Metalinguistic Awareness of BAG-Raising

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Metalinguistic Awareness

Metalinguistic Awareness (Sullivan 2022): Degree of awareness of phonetic variants
e.g. how aware are you of /æg/-raising? (raising of /æ/ before /g/)

3 Levels of Awareness

1. *No Awareness*: No difference between raised and unraised /æ/

2. *Phonetic Awareness*: Difference between raised and unraised /æ/, but it has no social meaning

3. *Social Awareness*: Difference between raised and unraised /æ/ which has social meaning (e.g. represents a particular region)

What is /æg/-raising?

- Process whereby some North American English speakers raise /æ/ before /g/ (but not /k/) (e.g. in *bag*, but not in *back*)

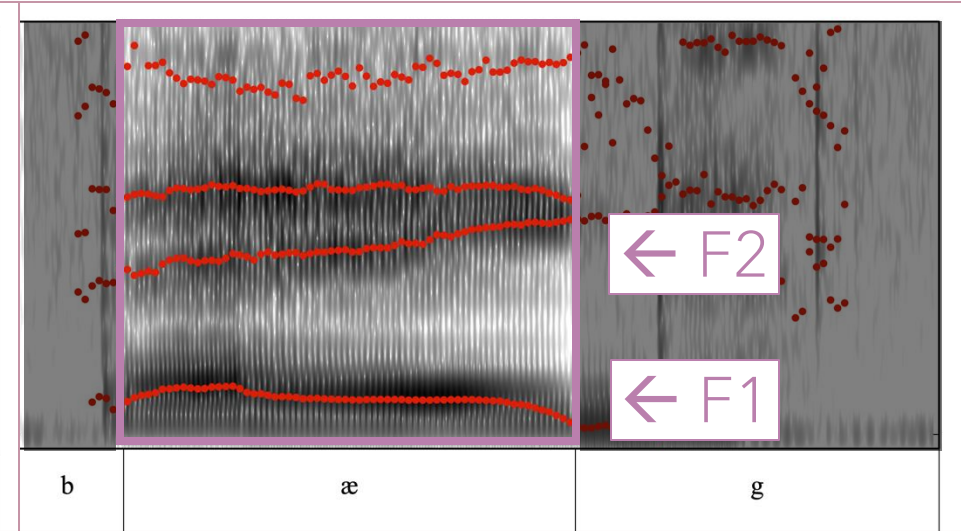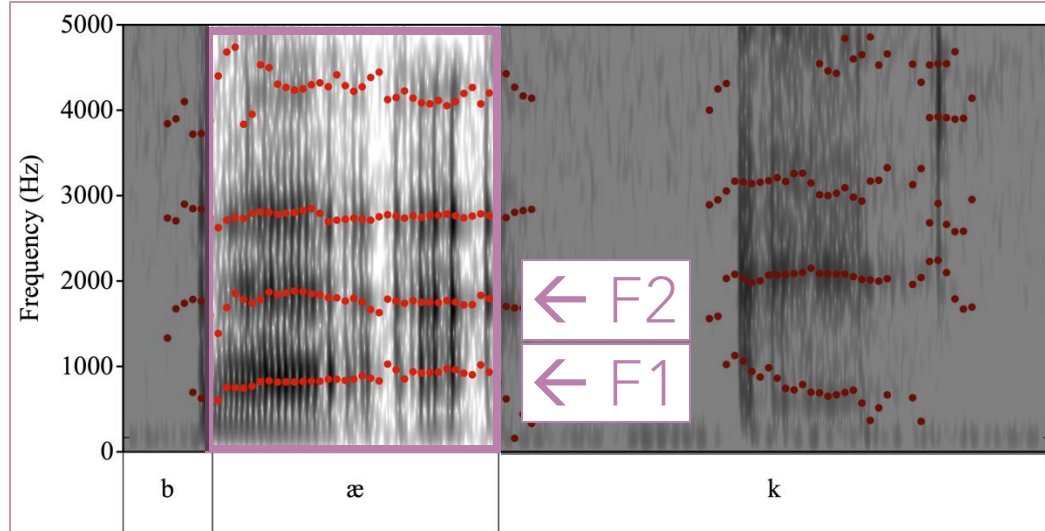$$/æ/ \rightarrow \text{raised} / \_\_ \textbf{g}$$

- Raising doesn't necessarily change phonological category for speakers who participate in raising
  - For those who don't raise, *bag* may be perceived as b[ɛ]g or b[e]g

- Acoustically, a raised /æ/ will have lower F1 (& possibly higher F2) as it approaches /ɛ/

Spectrograms of a Raiser and Non-Raiser
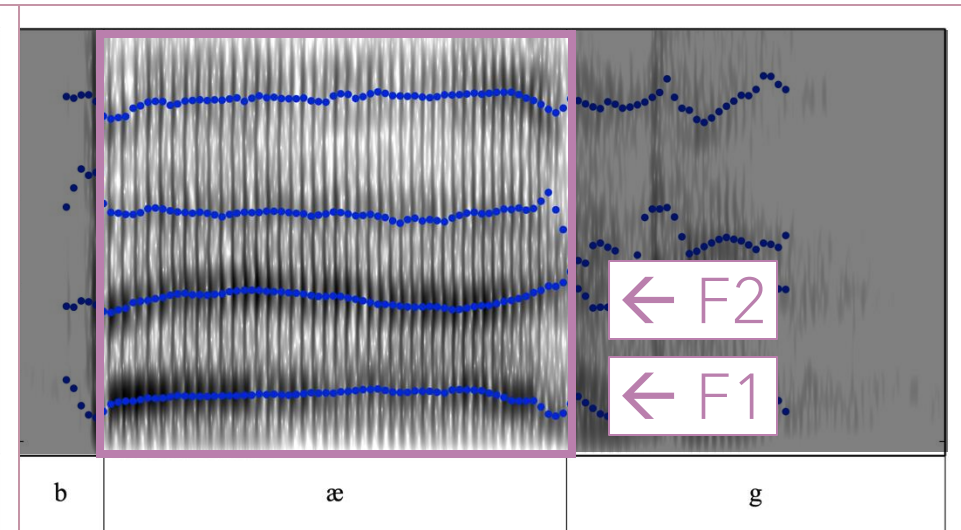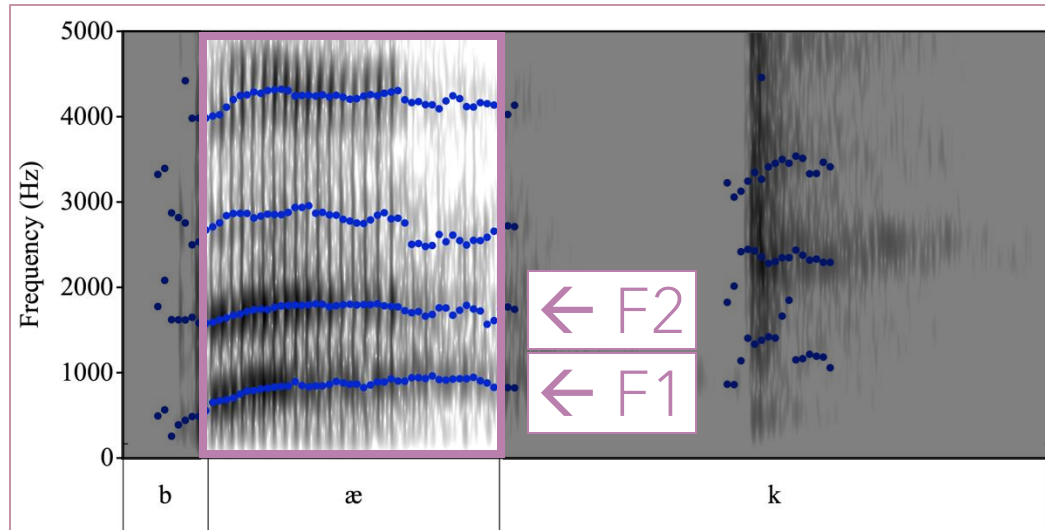
Raiser
(CAN F 30)

🔊 *back*

🔊 *bag*

Non-Raiser
(US M 27)

🔊 *back*

🔊 *bag*

/æg/-raising and MLA

Anecdotal evidence suggests there is variation in the metalinguistic awareness, and perception, of this contrast based on production

- Americans living in Toronto say Canadian b[æ]g sounds like b[e]g or b[ɛ]g → Americans hear raised /æ/ as a mid vowel

- As a speaker of Canadian English, I wasn't aware of pre-velar /æ/-raising until Americans told me about it → I (Canadian) hear raised /æ/ as a low vowel

- American participants in Sullivan (2020a,b) commented on pre-velar /æ/ raising as "that thing you Canadians do" → Americans hear raise /æ/ as distinct from unraised /æ/

- Canadian participants had to be explicitly told to compare *bag* to *back* to hear the difference → Canadians don't hear raised /æ/ as distinct from unraised /æ/
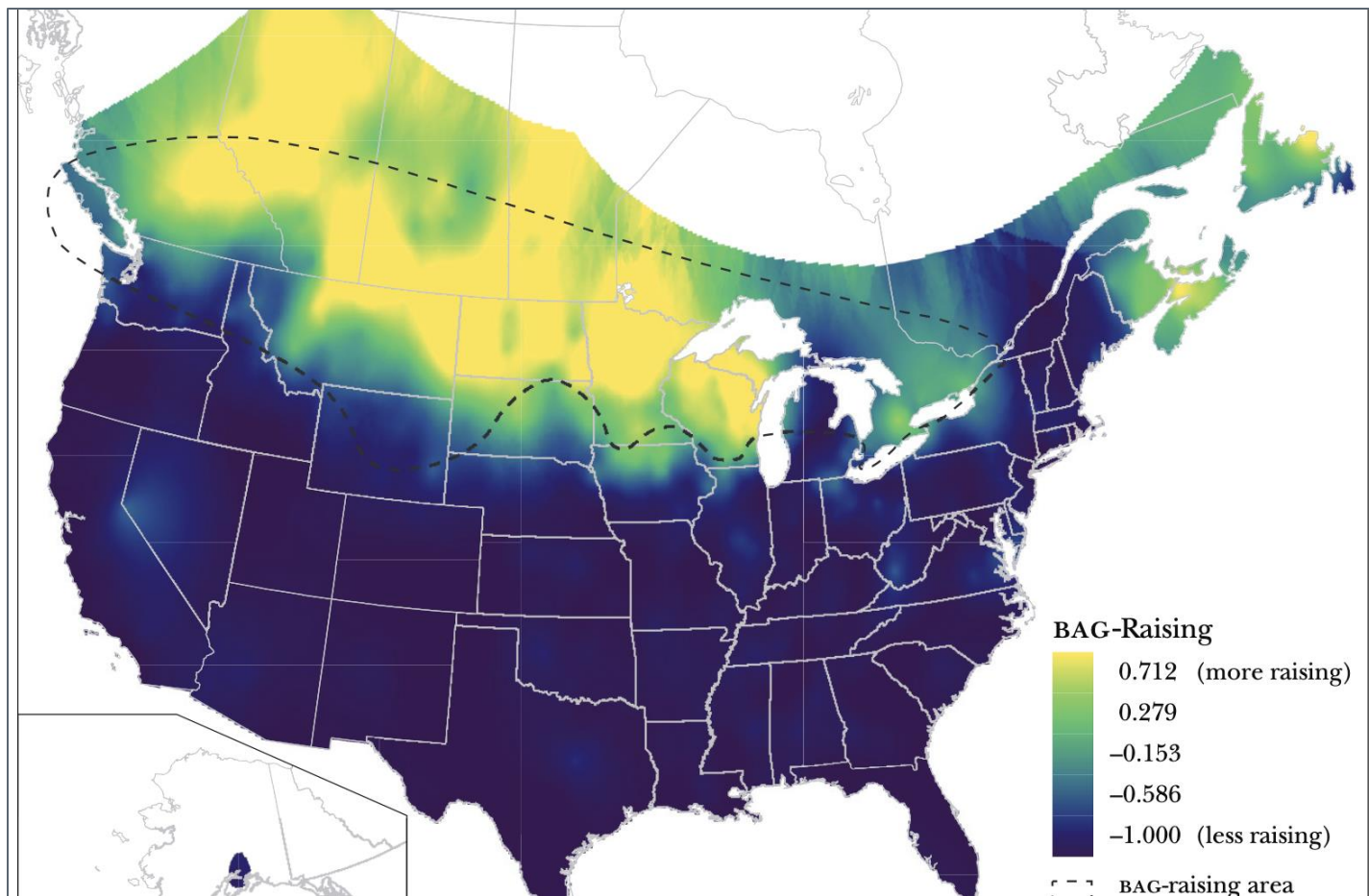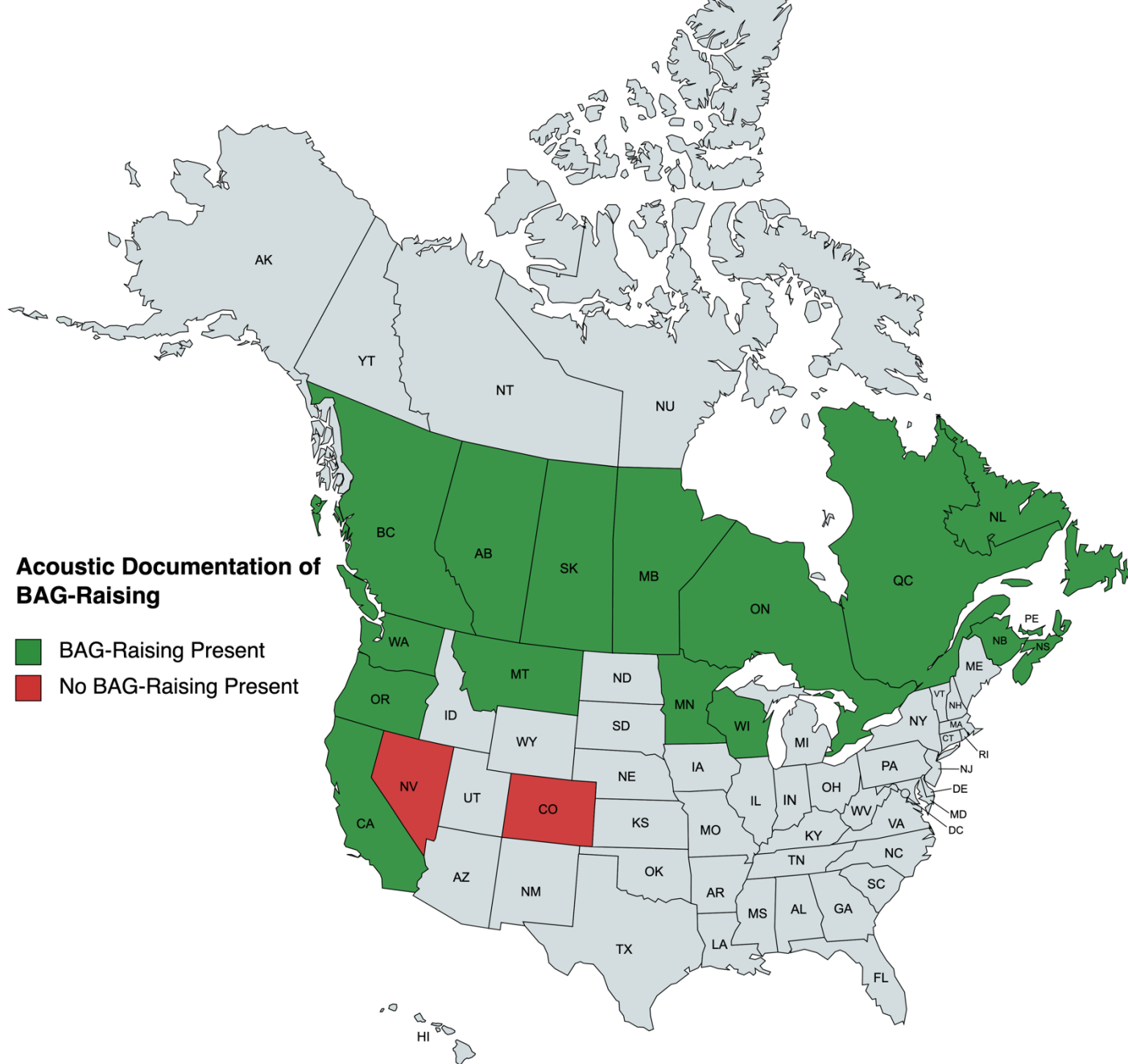
Map from Stanley 2022

Who /æg/-raises? (Self-Report)

Stanley (2022)

- Asked participants how they think they pronounce /æg/ in various words

- Canada & parts of the US closer to the Canadian border

- Prevalence of /æ/-raising decreases as you go further south in the US

Acoustic Documentation of BAG-Raising

- 🟩 BAG-Raising Present
- 🟥 No BAG-Raising Present

Who /æg/-raises? (Acoustics)

Raising documented in:

- Canada: across the country, including Vancouver, BC, Calgary, southern Alberta, Toronto

- US: Pacific Northwest (Washington, Oregon, Montana), Upper Midwest (Minnesota, Wisconsin)

No raising or mixed results: Nevada, Colorado, California

Created with mapchart.net

3 Groups

1. **RAISE**: Raising dialect + Exposure
   - People from a raising region (Canada, PNW, Upper Midwest)

2. **NREX**: Non-Raising dialect, exposure to raising
   - People from non-raising regions, but who have lived for a significant amount of time in a raising region

3. **NRNX**: Non-Raising dialect, no (or limited) exposure
   - People from non-raising regions who have not lived for a significant amount of time in a raising region

Note: It's not possible to be from a raising region w/ no exposure

Research on Metalinguistic Awareness

- **Johnstone & Kiesling 2008** – Examines perception of monophthongal aw in Pittsburgh using a matched guise task, as well as interviews with individual participants, finding more awareness in speakers who tended not to use the feature

- **Ruch 2018** – Open description of 2 Swiss German dialects, which finds differences in levels of awareness between participants, dialects and features, with more description of more marked features & dialects

- **Sullivan 2024** – Examines metalinguistic awareness of 4 North American English features using dialect description and identification tasks, and finds differences in awareness between features and task types
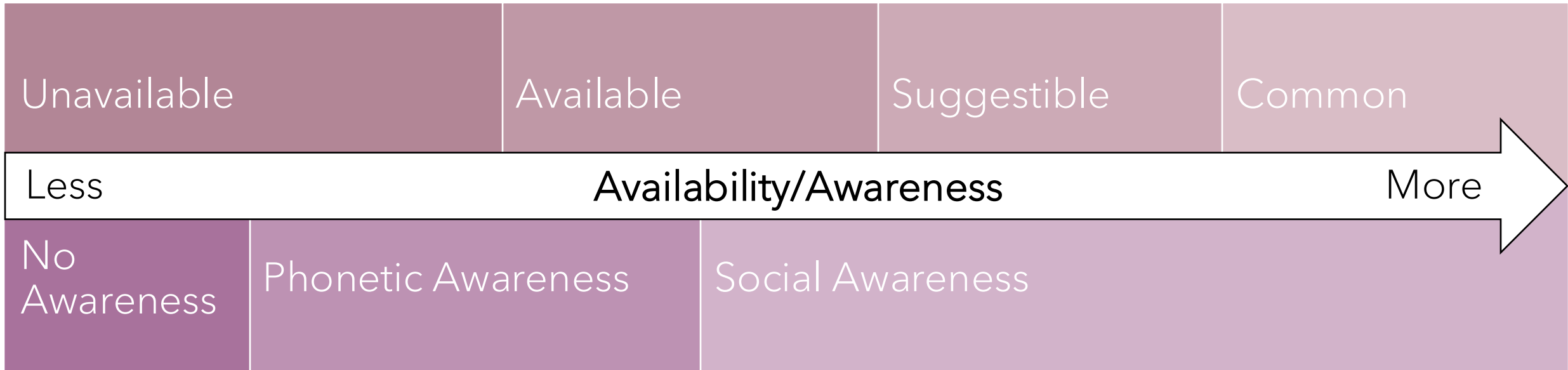
Preston's (1996) Folk Linguistic Awareness

4 modes of folk linguistic awareness

1. Availability – Are speakers aware of variants?

2. Accuracy – Is their awareness accurate?

3. Detail – How specific is their awareness?

4. Control – Can speakers perform variants?

Metalinguistic awareness is particularly related to availability

Availability vs Metalinguistic Awareness

Availability Mode of Folk Linguistic Awareness (Preston 1996)

| Unavailable | Available | Suggestible | Common |

Less — Availability/Awareness — **More**

| No Awareness | Phonetic Awareness | Social Awareness |

Metalinguistic Awareness

Dialect Description Task (based on Ruch 2018)

For each place listed below, describe the accent speakers from the place have. Are there any words or sounds people from this place say differently than others? What are they and how do they say them?

If a place doesn't haven identifiable accent, or you don't know how to describe their accent, please say so instead of describing the accent.

|	
Canada	Minnesota
Seattle	Newfoundland
Boston	Ottawa Valley
Alabama	

Written Dialect Identification Task

Consider each word below, thinking about how it might be pronounced by people with different North American English accents. Do you think the pronunciation of this word differs based on the accent of the person saying the word? Which accents (or regions) are characterized by different pronunciations? How would you describe the different pronunciations of the word for each accent you listed above?

bag   beg   vague   sack

car   right   about   tan

Auditory Dialect Identification Task

Where do you think this speaker is from? (country, city, state/province, anywhere, I am not sure)
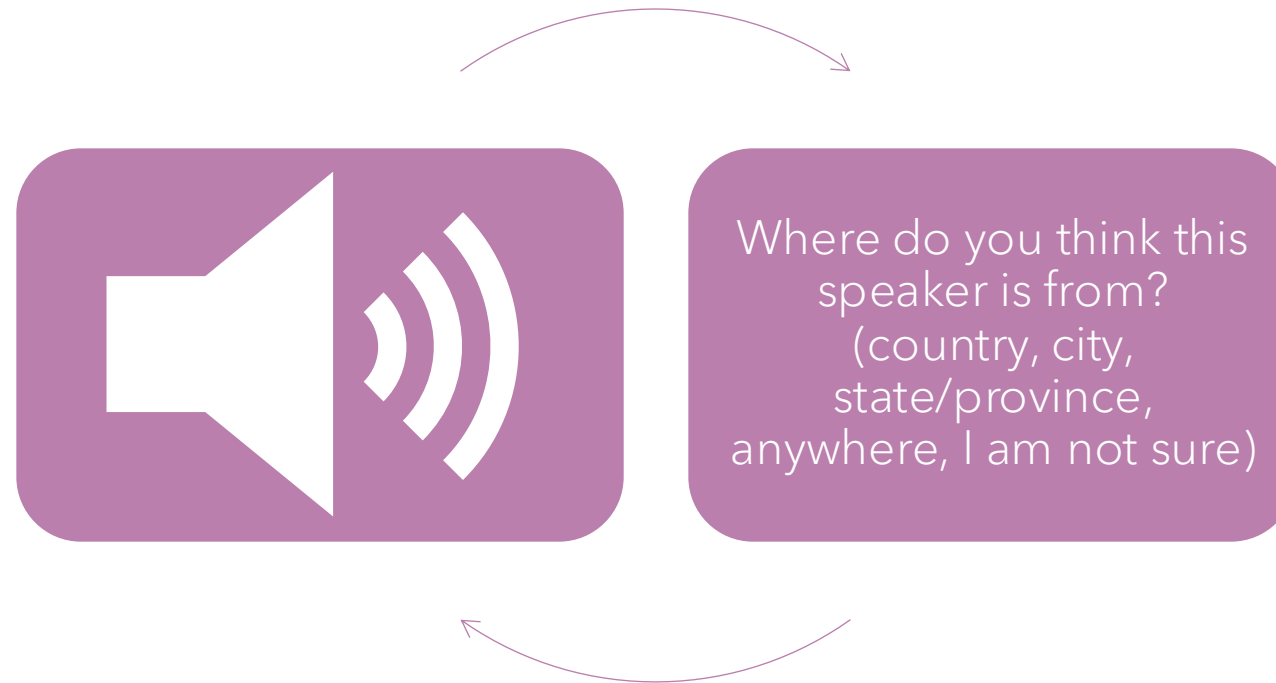
Hypothesized Relationship between experiment tasks, availability and metalinguistic awareness

Availability Mode of Folk Linguistic Awareness (Preston 1996)

Task 3 Auditory Dialect Identification	Task 2 Written Dialect Identification	Task 1 Dialect Description

Unavailable	Available	Suggestible	Common

Less → Availability/Awareness → More

No Awareness	Phonetic Awareness	Social Awareness	

Metalinguistic Awareness

Metalinguistic Awareness Survey

Goals

1. Substantiate anecdotal evidence & determine how available raised /æ/ is to do social work

2. Explore how native dialect and exposure to /æ/-raising dialects contribute to metalinguistic awareness

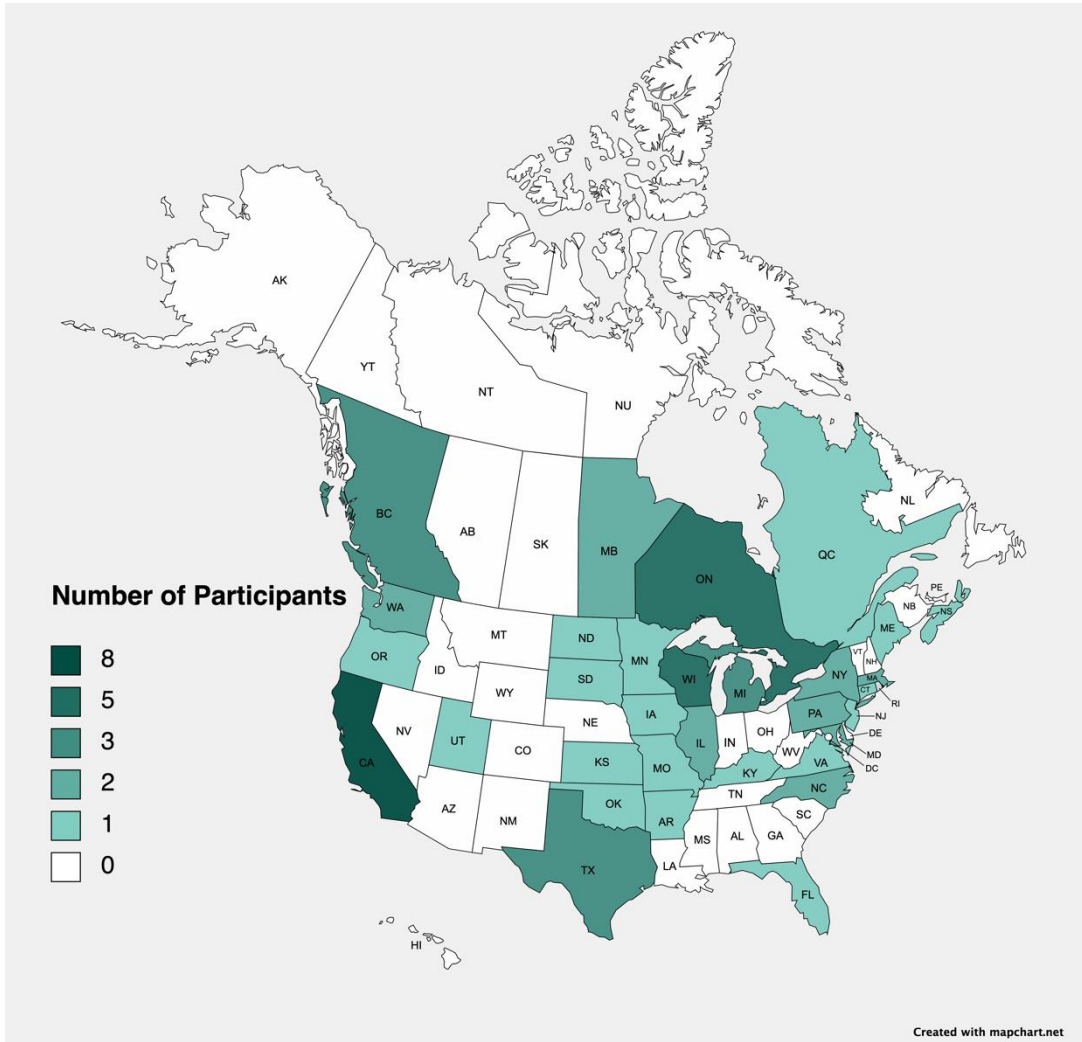3. Test the possibility of quantifying MLA

Hypotheses

Dialect Groups
- **NRNX**: Non-Raiser, No Exposure
- **NREX**: Non-Raiser w/ Exposure
- **RAISE**: BAG-Raiser

Hypotheses: Effects of Dialect and Exposure
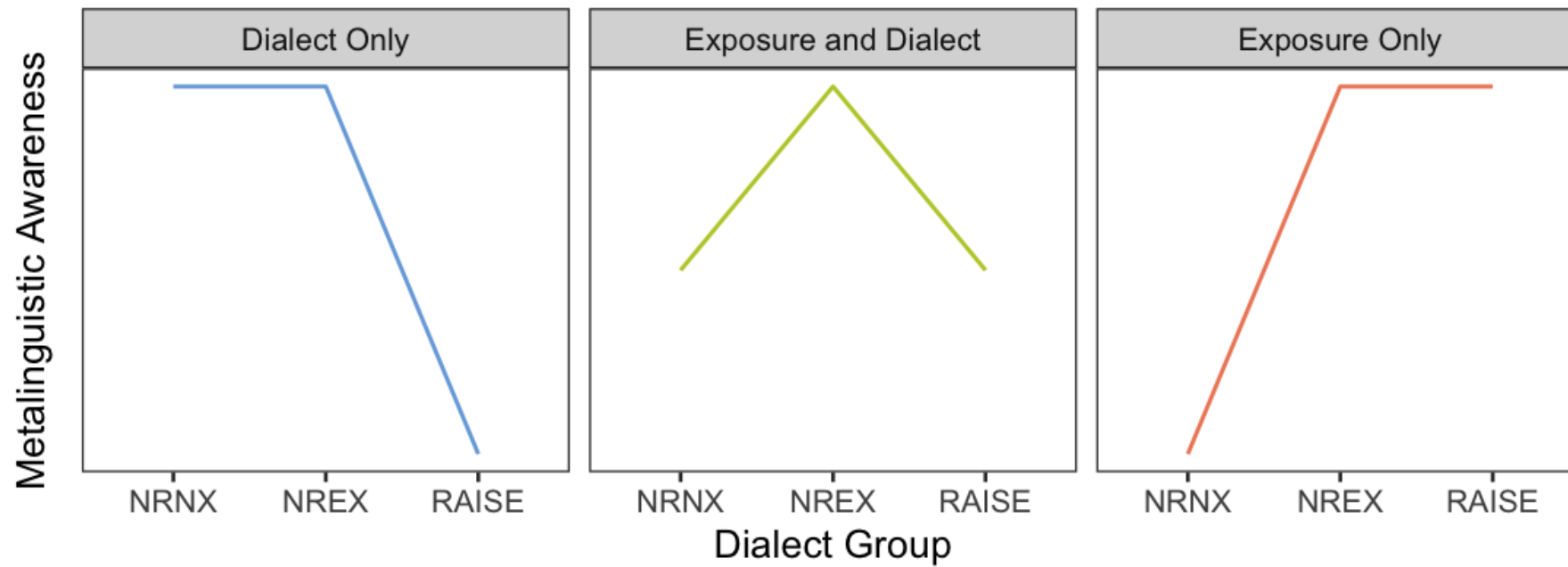
Participants

Dialect Group	Female			Male			All		
	n	Age M	Age Range	n	Age M	Age Range	n	Age M	Age Range
RAISE	13	35.1	18-60	10	38.9	25-55	23	36.7	18-60
NREX	10	35.1	20-72	8	34.1	19-50	18	34.7	19-72
NRNX	10	33.8	20-54	10	36.8	23-55	20	35.3	20-55
TOTAL	33	34.7	18-72	28	36.8	19-55	61	35.7	18-72

- Participants recruited on prolific.co
- /æg/ analysis groups
  - RAISE: /æg/-raising region
  - NREX: non-raising region, exposure
  - NRNX: non-raising region, no exposure

Audio Stimuli

9 native speakers of North American English (1 recorded 2 accents) for a total of 10 speakers:

- 6 Canadians (Ottawa Valley - 3 female, 3 male)

- 4 Americans (Midwest, California, & General American/Southern – all male)

Female speakers were manipulated to sound male using Praat's (Boersma & Weenink 2021) change-gender feature (to avoid possible speaker gender effects)

Audio Stimuli

Vowels were analyzed in Praat to determine if speakers had features or not

- Difference between the mean of 7 equidistant points in middle 50% of vowel in the raised and unraised environments (hereafter Δmean(F1))

- Speakers with Δmean(F1) > 1 were coded as /æg/-raisers
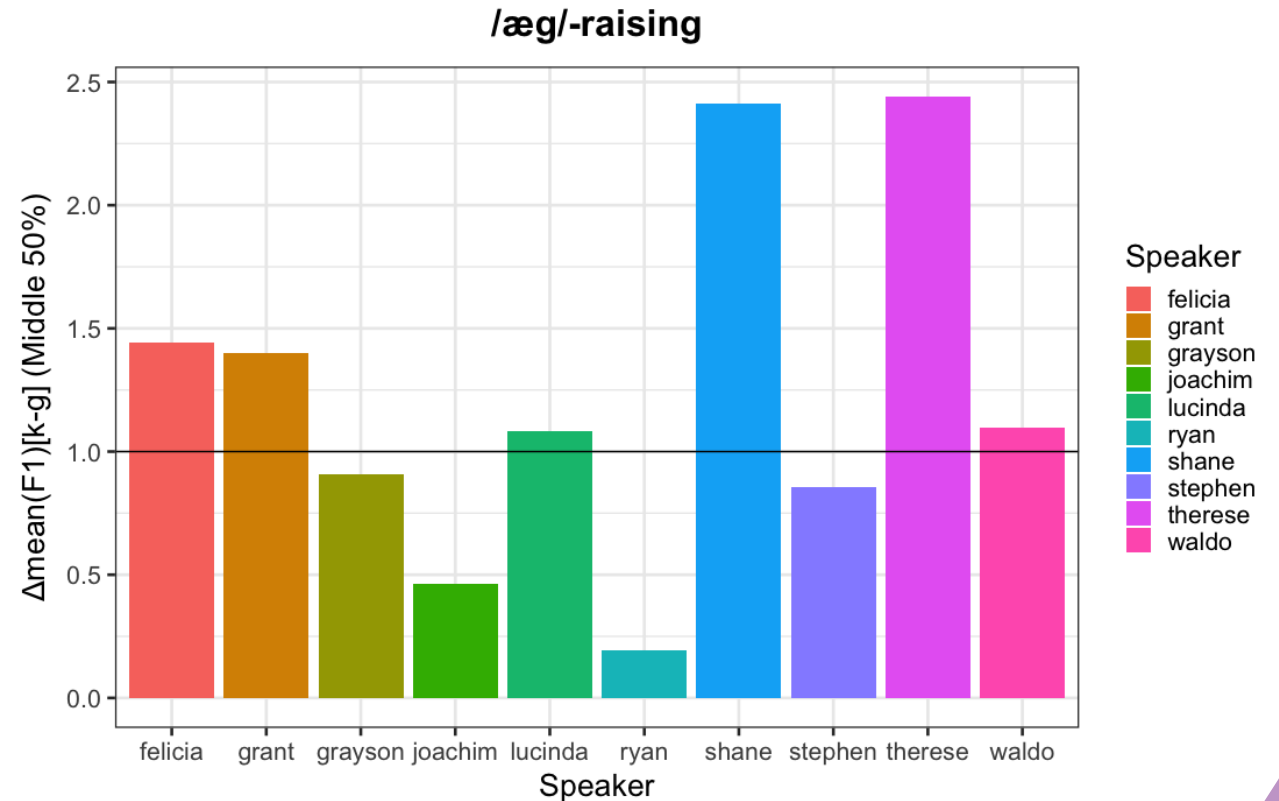
Procedure

4-part Procedure

- Dialect Description Task

- Written Dialect Identification Task

- Auditory Dialect Identification Task

- Language Background Questionnaire

Implementation: Online using jsPsych (de Leeuw, 2015)

Coding

Participants were given a score of 1 if they described a feature in a reasonably correct way as being present in Canada (+ Ottawa Valley & Newfoundland), Minnesota or Seattle (tasks 1-2) or identified a speaker with that feature as being from that region (task 3)

For Task 3, the scores for each speaker with the feature were summed and divided by the number of speakers

Statistical Analysis

Conducted in R (R Core Team 2020) using base functions and the lmer (Bates et al. 2015; Kuznetsova et al. 2017) package

Task 3 Verification: Simple linear regression by feature: mean score ~ Δmean(F1)

**Task Correlation**: Simple linear regression: Task 2 ~ Task 3

Regression Model: lmer(Score ~ Task*(Group+Gender) + (1|YOB))

- **Task**: Contrast Coded (2 = -0.5; 3 = 0.5)
  - **Note**: Task 1 excluded due to only 2 participants identifying /æg/-raising in this task
- **Gender**: Contrast Coded (F = -0.5; M = 0.5)
- **Group**: Helmert Coded (RAISE vs NR; NREX vs NRNX)

Task 3 Verification

- Expect a positive correlation between Δmean(F1) & score

- Speakers who raise more are more likely to be identified as being from an /æg/-raising region

- Suggests this task is able to capture MLA, at least in so far as participants are behaving as expected

| Variable	Adj. R²	β	SE	t	p
/æg/-raising	0.37	0.047	0.019	2.51	0.037
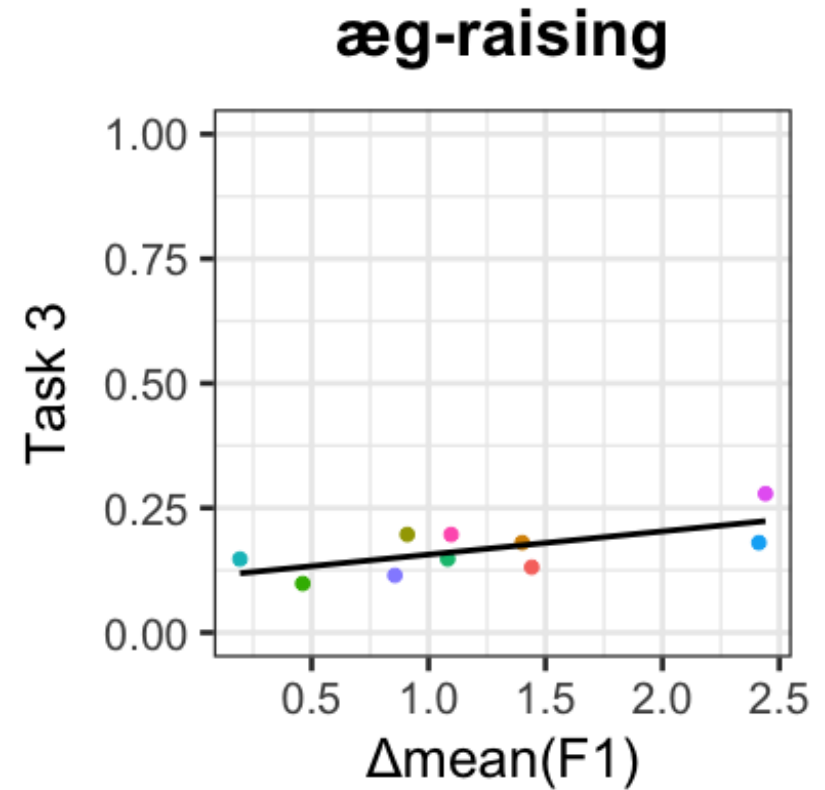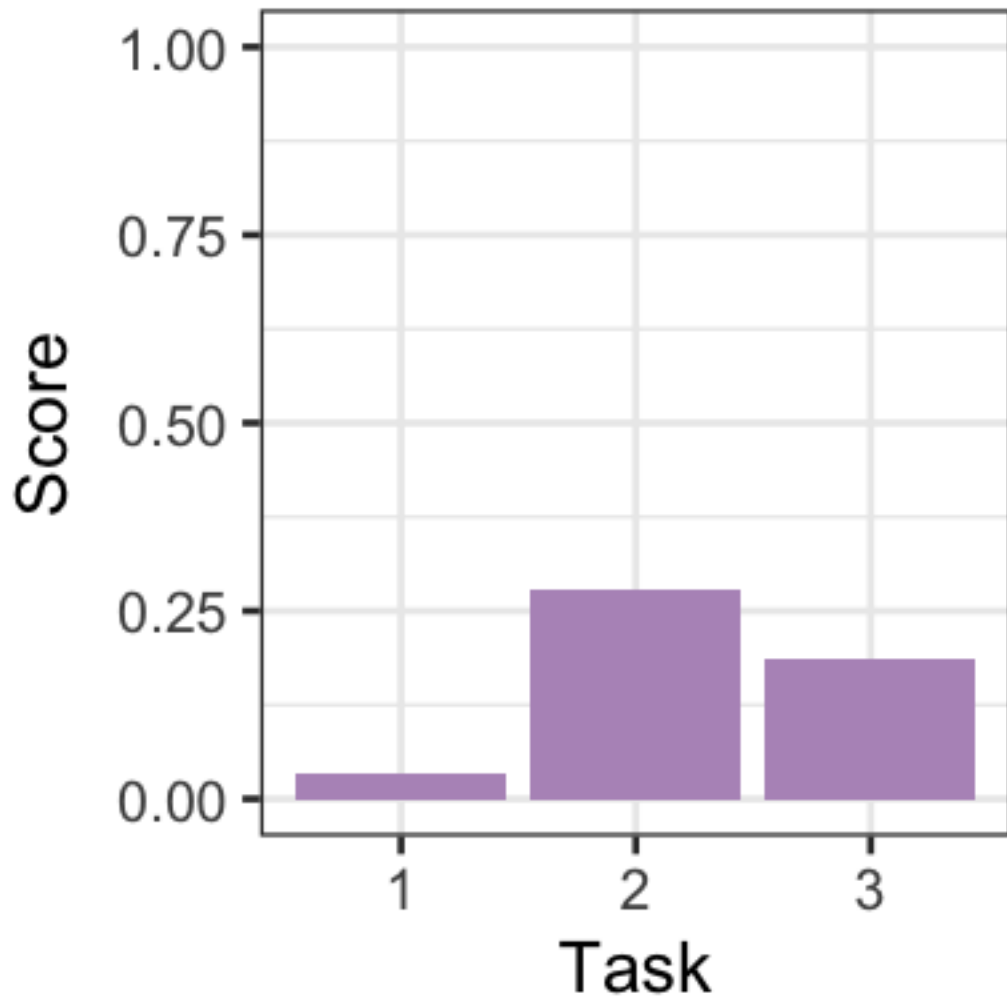
æg-raising

Results by Task

- Only 2 participants (1 RAISE, 1 NREX living in Canada) identified /æg/-raising in Task 1

- Low levels of MLA in tasks 2 and 3, but higher in task 2 (interaction with dialect group)

- Small, but significant correlation between participants' scores in Tasks 2 & 3 (Adj. R^2 = 0.052, β = 0.2, SE = 0.30, t = 2.07, p = 0.043)

- Pattern between task 2 & 3 is somewhat unexpected

æg-Raising by Dialect Group
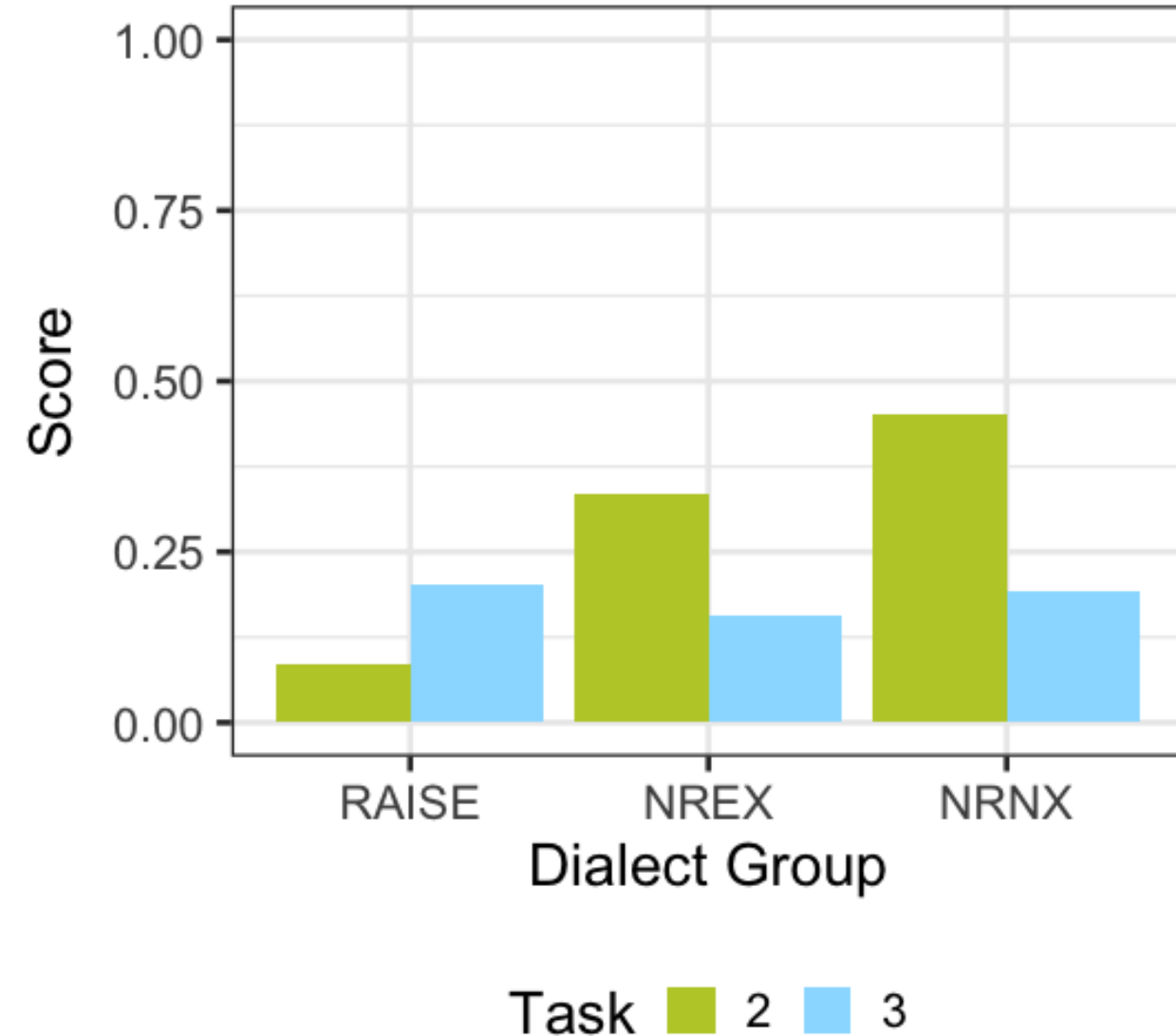
Effects of Dialect Group and Task

- Interaction between Task and Group
  - NR groups have higher scores in Task 2 but not Task 3 (sig.)
  - RAISE has higher scores in Task 3 than 2 (n.s.)
- Suggests that dialect region, but not exposure impacts MLA, at least in Task 2

Discussion

Differences between æg-raisers and non-raisers indicate that dialect region influences metalinguistic awareness

- Consistent with anecdotal evidence

- Dialect region could be a proxy for production, but production data wasn't collected

- Exposure in non-raisers does not seem to have an impact, but this is more complicated

Hypotheses: Effects of Dialect and Exposure
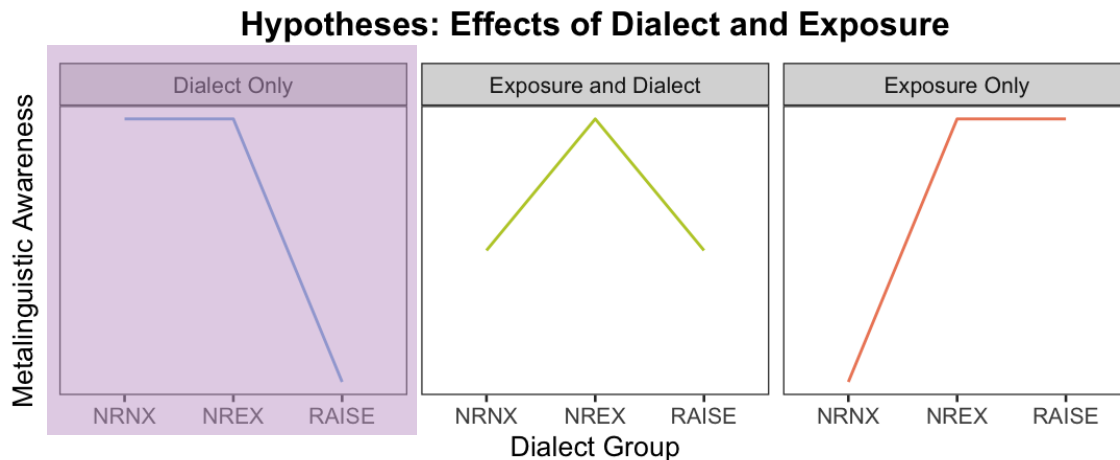
Why the difference between tasks?

Pattern somewhat unexpected because Task 3 was expected to have higher scores than Task 2

- Tasks involved different modes of folk linguistic awareness (Preston 1996)
  - Sullivan (2024) shows that results across tasks differ by factor and suggests this could be due to the effects of different modes of folk linguistic awareness
  - Accuracy is important for task 3 while detail is important for task 2
- Similar scores in Task 3 could be due to different factors
  - NR can describe but not identify; they hear a different word altogether (even though they read the correct word)
  - RAISE hears it as normal and identifies it with their dialect, but can't describe

Future Directions

- Consider gradience in written responses (e.g. those who note an inaccurate stereotype vs those who don't)

- Compare stereotyped vs non-stereotyped words (e.g. *about* vs *bout*)

- Examine social and individual factor influence for more features (e.g. production, dialect region, cognition, etc.)
  - Explore exposure in more detail

- Collect production data to explore effects of dialect region vs production itself on MLA

- Other languages, tasks, features

Conclusion

- It is possible to quantify MLA – but complicated by different modes of folk linguistic awareness (Preston 1996)

  - See also Sullivan 2024

- Results support anecdotal evidence that /æg/-raisers are less aware of this feature than non-raisers

  - Can be compared with perception

- Dialect region matters, but exposure doesn't (though this could be due to the nature of quantification)

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Canada

References

Bates, D., Maechler, M., Bolker, B., & Walker S. (2015). Fitting Linear Mixed-Effects Models Using lme4. *Journal of Statistical Software*, 67(1), 1-48. doi:10.18637/jss.v067.i01.

Boersma, P., & Weenink, D. (2021). *Praat: doing phonetics by computer [computer program]. version 6.1.38.* Retrieved from http://www.praat.org/

de Leeuw, J. R. (2015). jspsych: A javascript library for creating behavioral experiments in a web browser. *Behavior Research Methods*, *47*(1), 1-12. doi: 10.3758/s13428- 014-0458-y

Johnstone, B., & Kiesling, S. F. (2008). Indexicality and experience: Exploring the meanings of/aw/-monophthongization in Pittsburgh. *Journal of sociolinguistics*, 12(1), 5–33.

Kuznetsova, A., Brockhoff, P.B., Christensen, R.H.B. (2017). lmerTest Package: Tests in Linear Mixed Effects Models. *Journal of Statistical Software*, 82(13), 1-26. doi: 10.18637/jss.v082.i13

Preston, D. R. (1996). Whaddayaknow?: The modes of folk linguistic awareness. *Language awareness*, 5(1), 40–74.

References

R Core Team (2020). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/.

Ruch, H. (2018). The role of acoustic distance and sociolinguistic knowledge in dialect identification. *Frontiers in psychology*, 9(818), 1-15.

Stanley, J. (2022). Regional patterns in prevelar raising. American Speech, 97(3), 374-411.

Sullivan, L. (2022). *Pre-velar /æ/-raising in Ontario and Colorado English: Production, perception and metalinguistic awareness.* [Doctoral Dissertation, University of Toronto]. Dissertations & Theses @ University of Toronto.

Sullivan, L. (2024). Quantifying (Folk) metalinguistic awareness. *Change and Variation in Canada 13*. Université de Montréal. Montreal, QC.

Wickham H., et al. (2019). Welcome to the tidyverse. *Journal of Open Source Software*, 4(43), 1686. doi: 10.21105/joss.01686