Vowel Dynamics and Social Meaning in York, Northern England

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Introduction

- As time-varying acoustic events, speech sounds offer a wide range of variable cues which could potentially attach to the social meanings available in a speech community.
- The present study explores dynamic variation and change in the GOAT vowel (/o/) in York, Northern England, with a view to discovering:
 - (a) how dynamic properties of this vowel vary **in production**.
 - (b) the extent to which this variation is available as a socialindexical cue in perception.

Data

- 52 sociolinguistic interviews (inc. interview, map task, word list) conducted in York, Northern England.
- Social perception data from the same individuals.

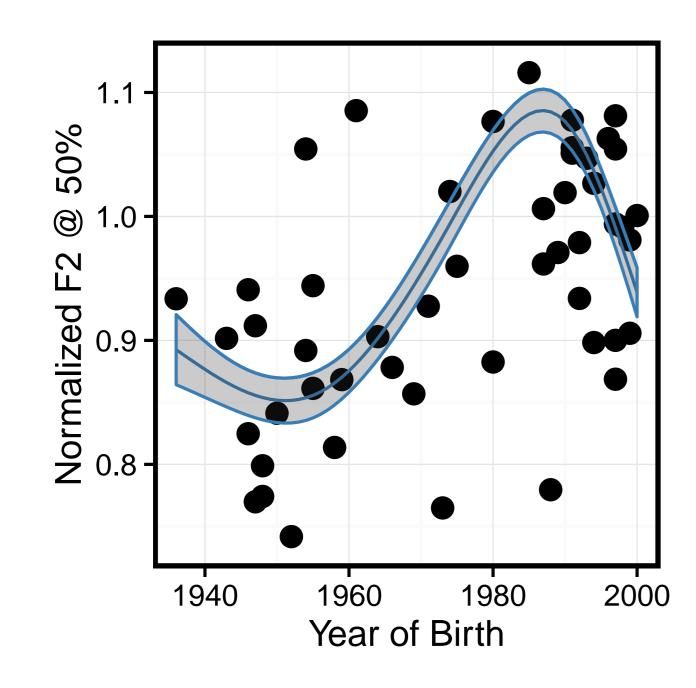
| | Male |
|----|------------------------|
| | 5 |
| | 11 |
| 10 | 11 |
| | Female 7 8 10 |

/o/ fronting and diphthongization in York

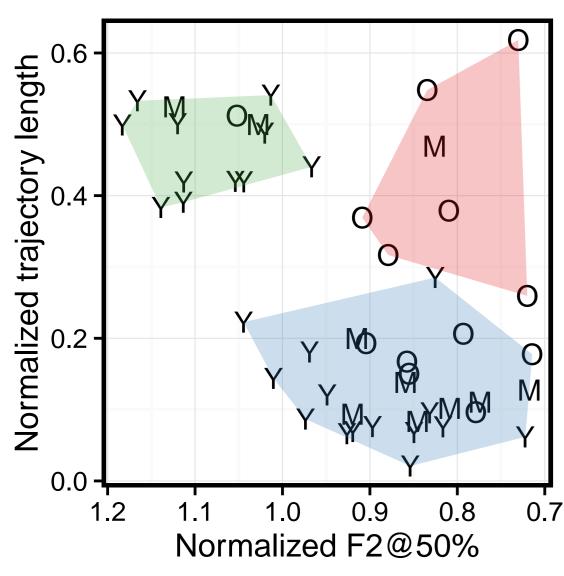
- F1/F2/F3 Measurements taken at 20 equidistant points along the vowel trajectory.
- Generalized Additive Mixed Models fit to F2 trajectories, predicting F2 as a smooth function of time.
- Social factors tested: speaker year of birth, gender...
- +3 composite variables derived from a factor analysis of interview responses:
- mobility index (-2 +2)
- regional identity index (-2 +2)
- -general SES index (-2 +2)

(a) Main effect of speaker year of birth

Apparent-time evidence of /o/ fronting



(b) Interaction of fronting and diphthongization

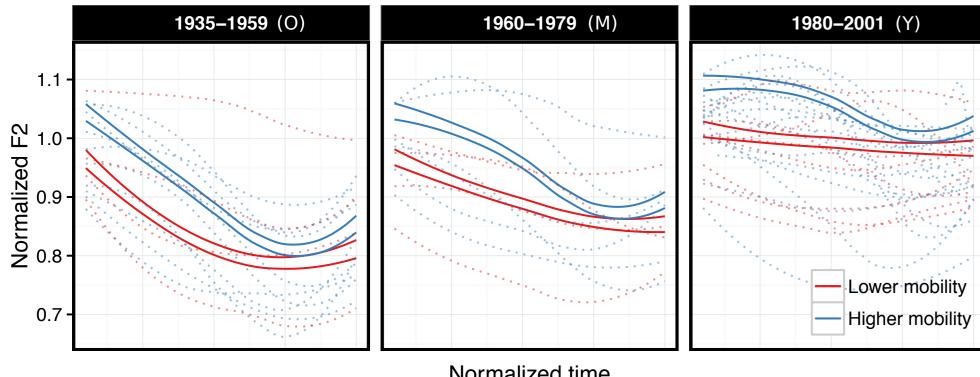


- Speakers appear to cluster into three groups:
- Those with back /o/ realizations, who vary in terms of their trajectory length (red).
- Those with fairly back, monophthongal realizations (blue).
- Those with fronted, diphthongal realizations (green).

 Fronting among monophthongal speakers lags behind that of diphthongal speakers, consistent with Haddican et al. (2013).

(c) Vowel dynamics and mobility

• F2 trajectories of high/low mobility speakers have become more distinct:



Normalized time

Investigating sociolinguistic perception

- We know that:
- Back /o/ variants are typical of older speakers.
- Diphthongal variants are typical of more mobile/middle-class speakers.
- Monopthongal variants are possibly associated with regional identity (Haddican et al., 2013).
- To what extent are listeners sensitive to these patterns in perception?

Figure 2: /o/ variants tested

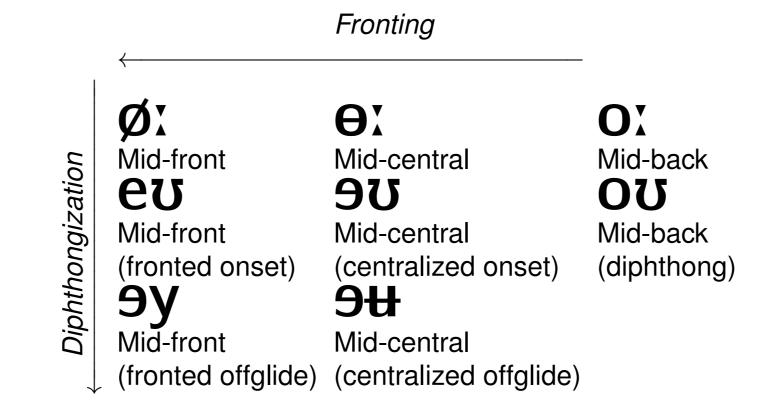
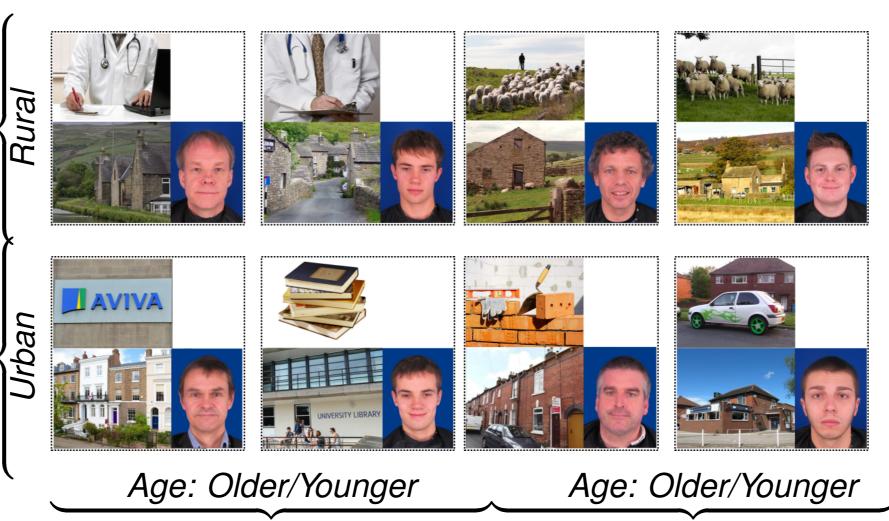


Figure 3: Visual stimuli



Social class: Middle/Working

• Task:

- Participants are told they are listening to an actor pretending to be one of a set of characters in a TV sitcom set in York.
- Training phase: Participants sort the images according to questions e.g. 'Which character comes from Rural Yorkshire'?
- Testing phase: Participants see the characters in 'minimal pairs', hear a speech token, and select the character which they think the actor is pretending to be.

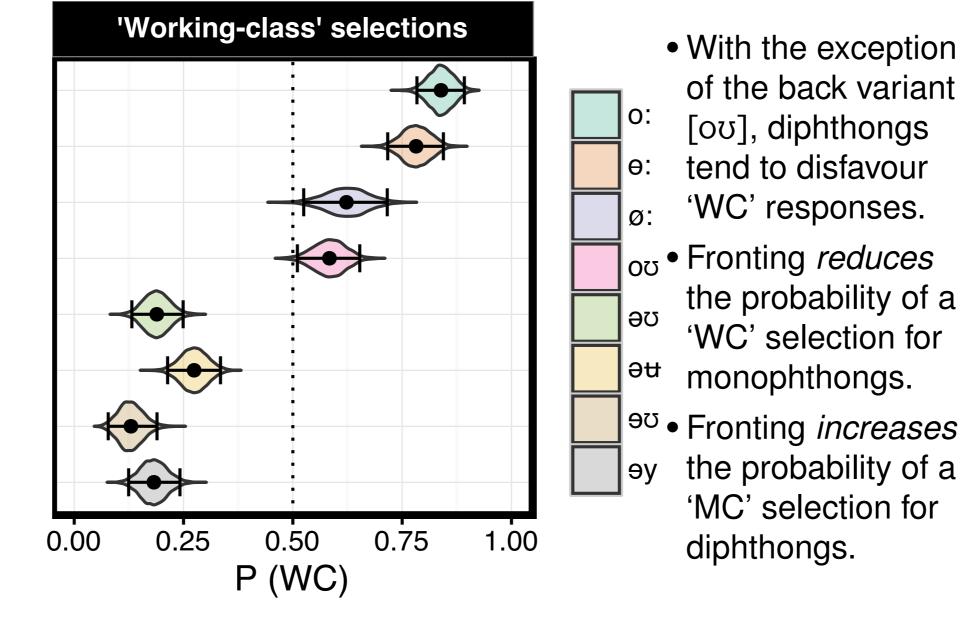
Modeling sociolinguistic perception

- Strategy: analyze responses for each social dimension separately – social class (WC/MC), regional identity (Urban/Rural) age (Older/Younger).
- Responses modeled using hierarchical GLMs with a logit link.
- Individual-level variability modeled through listener-level intercepts and (variant—listener) random slopes.
- Parameter estimates obtained through MCMC in rstanarm (Gabry & Goodrich, 2016). Priors were t-distributions with 7 degrees of freedom and a scale of 2.5.

Results

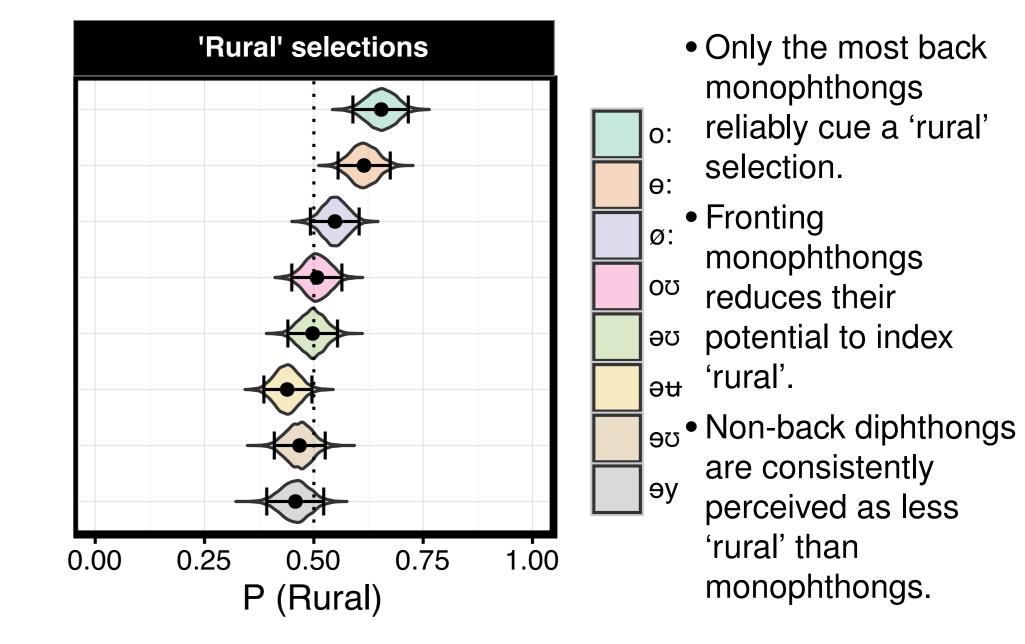
- Plots show the inverse-logit transformed posterior distribution of each parameter, representing the expected probability that each variant will cue a selection on the social dimension labeled on each plot.
- Where error bars (showing 95% credible intervals) do not cross zero, there is reliable evidence that the variant impacted listeners' selections.
- Where the mean of one parameter lies outside the 95% CI of another, there is evidence that the variants differed from each other in influencing listeners' responses.

/o/ variation as an index of social class



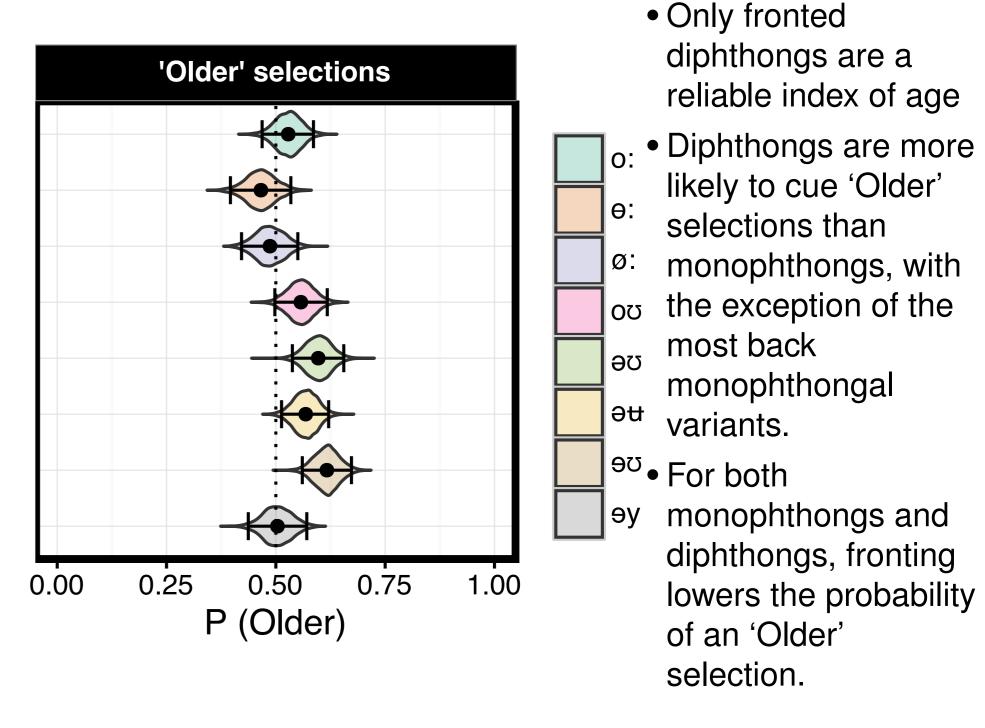
- Fronting at the offglide is marginally less 'MC' than fronting at the vowel midpoint.
- Social perception generally consistent with production.

/o/ variation as an index of urban/rural identity



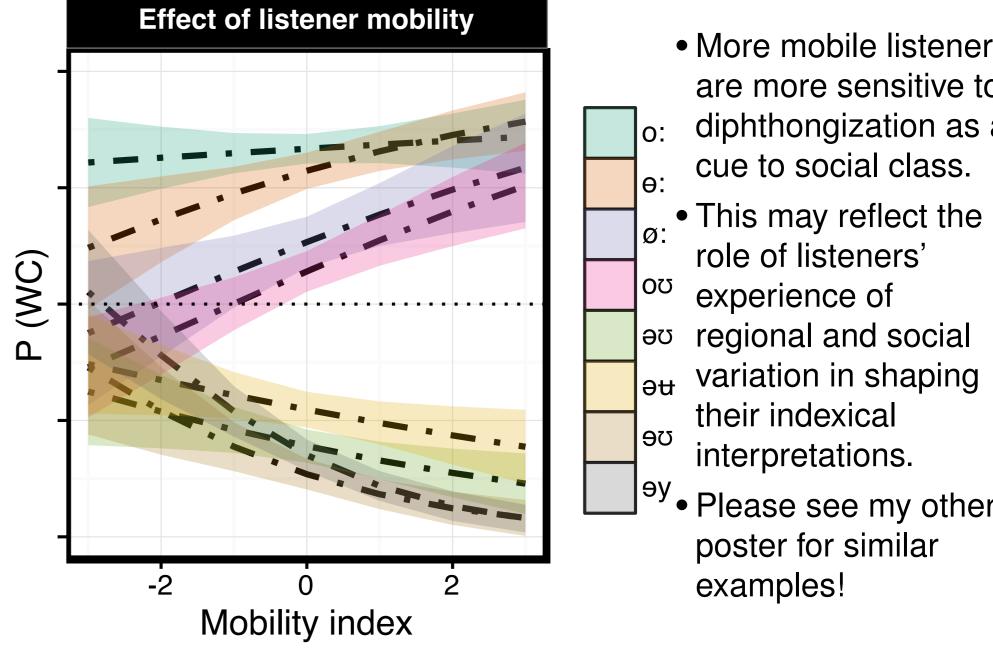
Social perception weakly consistent with production.

/o/ variation as an index of age



 Social perception ONLY PARTIALLY consistent with production.

Evidence of listener variability



 More mobile listeners are more sensitive to diphthongization as a

regional and social variation in shaping

^{9y} • Please see my other

Conclusion

- The interaction of fronting and diphthongization results in a range of variation in /o/.
- The social interpretation of /o/ variation often reflects the distribution of that variation in production, but not always.
- In some cases, listeners' perceptual inferences are consistent with production:
- diphthongization and social class.
- fronting, age and social class.
- In other cases, there is a mismatch between social perception and production:
- fronted diphthongs are heard as 'old', but are used almost exclusively by younger speakers.
- A possible interpretation: listeners' social-indexical knowledge is informed by ideologically-structured schemata (e.g. Eckert (2008); Campbell-Kibler (2009), rather than being based primarily on the social distribution of variation in the speech community (e.g. Docherty & Foulkes, 2014). As a result, social interpretations may reflect the social patterning of variants in production, but may also contrast with them.

References

Campbell-Kibler, K. (2009). The nature of sociolinguistic perception. Language Variation and Change, 21(01), 135-156.

Docherty, G. J., & Foulkes, P. (2014). An evaluation of usage-based approaches to the modelling of sociophonetic variability. Lingua, 142, 42-56.

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