"I speak Hong Kong English, not American or British English."

The effect of language affiliation on vowel production among L2 English speakers in Hong Kong

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English in Hong Kong

- **Hong Kong:** Special Administrative Region of China, former British colony
- Official languages: English & Chinese
- 51.9% speak English, most of them are Cantonese-English-Mandarin trilinguals (Census and Statistics Department, 2017)

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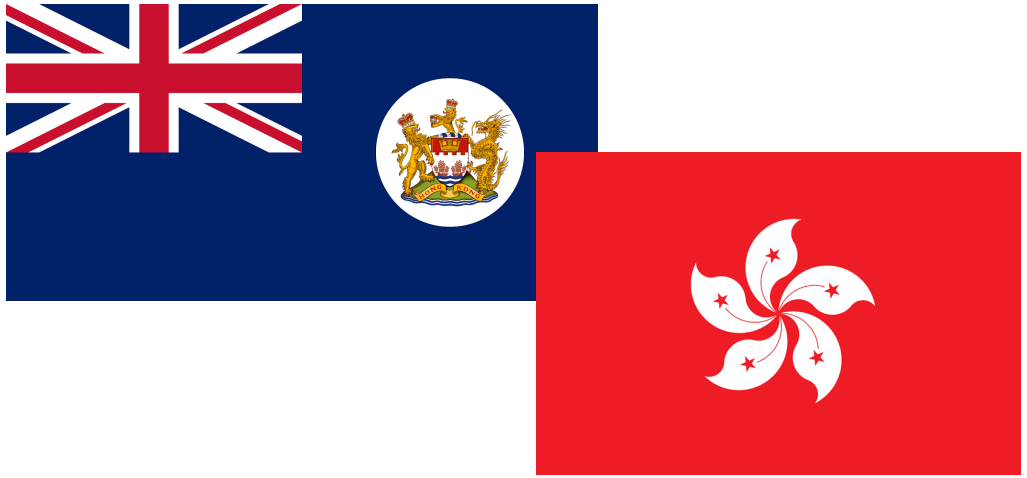
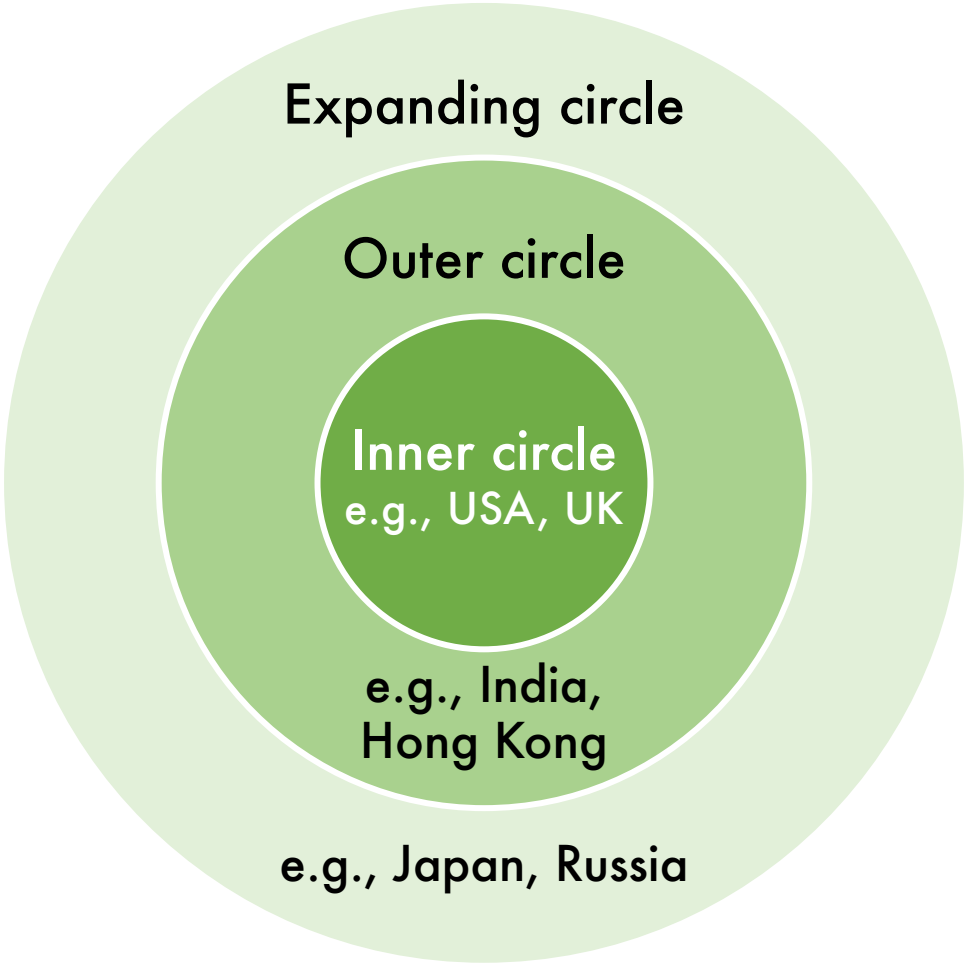


https://en.wikipedia.org/wiki/Hong_Kong

English in Hong Kong

Kachru's three circles of English (1985):

- Hong Kong: **Outer circle**
- English mostly spoken as an L2 (Hansen Edwards, 2018)
- English introduced through British colonization
- English is an official language, the language of education, governance, business, written communication, etc. (Bacon-Shone et al., 2015; Hansen Edwards, 2018; Sewell, 2016)



Adapted from Crystal (2003)

English in Hong Kong

Schneider's dynamic model (2007):

- Hong Kong: Phase 3 (nativization) (Groves, 2011; Chan, 2013; Li, 2018)
- Widespread English-Cantonese bilingualism
- An indigenized variety formed with distinct local linguistic features
- Sociolinguistic divide between speakers who adopt indigenized norms and speakers who uphold external norms
- Local variety of English is an identity marker (covert prestige), but also carries stigma (lack of overt prestige)

Hong Kong English

- Hong Kong English (HKE): indigenized variety of English in Hong Kong, distinct phonological (Deterding et al., 2008; Hung, 2000), syntactic (Sung, 2015), and lexical features (Cummings & Wolf, 2011)
- The existence of HKE is widely acknowledged by the public
  - Bacon-Shone et al. (2015): 82.8%
  - Groves (2011): 74.3%
- Yet, it is often perceived negatively in comparison to Inner Circle varieties (Luk, 2010; Sewell, 2012)

English in Hong Kong

- Variation in language affiliation and norm orientation among L2 English speakers in Hong Kong
- Language affiliation: "*What kind of English do I speak?*"
  - Some identify as HKE speakers, others as speakers of Inner Circle varieties or a mix of both
  - HKE: 74.3%; British English (BrE) or American English (AmE): 19.3% (Groves, 2011)
  - HKE: 25-30%; mix of HKE and AmE/BrE: 33-42%; AmE/BrE: 15-22% (Hansen Edwards, 2018)

English in Hong Kong

- Norm orientation: "*What kind of English do I want to speak?*"
  - Many treat Inner Circle varieties as their norm, but a sizable minority also treats HKE as the norm
  - HKE: 22.5%; BrE: 61.9%; AmE: 15.6% (Bacon-Shone et al., 2015)
  - HKE: 29-41%; BrE: 79-86%; AmE: 48-63% (Hansen Edwards, 2018)

- **Do these speakers differ in their speech production?**
- **If so, is the difference reflected in vowel production?**

Research question

- Do L2-English speakers in Hong Kong with different language affiliations and norm orientations differ in their production of high front (**FLEECE, KIT**) and low back (**LOT, THOUGHT**) vowels?

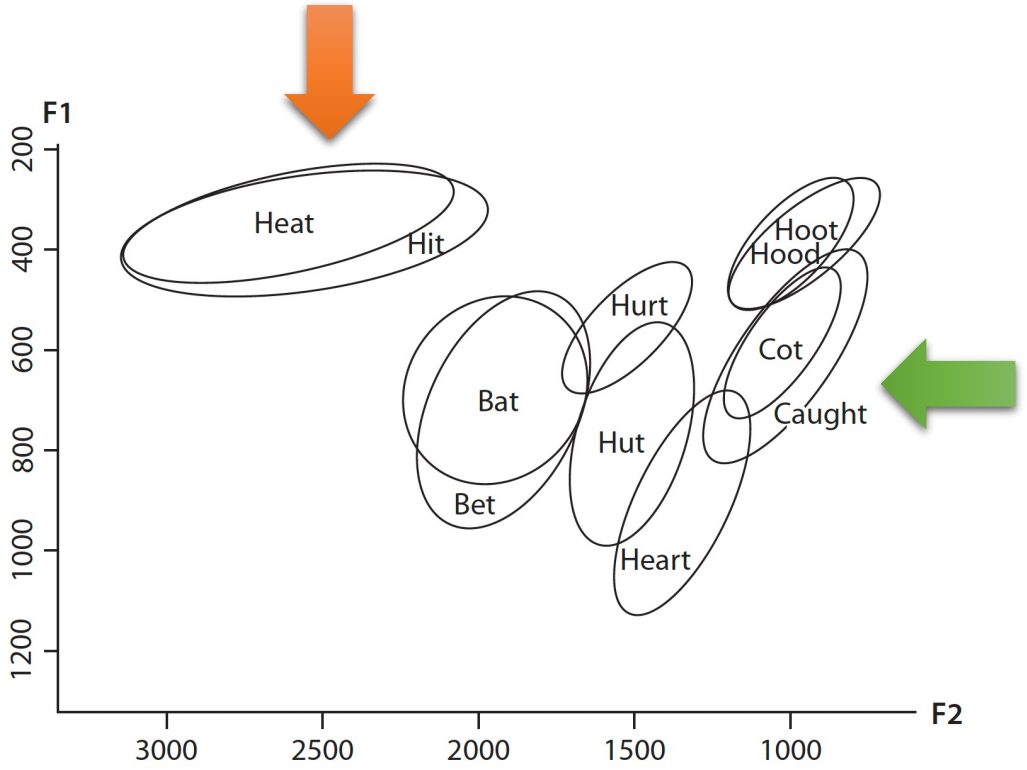
Vowels of HKE and Inner Circle varieties

- In this section, I will compare HKE vowels with

  1. Received Pronunciation (RP) and General American English (GA): two Inner Circle models commonly used in English education worldwide (Dziubalska-Kołaczyk & Przedlacka, 2008)
  2. Other Inner Circle varieties

Vowel mergers in HKE

- *sit-seat* merger: KIT merges to FLEECE before non-velar consonants (Hung, 2000, 2012; Yeung, 2022)
  - ***heat*** and ***hit*** both pronounced as [hit]
- *cot-caught* merger: LOT merges to THOUGHT (Hung, 2000, 2012)
  - ***cot*** and ***caught*** both pronounced as [kɔt]



From Hung (2012)

Vowels of HKE and Inner Circle varieties

- *sit-seat* merger is absent in RP and GA (Wells, 1982)
  - FLEECE vowel: [i:] in RP, [i] in GA
  - KIT vowel: [ɪ] in RP, GA
- Inner Circle varieties show slight variation in the phonetic realization of these two vowels, but a phonemic distinction is usually maintained
  - Exception: Southern US English, merger of FLEECE and KIT before /l/ (Labov et al., 2008)

Vowels of HKE and Inner Circle varieties

- *cot-caught* merger is absent in RP and GA, but common in many Inner Circle varieties (Wells, 1982; Labov et al., 2008)
  - LOT vowel: [ɒ] in RP, [ɑ] in GA
  - THOUGHT vowel: [ɔː] in RP, [ɔ] in GA
- Merger is found in Canada, western US, Scotland, etc.
- The phonetic realization of the merged phoneme varies:
  - E.g., [ɑ] in western US, [ɔ] in Scotland

Vowels of HKE and Inner Circle varieties

Lexical set	HKE	RP	GA
FLEECE (before non-velars)	[i]	[iː]	[i]
KIT (before non-velars)	[i]	[ɪ]	[ɪ]
LOT	[ɔ]	[ɒ]	[ɑ]
THOUGHT	[ɔ]	[ɔː]	[ɔ]

Hypothesis

- Stronger affiliation and norm orientation towards HKE
  - Merger of KIT and FLEECE, both realized as [i]
  - Merger of LOT and THOUGHT, both realized as [ɔ]
- Weaker affiliation and norm orientation towards HKE
  - Distinction between KIT and FLEECE, [ɪ] for KIT and [i] for FLEECE
  - LOT and THOUGHT might be more variable, [ɑ~ɒ~ɔ] for LOT and THOUGHT

Methodology

- 39 speakers, aged 18-58 (22 F, 17 M)
- All Cantonese-English bilinguals, born and raised in Hong Kong
- Interview schedule:
  - Sociolinguistic interview (~75 mins)
  - Word list (~20 mins)
  - Minimal pair (~10 mins)
- Demographic & attitudinal info: sociolinguistic interview
- Vowel production data: word list reading

Methodology

- Questions asked during the interview:
  - Language affiliation:
  - *"What kind of English do you think you speak? Hong Kong English, British English, American English, a mix of them, or something else?"*
  - Norm orientation:
  - *"If no effort is required to change the way you speak, what kind of English do you wish to speak? Hong Kong English, British English, American English, a mix of them, or something else?"*

Methodology

Other information collected during the interview:

1. Age
2. Gender
3. Attitudes towards HKE
4. Education level
5. Exposure to different varieties of English

Methodology

- Word list reading task:
  - 5 monosyllabic words for each vowel category
  - Onset and coda consonants controlled
    - E.g., **beat** vs. **bit, bought** vs. **bot**
  - 3 repetitions for each word = 60 tokens/speaker
- Word presented in a pseudo-random order
- Embedded in carrier phrase “Say ___ again.”
- Audio: 44.1 kHz sampling rate, 16-bit sample depth

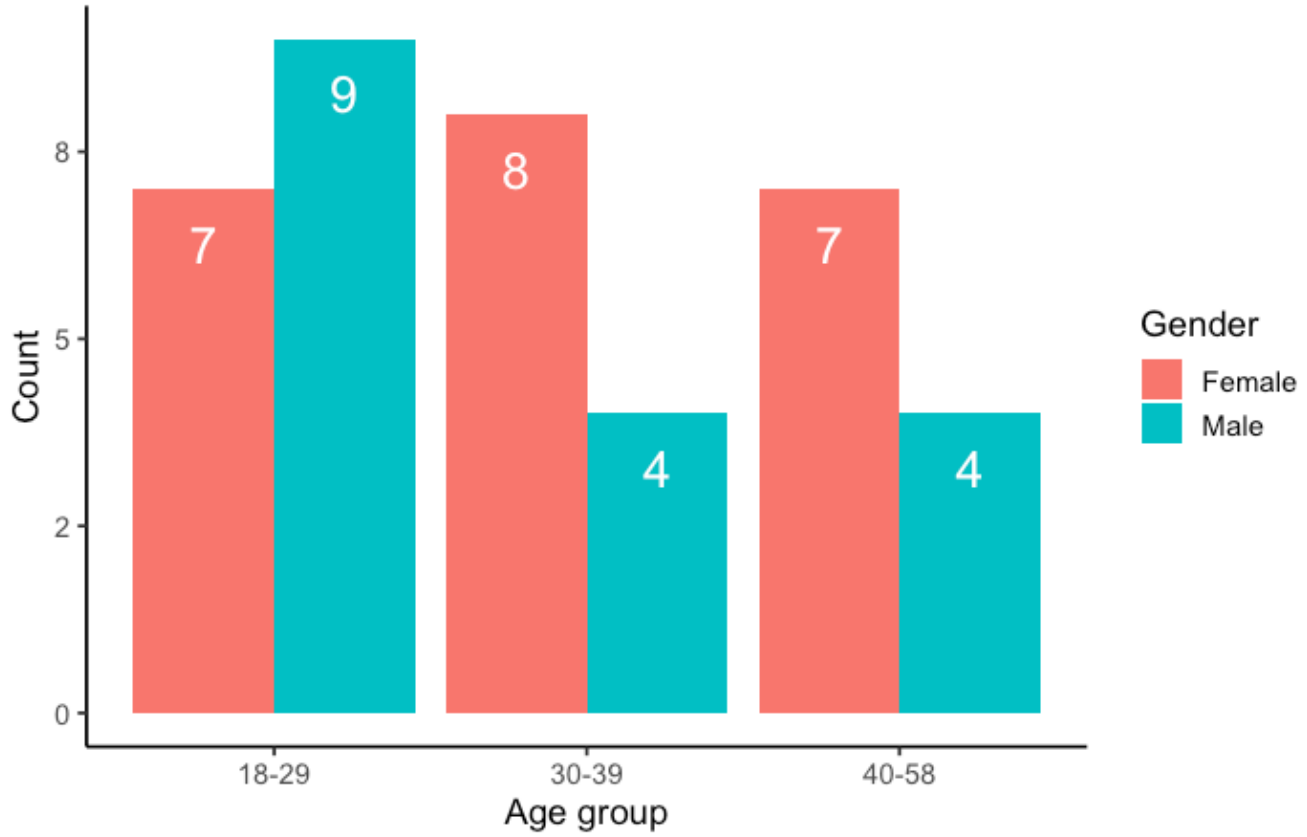
Methodology

- Recordings segmented using Montreal Forced Aligner (McAuliffe et al., 2017), then manually reviewed and corrected
- Vowel formants extracted at the 1/3 point of vowel duration using Praat (Boersma & Weenink 2022)
- Tokens of all monophthongs in the word list extracted
  - 155 words from 14 vowels * 3 repetitions = 465 tokens/speaker
- Vowel formants normalized using Lobanov method (Lobanov 1971)

Methodology

- Mixed-effect regression models: examine whether normalized F1and F2 of the vowels varied with language affiliation and norm orientation
- Pillai scores: derived from by-speaker MANOVAs fits (Nycz & Hall-Lew 2013), access degree of merger between the two pairs of vowels (FLEECE vs KIT, LOT vs. THOUGHT)
- Spearman's rank correlation coefficients: test correlation between the Pillai scores and the two social variables

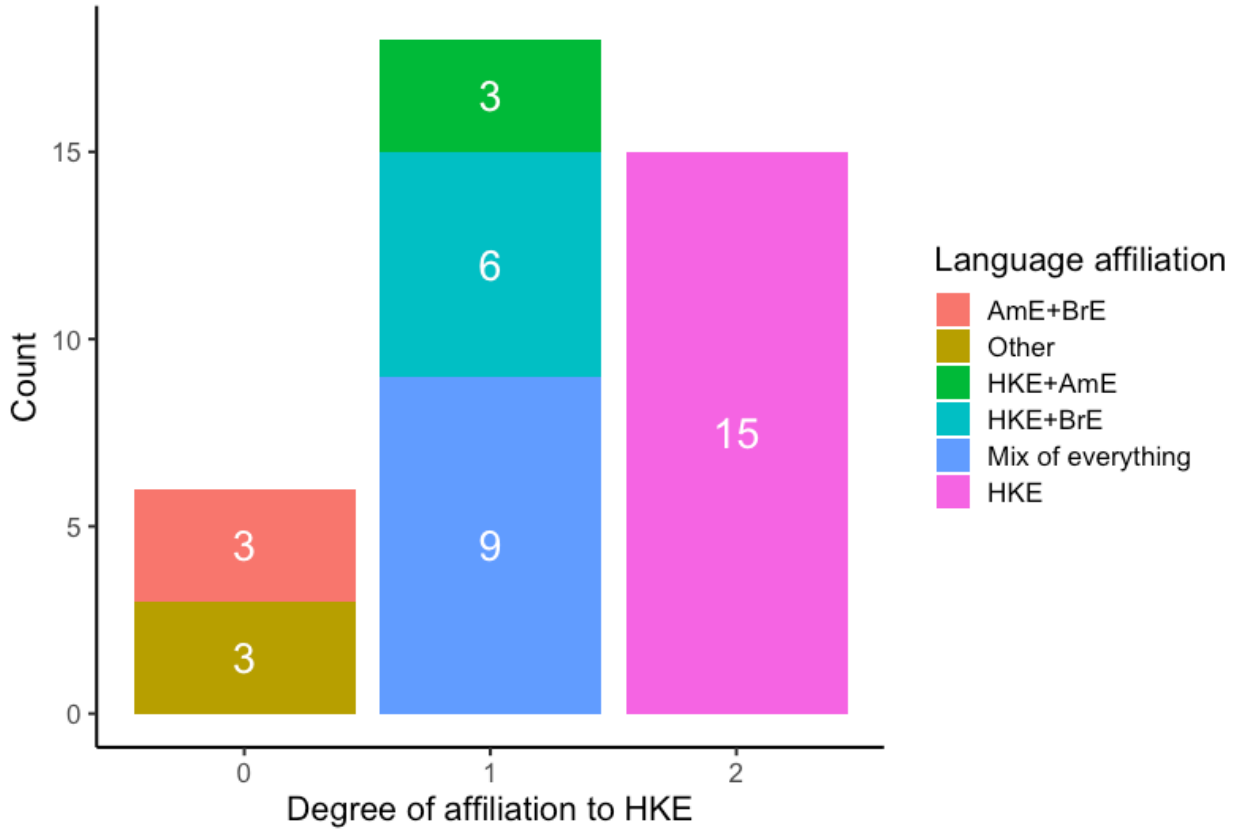
Results



Wide range of age and gender groups represented

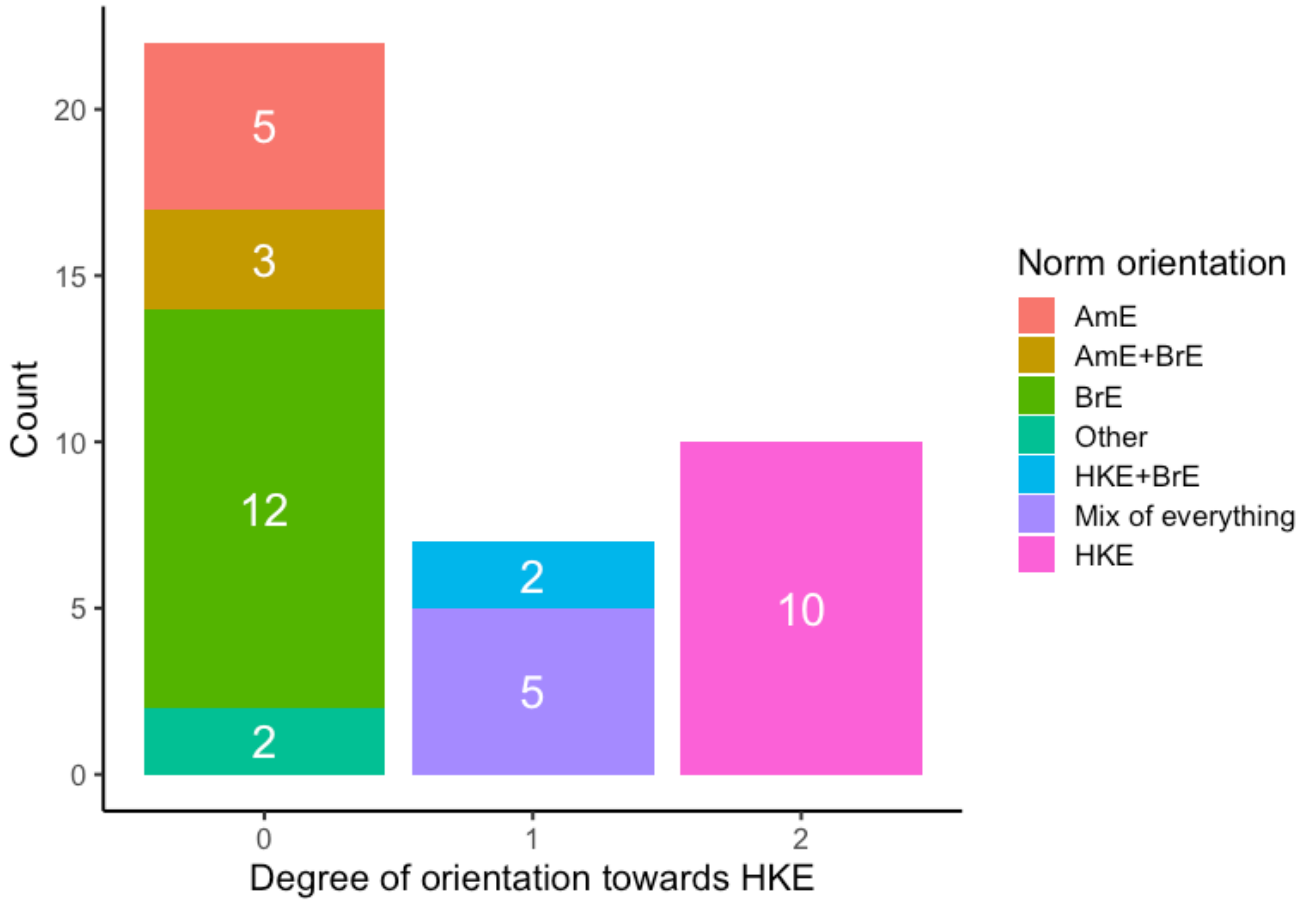
Results: Language affiliation

- HKE: 15 (38%)
- HKE + other varieties: 18 (46%)
  - HKE + AmE: 3 (8%)
  - HKE + BrE: 6 (15%)
  - A mix of everything: 9 (23%)
- No affiliation to HKE: 6 (15%)
  - AmE + BrE: 3 (8%)
  - Other: 3 (8%)



Results: Norm orientation

- Endonormative: 10 (26%)
  - HKE: 10 (26%)
- Intermediate: 7 (18%)
  - HKE + BrE: 2 (5%)
  - A mix of everything: 5 (13%)
- Exonormative: 22 (56%)
  - AmE: 5 (13%)
  - AmE + BrE: 3 (8%)
  - BrE: 12 (31%)
  - Other: 2 (5%)



Results

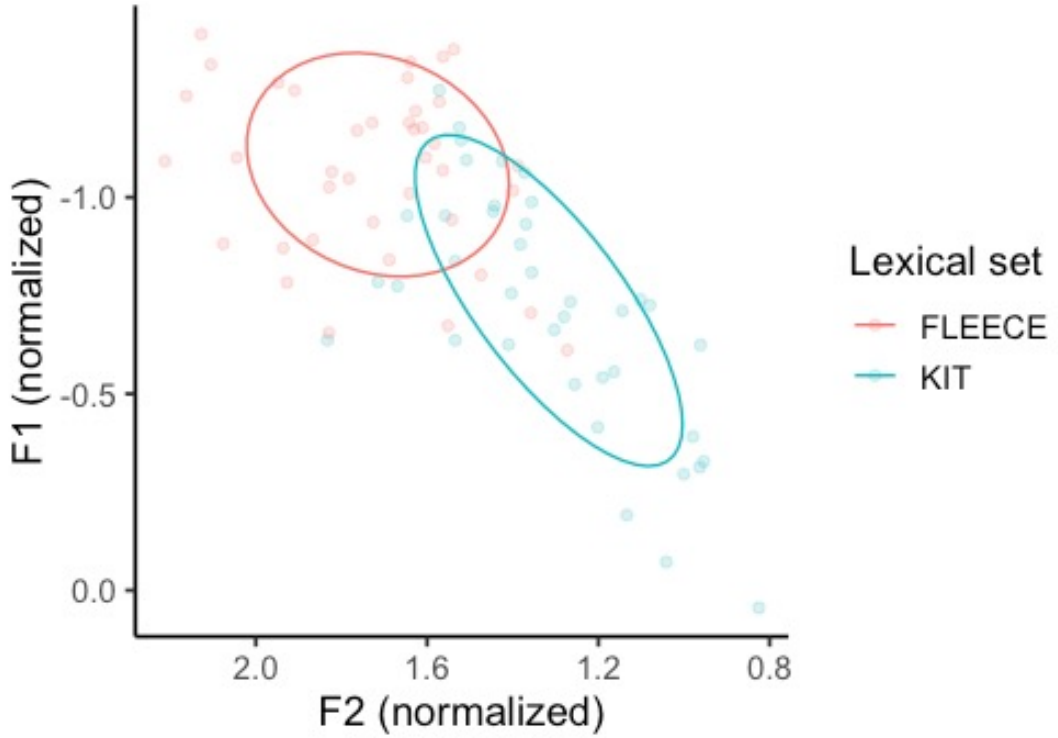
- Each speaker was assigned a score from 0-2 in terms of their degree of affiliation and orientation towards HKE:

- Affiliation:
  - 0: No affiliation to HKE
  - 1: Partial affiliation to HKE
  - 2: Full affiliation to HKE

- Norm orientation:
  - 0: Varieties other than HKE (exonormative)
  - 1: A mix of HKE and other varieties
  - 2: HKE (endonormative)

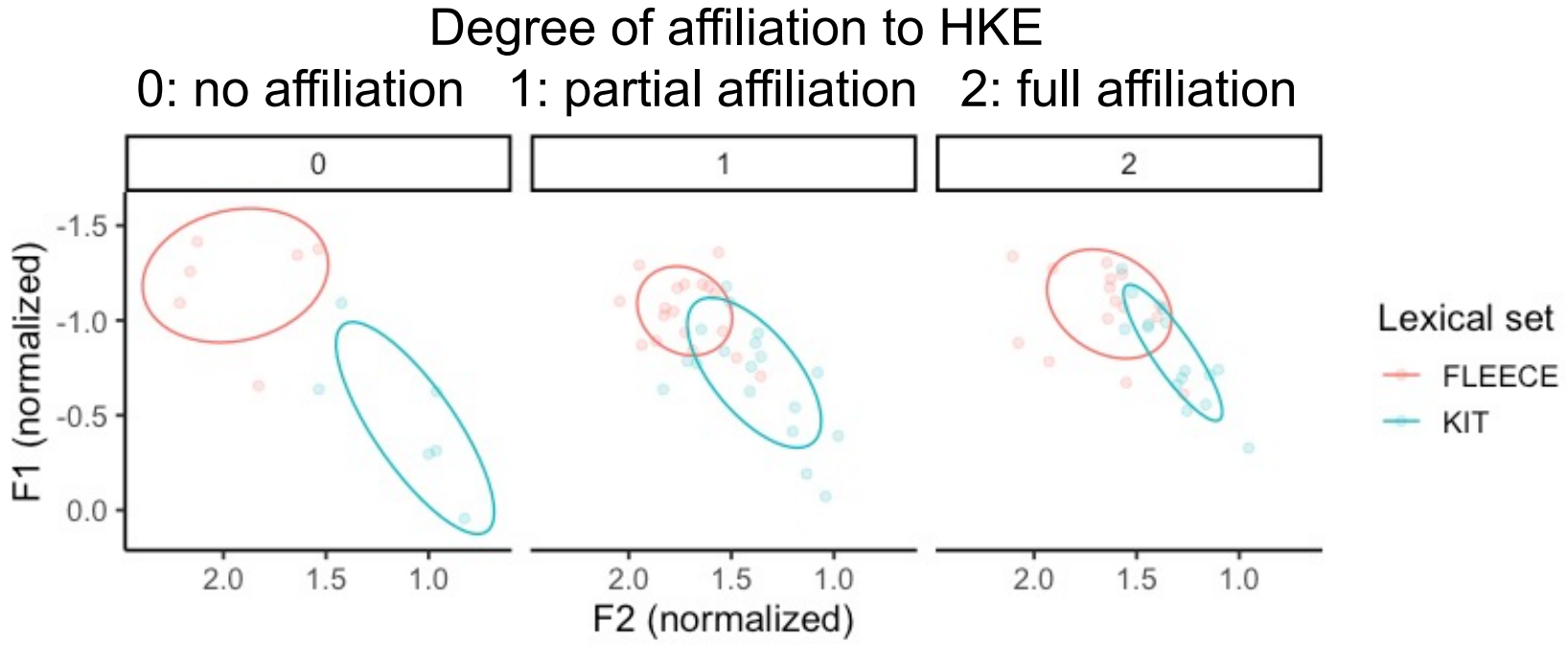
Results: sit-seat merger

- Mixed effect model: significant formant differences between KIT and FLEECE vowels in general
  - KIT has **higher F1** ($p<0.001$) and **lower F2** ($p<0.001$) than FLEECE



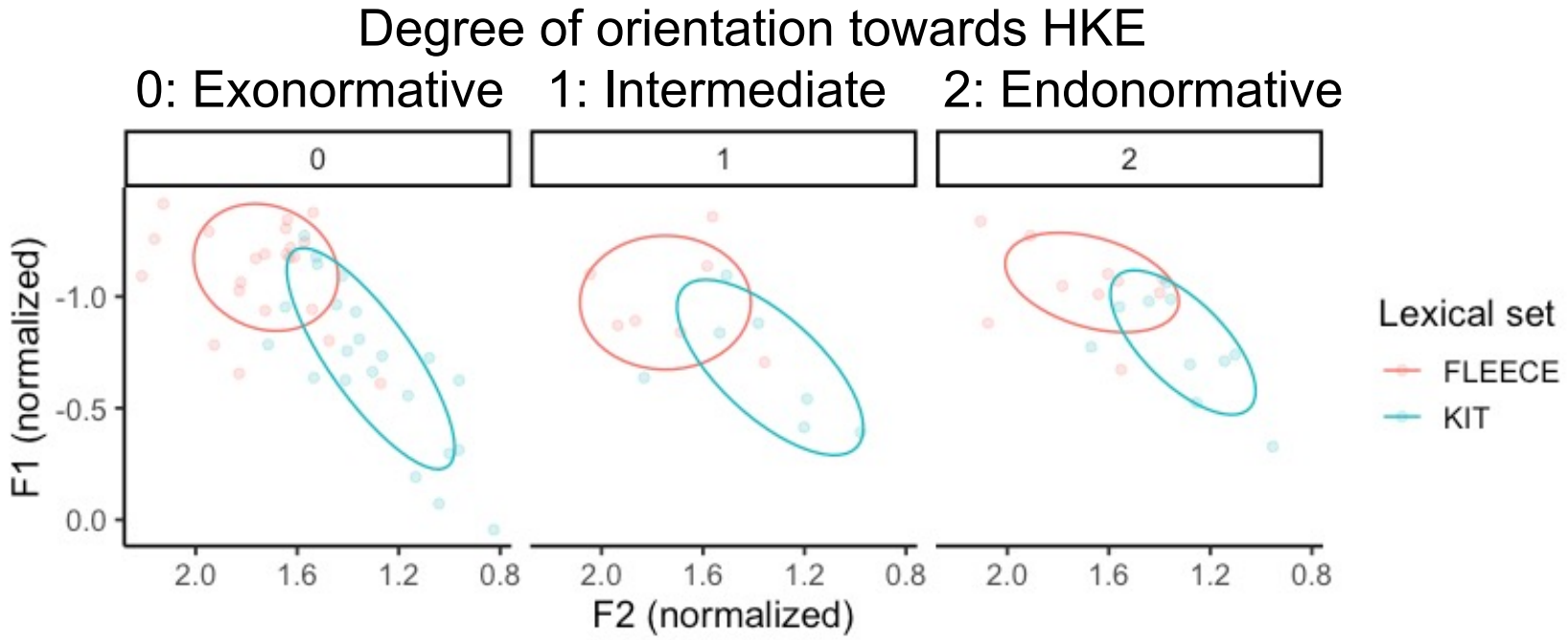
Results: sit-seat merger

- Significant effect of language affiliation
  - Stronger affiliation to HKE correlates to smaller F1 (p=0.019) difference between KIT and FLEECE vowels



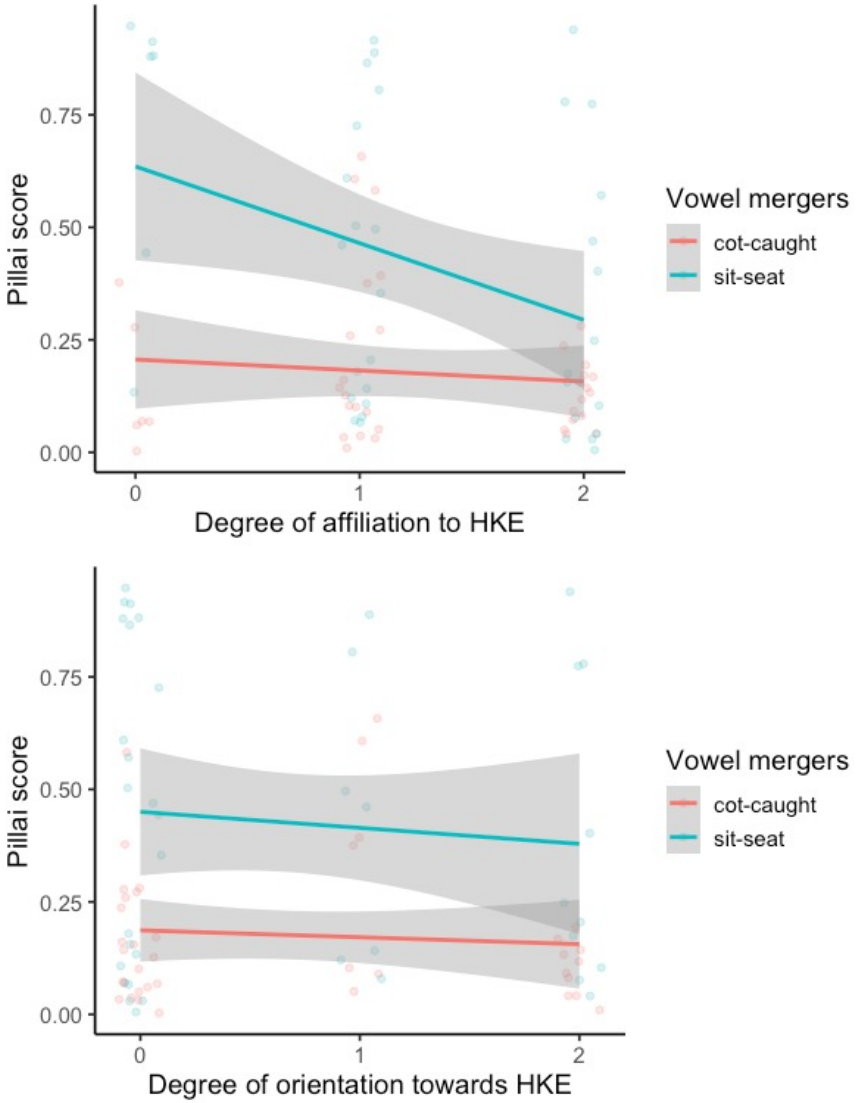
Results: sit-seat merger

- No significant effect of language orientation on formant differences between KIT and FLEECE vowels ($p>0.05$)



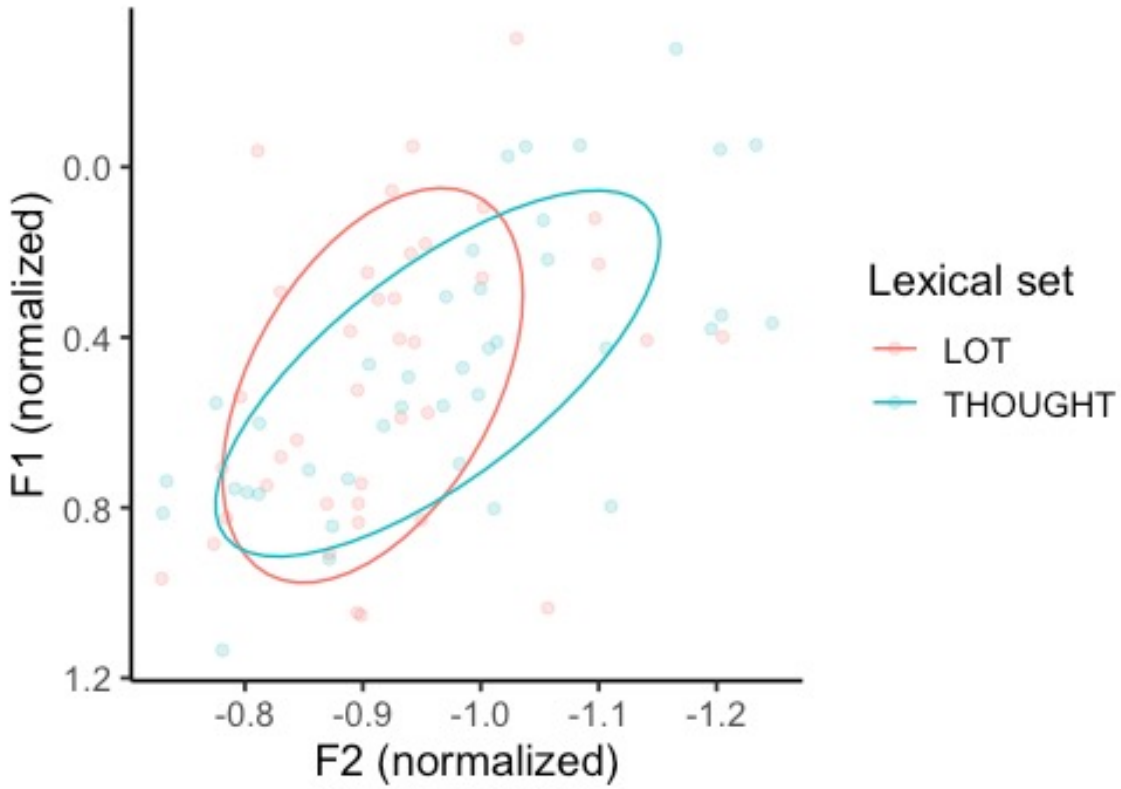
Results: sit-seat merger

- Pillai score: lower value = two vowels more merged
- Significant effect of language affiliation
  - Stronger affiliation to HKE correlates to greater degree of merger (p=0.021)
- No significant effect of norm orientation on the degree of merger



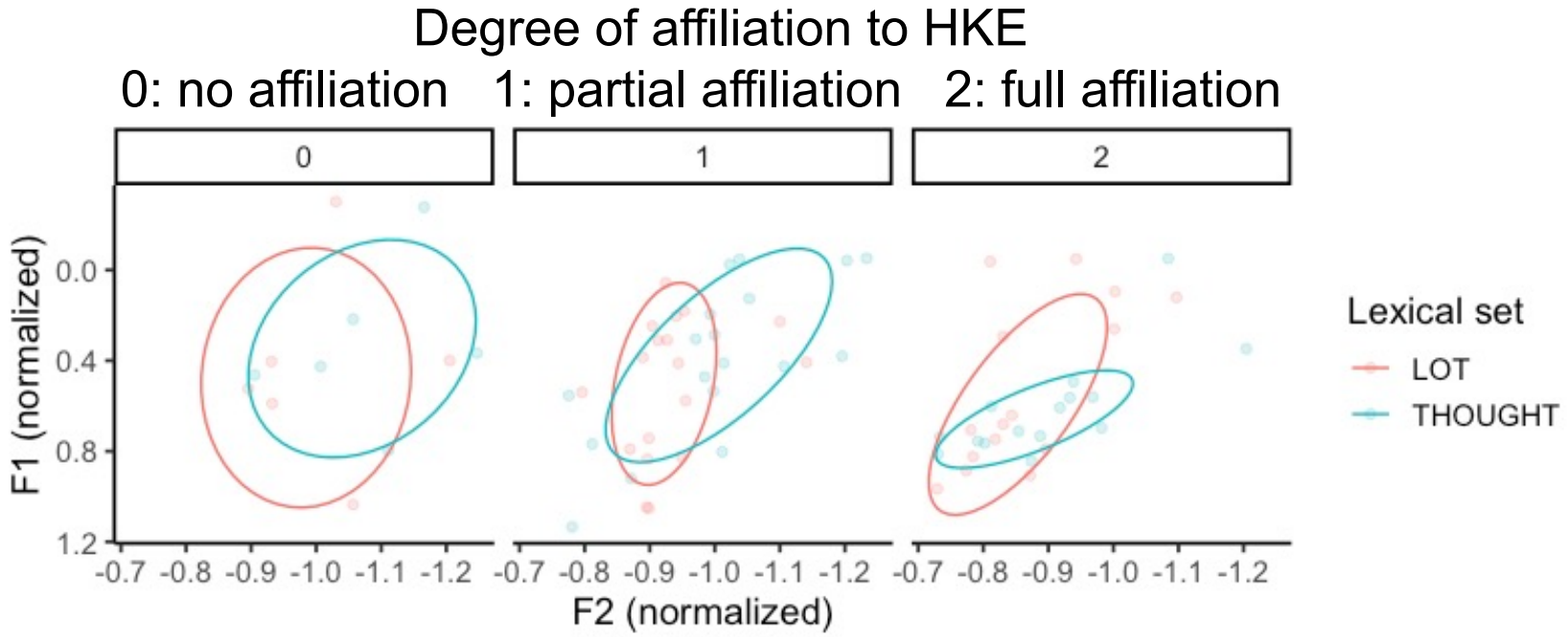
Results: cot-caught merger

- Mixed effect model: significant formant differences between LOT and THOUGHT vowels in general
  - LOT has **higher F2** (p=0.039) than THOUGHT



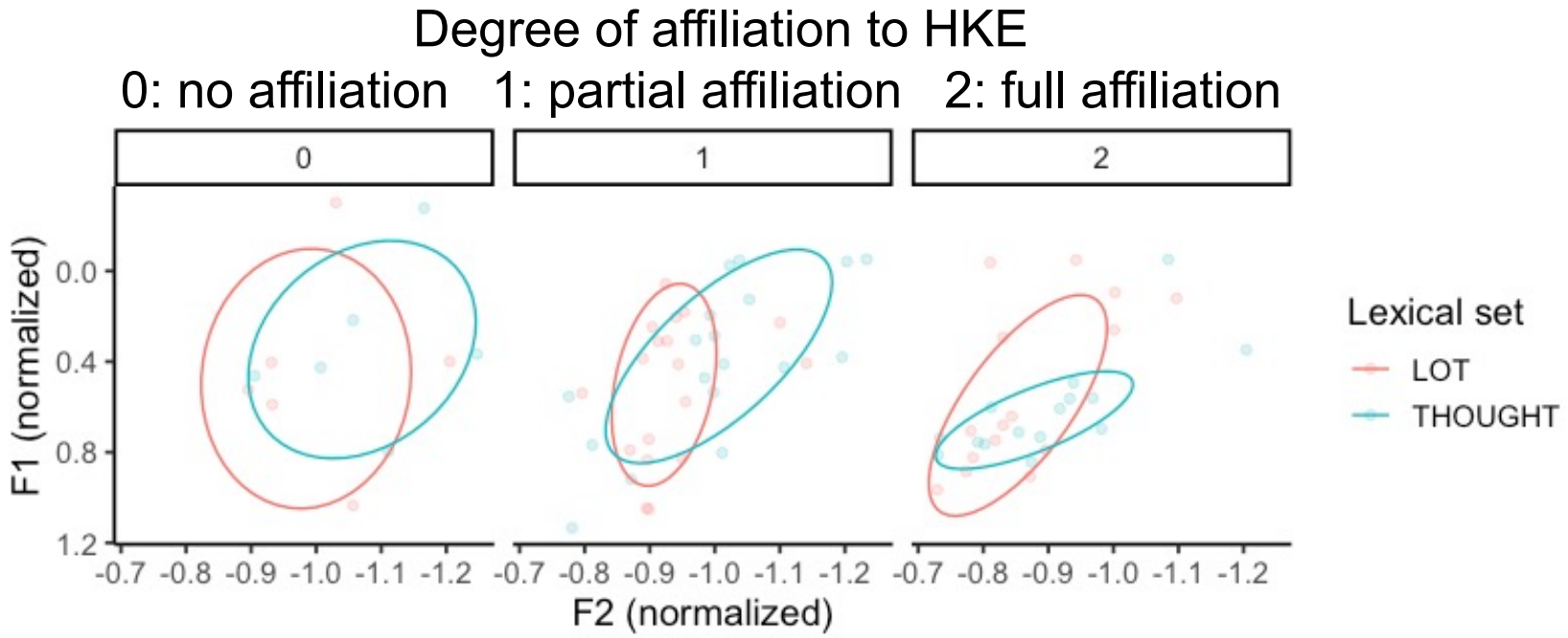
Results: cot-caught merger

- Significant effect of language affiliation:
  - Stronger affiliation to HKE correlates to higher F1 (p=0.043) and F2 (p=0.005) for LOT and THOUGHT vowels as a whole



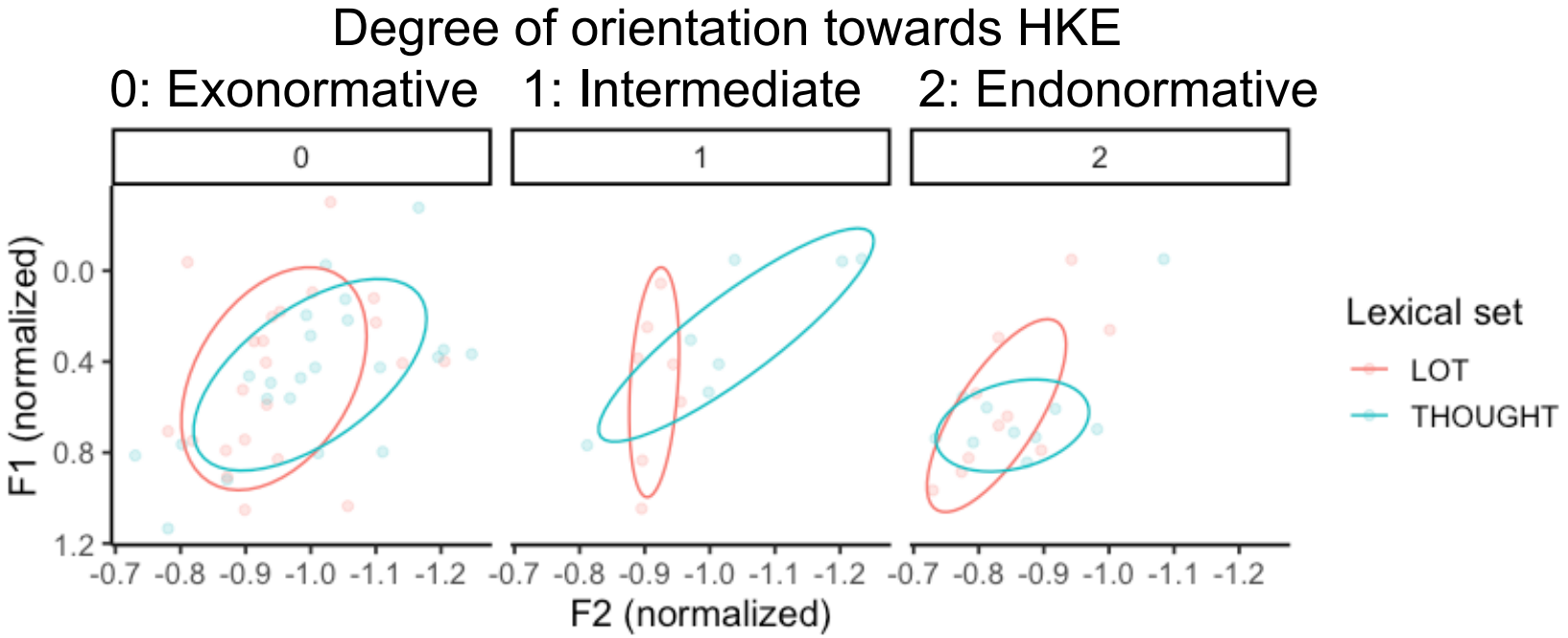
Results: cot-caught merger

- Yet, no significant effect of language affiliation on the formant difference between LOT and THOUGHT vowels (p>0.05)



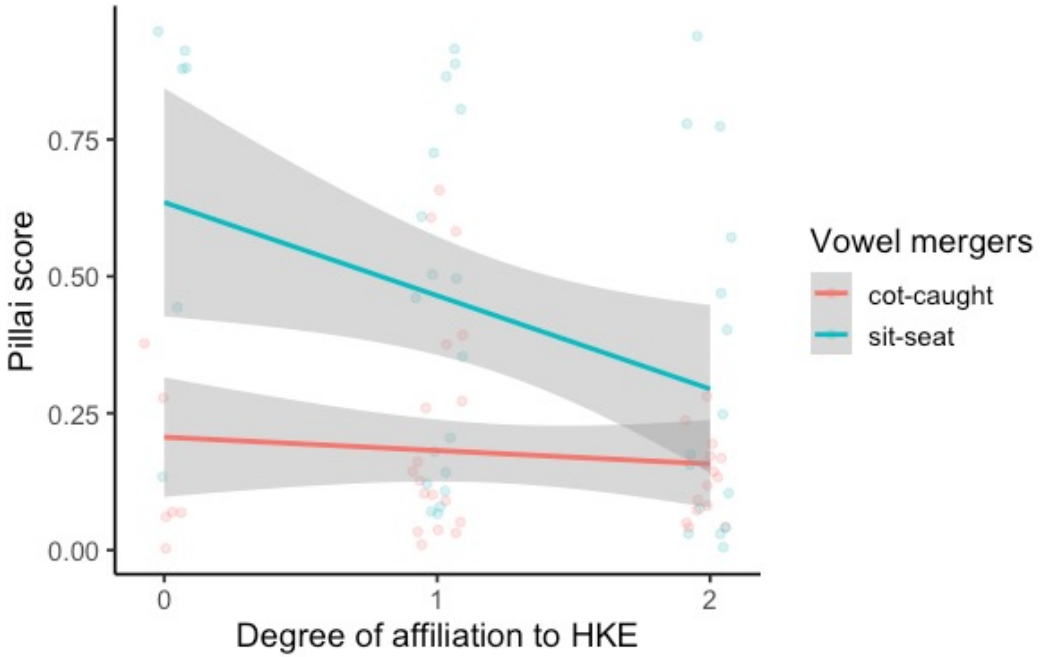
Results: cot-caught merger

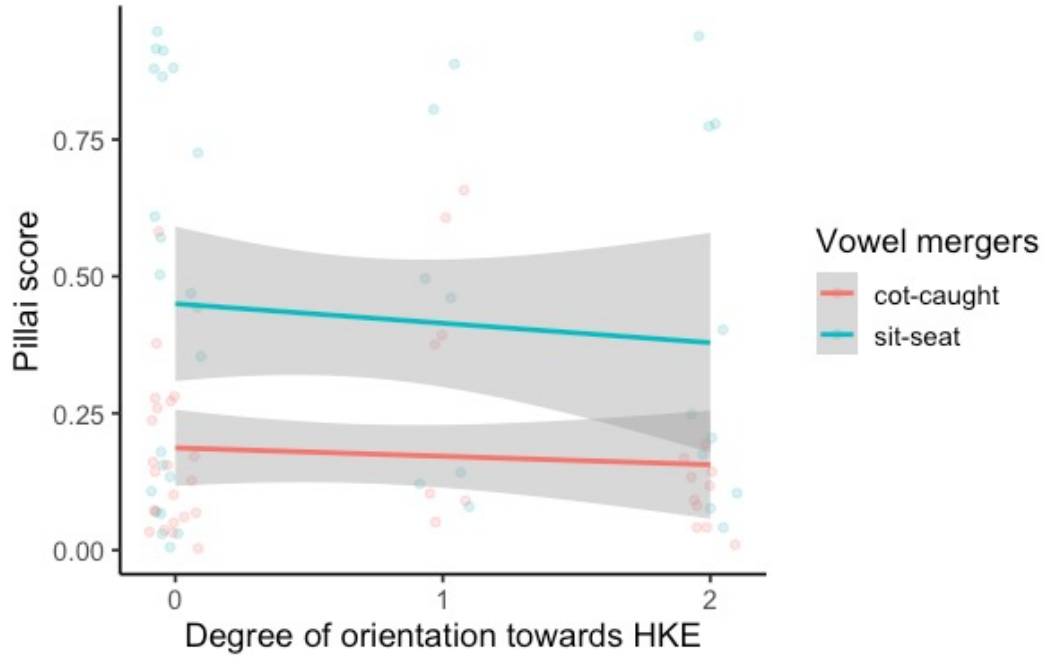
- Significant effect of language orientation
  - Stronger endonormative orientation correlates to higher F2 ($p=0.029$) for LOT and THOUGHT vowels as a whole



Results: cot-caught merger

- Pillai score: No significant effect of language affiliation or norm orientation on the degree of merger ($p>0.05$)





Discussion

- The low back vowels are more merged than the high front vowels among L2 English speakers in Hong Kong
  - LOT-THOUGHT: almost completely merged
  - FLEECE-KIT: only partially merged
- Not all vowel mergers in HKE are equal! Some are more advanced than others

Discussion

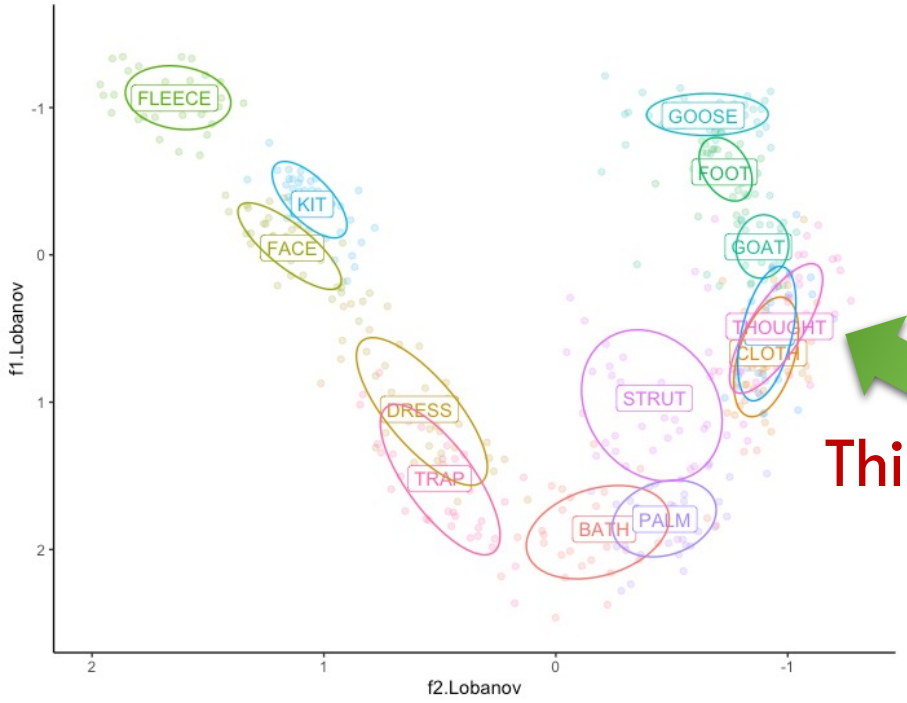
- Hypothesis for **KIT** and **FLEECE** vowels supported
  - Speakers with stronger affiliation to HKE show more merger
  - The direction of variation is expected: *sit-seat* merger is present in HKE but not in most Inner Circle varieties
  - Affiliation to HKE → divergence from Inner Circle norms
  - Affiliation to Inner Circle varieties → convergence to Inner Circle norms

Discussion

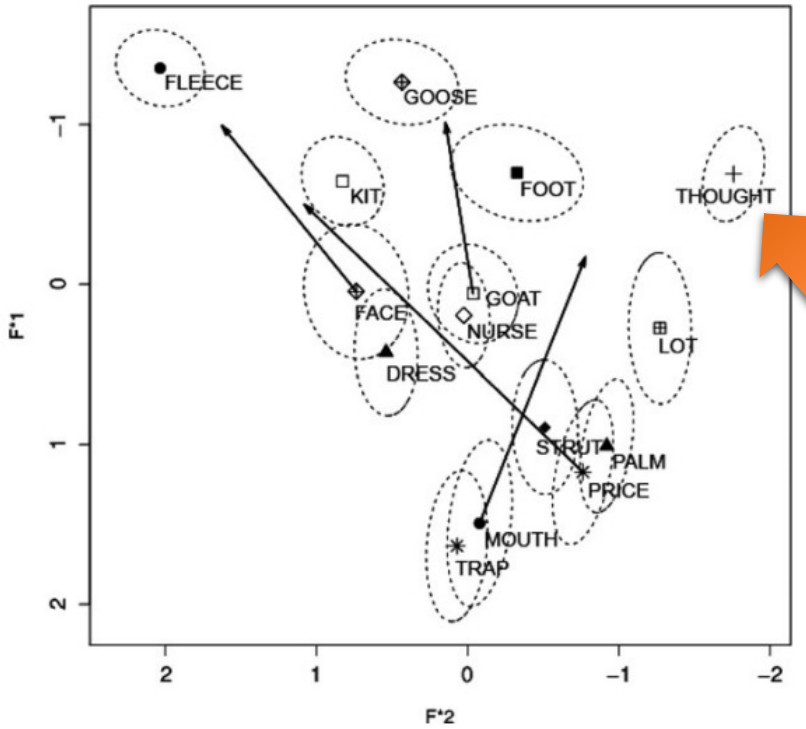
- What about **LOT** and **THOUGHT** vowels?
  - Speakers merge them to the same degree despite differences in language affiliation and norm orientation
- Phonetic realization of the merged LOT-THOUGHT vowel is unexpected
  - According to previous studies, HKE has higher and backer [ɔ] than AmE [ɑ]
  - Yet, stronger affiliation and orientation towards HKE correlates to more fronted (and lowered) vowel

Discussion

- Possible reason:
  - Although the THOUGHT vowel is transcribed as [ɔ] in both HKE and RP, the one in RP is actually higher (Bjelaković, 2016)



This study



RP speakers from Bjelaković (2016)

Discussion

- Not all HKE features are employed by speakers to index HKE identity
  - *sit-seat* merger **yes,** *cot-caught* merger no
- Possible reason:
  - *cot-caught* merger is present in Inner Circle varieties but *sit-seat* merger is not
  - Thus, *sit-seat* merger is more salient as a HKE feature, more likely to be enregistered by speakers
  - Stigma against HKE motivates speakers to resist complete merger

Discussion

- Language affiliation has greater effect on vowel production than norm orientation
  - Affiliation to HKE:
    - KIT and FLEECE vowels more merged
    - Lower and fronter LOT-THOUGHT vowel
  - Orientation towards HKE:
    - Fronter LOT-THOUGHT vowel
- Why does norm orientation have little effect on vowel production?

Discussion

- Discrepancy between linguistic ideals and actual production
  - Groves (2011): "linguistic schizophrenia", exonormative in ideal but endonormative in practice
- Constraints of L2 acquisition: inability to completely acquire native-like phonology (Flege et al., 1999; Piske et al., 2001)
- Covert prestige of indegenized variety: HKE as identity marker
  - Although few speakers treat HKE as their ideal variety, many nonetheless identified themselves as HKE speakers

Thank you!

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Appendix I: Word list

FLEECE	KIT	THOUGHT	LOT
beat	bit	bought	bot
deep	dip	caught	cot
feet	fit	dawn	don
Pete	pit	stalk	stock
team	Tim	walk	wok

Appendix II: Model specifications

- lmer(normalized F1/F2 ~ lexical set * affiliation score/orientation score + syllabic structure + (1+lexical set|speaker) + (1+affiliation score/orientation score|word)