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 social-indexical cue **in perception.**

Data

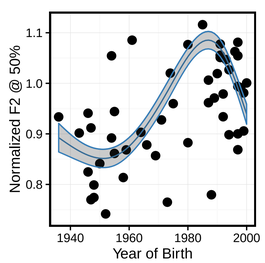
- 52 sociolinguistic interviews (inc. interview, map task, word list) conducted in York, Northern England.
- Social perception data from the same individuals.

Birth year	Female	Male
1935-1960	7	5
1961-1980	8	11
1981-2000	10	11

/o/ fronting and diphthongization in York

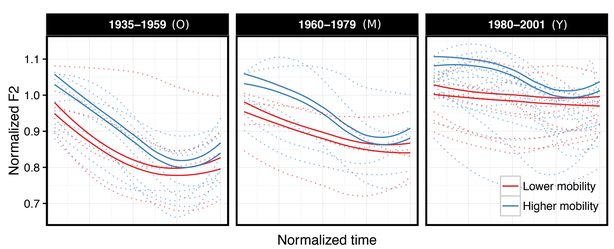
- F1/F2/F3 Measurements taken at 20 equidistant points along the vowel trajectory.
- Generalized Additive Mixed Models fit to F2 trajectories, predicting F2 as a smooth function of time.
- Social factors tested: speaker year of birth, gender...
- +3 composite variables derived from a factor analysis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

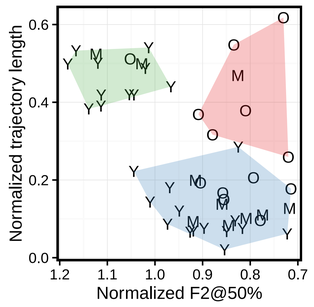


- Evidence of ongoing fronting of /o/
- This change involves:
  - A rise in F2 at the offglide across speaker groups
  - Additional fronting at the vowel midpoint among more mobile speakers, resulting in a greater curvature in the vowel trajectory
- Trajectories of high/low mobility groups have become more distinct over time

(b) Interaction of year of birth and mobility index



(c) 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)
- Apparent lack of fronted monophthongs consistent with Haddican et al. (2013)

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

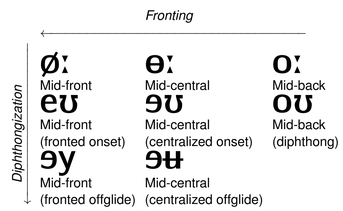
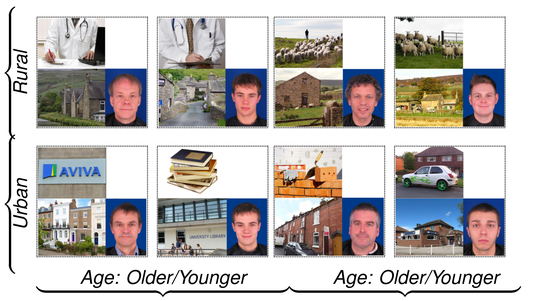


Figure 3: Visual stimuli



- **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.

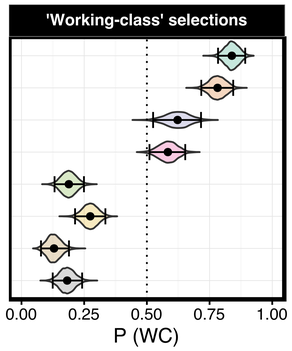
Modeling sociolinguistic perception

- 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

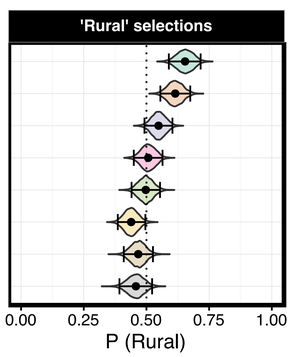
- Plots show the inverse-logit transformed posterior distribution of each parameter, representing the expected probability that each variant will cue a selection on the social dimension labeled on each plot.
- Where error bars (showing 95% credible intervals) do not cross zero, there is reliable evidence 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



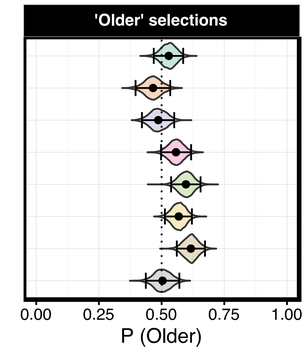
- Clear effect of diphthongization – with the exception of the back variant [oʊ], diphthongs tend to disfavour 'WC' responses
- Within monophthongs, fronting reduces the probability of a 'WC' selection
- Within diphthongs, fronting increases the probability of a 'MC' selection, although less radically
- Fronting at the offglide is marginally less 'MC' than fronting at the vowel midpoint.

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



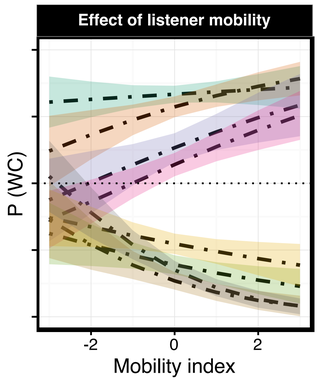
- Only the most back monophthongs reliably cue a 'rural' selection
- Fronting monophthongs reduces their potential to index 'rural'
- Non-back diphthongs are consistently percieved as less 'rural' than monophthongs

/o/ variation as an index of age



- Only fronted diphthongs are a reliable index of age
- Diphthongs are more likely to cue 'Older' selections than monophthongs, with the exception of the most back monophthongal variants
- Within both monophthongs and diphthongs, fronting lowers the probability of an 'Older' selection
- Fronting at the offglide of a diphthong sounds less old than fronting at the vowel onset.

Evidence of listener variability



- More mobile listeners are more sensitive to diphthongization as a cue to social class.
- This may reflect the role of listeners' experience of regional and social variation in shaping their indexical interpretations.
- Please see my other poster for similar examples!

Conclusion

- Ongoing fronting and diphthongization of /o/ results in a range of dynamic variation.
- 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 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

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