Social differentiation of \textit{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 /æɡ/, 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

<table>
<thead>
<tr>
<th>Generation</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen 2</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>(age 37-62)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gen 3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>(age 18-36)</td>
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<td></td>
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</tbody>
</table>

Target words selected for analysis

- From reading passage & word list
- /æ, ɛ, e/ before /g/
- /æ, ɛ, 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 σ 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 σ around means
Midpoint: Plain vowels

- /æ/ and /ɛ/ overlap
  - 39% overlap
Midpoint: BEG-BAGEL

- /eg/ and /ɛɡ/ merged between /e/ and /ɛ/
  - 91% overlap
  - Rising diphthongs
  - /ɛɡ/ shorter
Midpoint: BAG

- /æɡ/ raised from /æl/
  - 58% overlap
Midpoint: BAG

- `/æg/ raised from `/æ/`
  - 58% overlap
- `/æg/ overlaps `/ɛ/`
  - 95% overlap
  - `/æg/ rising diphthong`
  - `/ɛ/ shorter`
Midpoint: BAG

- /æg/ raised from /æ/
  - 58% overlap
- /æg/ overlaps /ɛ/
  - 95% overlap
  - /æg/ rising diphthong
  - /ɛ/ shorter
- /æg/ overlaps /ɛg-eg/
  - 60%+ overlap
  - /ɛg/ shorter
Midpoint: BAG

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

- /æɡ/ overlaps /ɛ/  
  - 95% overlap  
  - /æɡ/ rising diphthong  
  - /ɛ/ shorter

- /æɡ/ overlaps /ɛɡ-eg/  
  - 60%+ overlap  
  - /ɛɡ/ shorter

- /æɡ/ separate from /e/  
  - 9% overlap
Summary: Social Differentiation

✅ Age
- Older speakers raise /æɡ/ more
- Change in progress, may have stigma

✅ Gender
- In older generation, males raise /æɡ/ more

✅ Age x Gender interaction:
- Middle-aged men raise /æɡ/ to merge with /eg-ɛɡ/ 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?

- **Special thanks**
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References


- Riebold, J. (2014). Language change isn't only skin-deep: Inter-ethnic contact and the spread of innovation in the Northwest. Qualifying paper for PhD candidacy, University of Washington.


