Can heritage speakers innovate allophonic splits due to contact?

Linguistic Society of America Annual Meeting, January 5, 2019, New York, NY

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Poster PDF available at: http://www.pitt.edu/~hbt3/

1) Background

- Most studies of heritage speaker phonology show contrast maintenance (Benmamoun et al. 2013) and hence lack of mergers (cf. Tse 2018 for an exception)
- What about allophonic splits influenced by dominant language phonology (cf. Tse 2016)?

2) Toronto Heritage Cantonese Data

HLVC Corpus (Nagy et al 2009, Nagy 2011) consists of:

1. Sociolinguistic Interviews (~ 1 hour long spontaneous speech samples following methods discussed in Labov 1984)
2. Ethnic Orientation Questionnaire
3. Picture naming task

3) Speakers Analyzed

Group	GEN 1	GEN 2	HK
Age Range	46-87	20-44	16-77
Time in Hong Kong	Born and raised in HK	N/A	Born and raised in HK
Time in Toronto	Moved to Toronto as adults, lived in Toronto > 20 years	Lifelong Toronto residents or have lived in Toronto since age of 4	N/A
English Proficiency	Variable, but Cantonese dominant	English dominant	Variable, but Cantonese dominant
TOTAL	N = 12	N = 12	N = 8

4) Methodology

STEP 1: Forced alignment (speech to acoustic segment) using Prosodylab-Aligner (Gorman et al 2011), output manually reviewed

STEP 2: Midpoint F1 and F2 measurements of all usable tokens of /ɛ/ using PRAAT script (Boersma & Weenik 2016), output reviewed for extreme values

NORM
The Vowel Normalization and Plotting Suite

STEP 3: Lobanov Method for normalization using NORM (Thomas & Kendall 2007)

STEP 4: Mixed Effects Modeling using R-brul (Johnson 2009)
Separate Models for each group (GEN 1, GEN, HK)

1. Dependent variable: F2
2. Random Effects: Speaker and Word
3. Fixed Effects considered in separate models: Coda Context (Open syllable, pre-nasal, pre-stop), CAN % Score, age, sex, or ethnic orientation score

CAN % Score = Total words transcribed in Cantonese ÷ Total words in both Cantonese and English

5) Results from three comparisons to support argument for contact (cf. Nagy 2011)

GEN 1

Coda Context n.s.
n = 1135

Inter-generational Comparison

HK Cantonese

Diatopic Comparison

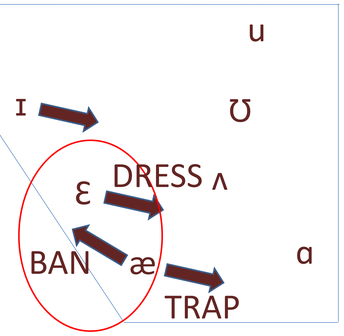
GEN 2

Coda Context n.s.
n = 548

Coda Context p < 0.01**
n = 836

Cross-linguistic Comparison

TORONTO ENGLISH

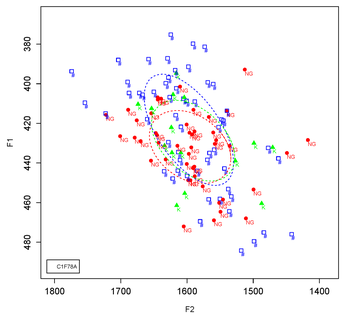


Notable features (cf. Boberg 2008)

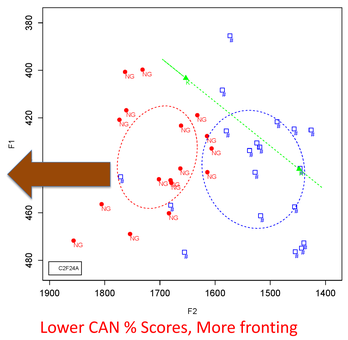
- Pre-nasal tensing of /æ/
- Canadian Vowel Shift (CVS) involving retraction of lax vowels: /ɪ/, /ɛ/, /æ/

GEN 2 Cantonese speakers participate in the CVS when speaking English (Hoffman & Walker 2010)

Speaker without split



Speaker with a split

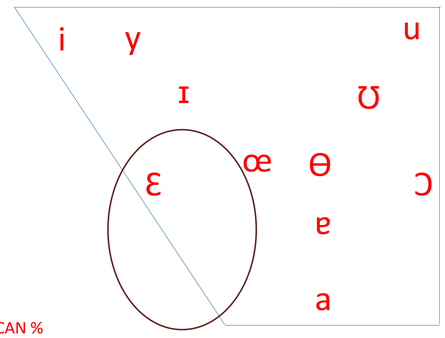


Lower CAN % Scores, More fronting of pre-nasal /ɛ/

Best Step-down model for GEN 2
Random effects: speaker and word
Fixed Effect: Coda Context (p < 0.01)**

	Coefficient (Hz)	Tokens	F2 Mean (Hz)
Pre-nasal	39	258	1619
Open Syl.	-8	538	1564
Pre-stop	-30	40	1530
TOTAL		836	

r^2 [fixed] =0.07, r^2 [random] =0.388, r^2 [total] =0.458



Only CAN % Scores significant

Best step-down model of /ɛ/
(GEN 2 data from pre-nasal context only)
Random: Speaker and Word
Fixed: CAN % Score (p < 0.001)***

		Coefficient (Hz)	Tokens
continuous	+1	-161	258

r^2 [fixed] = 0.122, r^2 [random] = 0.373
r^2 [total] = 0.495

Non significant factors:
Age, sex, ethnic orientation score

	Cantonese /ɛ/ [+tense]	English /ɛ/ [-tense]	English /æ/ [tense] split
Open syllable	[sɛ2], 'to write'	Does not occur	Does not occur
Closed syllable	[sɛk3] 'to kiss'	DRESS, [-tense]	TRAP, [-tense]
Pre-nasal	[sɛŋ2] 'to awaken'	No split	BAN, [+tense]

Innovation of splits in /ɛ/!

ɛ [+tense]

[sɛŋ2] [sɛ2] [sɛk3]

6) Conclusion / Next Steps

To further support argument for contact-induced change

- Acoustic data needed from the English spoken by GEN 2 Cantonese speakers to determine if Cantonese pre-nasal /ɛ/ is identical to English pre-nasal /æ/
- Measure other acoustic features that might also characterize the split

1. Could there also be diphthongization?
2. Are there durational differences?

- Follow-up study to obtain more pre-stop tokens

7) References

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8) Acknowledgements

Naomi Nagy, Scott Kiesling, Shelome Gooden, Alan Juffs
HLVC Cantonese RA's: See full list at http://projects.chass.utoronto.ca/ngn/HLVC/0_0_home.php

多謝晒!

University of Toronto

Social Sciences and Humanities Research Council of Canada | Conseil de recherches en sciences humaines du Canada