



Intersect(ING) Variables

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Methods in Dialectology XVI

立川市 Tachikawa • August 2016

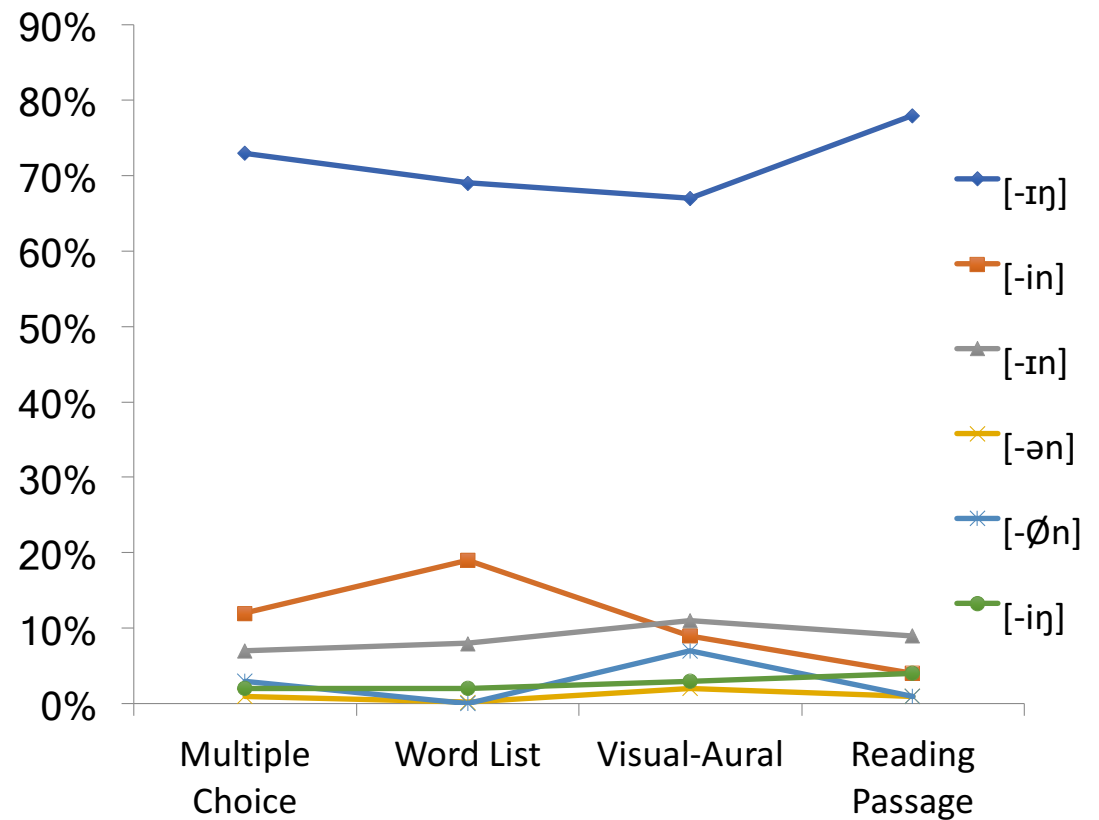
(ING): Variation in Final Consonant

- Variable realization as velar [ŋ] or alveolar [n]
 - Well studied in both production (e.g. Fischer 1958; Labov 1966; Trudgill 1974) and perception (e.g. Campbell-Kibler 2009 ...)
- Historical convergence (Houston 1985; Labov 1989):
 - Verbal noun *-inge/ynge* > *-ing*
 - Participle *-inde* > *-ind* > *-in*
 - Velar variant a hypercorrection or spelling pronunciation (Wells 1982)?
- Occurs in all varieties of English
 - Social constraints (social class, sex/gender, ethnicity ...)
 - Stylistic constraints
 - Linguistic constraints (phonological context, grammatical status)

(ING): Variation in the Vowel?

- Canadian English:
 - Vancouver (Gregg 1974/1992)
[ɪŋ], [ɪn], [ɪn], [əŋ], [n], [ɪŋ]

- Ottawa (Woods 1979/1999)
[ɪŋ], [ɪn], [əŋ]



(ING): Variation in the Vowel?

- Does (ING) have two variants, or three? (or more?) (e.g. Rosen 2015; Rosen, Ankutowicz & D'Arcy 2016)
- Are the tense-vowel variants on the rise in Canadian English? (e.g. Chambers 2009)
- Is the vowel variation available for social evaluation?

Toronto – Tokyo – Melbourne



“Contact in the City”

(Hoffman & Walker 2010)



Stratification of Informants by Ethnic Origin, Generation and Sex

(As of July 31, 2017)

Ethnic Origin:																			
		British/ Irish		Chinese		Filipino		Greek		Italian		Jewish		Korean		Portuguese		Punjabi	
Gen:		F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
1 st		8	6	5	4	5	2	4	2	6	4	0	2	1	0	5	1	4	3
2 nd /3 rd		6	6	11	11	7	9	1	3	10	8	0	1	1	1	4	2	13	13
Total:		14	12	16	15	12	11	5	5	16	12	0	3	2	1	9	3	17	16
Ethnicity Total:		26		31		23		10		28		3		3		12		33	
Grand Total:		169																	

Extracting and Coding (ING)

- Variable Context
 - Word-final unstressed *-ing*
- Social Factors
 - Speaker
 - Ethnic background
 - Generation
 - Sex/gender
- Linguistic Factors
 - Grammatical status
 - Verb, Noun, Adjective, *-thing*, Preposition
 - Consonant
 - Velar [ŋ] vs. Apical [n]
 - (“stopped” velar [ŋk], [ŋg])
 - Vowel
 - Lax [ɪ] vs. Tense [i]

Inter-coder
reliability
>90%

Inter-coder
reliability
<90%



speak[in]



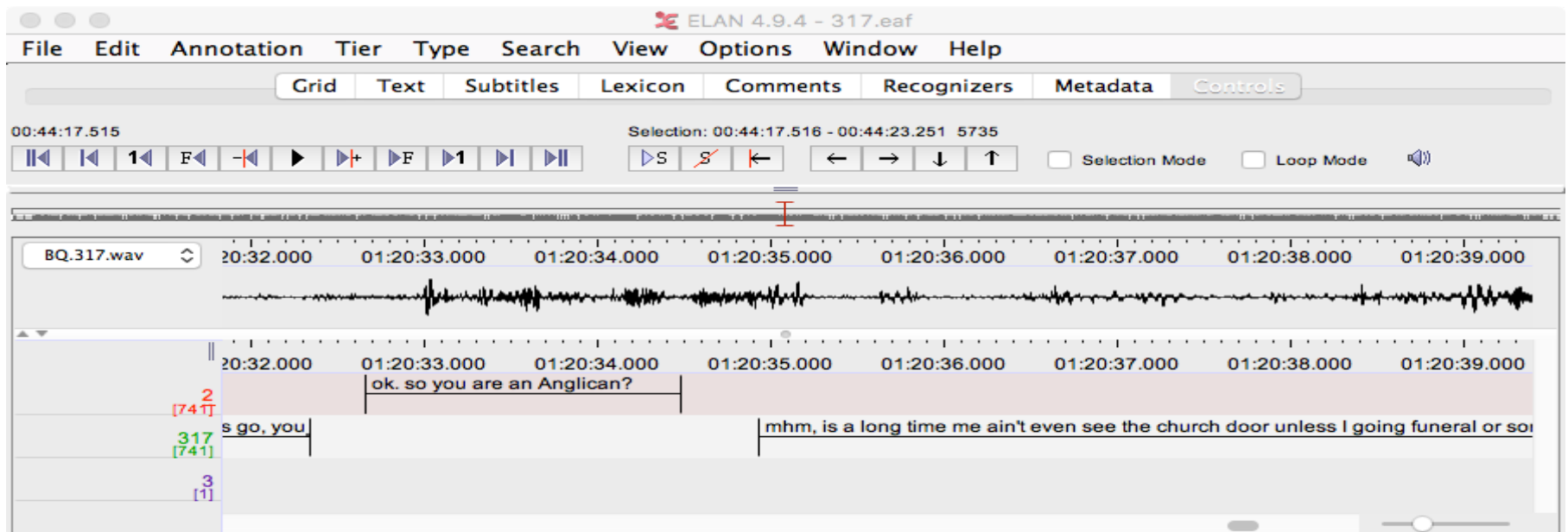
think[in]



shin[ɪŋ]

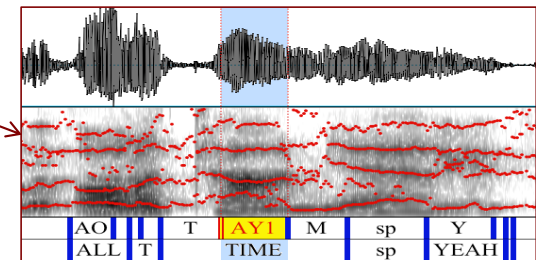
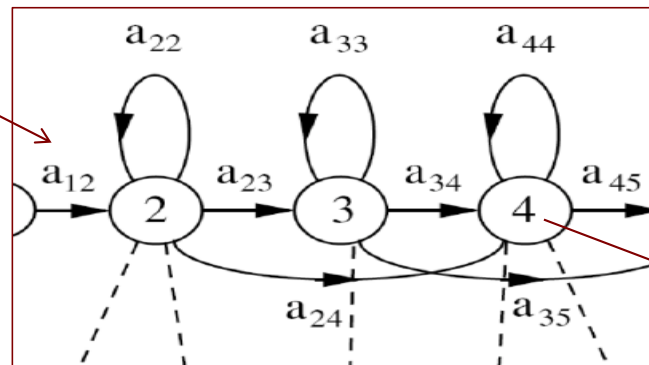
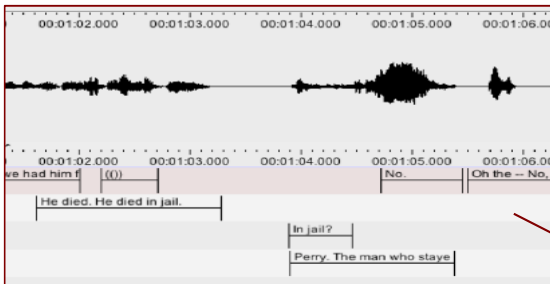
Data Transcription

- Time-aligned transcription in ELAN



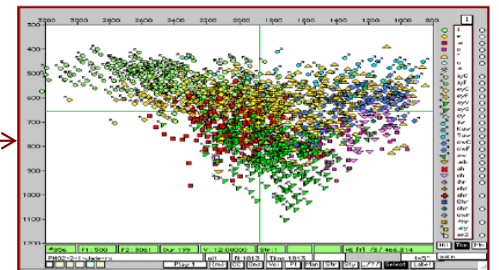
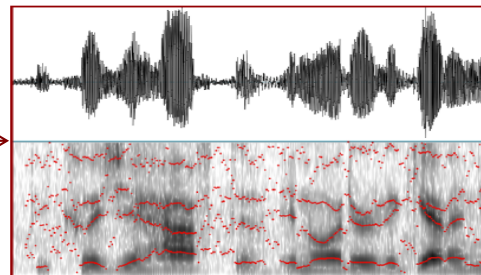
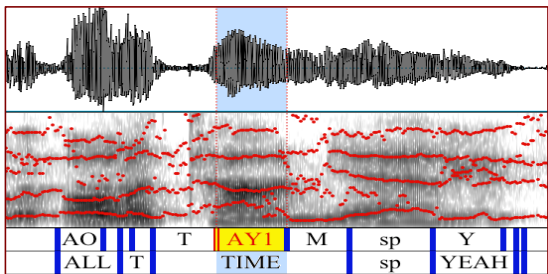
Extracting Tokens

- Forced alignment with FAVE (Rosenfelder et al. 2011)
 - Force-aligns segments in transcription with wave-form in sound file
 - Produces TextGrid



Coding Tokens

- Using FAVE-Extract
 - Extracts and measures vowel formants using TextGrid and sound file
 - Normalises tokens using Lobanov method
 - Locates unstressed final *-ing* and take measurement at 50% point



Informants Coded for (ING)

(As of July 31, 2017)

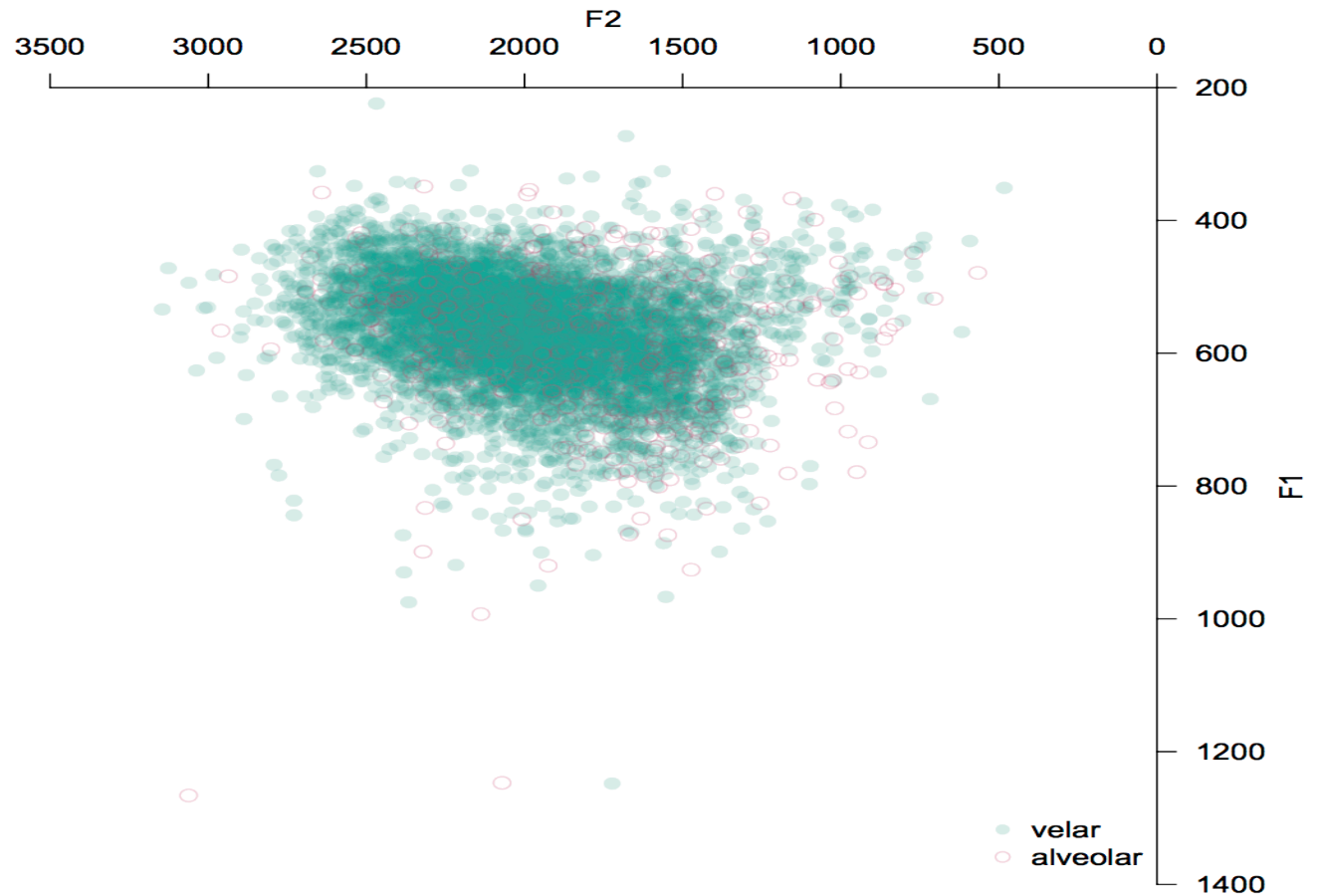
Ethnic Origin:																		
	British/ Irish		Chinese		Filipino		Greek		Italian		Jewish		Korean		Portuguese		Punjabi	
Gen:	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
1 st	8	6	5	4			2	3	6	3					5	1	1	1
2 nd /3 rd	6	6	11	10			1	3	9	8					4	2	10	11
Total:	14	12	16	14			3	6	15	11					9	3	11	12
Ethnicity Total:	26		30				9		26						12		23	
Grand Total:	126										8,910 tokens							

Informants Considered in this Study

Ethnic Origin:																			
	British/ Irish		Chinese		Filipino		Greek		Italian		Jewish		Korean		Portuguese		Punjabi		
Gen:	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
1 st	8	6																	
2 nd /3 rd	6	6	11	10			1	3	9	8					4	2	10	11	
Total:	14	12	11	10			1	3	9	8					4	2	10	11	
Ethnicity Total:	26		21				4		17						6		21		
Grand Total:											85		7,004 tokens						

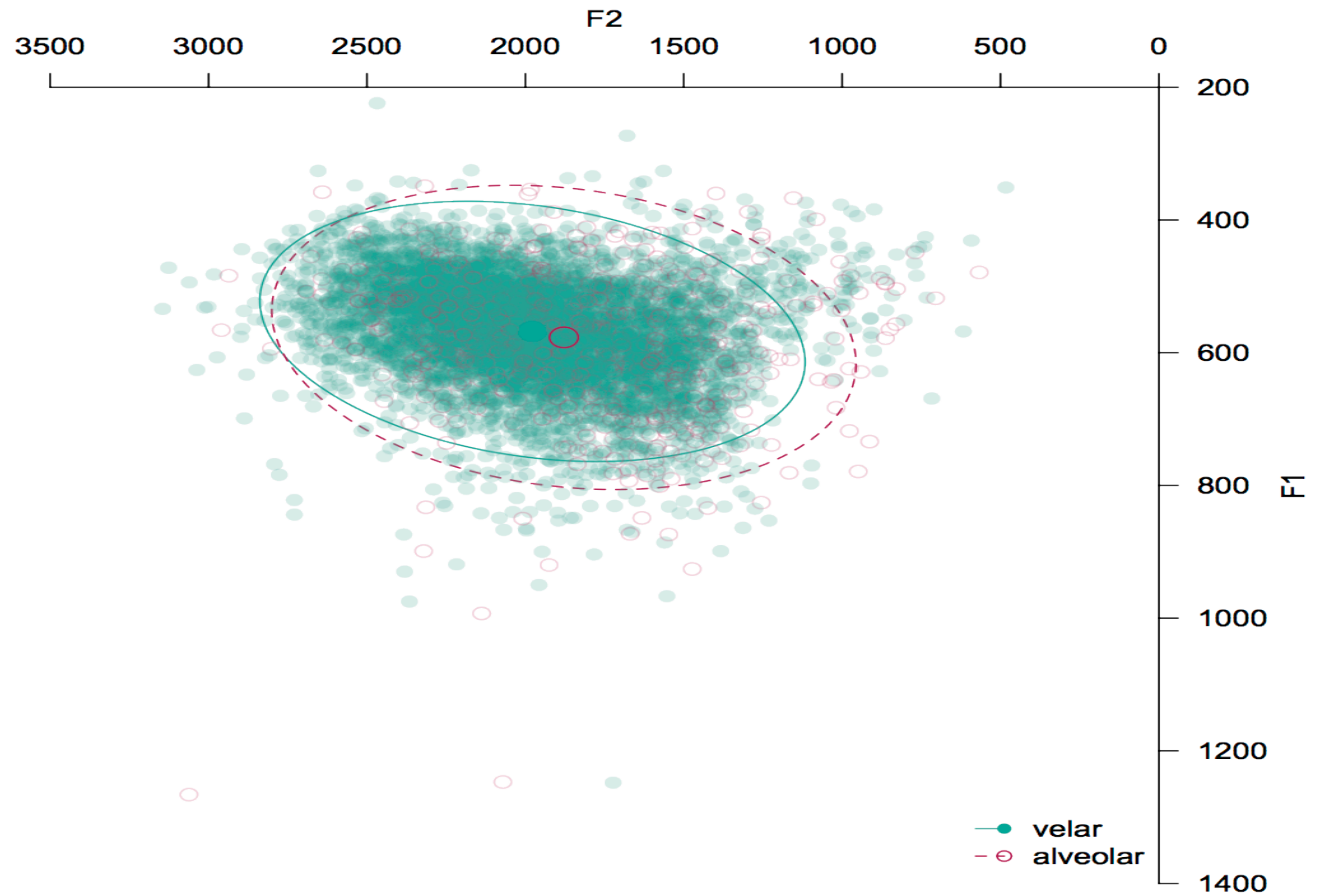
Overall Distribution of (ING) Tokens

- Plotted with R package *phonR* (McCloy 2016)
- High degree of overlap!



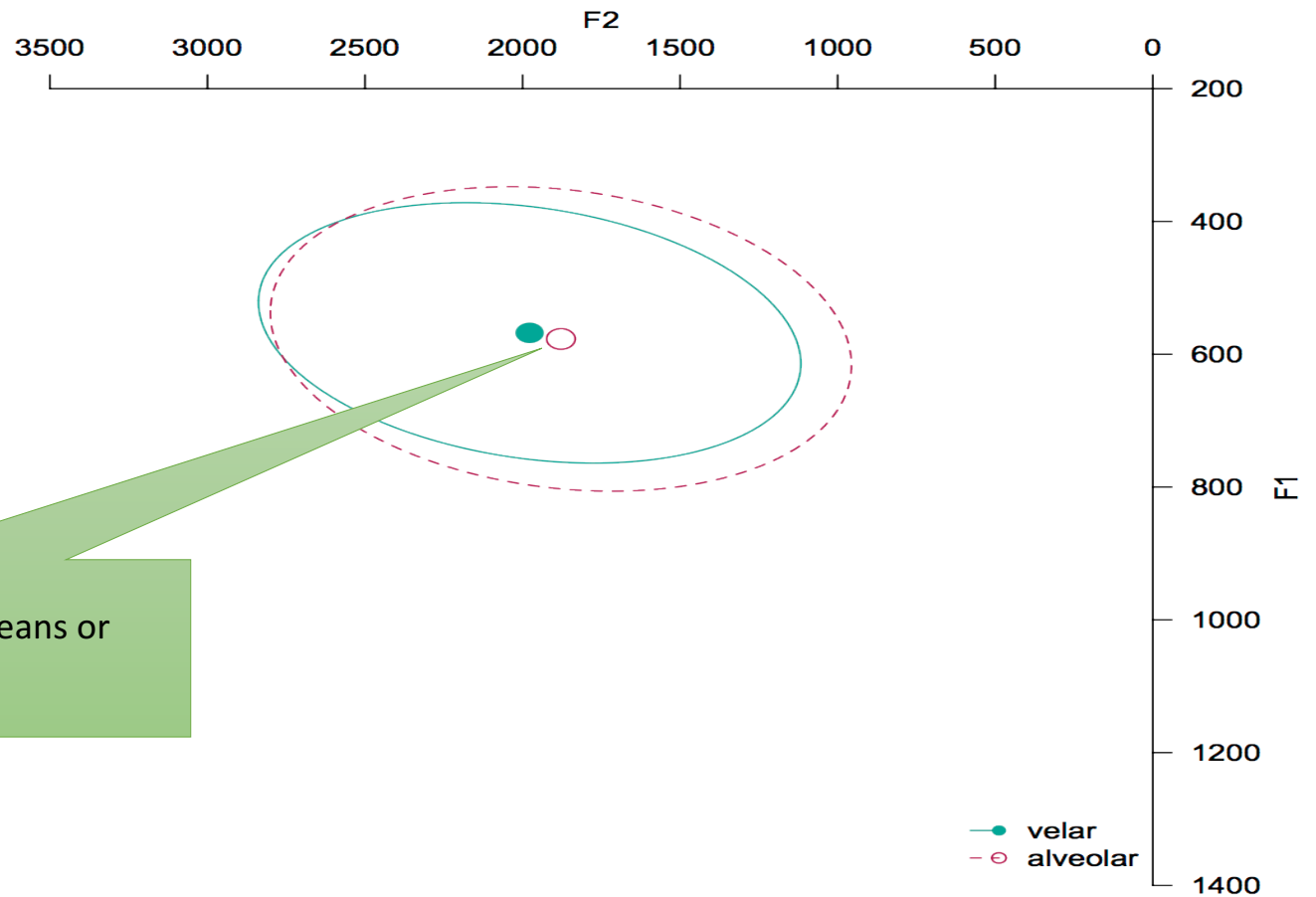
Overall Distribution of (ING) Tokens

- Plotted with R package *phonR* (McCloy 2016)
- High degree of overlap!



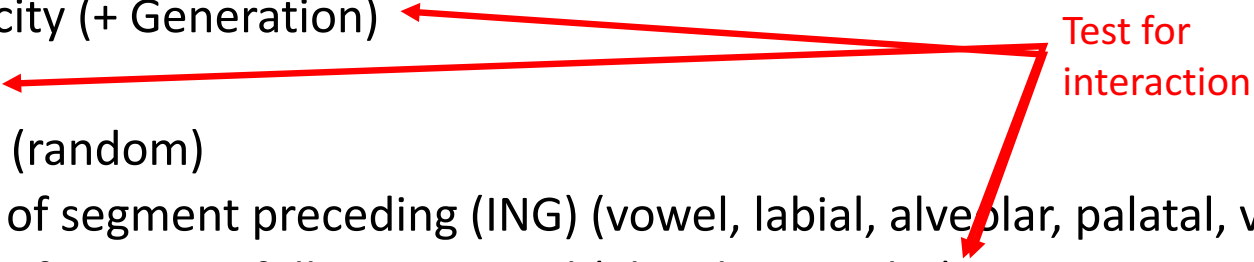
Overall Distribution of (ING) Tokens

- Plotted with R package *phonR* (McCloy 2016)
- High degree of overlap!



But not *complete* overlap of means or standard deviations!

Mixed-effects linear regression with Rbrul (Johnson 2009)

- Dependent variable:
 - Lobanov-normalised F1 value of vowel: lower value = higher vowel
 - Independent variables:
 - Speaker (random)
 - Ethnicity (+ Generation) ←
 - Sex ←
 - Word (random)
 - Place of segment preceding (ING) (vowel, labial, alveolar, palatal, velar)
 - Place of segment following vowel (alveolar or velar) ↓
 - Grammatical status (noun, verb, adjective, preposition, *-thing*)
- Test for interaction
- 

Mixed-effects linear regression with Rbrul (Johnson 2009)

1. Preceding Place	
Vowel	41.177
Liquid	21.983
Alveolar	-3.032
Labial	-8.014
Palatal	-18.208
Velar	-33.706

2. Ethnic Background (+ Generation) x Following Place	
British/Irish (older) x alveolar	16.765
Greek (G2) x velar	11.744
Chinese(G2) x velar	4.201
Italian(G2) x velar	4.145
British/Irish (younger) x alveolar	3.893
Punjabi (G2) x velar	1.578
Portuguese (G2) x alveolar	1.012
Portuguese (G2) x velar	-1.012
Punjabi (G2) x alveolar	-1.578
British/Irish (younger) x velar	-3.893
Italian (G2) x alveolar	-4.145
Chinese (G2) x alveolar	-4.201
Greek (G2) x alveolar	-11.744
British/Irish (older) x velar	-16.765

BEST MODEL: Speaker [random], Word [random],
 Preceding Place ($p = 3.63 \times 10^{-26}$),
 Ethnicity(+Generation) x Following Place ($p = 0.000132$),
 Sex x Following Place ($p = 0.0144$),
 Grammatical Status ($p = 0.0209$)

Mixed-effects linear regression with Rbrul (Johnson 2009)

3. Sex x Following Place	
Female x Velar	3.455
Male x Alveolar	3.455
Female x Alveolar	-3.455
Male x Velar	-3.455

4. Grammatical Status	
Preposition	17.535
<i>-thing</i>	12.700
Adjective	-4.197
Noun	-12.174
Verb	-13.863

BEST MODEL: Speaker [random], Word [random],
Preceding Place ($p = 3.63 \times 10^{-26}$),
Ethnicity(+Generation) x Following Place ($p = 0.000132$),
Sex x Following Place ($p = 0.0144$),
Grammatical Status ($p = 0.0209$)

Conclusions

- Does (ING) have more than two variants?
 - Better viewed as co-variation between the vowel ([ə] ↔ [ɪ] ↔ [i]) and the consonant ([ŋ] ~ [n])
 - Linguistic conditioning;
 - Preceding palatal/velar → higher vowel
 - Preposition/*-thing* → lower vowel
 - Social conditioning
 - [in] favoured by women, [iŋ] favoured by men
 - Split between British/Irish speakers and other ethnic groups
- Are the tense-vowel variants unique to Canadian English? (If so, why??)
 - Vowel in (ING) hasn't received much attention in other varieties of English (AFAIK)
 - Place of following consonant may influence perception of preceding vowel
 - More studies!

Thank you!

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ありがとうございました!

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Mixed-effects linear regression of F2 with Rbrul (Johnson 2009)

1. Preceding Place	
Velar	91.341
Palatal	87.483
Alveolar	25.099
Labial	-3.687
Vowel	-82.728
Liquid	-117.508

3. Sex x Following Place	
Female x Alveolar	15.283
Male x Velar	15.283
Female x Velar	-15.283
Male x Alveolar	-15.283

2. Ethnic Background (+ Generation) x Following Place	
British/Irish (younger) x velar	40.292
Chinese (G2) x alveolar	38.632
Italian (G2) x alveolar	32.830
Portuguese (G2) x velar	21.750
British/Irish (older) x alveolar	19.329
Greek (G2) x velar	18.999
Punjabi (G2) x velar	9.750
Punjabi (G2) x alveolar	-9.750
Greek(G2) x alveolar	-18.999
British/Irish (older) x velar	-19.329
Portuguese (G2) x alveolar	-21.751
Italian (G2) x velar	-32.830
Chinese (G2) x velar	-38.632
British/Irish (older) x velar	-40.292

BEST MODEL: Speaker [random], Word [random], Preceding Place ($p = 1.01 \times 10^{-10}$), Ethnicity + Generation x Following Place ($p = 0.000441$), Sex x Following Place ($p = 0.00821$)