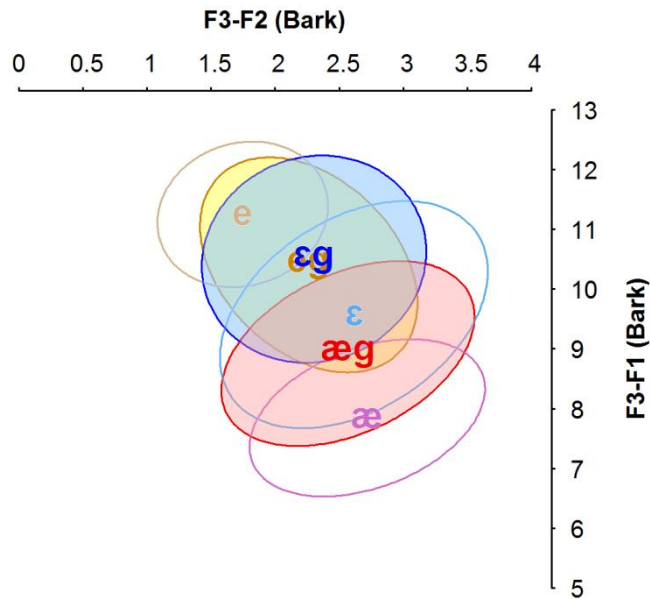
**(a) Gen 2 Males**



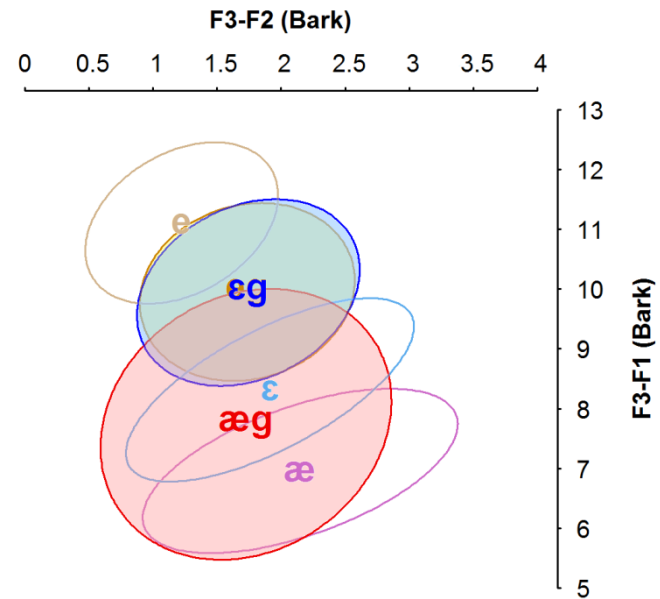
**(b) Gen 2 Females**

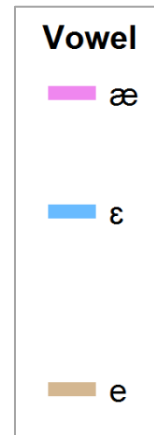
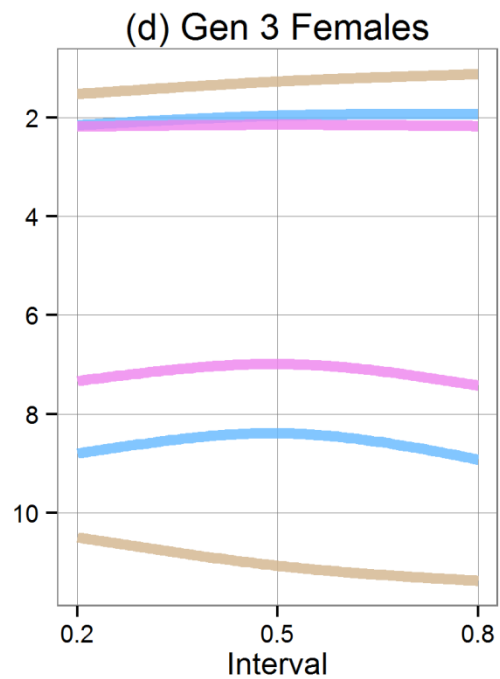
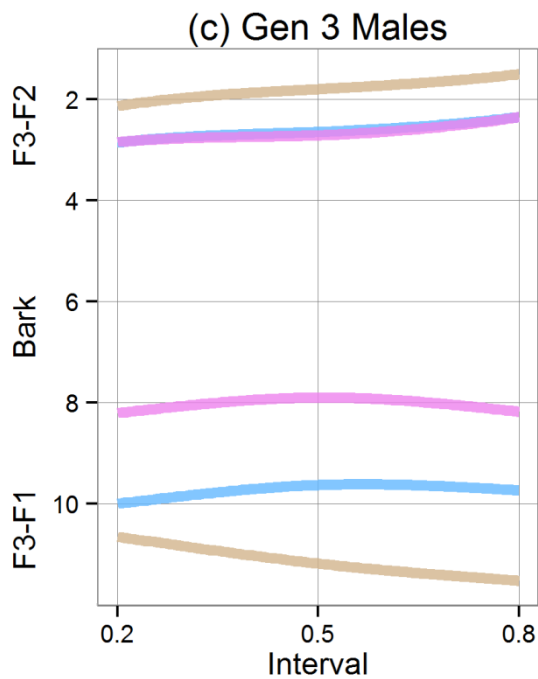
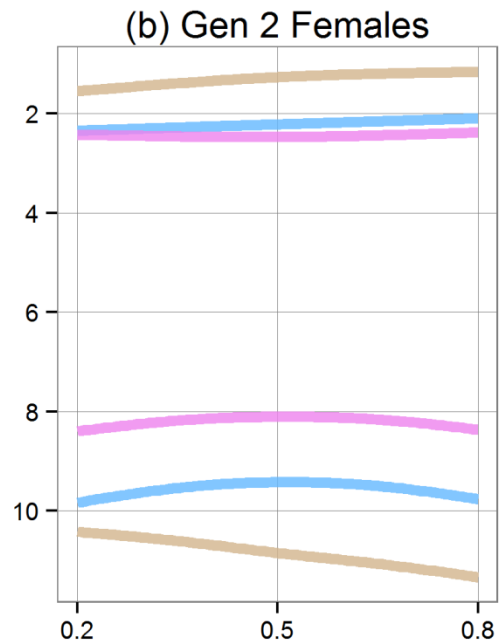
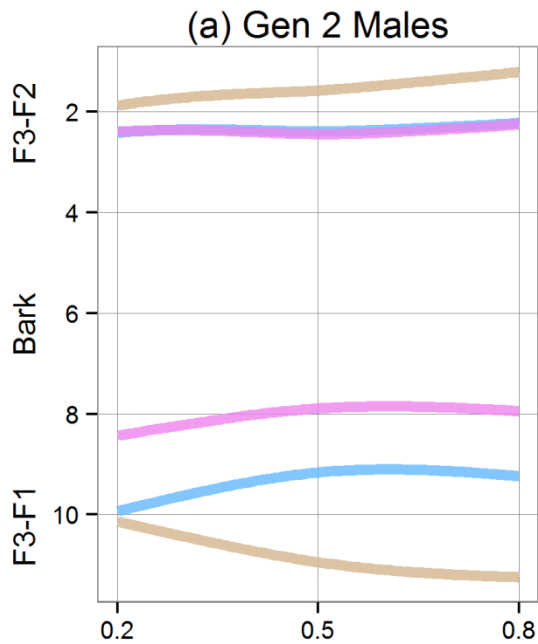


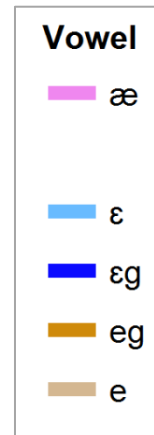
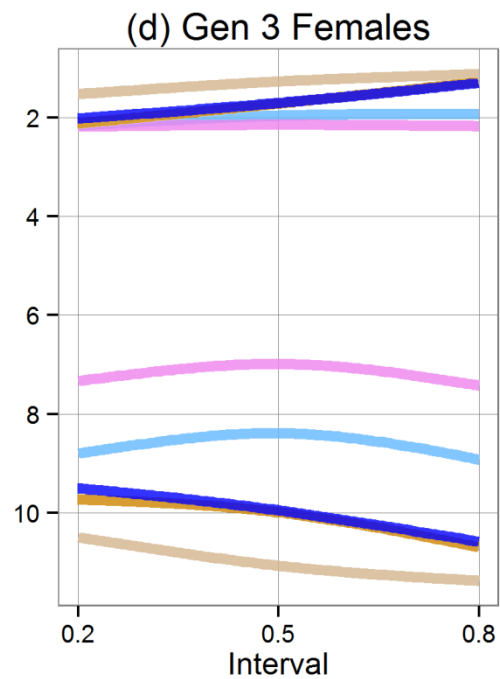
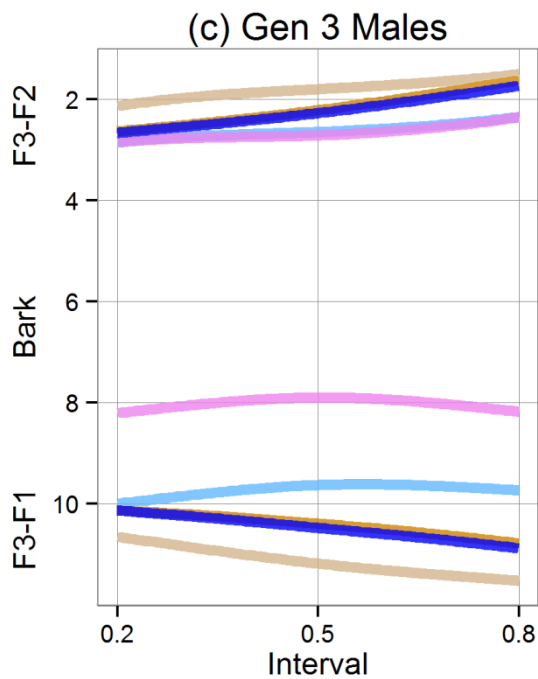
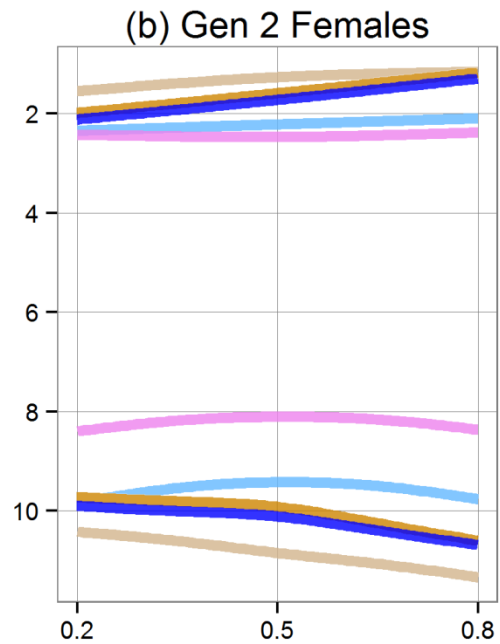
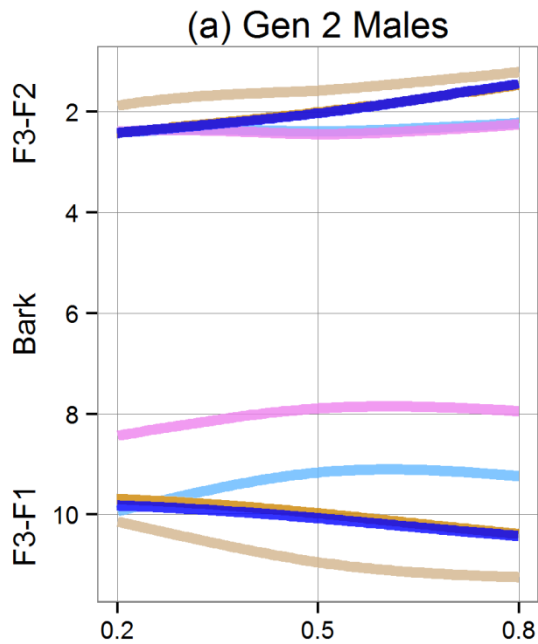
**(c) Gen 3 Males**

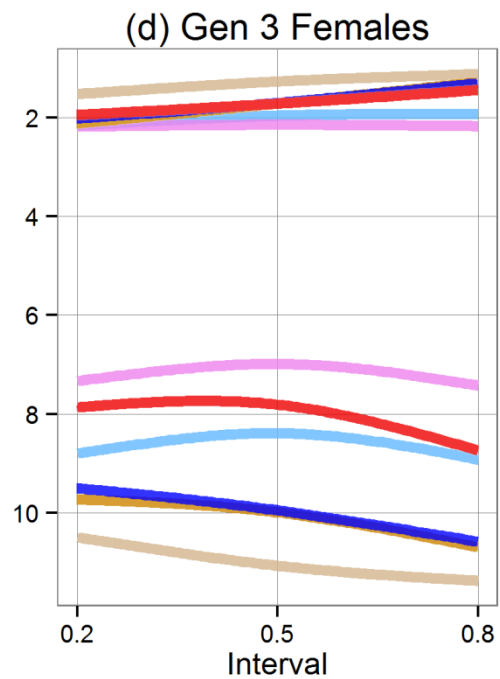
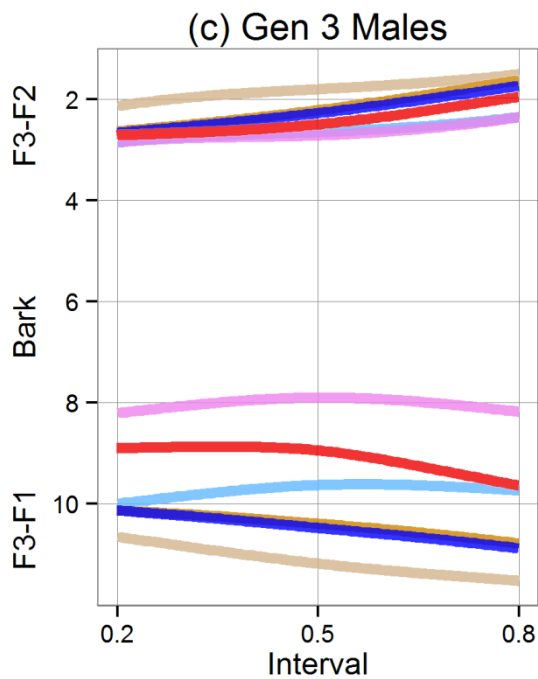
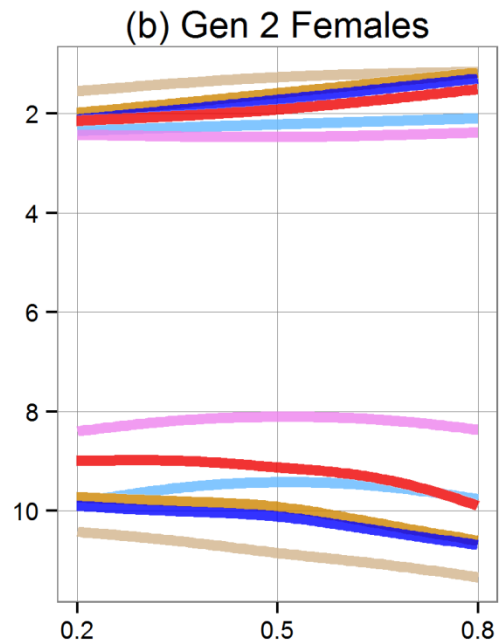
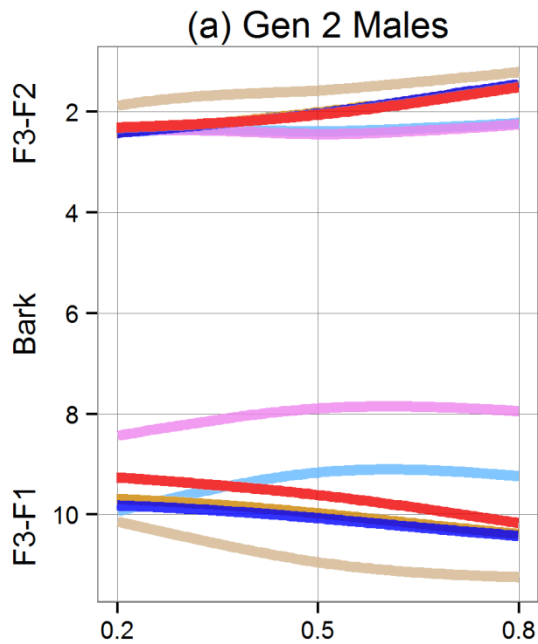


**(d) Gen 3 Females**









# Summary: Social Differentiation

## ✓ Age

- Older speakers raise /æɪg/ more
- Change in progress, may have stigma

## ✓ Gender

- In older generation, males raise /æɪg/ more

## ✓ Age x Gender interaction:

- Middle-aged men raise /æɪg/ to merge with /eɪg-ɛɪg/ in F1xF2
- Young speakers of both genders raise the least
- Might have local but not wider positive value

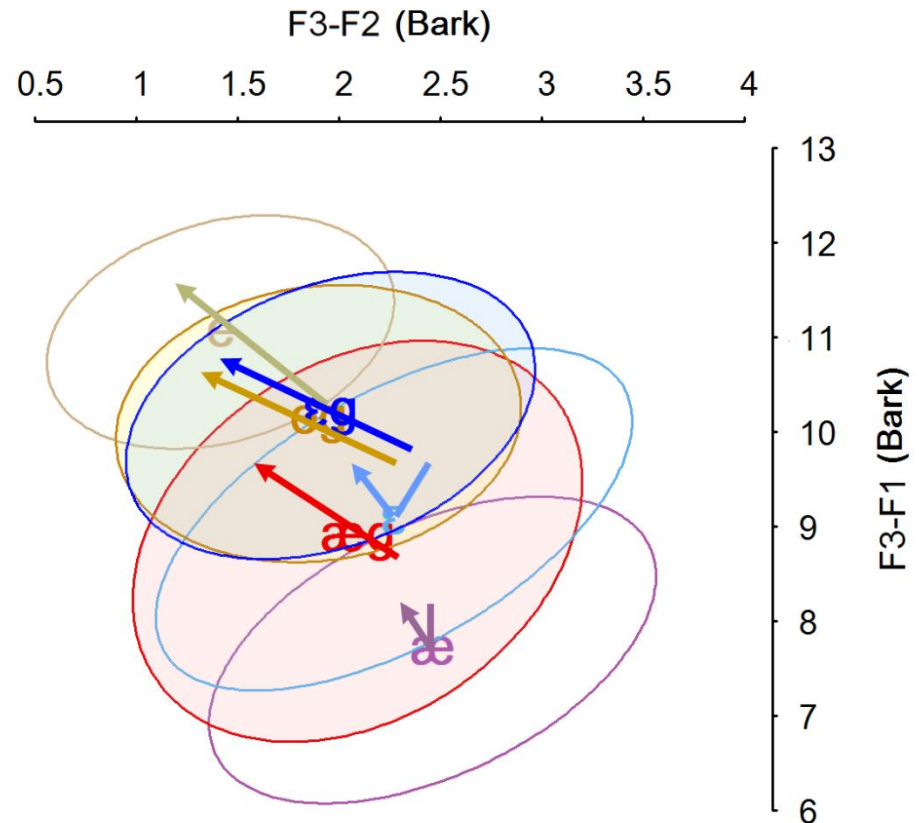


# Other Causes of Variation?

- Social factors/demographics
  - Urbanness/insularity, network strength, social class...
    - Might correlate better than simple age/gender divisions, explain variation within age/gender groups
- Style / Task
  - Formal vs. informal tasks
- Discourse factors
  - Interactions with stance, engagement, audience
- Lexical differences
  - Common words more raised? (Wassink & Riebold 2013)

# Questions?

## All speakers



- Special thanks

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# References

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