The Phonetic Properties of New York Hasidic Yiddish Vowels: Cross-generational Change

YiLaS2

2nd Conference on Yiddish Language Structures

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Overview of the Study

- **FOCUS ON**: Yiddish of Hasidic Jews in New York
- **ANALYZE:** Phonetic distinction in long-short peripheral vowel pairs
  - {/i/, /ɪ/}, {/u/, /ʊ/} and {/a:/, /a/}
- **DATA:** Word list elicitation following sociolinguistic interviews
- **COMPARE:** Vowel **spectrum** (via Euclidean distance) and **duration** across word class and speaker generation to find evidence of change
- **RESULTS:** Evidence of apparent time change, but the trajectories are different for high vs. low vowels

Organization

Background

Speakers

Variables

Data & Methods

Results

Summary and Conclusions

Background: Vowel Length in Yiddish

Eastern Yiddish

- Northeastern Yiddish:
  - Lithuania, Belarus, Latvia, areas of northeastern Poland, northern and eastern Ukraine, and western Russia
- Southeastern Yiddish:
  - Moldova and parts of Ukraine
- Central Yiddish:
  - Poland, eastern Slovakia, eastern Hungary and Romania, including a region referred to by Yiddish speakers as *Unterland*


Košice
Uzhhorod
Ужгород
Polyanytsya
Поляниця
Miskolc
E79
Eger
Nyíregyháza
E71
Sighetu
Marmației
Satu Mare
Baia Mare
Debrecen
Vatra Dornei
Szolnok
Zalău
Bistrița
Oradea
Cluj-Napoca
Gyula
Turda
Târgu Mureș
Arad
Sighișoara
Alba Iulia
Deva
Timișoara
Sibiu
Hunedoara
Resita

Impressions and Hypotheses

- Hasidic Yiddish inherited the long-short vowels of Central Yiddish
  - {/i/, /ɪ/}, {/u/, /ʊ/} and {/a:/, /a/}
  - Has been described as a **length contrast** for CY, but we don't know the phonetic realization
- Predictions (based on impressions):
  - High vowel pairs /i/ and /u/ exhibit a a tense-lax distinction (similar to English counterparts)
  - Low vowel pair /a/ still distinguished by length

Research Questions

- For each vowel pair, is there evidence of change over time in:
  - Relative quality?
  - Relative duration?

Speakers

Sociocultural Context

Speakers: Sociocultural Context

- Hasidic (ultra-Orthodox) Jews in New York
  - Estimated between 135K – 273 Yiddish speakers in NY Brooklyn, Rockland County, and Orange County
- Ideology that supports language maintenance (cultural continuity)
- Bilinguals
  - Yiddish acquired first and remains dominant in certain domains
  - Extensive English borrowing
- Gendered language dominance and use
  - Segregated educational system
    - Boys: Religious studies with Yiddish as language of instruction, minimal English
    - Girls: Dual curriculum, English instructional medium for secular subjects
  - English has covert prestige among female speakers (Fader, 2009)

Variables

Variables: /i/ - /ɪ/

- /i/ pair:
  - Distinction derives from Middle High German (MHG)
  - Corresponds to /i/ and /u/ in Standard Yiddish (StY)
  - Ex: *hi:t* ‘save’, *hit* ‘hat’ [StY: *hit, hut*]

/hit/ ‘protect’

/hɪt/ ‘hat’

Variables: /u/ - /ʊ/

- /u/ pair:
  - Reflex of MHG /a:/
  - Corresponds to /o/ in StY
  - Conditioned split (shortening) by following velar and labial consonants
  - Ex: *tsu:l* ‘pay’, tug ‘day’ [StY: *tsol*, *tog*]

/tsul/ ‘pay’

/tʊg/ ‘day’

Variables /a:/ - /a/

- /a/ pair:
  - Short /a/ reflex of MHG /a/
  - Long /a:/ corresponds to StY /aj/
  - Ex: *ha:nt* ‘today’, *hant* ‘hand’ [StY: *haynt, hant*]

/ha:nt/ ‘today’

/hant/ ‘hand’

Data & Methods

Participants

- 24 native HY speakers
- Raised Hasidic and raised or living in New York for a while
- 8 speakers of each generation (2, 3 and 4)
- Gen2
  - Age range: 60 – 70 (*M* = 66.69, median = 68.5, *SD* = 3.30)
  - Sex: 5 female
- Gen3
  - Age range: 29 – 48 (*M* = 40.17, median = 39, *SD* = 4.93)
  - Sex: balanced
- Gen4
  - Age range: 13 – 24 (*M* = 17.45, median = 14, *SD* = 4.18)
  - Sex: balanced

Elicitation

- Sociolinguistic interviews:
- Part I: Natural conversation (not analyzed here)
- Part II: Read Yiddish words in carrier sentence
  - 10 monosyllabic (CVC) words for each of the 6 vowels
  - Stimuli (target words) presented orthographically via digital flash cards (on a tablet), in pseudo-randomized order
- Part III: Part II repeated with English words (not analyzed here)

Data Transformations

- Duration measures log transformed (base 10)
- Normalization: Formant values (Hz) normalized using the modified Watt & Fabricius method as implemented in the *phonR* package (McCloy, 2016) in *R*
- Euclidean distance: Mean (normalized) F1 and F2 values of all the long vowels were calculated for each speaker and Euclidean distances (ED) of all vowel tokens were calculated relative to speaker's long vowel mean

Statistical Modeling

- Linear-mixed effects models for 3 vowel pairs, separately for **ED** and **duration**
- Step-up selection method: Fixed effects that significantly improved the fit of base model were added gradually
- Base model included: **vowel**, **generation** and the **interaction between vowel and generation** as fixed effect; with random intercepts for speaker and word
- Base model for compared to models to which one of these were added

(QUALITY: 1, 2, 4, 5, 6, 7; DURATION: 1, 2, 3, 4, 5)

1. Gender
2. Speech rate
3. Number of segments in word
4. Place of articulation of the following segment (coronal, dorsal and non-lingual)
5. Manner of articulation of the following segment (voiceless obstruent, nasal, lateral and voiced obstruent)
6. Voicing of the preceding segment (voiced vs. voiceless)
7. Place of articulation of the preceding segment (lingual vs. non-lingual)

Results

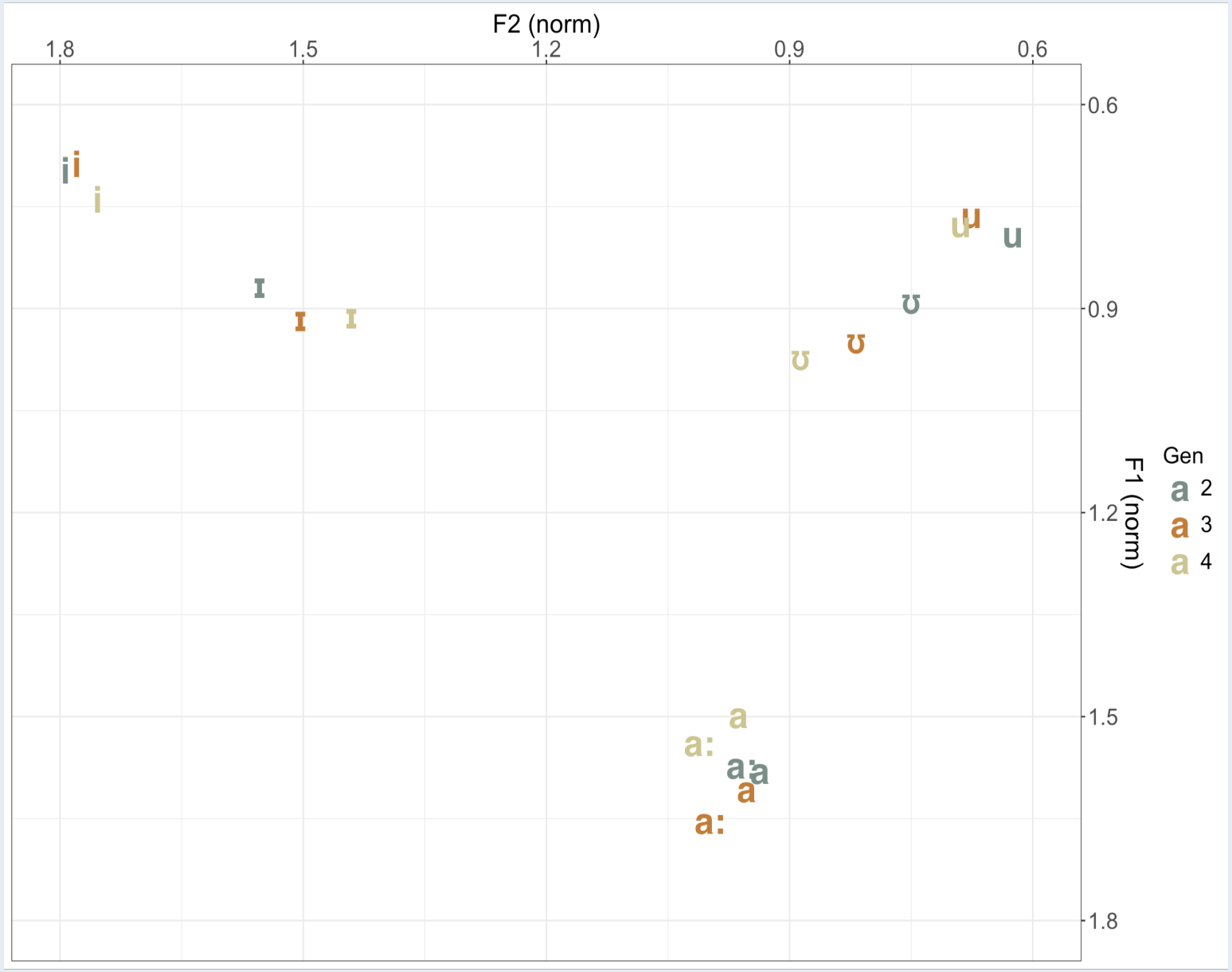
QUALITY

Tokens of New York Hasidic Yiddish Peripheral vowels plotted with F2 on the x-axis and F1 on the y-axis, with formant means represented by symbols in large font and ellipses showing 68% degrees of confidence in the location of the mean

N = 1367

Mean normalized formant values of New York HY Peripheral Vowels plotted by generation, with F2 on the x-axis and F1 on the y-axis

N = 1367



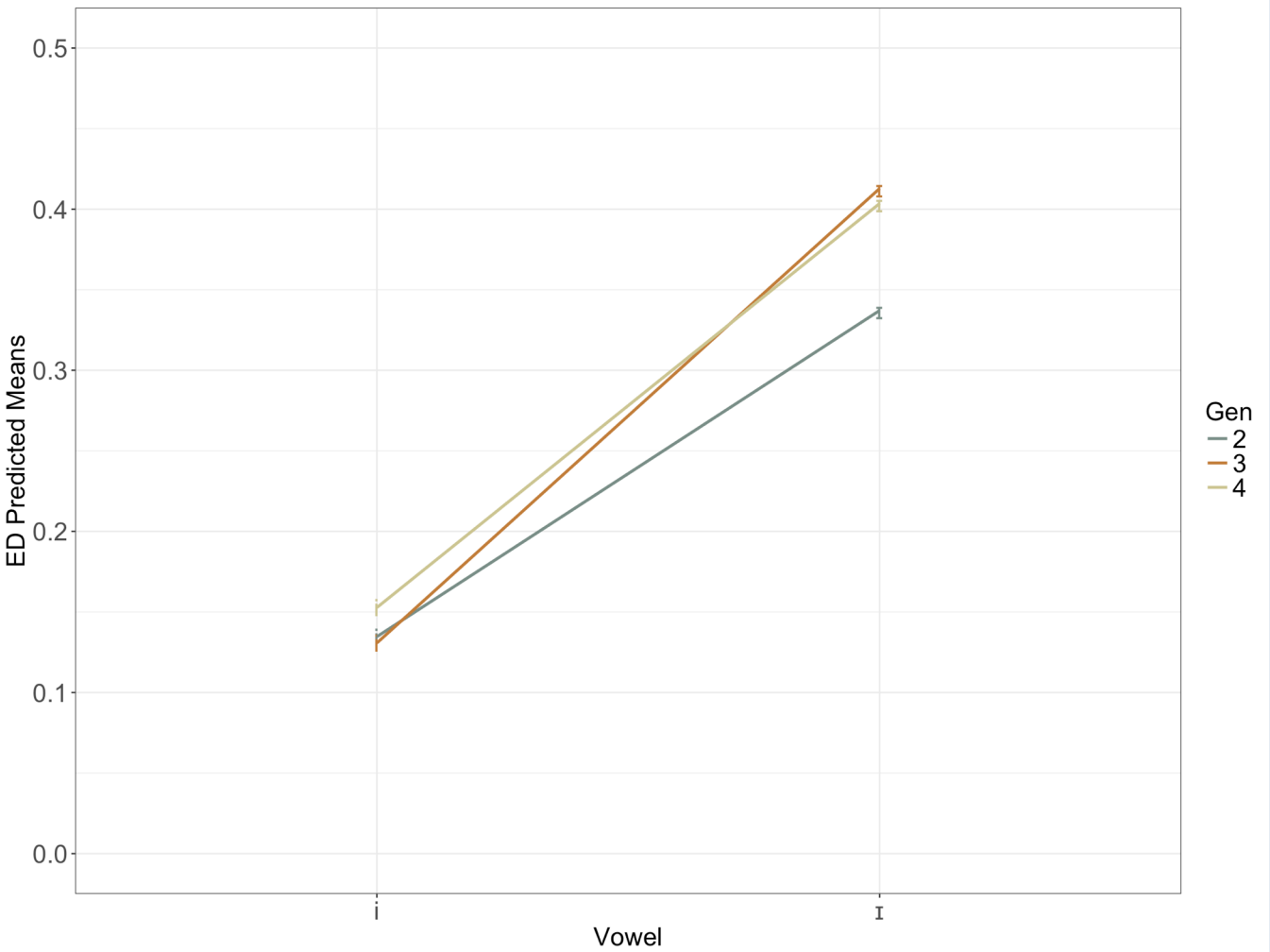
Statistical Model: Spectral Distance /i/

Best Model:
lmer(ED~Vowel*generation+post_man+ post_plac+(1|Speaker)+(1|Context), data=df_i)
N = 513

Main experimental effect:
Increase in distance, significant between Gen2 and Gen3 (<0.001)

Other significant effects:
Manner of following segment: Increase in ED from lateral consonant (<0.001)
Following segment place: Increase in ED from non-lingual consonants (<0.10)

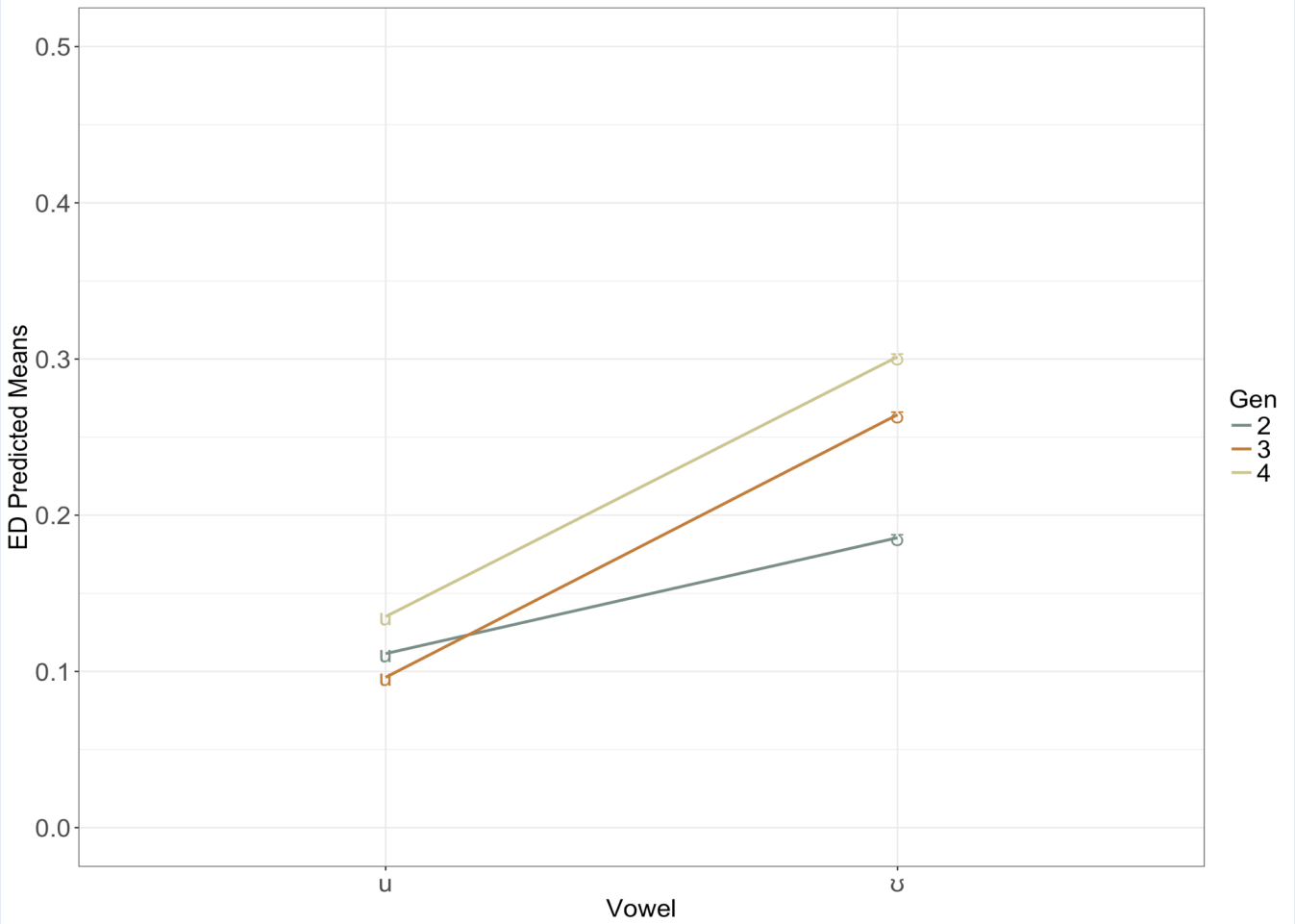
Model-predicted geometric means of Euclidean distance (in ms) of ɪ vs. i by generation; Note that predicted effects are plotted at the average level of all other significant factors in the model



Statistical Model: Spectral Distance /u/

Best Model:
lmer(ED~Vowel*generation+(1|Speaker)+(1|Context), data=df_u)
N = 391
Main experimental effect:
Increase in distance: Significant between Gen2 and Gen3 (<0.001)

No other factors were significant



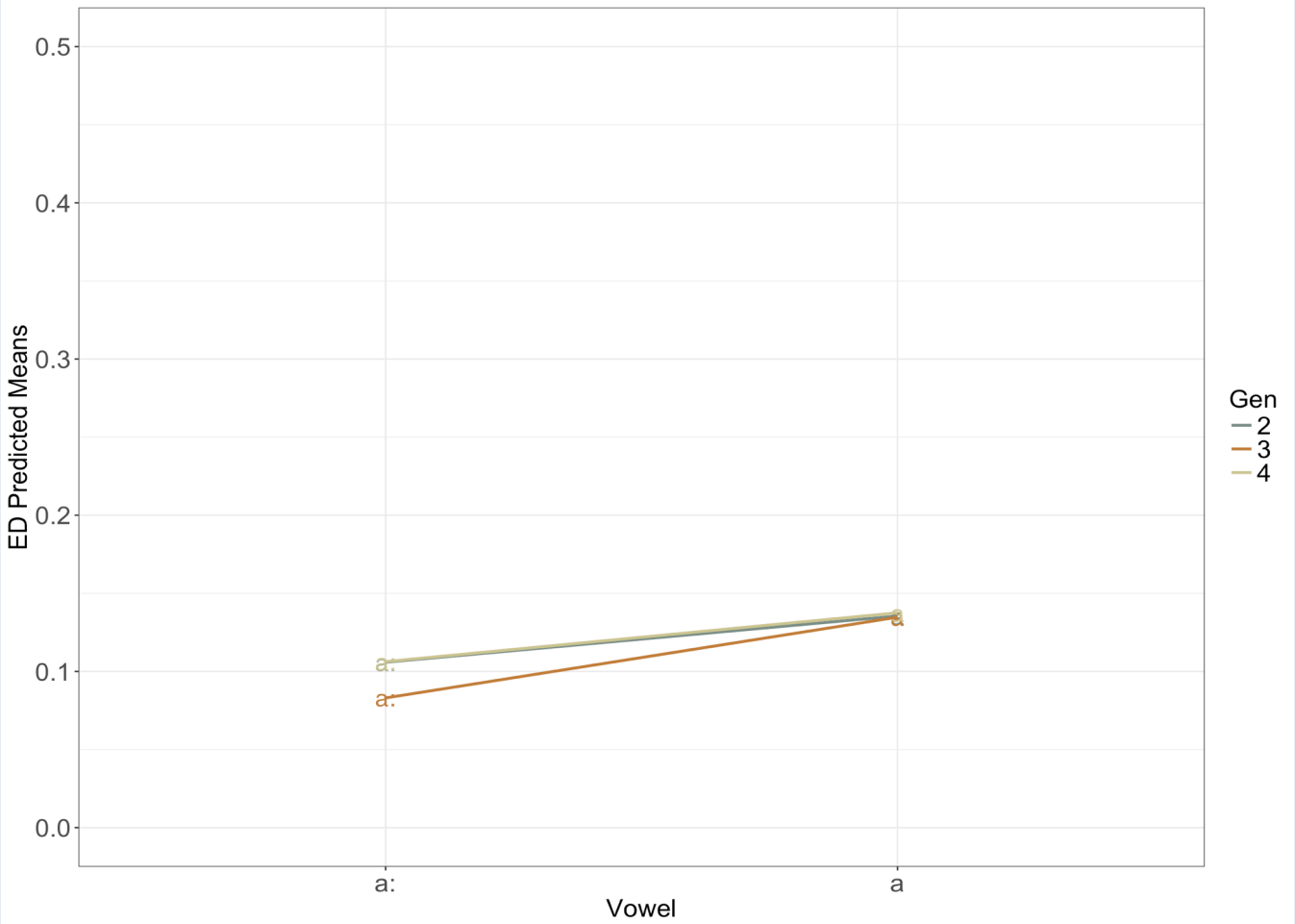
Model-predicted geometric means of Euclidean distance (in ms) of ʊ vs. u by generation

Statistical Model: Spectral Distance /a/

Best Model:
lmer(ED~Vowel*generation+post_man+(1|Speaker)+(1|Context), data=df_a)
N = 492

Main experimental effect:
No significant change in spectral distance across generations

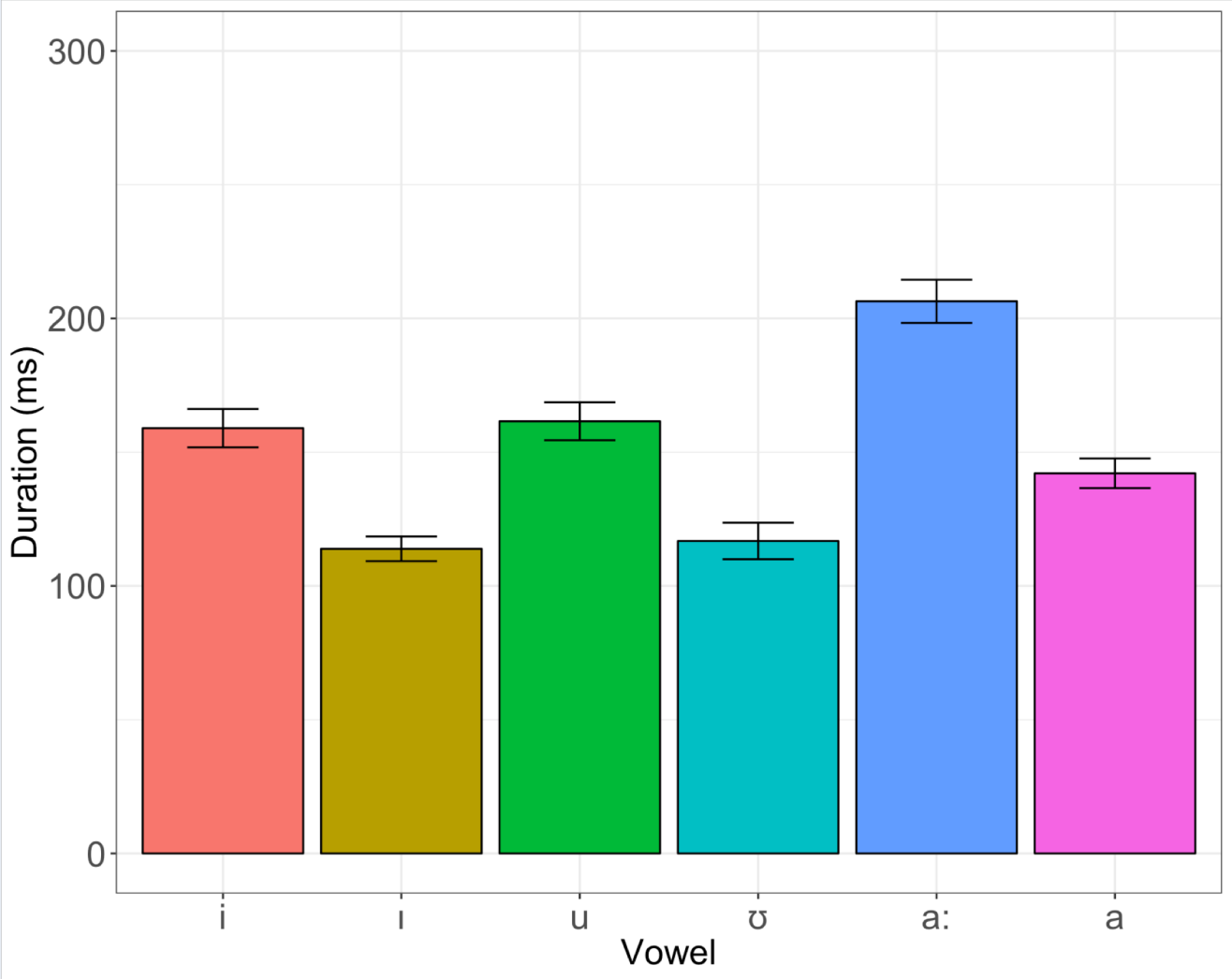
Other significant effects:
Manner of following segment: Increase in ED from lateral consonant (<0.001)



Model-predicted geometric means of Euclidean distance of a: vs. a by generation; Predicted effects are plotted at the average level of all other significant factors in the model

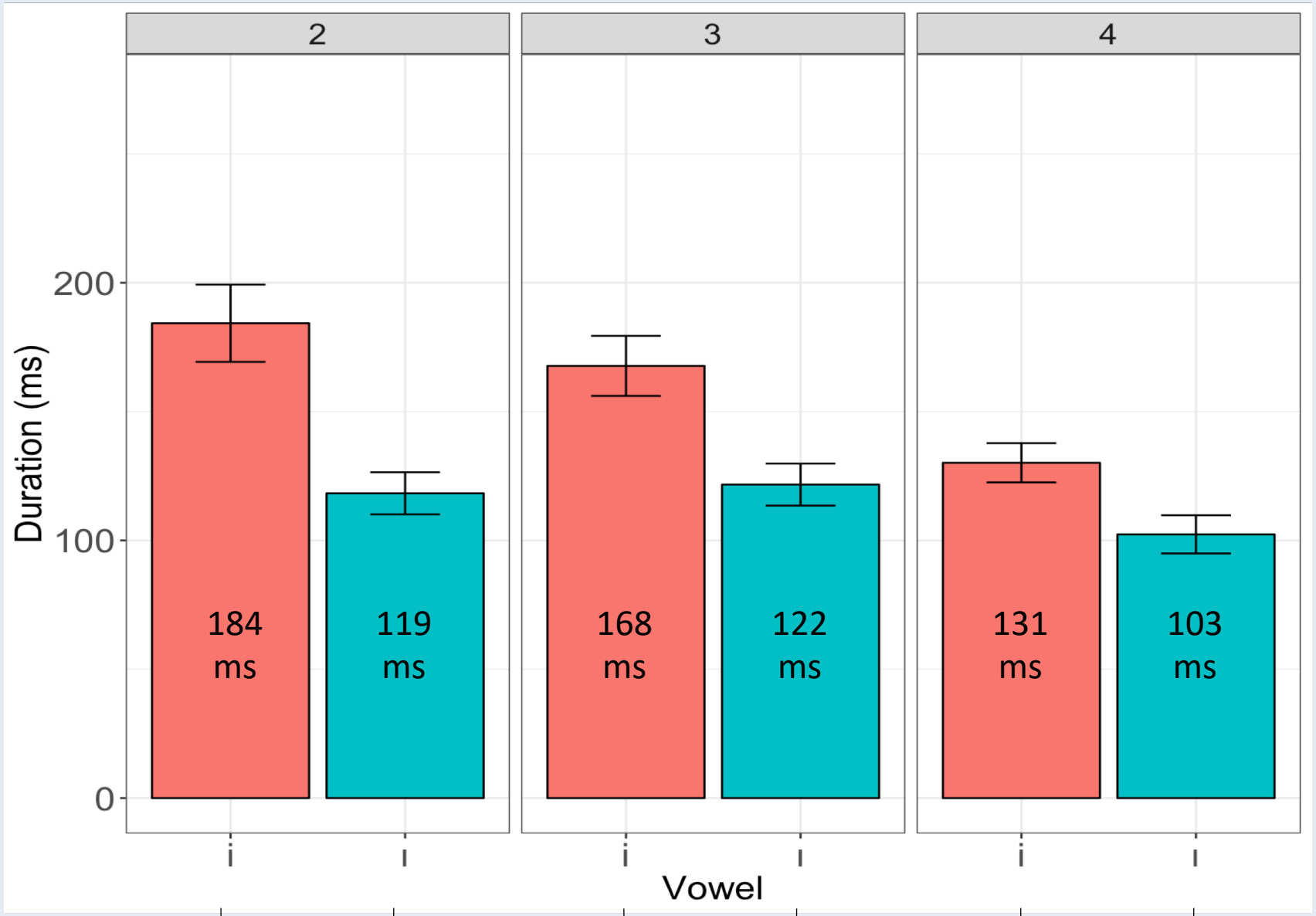
DURATION

	n	Dur (ms)	SD	Diff (ms)
i	236	158	55.86	44
ɪ	278	114	39.06	
u	222	162	53.62	45
ʊ	169	117	44.96	
a:	229	207	61.97	65
a	233	142	42.89	



Duration (in ms) by vowel for all observations

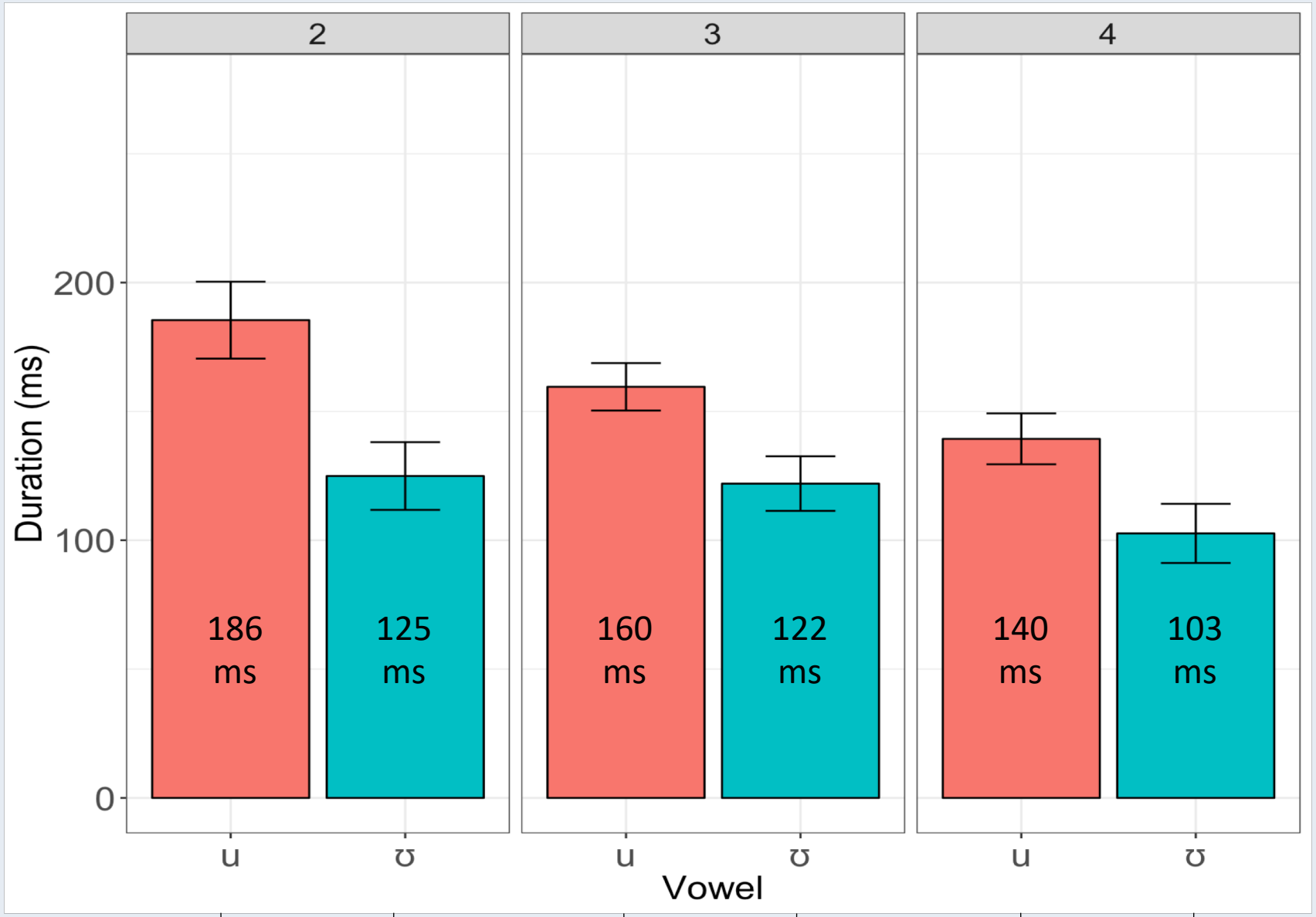
N = 1367



65 ms

46 ms

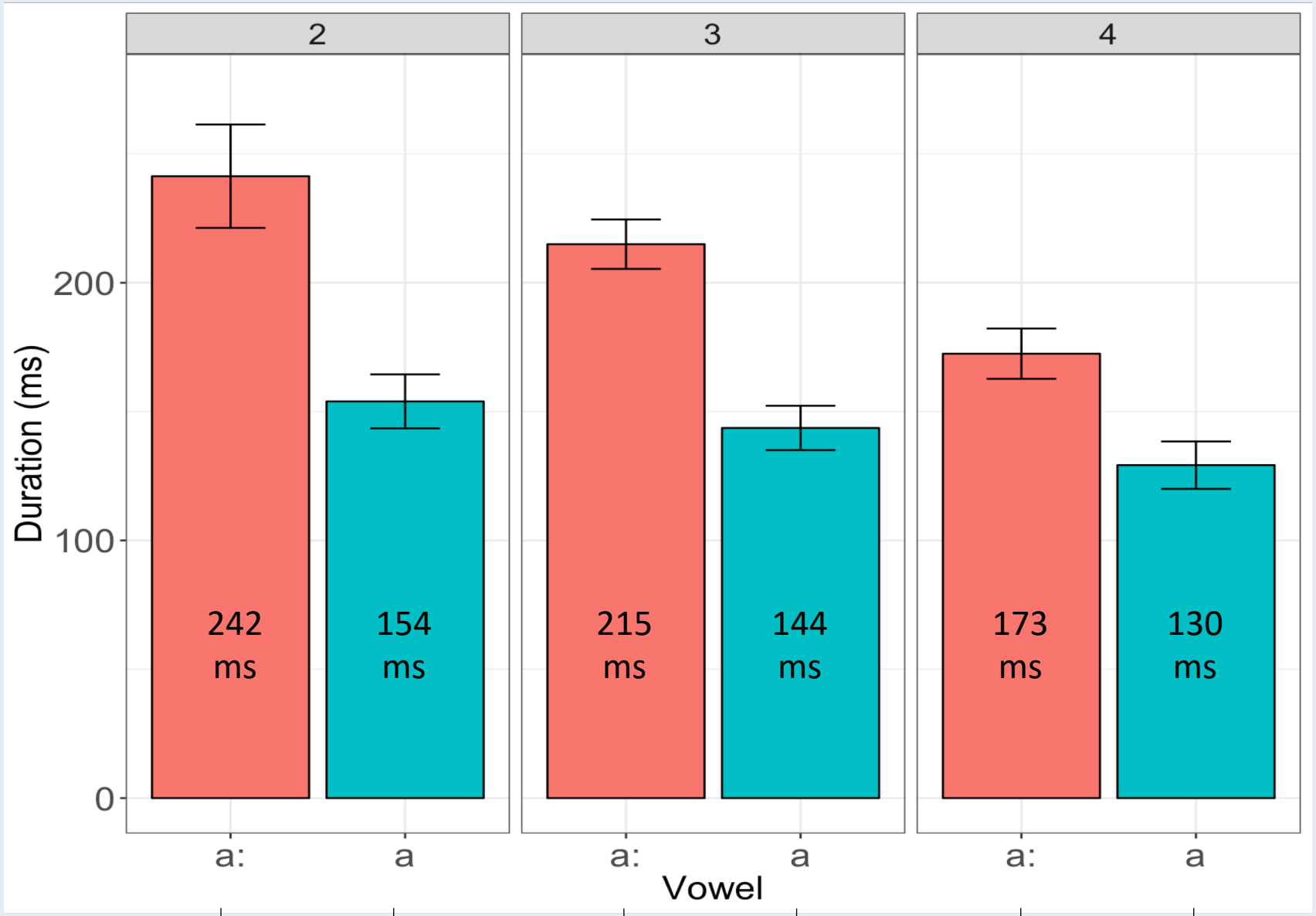
28 ms



61 ms

38 ms

37 ms



88 ms

71 ms

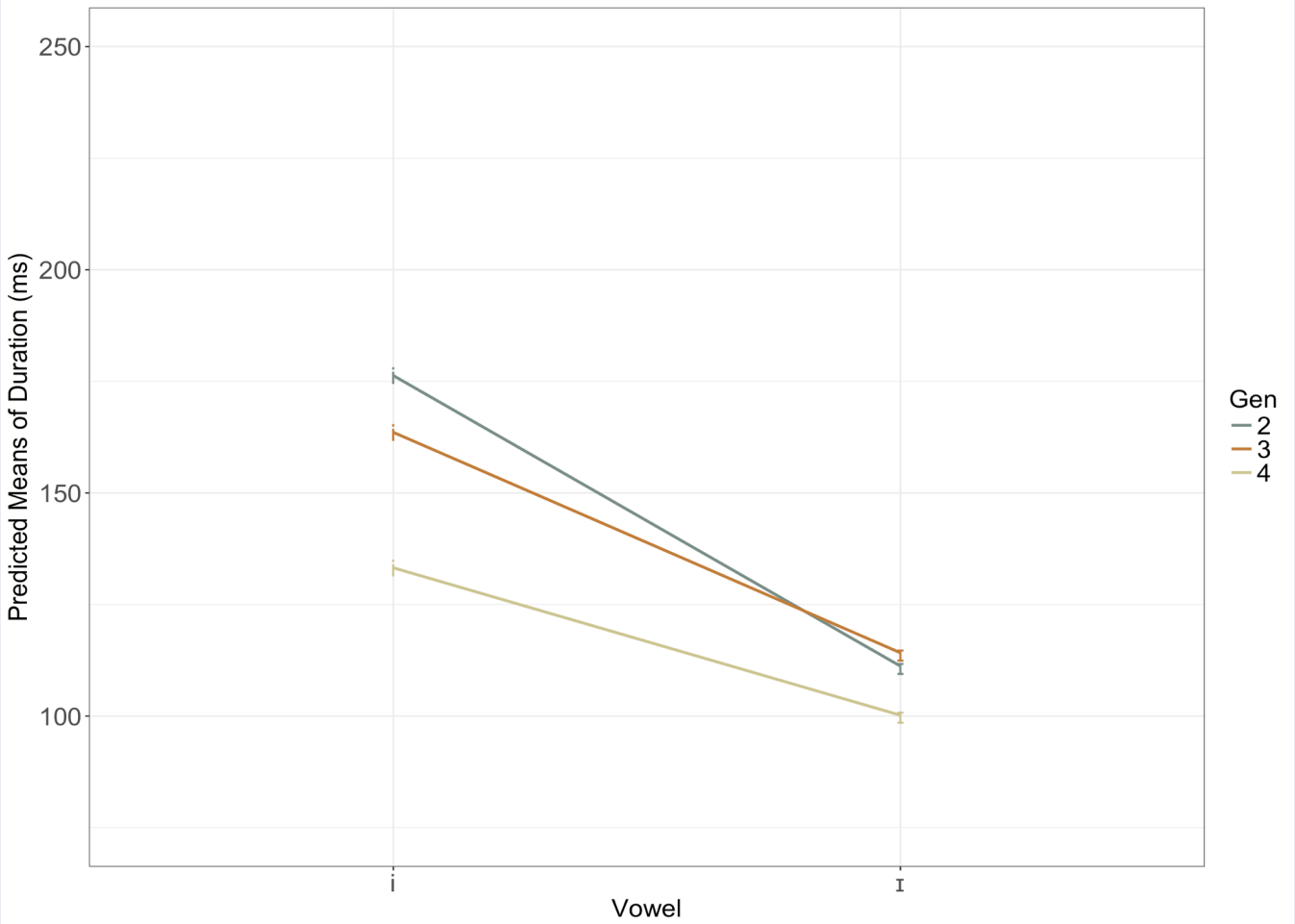
43 ms

Statistical Model: Durational Distance /i/

Best Model:
lmer(log10(Duration)~Phoneme*generation +rate+post_man+(1|Part)+(1|Word), data=dfI)
N = 513

Main experimental effect:
Significant reduction in duration between Gen2 and Gen3 (<0.05)

Other significant effects:
Rate: (correlated with vowel length) (<0.001)
Following segment: Lengthening from nasal consonant (vs. voiced obstruents) (<0.001)

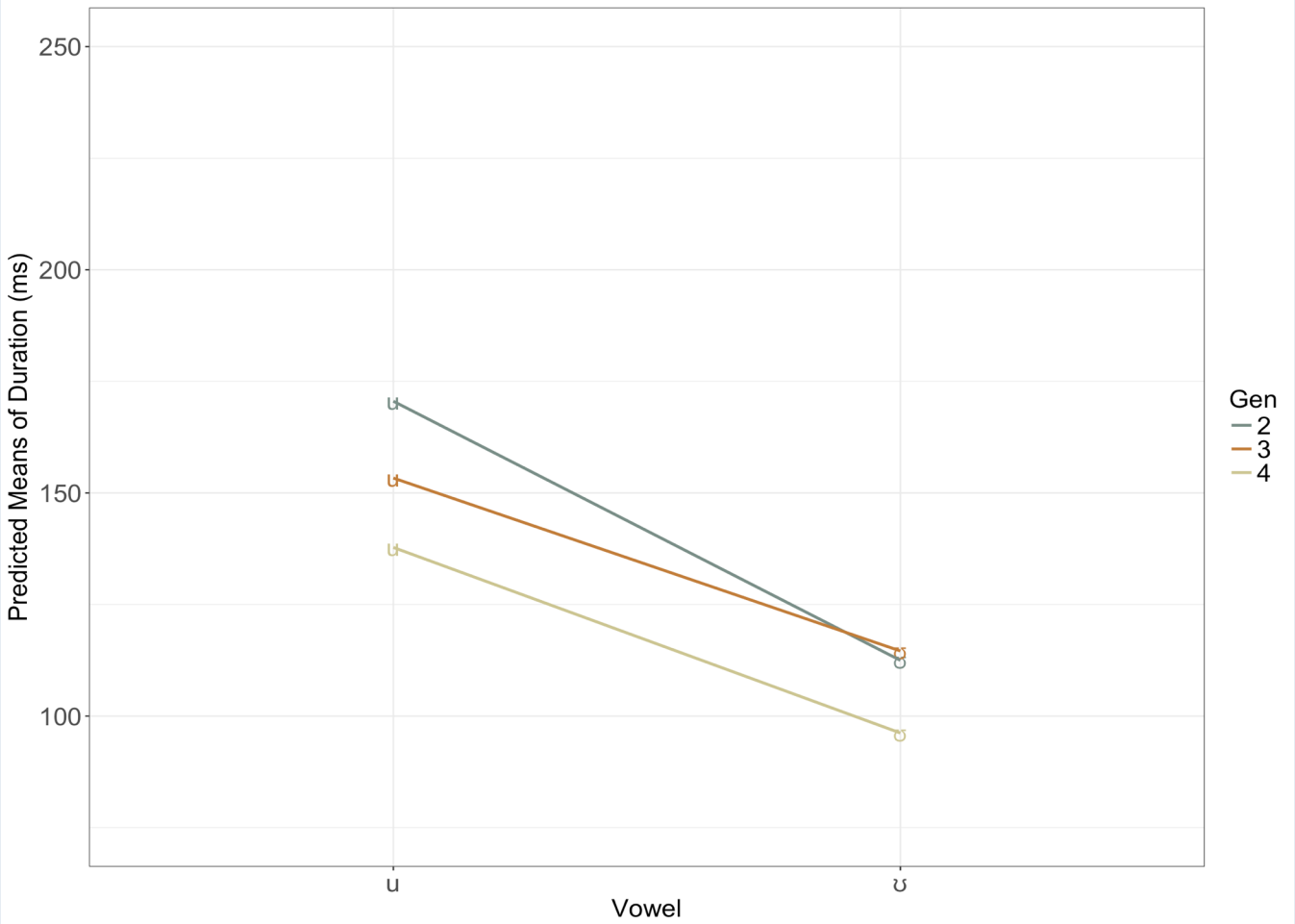


Model-predicted geometric means of duration (in ms) of i vs. ɪ by generation; Predicted effects are plotted at the average level of all other significant factors in the model

Statistical Model: Durational Distance /u/

Best Model:
lmer(log10(Duration)~Phoneme*generation +rate+(1|Part)+(1|Word), data=dfU)
N = 391
Main experimental effect:
Significant reduction in duration between Gen2 and Gen3 (<0.05)

Other significant effects:
Rate (correlated with length) (<0.001)



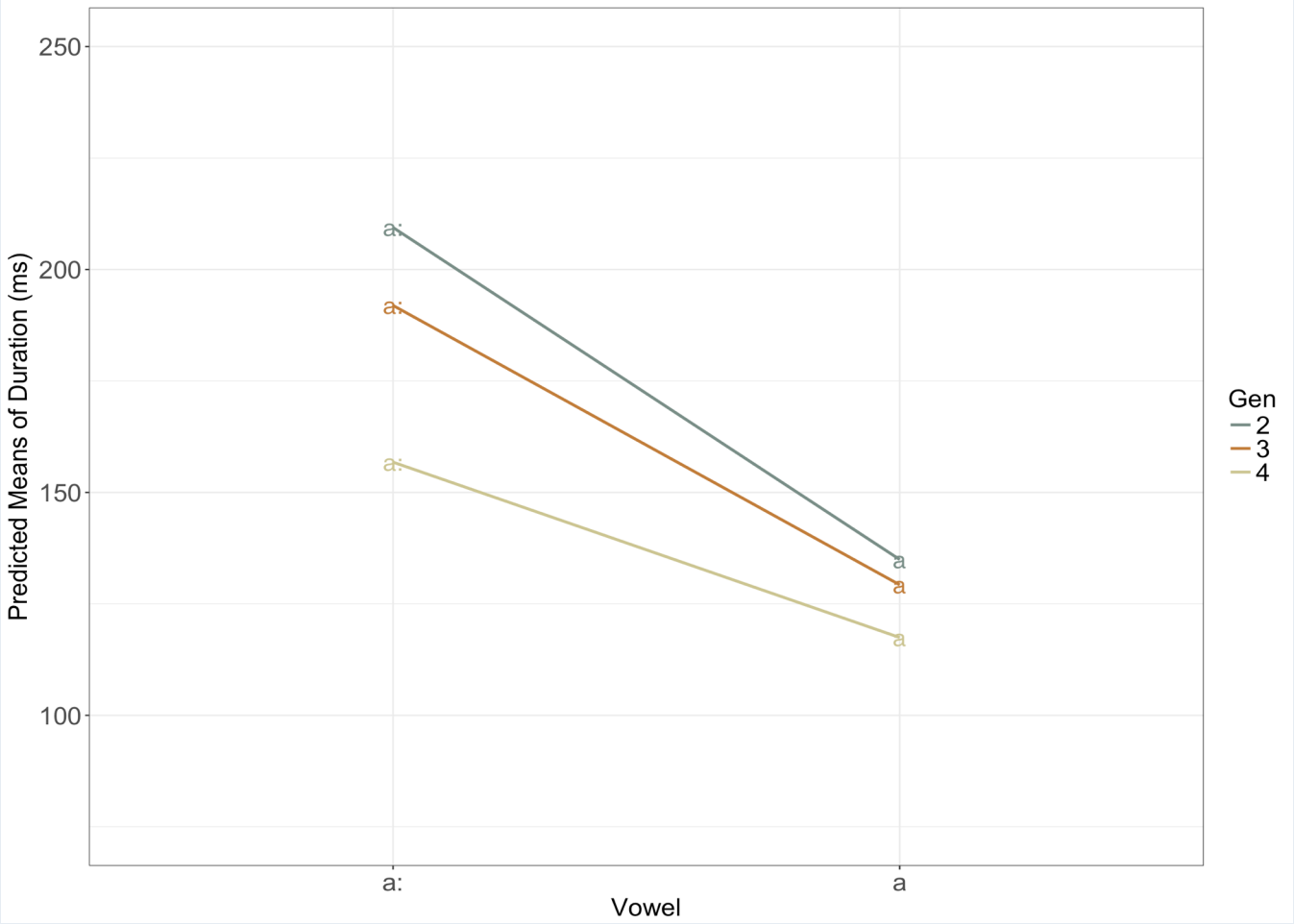
Model-predicted geometric means of duration (in ms) of [u] vs. [ʊ] by generation; Predicted effects are plotted at the average level of all other significant factors in the model

Statistical Model: Durational Distance /a/

Best Model:
lmer(log10(Duration)~Phoneme*generation+rate+num_seg+post_plac+(1|Part)+(1|Word), data=dfA)
N = 492
Main experimental effect :
Significant reduction in duration between Gen3 and Gen4 (<0.01)

Other significant effects:
Rate: (correlated with length) (<0.001)
Number of segments: shortening from 4 (vs. 3) segments
Place of following segment: shortening from dorsals (vs. coronals) (<0.05)

Model-predicted geometric means of duration (in ms) of [a:] vs. [a] by generation; Predicted effects are plotted at the average level of all other significant factors in the model



Summary and Conclusions

Statistical Modeling: Summary

Quality

- Significant spectral divergence of long-short correlates of high vowel pairs between Gen2 and Gen3
- No significant change in apparent time in spectral distance of /a/ pair

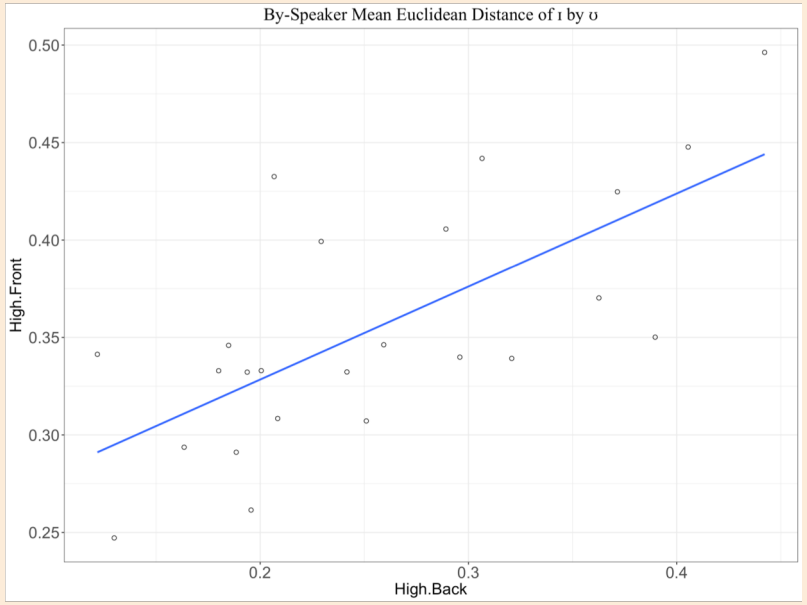
Duration

- Significant decrease in durational distance of high vowel pairs between Gen2 and Gen3
- Significant decrease in durational distance of long-short /a/ between Gen3 and Gen4

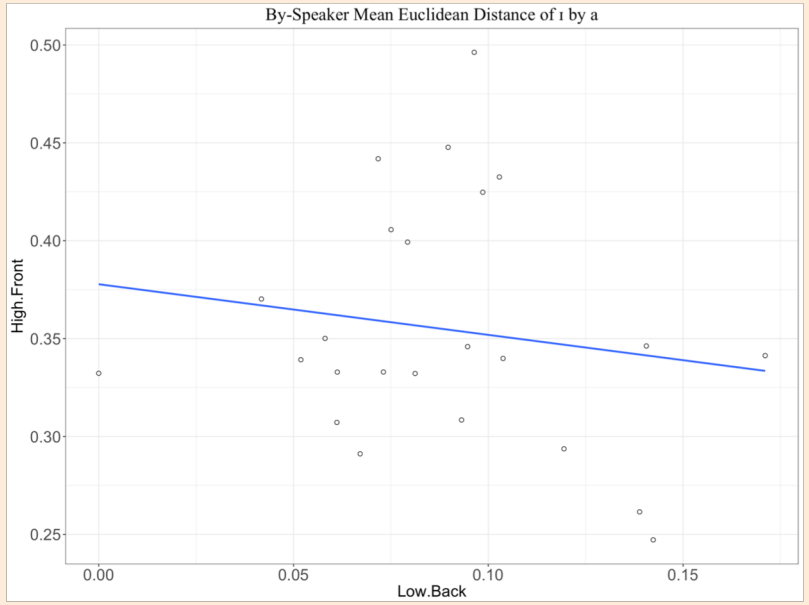
Two Main Stories

1. Trajectories of change are different for high vowel than low vowel pairs
   - For high vowels, appears to be a sound change, that reached completion or near completion by generation 3
   - Pattern suggests a language-external explanation for change: HY high vowels becoming more like their English tense-lax counterparts
2. Diminishing durational distance of /a/ pair, which shows no qualitative change in apparent time and appear to overlap completely in phonetic space
   - For youngest speakers, difference has fallen below 50 msec, the threshold for perceptual distinction suggested by Labov and Baranowski (2006)
   - Are we observing a near-merger of /a/?

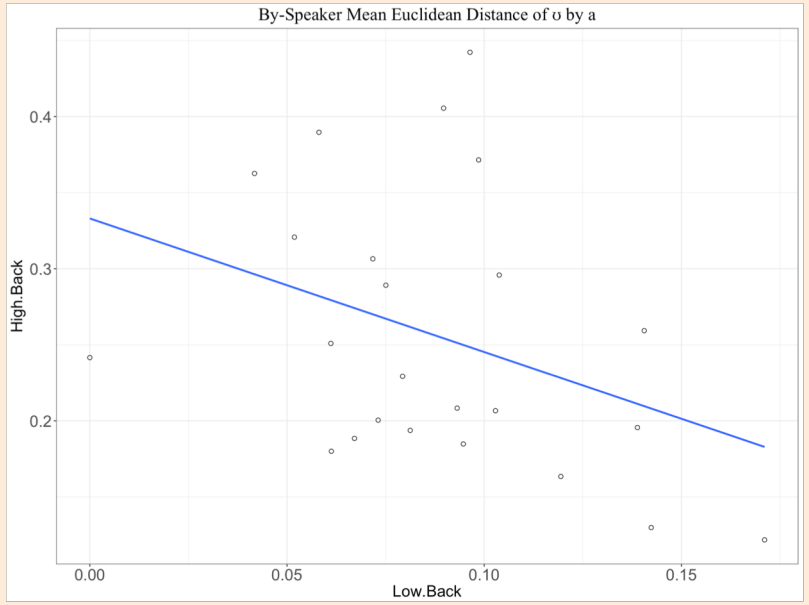
System Independence: Quality



By-Speaker ED means for short high vowels (front vs. back)

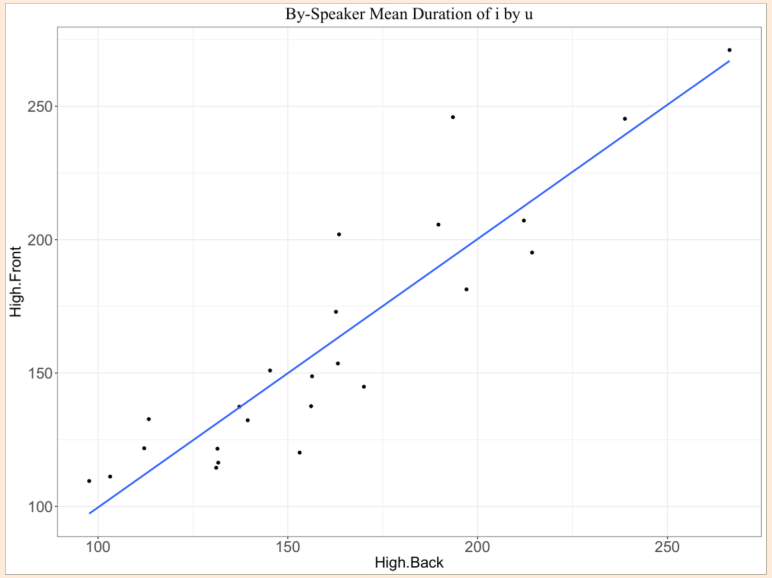


By-Speaker ED means for short high front vs. low back vowels



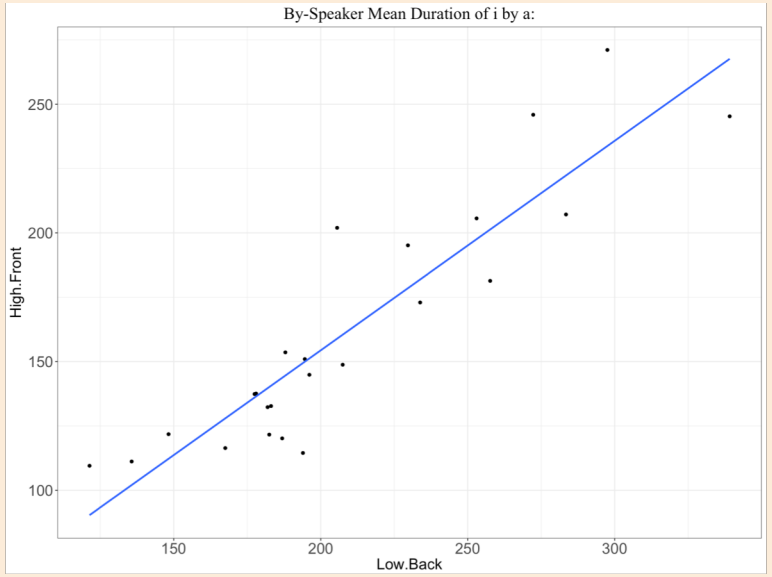
By-Speaker ED means for short back vowels (high vs. low)

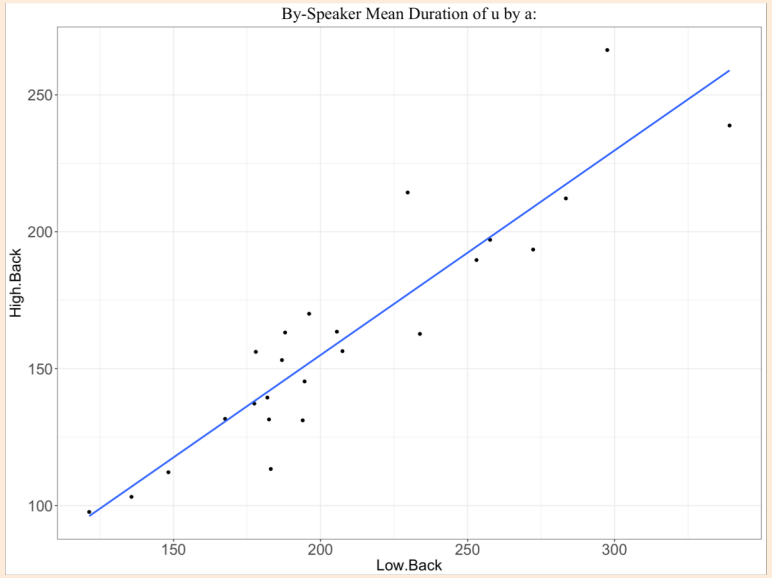
Systematicity: Quantity



By-Speaker mean duration for long high vowels (front vs. back)

By-Speaker mean duration for long high front vs. low back vowels





By-Speaker mean duration for long back vowels (high vs. low)

Limitations

- Elicitation experiment (vs. natural speech) with possible effect from orthography
- Data imbalance:
  - Fewer [ʊ] tokens
  - No post-vocalic non-lingual consonants in /a/ pair
- Recording issues

Ongoing and Future Research

- Bilingual Comparison: Compare HY & English wordlist data to explore contact effects: Stay tuned!
- More statistical tests (including Pillai scores) for /a/ of Gen4 speakers to check for merger: No strong evidence of merger

Going Forward:

- Analyze naturalistic speech elicited during interviews and see if same results obtain
- Analyze vowels of Gen1: 12 Holocaust survivors (archival recordings from USC Shoah Visual History), to trace change (Nove 2018b)
- Minimal pairs produced by Gen4 speakers can be used as stimuli in perception experiments, to see if they are merged

Implications

- New York HY has been developing independently of its origin dialects for 70 years
- Sustained by ideology, yet vulnerable to influence from English
- Unlike other New York minority languages whose ancestral dialects have not been well-studied in situ, European Yiddish is well-documented, so patterns of change in HY can be identified
- These patterns can help us understand the causes and directions of sound change in minority languages under contact
- The unique sociocultural circumstances of the community allows for the investigation of the role of many factors, including language ideology, in sound change

Broader Impact

- HY speakers: one of the fastest growing language groups in New York
- Lack of a systematic description of this dialect disadvantages to those who wish to provide speech and language-related services in this community.
  - Currently relying on references and materials based on a standard dialect to learn HY or about HY
- This study documents the way the language is actually spoken
- Finding evidence of phonetic convergence with English might help counter reductive narratives that portray the Hasidic community as rigidly anti-progressive and resistant to change.
- A sociolinguistic approach can inform not only how the religio-cultural and linguistic factors are shaping the language, but what the language can tell us about the ways in which the Hasidic community in New York is evolving

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