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Quantifying (Folk) Metalinguistic Awareness

Social Sciences and Humanities Research Council of Canada
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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

- *No Awareness*: No difference between raised and unraised /æ/
- *Phonetic Awareness*: Difference between raised and unraised /æ/, but it has no social meaning
- *Social Awareness*: Difference between raised and unraised /æ/ which has social meaning (e.g. represents a particular region)

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 2022** – Examines awareness of æg-raising across North America in 3 tasks, and finds that speakers from dialect regions with /æg/-raising have lower metalinguistic awareness than those from regions without /æg/-raising

Preston's (1996) Folk Linguistic Awareness

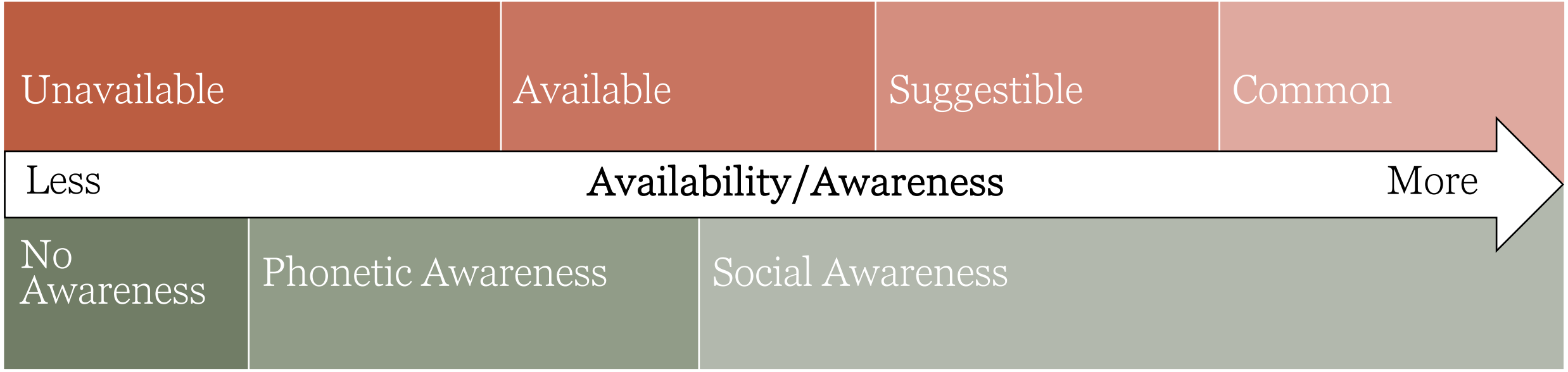
4 modes of folk linguistic awareness

- **Availability** – Are speakers aware of variants?
- **Accuracy** – Is their awareness accurate?
- **Detail** – How specific is their awareness?
- **Control** – Can speakers perform variants?

Metalinguistic awareness is particularly related to availability

Availability vs Metalinguistic Awareness

Availability Mode of Folk Linguistic Awareness (Preston 1996)



Metalinguistic Awareness

Study Goals

1. Explore the possibility of quantifying different levels of folk/metalinguistic awareness using three tasks (dialect description, written and auditory dialect identification tasks) and four features (/æg/-raising, Canadian raising of /aj/ and /aw/ as separate features, aj-monophthongization)
2. Explore how results on the tasks compare and how that may related to the different modes of folk linguistic awareness

Features

1. **/æg/-raising**: Raising /æ/ before /g/
   - Canada, Upper Midwest, Pacific Northwest, (California) (See Sullivan 2022 for summary)
   - Not super well known
2. **Canadian Raising**: Raising of /aj/ and /aw/ before voiceless obstruents. I will consider these variants separate features because of their different distributions
   - **/aj/-raising**: Canada + widespread across the US; not well known
   - **/aw/-raising**: Canada + some northern states; highly stereotyped
3. **/aj/-monophthongization**: Southern US; very salient

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	

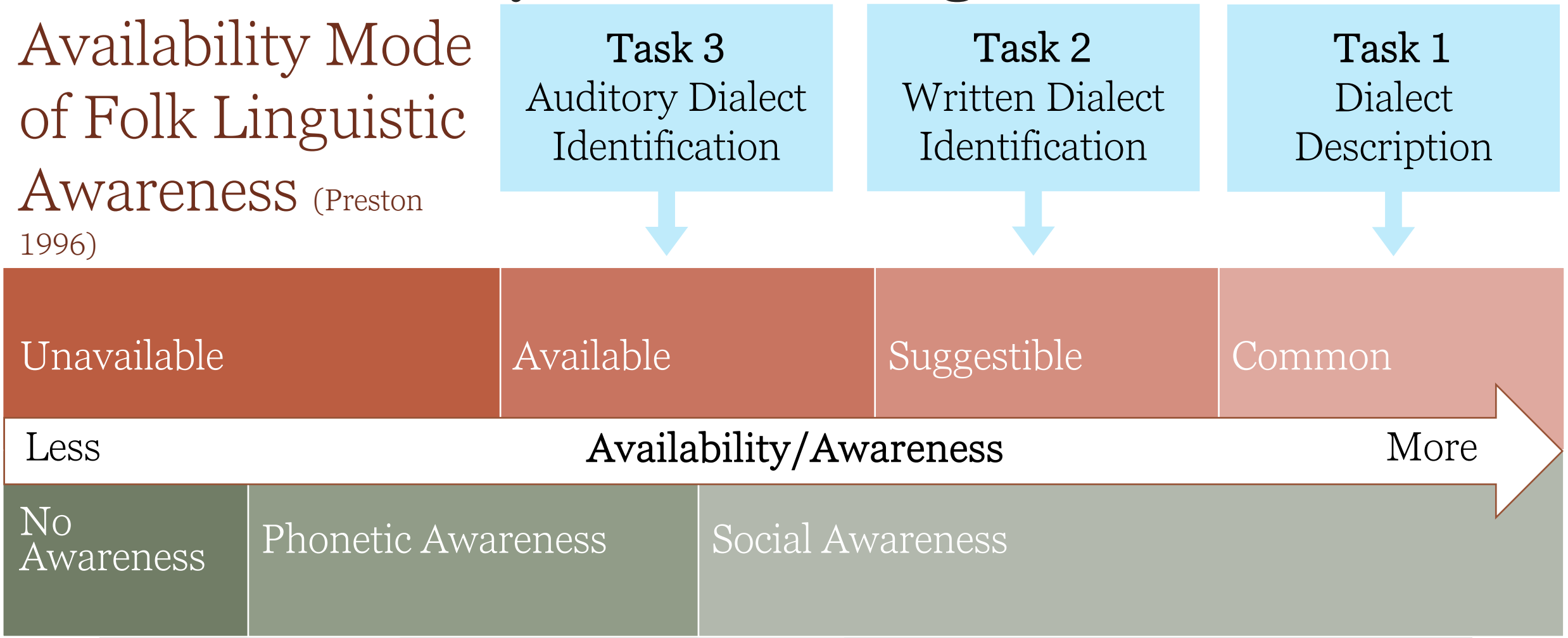
Written Dialect Identification Task

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

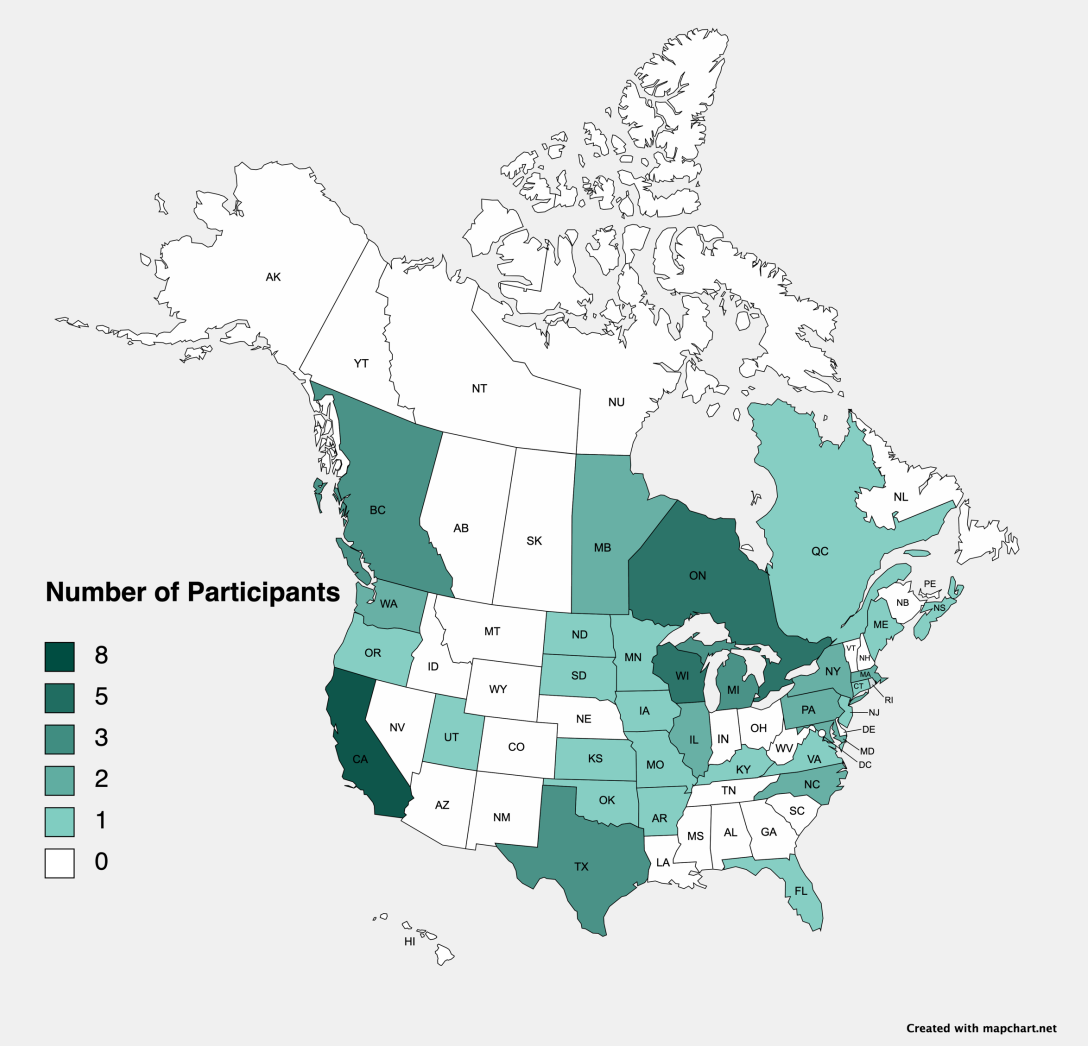
Hypothesized Relationship between experiment tasks, availability and metalinguistic awareness



Participants

Gender	*n*	Mean Age	Age Range
Female	33	34.7	18-72
Male	28	36.8	19-55
Total	**61**	**35.7**	**18-72**

Participants were recruited through prolific.co



Audio Stimuli

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

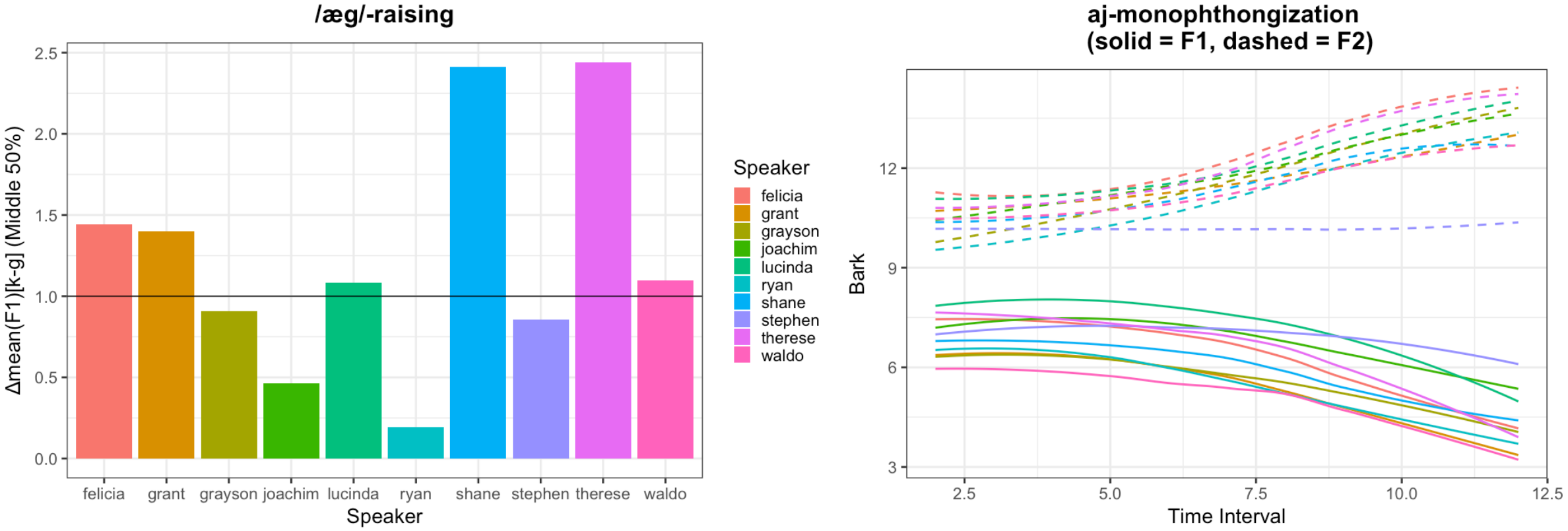
- 6 Canadians (Ottawa Valley - 3 female, 3 male)
- 4 Americans (Midwest, California, & General American/Southern – all male)

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

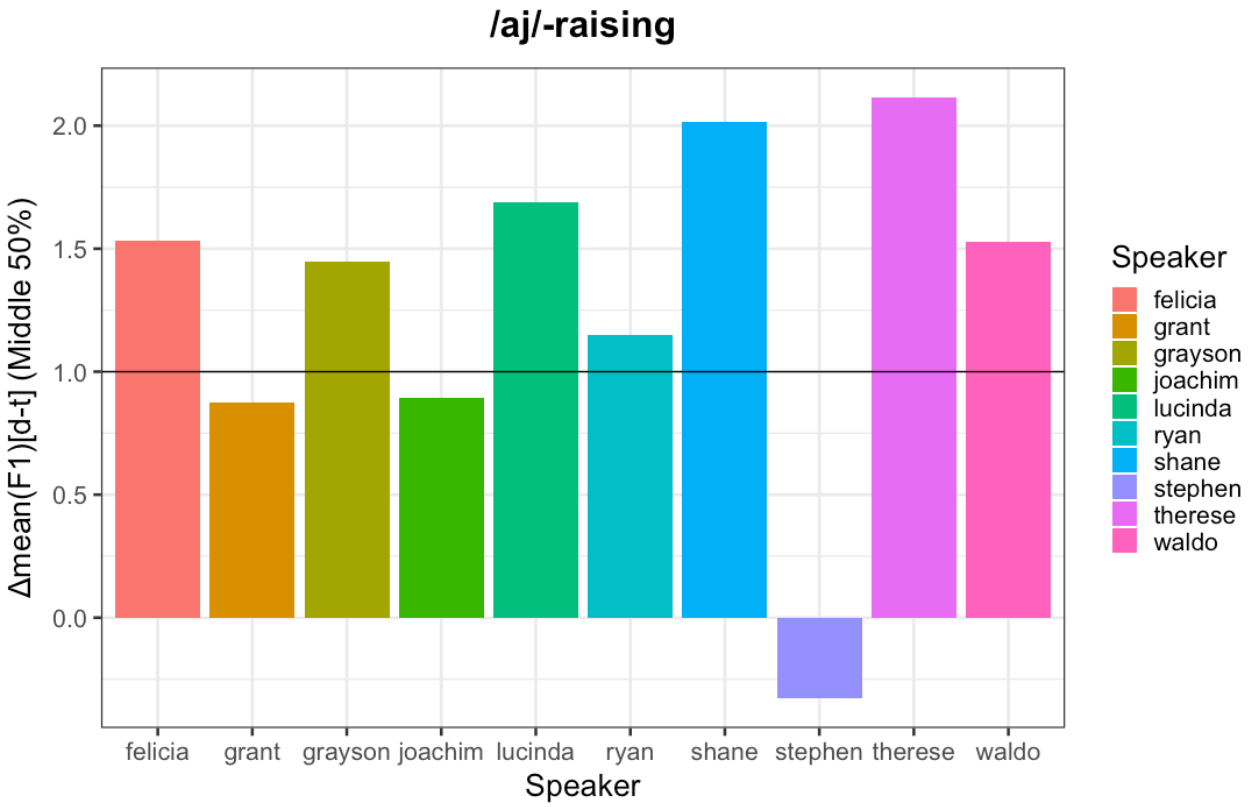
Vowels were analyzed in Praat to determine if speakers had features or not

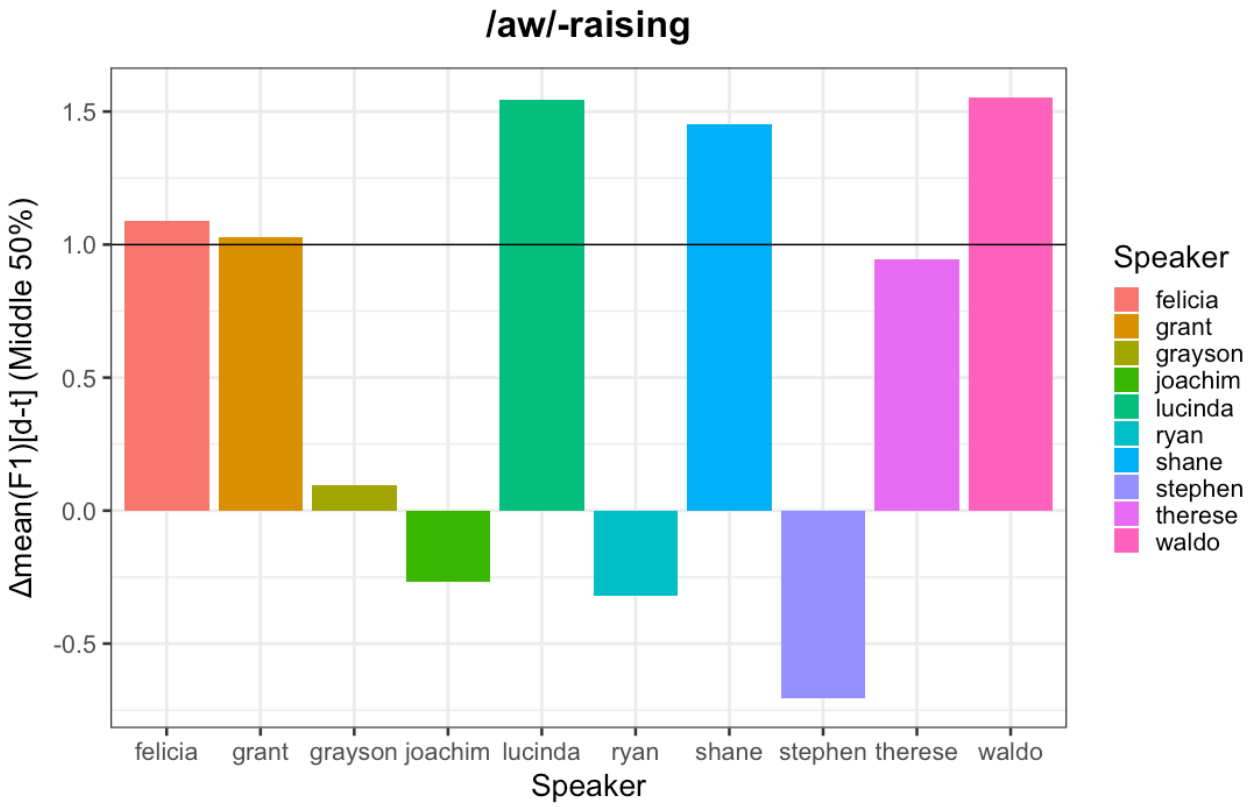
- **Raising**: difference between the mean of 7 equidistant points in middle 50% of vowel in the raised and unraised environments (hereafter Δmean(F1))
- **Monophthongization**: vowel trajectory (11 equidistant points)

Audio Stimuli



Audio Stimuli





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 the following regions (tasks 1-2) or identified a speaker with that feature as being from that region (task 3):

- **/aj/-monophthongization (AM)**: Any southern state
- **/æg/-raising (BAG)**: Canada (+ Ottawa Valley & Newfoundland), Minnesota, Seattle
- **/aw/-raising (BCR)**: Canada, Minnesota
- **/aj/-raising (FCR)**: Canada, Minnesota

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), buildmer (Voeten 2023) and party (Strobl et al. 2008) packages

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

Classification Trees & Random Forests:

- **All features**: Score ~ Feature + Task + Participant YOB + Participant Gender
- **By feature analysis**: Score ~ Task + YOB + Gender

Overall Regression model (to compare tasks): lmer(Score ~ Task + (1|Participant) + (1|Feature)

By-Feature Regression Models: buildmer(Score ~ Task*YOB*Gender)

- **Task**: Ordinal coding(1 vs 2; 2 vs 3)
- **YOB**: Continuous
- **Gender**: Contrast Coded (F = -0.5; M = 0.5)

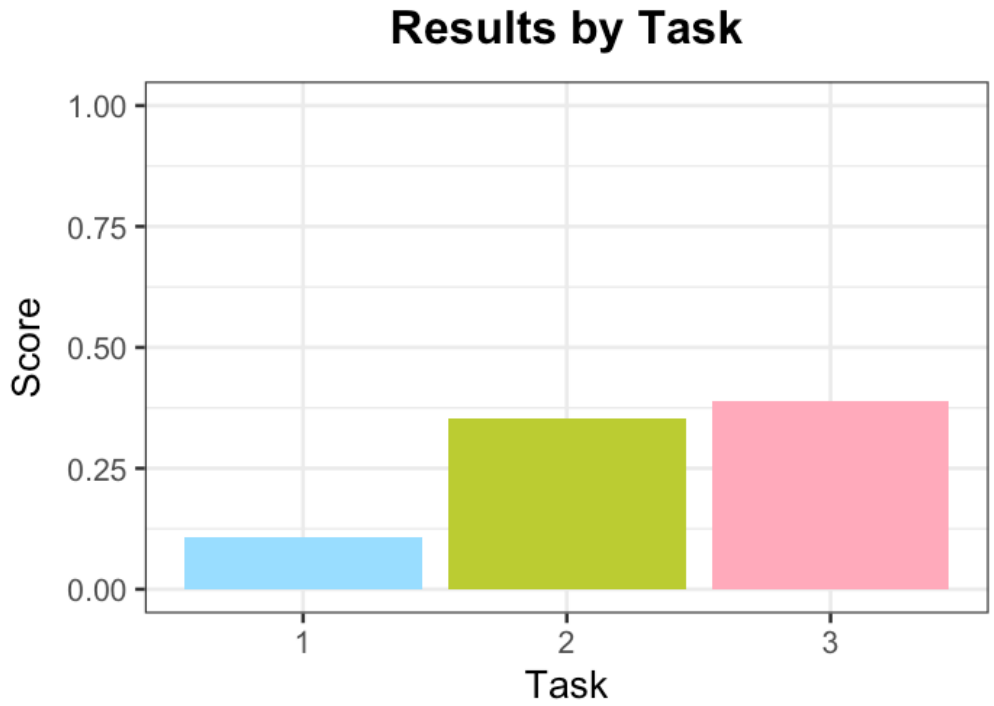
Overall Results

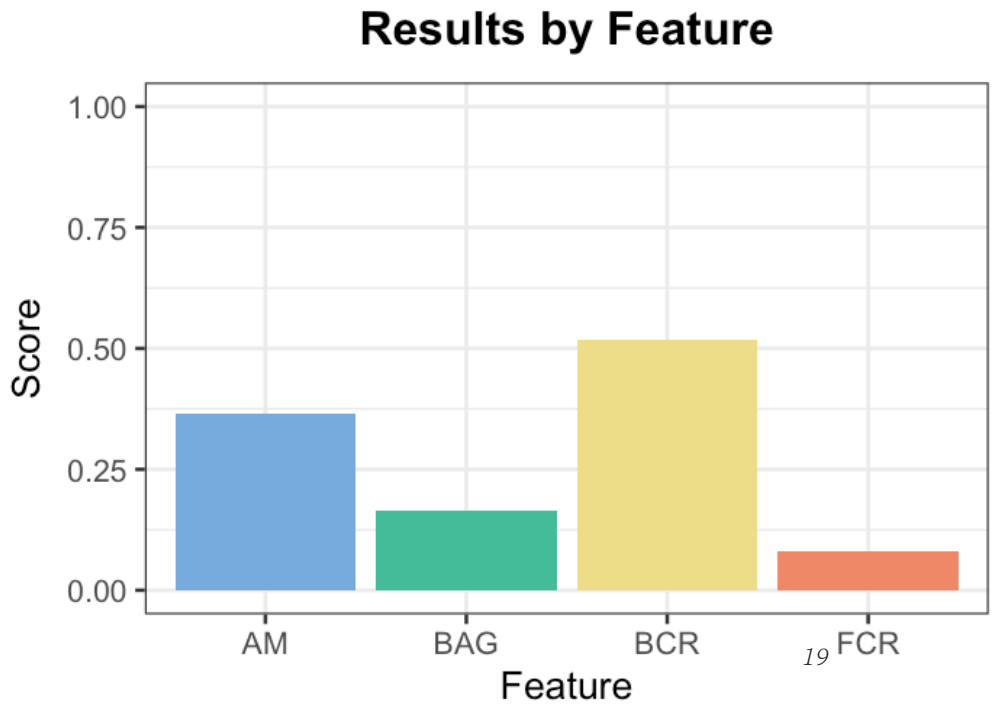
By task scores: 1 < 2 <3

- Difference between task 1 and 2 is significant (but not 2 vs 3)

By feature scores: FCR < BAG < AM <BCR

- **AM** – aj-monophthongization
- **BAG** – æg-raising
- **BCR** – aw-raising
- **FCR** – aj-raising

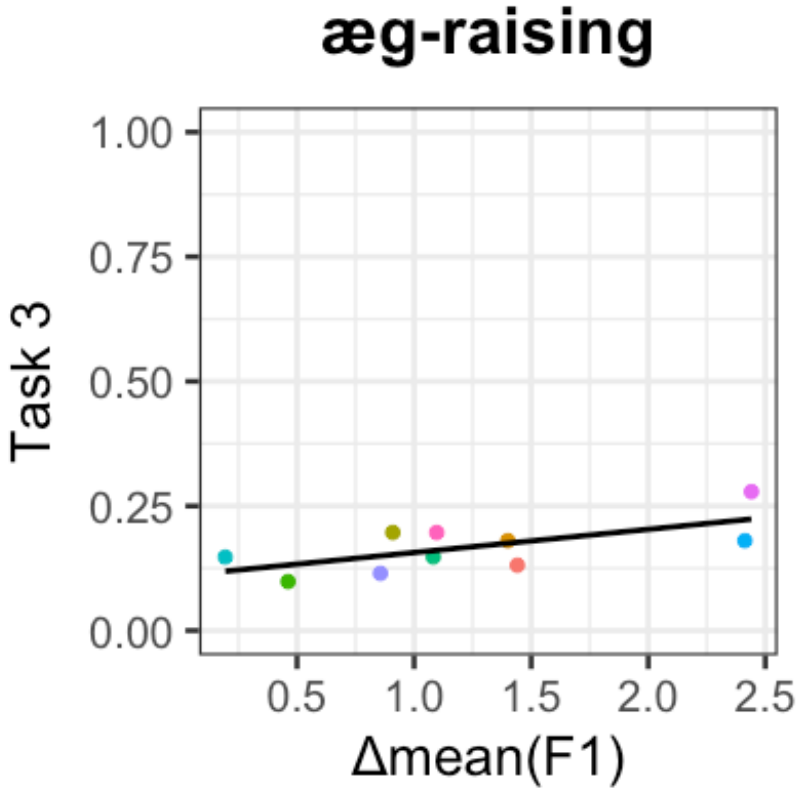


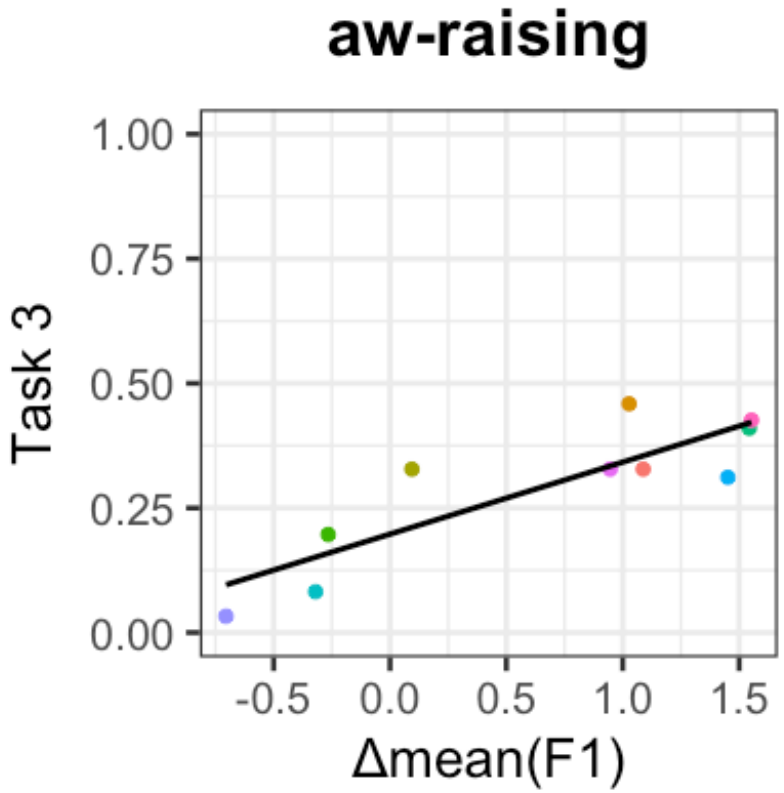


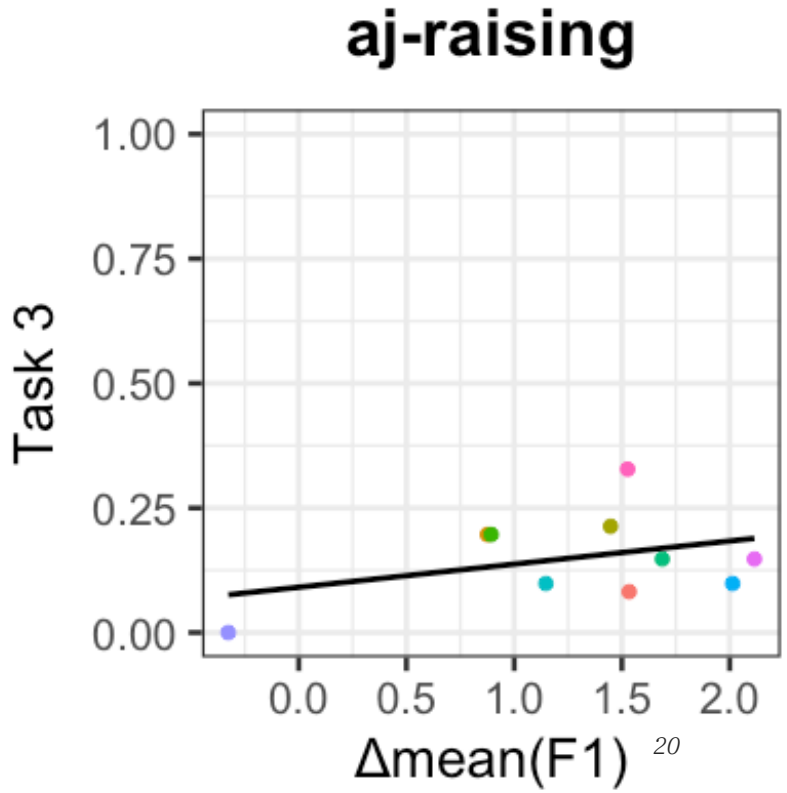
Task 3 Verification

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

Variable	Adj. R^2	β	SE	t	p
/æg/-raising	0.37	0.047	0.019	2.51	0.037
/aw/-raising	0.72	0.14	0.030	4.86	0.0013
/aj/-raising	0.024	0.046	0.042	1.11	0.30



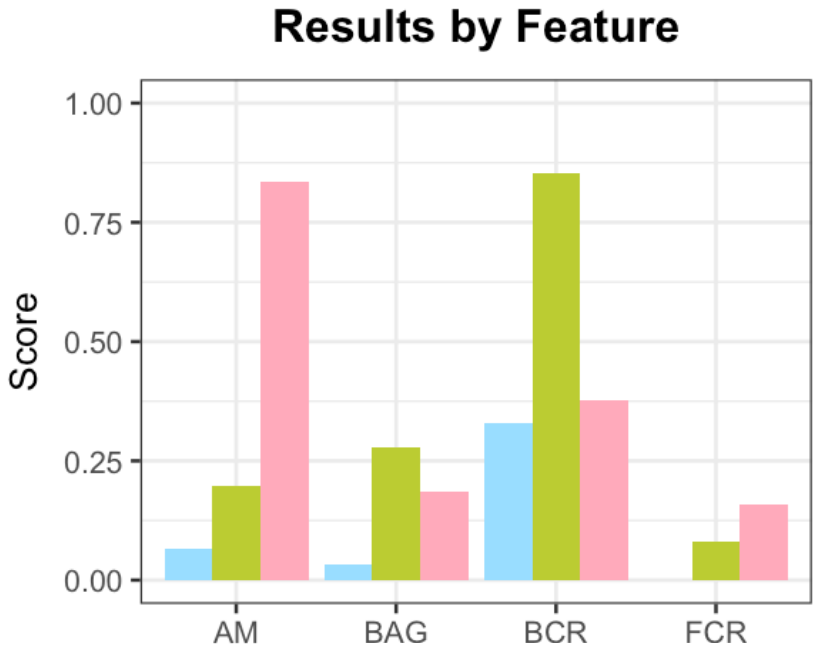


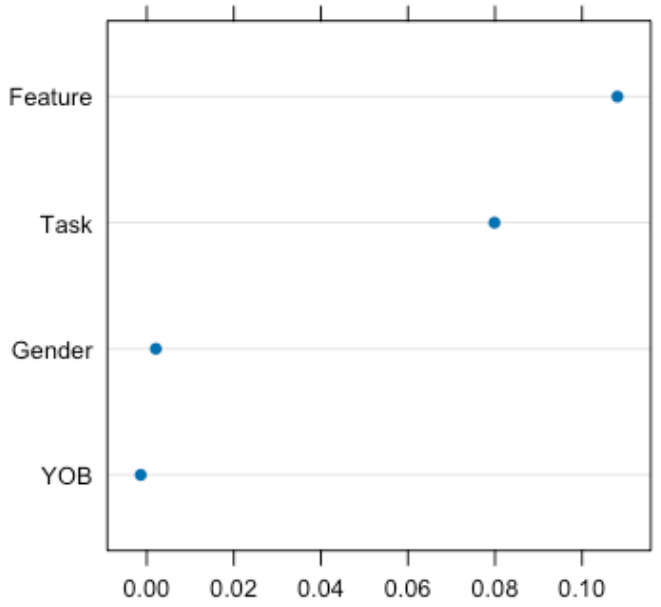


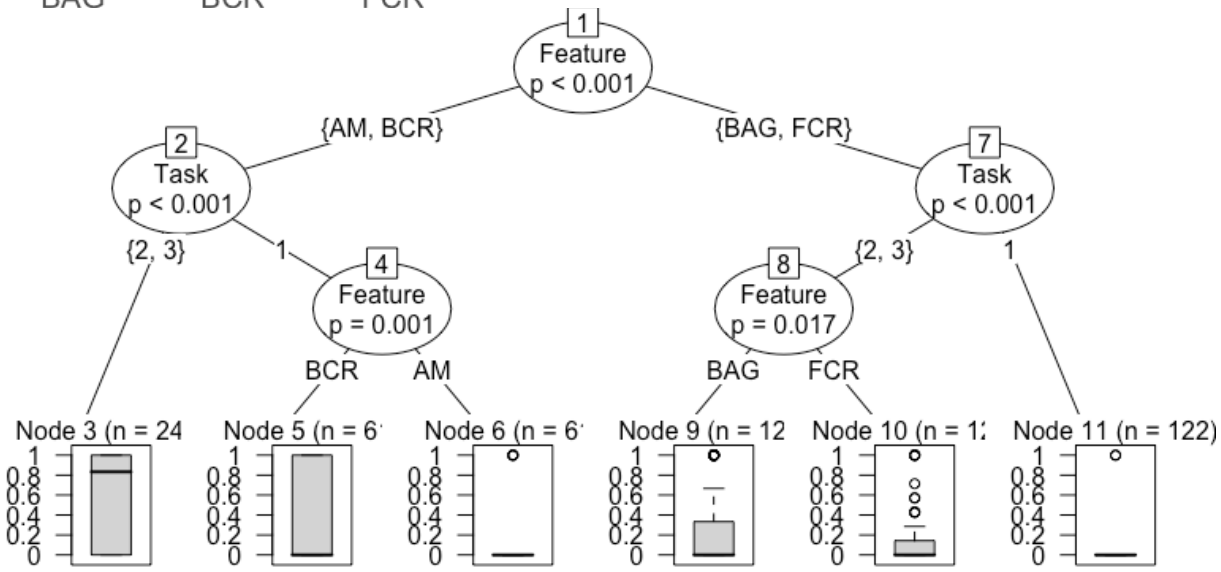
Results by Feature

- **AM** – aj-monophthongization
- **BAG** – æg-raising
- **BCR** – aw-raising
- **FCR** – aj-raising

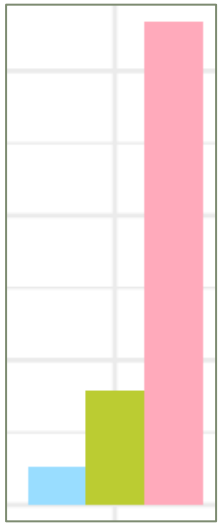
Random forests & classification trees indicate that task and feature are most significant in determining score



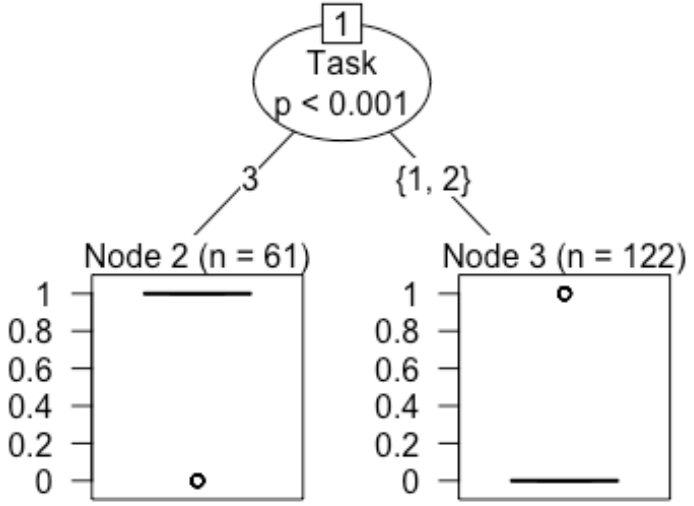


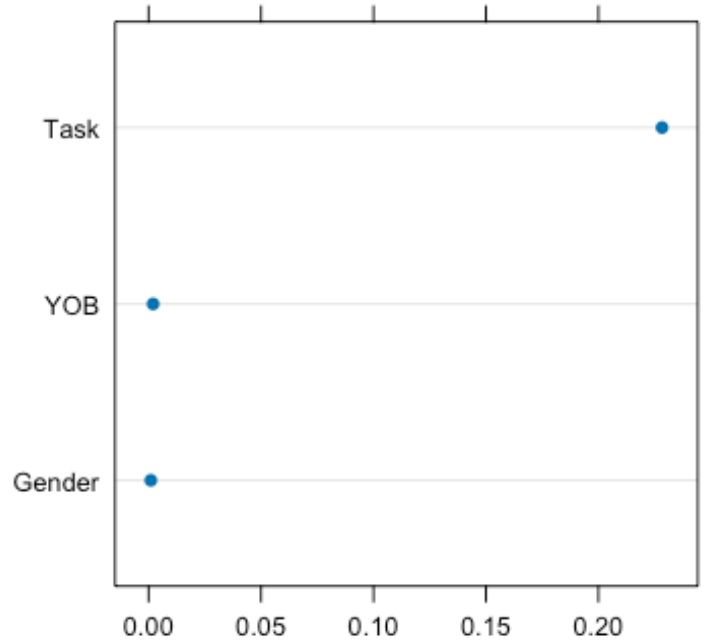


aj-monophthongization

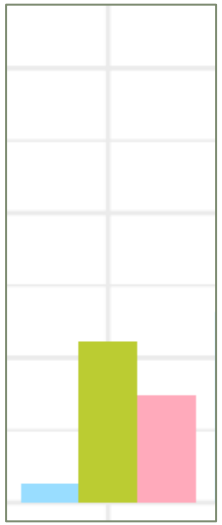


- Classification trees show significant effect of Task (1&2 vs 3)
- Random forest shows Task is the most important factor
- Regression model only includes tasks, and includes significant differences in 1vs 2 & 2 vs 3

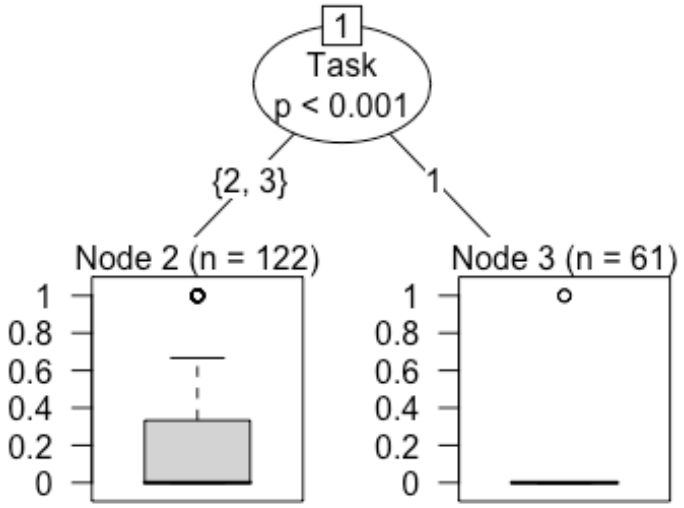


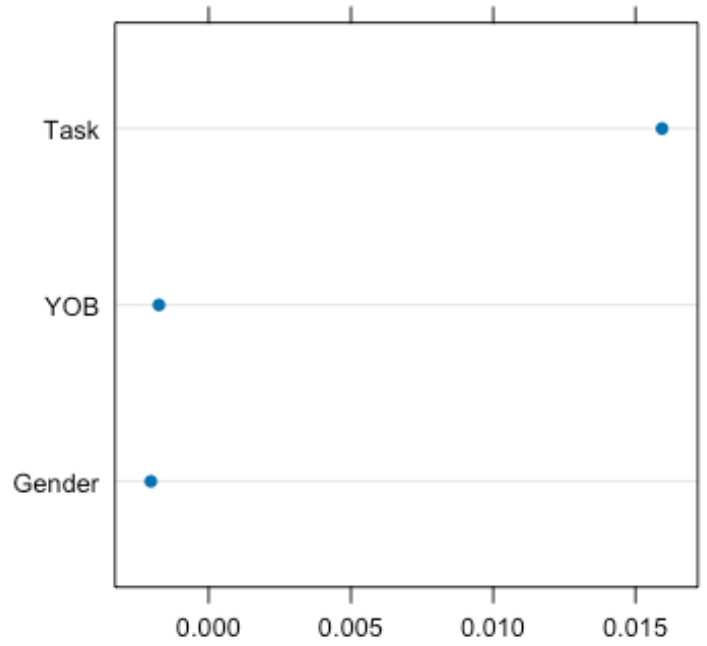


/æg/-raising

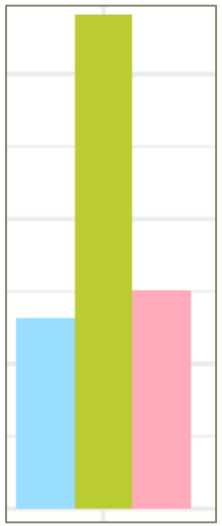


- Classification trees show significant effect of Task (1 vs 2&3)
- Random forest shows Task is the most important factor
- Regression model only includes tasks, and includes a significant difference in 1vs 2

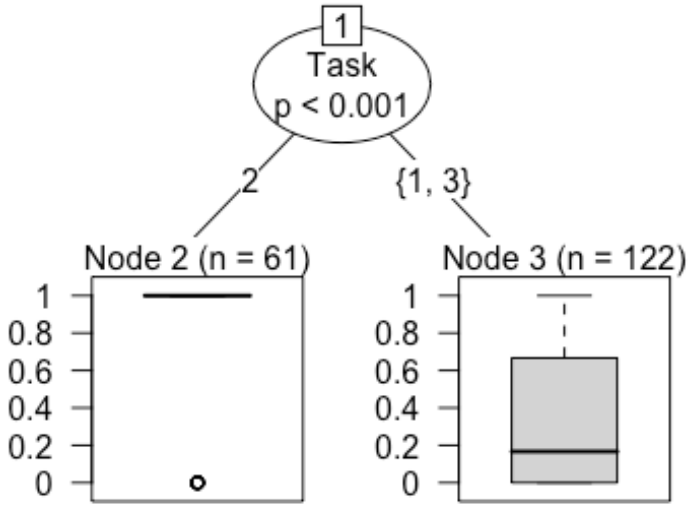


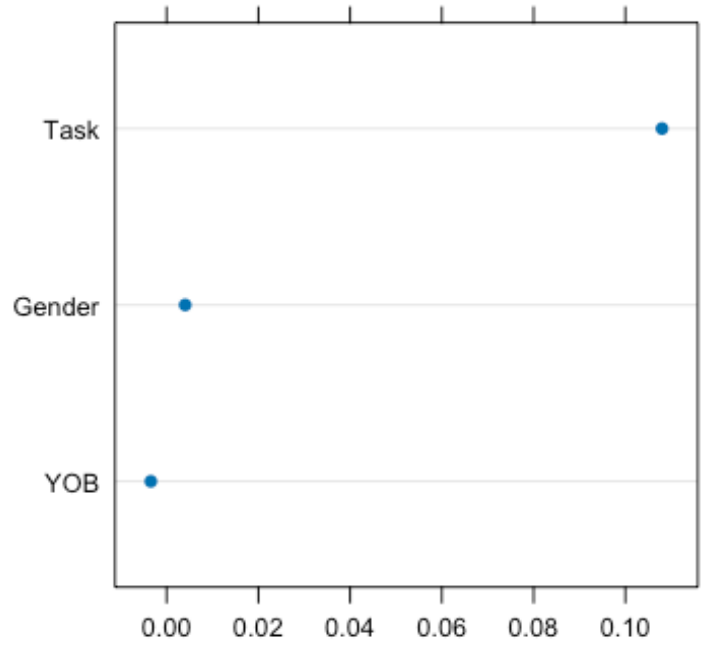


/aw/-raising

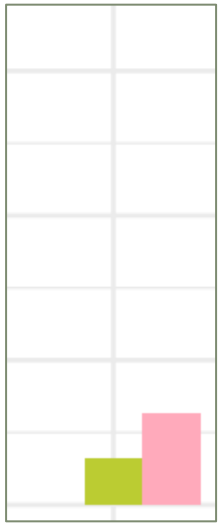


- Classification trees show significant effect of Task (2 vs 1&3)
- Random forest shows Task is the most important factor
- Regression model only includes tasks, and includes a significant difference in 1vs 2 and 2 vs 3

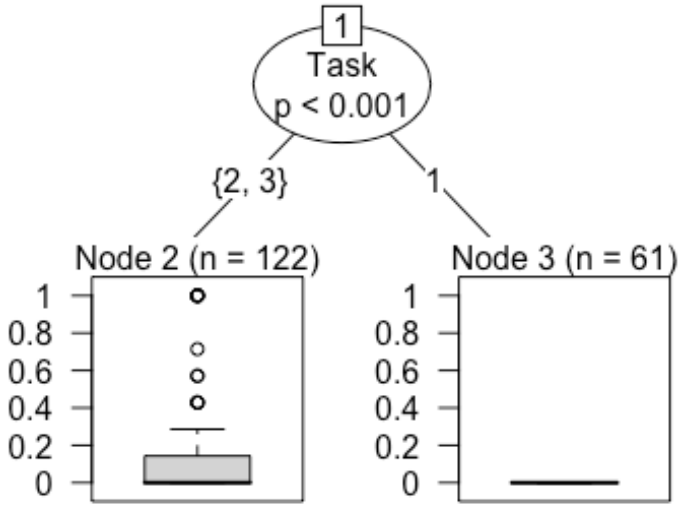


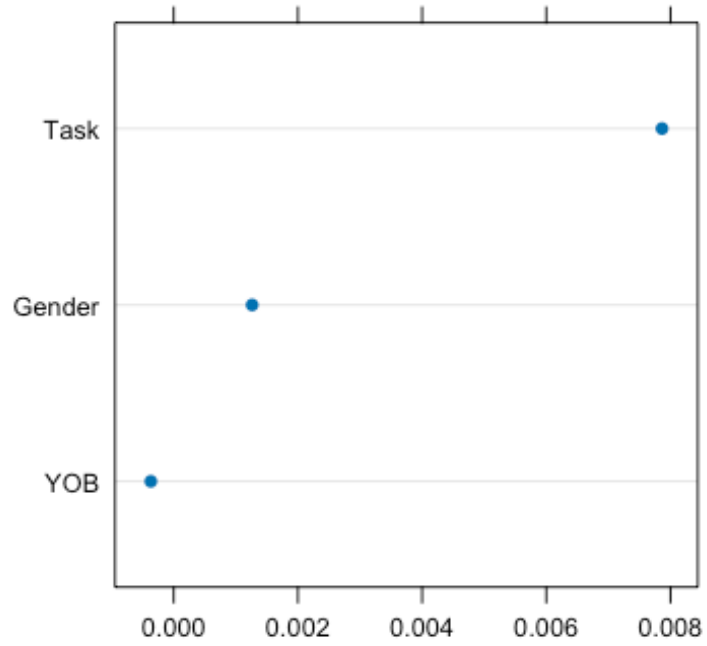


/aj/-raising



- Classification trees show significant effect of Task (1 vs 2&3)
- Random forest shows Task is the most important factor
- Regression model only includes task, gender and their interaction. All speakers show a difference significant difference between tasks 1 & 2, but only female speakers have a significant difference between tasks 2 & 3





Patterns

Overall patterns for task (1<2<3) and feature (FCR<BAG<AM<BCR) consistent with expected pattern based on folk/metalinguistic awareness expectations

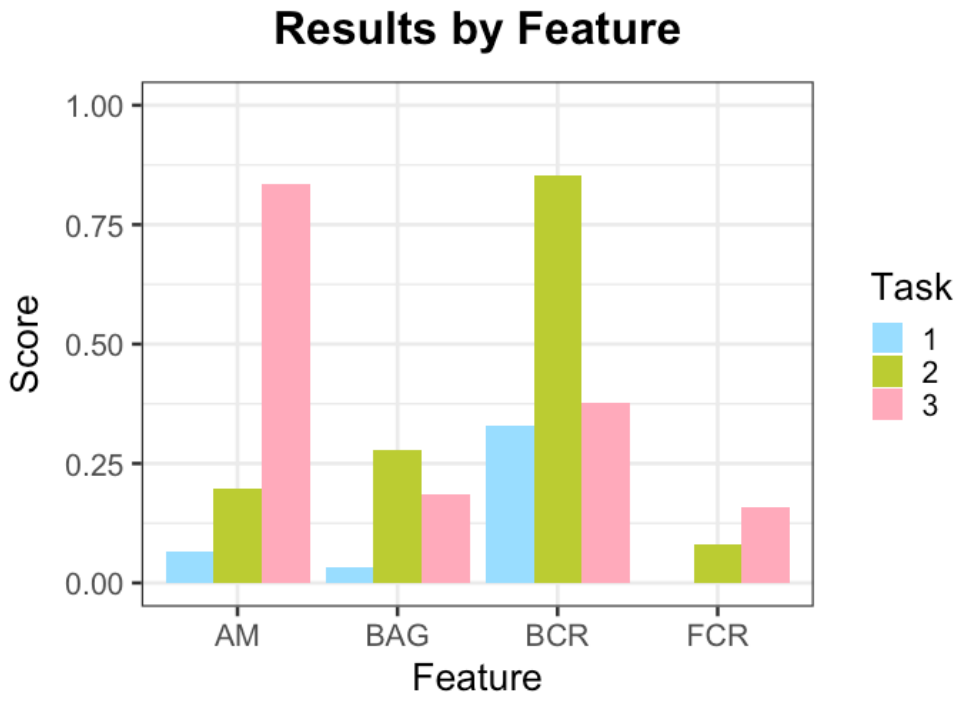
Different patterns between tasks suggest different different modes of folk linguistic awareness are at play

- **Task 1 vs 2/3**: æg-raising, aj-raising – lowest scores (low availability, detail, accuracy)
- **Task 1/2 vs 3**: aj-monophthongization – not easily described (low detail), but highly salient (high availability & accuracy)
- **Task 2 vs 1/3**: aw-raising – easily described & (inaccurately) stereotyped (high availability & detail, but low accuracy)

Discussion

Metalinguistic awareness is quantifiable, however different tasks appear to be influenced by different modes of folk linguistic awareness, in addition to availability

- Higher scores on task 1&2 for aw-raising suggest that detail is implicated alongside availability in these tasks, particularly Task 2 (written dialect identification)
- High scores only for aj-monophthongization in Task 3 (auditory dialect identification) suggest that accuracy is crucial for this task



Future work

- 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 (e.g. production, dialect region, cognition, etc.)
- Other languages, tasks

Conclusion

- It is possible to quantify metalinguistic awareness, however, availability is not the only mode of folk linguistic awareness implicated in different tasks, so care should be taken in selecting tasks
- Such quantifications can be used to examine now metalinguistic awareness and folk linguistic awareness affect sociophonetic perception (e.g. in phonetic discrimination and identification tasks)

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