

Evidence of phonemicization: Lax high vowels in Canadian French

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Introduction. In final syllables, speakers of Canadian French produce predictable variants for high vowels: high vowels are tense before specific coda consonants (“lengthening consonants”, /v z ʒ r vr/) and in open syllables, otherwise high vowels are lax (Poliquin 2006), as in (1). In non-final syllables, however, laxness is highly variable. High-vowel laxing often requires a final lax vowel (Poliquin 2006), as in (2), which has led to allophonic laxing being described as laxing harmony when it occurs in non-final syllable, though a lax vowel is not always present to trigger laxing, even if morphologically related words (redacted). This variability and partial predictability has led to the phonemic status of high vowels becoming uncertain.

Many authors consider high vowels’ laxness to be purely allophonic (e.g. Poliquin 2006) because the availability of high-vowel laxing is generally predictable from context. Others, on the other hand, argue that the lax high vowels are phonemic in French because recent borrowings from English preserve the English laxing values (Côté 2012). We argue based on two sources of evidence that laxing has become phonemic for high vowels: (a) the presence of minimal-pair phrases, and (b) an acoustic study. This additionally illustrates that phonetic patterns can offer evidence for the status of potentially phonemic contrasts – and, in the present case, that this contrast emerged in apparent time.

Distributional Evidence. While no minimal pairs exist in the native lexicon, we do find that phrases with different meanings can be distinguished solely through the presence of laxing. In the data shown in (3), laxing occurs in *qu’il a* ‘that 3sg.nom has’ but not in *qui l’a* ‘who 3sg.acc has’, which means that at the phrase level laxing is the sole segmental indication of meaning. Given that this occurs within the accentual phrase – which is the domain for prominence (e.g. Jun and Fougeron 1995) –, it may be that speakers would treat this different like they would treat a word-internal difference in a language like English with word-level stress.

Acoustic Evidence. The acoustic study aimed to look at whether coarticulation is modulated by phonological similarity, as suggested for high vowels by Poliquin (2006). We examined coarticulation on mid vowels – where there is a clear contrast between /e ø o/ and /ɛ œ ɔ/ – based on the following syllable’s vowel. To do this, we extracted the first formant from 26000 mid vowels in penultimate syllables from the spontaneous speech of 67 native Canadian French speakers about equally distributed across three generations. We also coded phonological features (height, rounding, backness, laxness) of target vowels of the following syllables’ vowels. We then used mixed-effects linear regression to predict the normalized first formant of the penult’s mid vowel, including random effects for speakers and words in addition to factors capturing phonological similarity (identical rounding, laxing, or backness) and social factors (sex and age).

We find that phonological similarity modulates coarticulatory effects. Mid vowels show more coarticulation with the height of following vowels when the vowels share values for height, rounding and backness. These results are consistent even when including the final syllable vowel’s F1 measurement, suggesting that both acoustic realization (F1) and phonological height (height feature values) influence the vowel height. Most crucially for the current study, we find that for middle-aged and older speakers the laxness of high vowels in the final syllable does not affect how much the final vowel’s height influences the penult mid vowel, but for young adults tense mid vowels were raised more when followed by tense high vowels, and lax mid vowels were raised more when followed by lax high vowels (figure 1).

Discussion. Our study suggests that laxness is not only a likely candidate for phonemicization (*distributional evidence*, borrowings), but is additionally planned early enough to affect the acoustic realization of earlier syllables, and that in younger speakers laxness patterns like other phonological features in modulating coarticulation (*acoustic evidence*). We interpret this result as indicating that high-vowel laxness has become phonemic for younger speakers. We propose that coarticulation like the one tested here can provide evidence for the phonological system in cases where other evidence is less conclusive (e.g. potential marginal contrasts), and can even suggest diachronic changes to that system.

(1) Distribution of high vowels (final syllables)

Word	Gloss	Realization
<i>vie</i>	life	[vi], *[vi]
<i>vite</i>	quick	[vit], *[vit]

(2) Variable non-final laxing

Word	Gloss	Realizations
<i>limite</i>	‘limit’	[lɪmit]~[limit]
<i>illicit</i>	‘illicit’	[ɪlɪsɪt]~[ɪlɪsɪt]~[ɪlɪsɪt]~[ɪlɪsɪt]
<i>visage</i>	‘face’	[vɪzɑʒ], *[vɪzɑʒ]

(3) High-vowel laxing can affect meaning

a. [lɔmkɪlavɥ]

- i. **L’homme qui l’a vu*
‘The man who saw him’
- ii. *L’homme qu’il a vu*
‘The man that he saw’

b. [lɔmkɪlavɥ]

- i. *L’homme qui l’a vu*
‘The man who saw him’
- ii. **L’homme qu’il a vu*
‘The man that he saw’

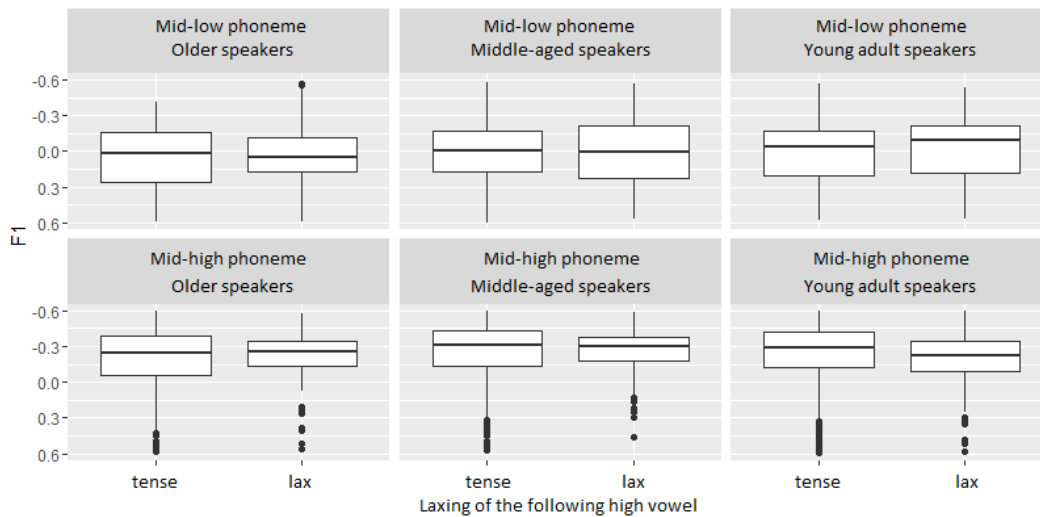


Figure 1: Normalised F1 of mid-low (top panels) and mid-high (bottom panels) phonemes in the penult according to the tenseness of the final-syllable high vowel, separated by speaker age group.

References

- Côté, Marie-Hélène. 2012. “Laurentian French (Québec): extra vowels, missing schwas and surprising liaison consonants”. In: R. Gess, C. Lyche, and T. Meisenburg, Eds. *Phonological variation in French: illustrations from three continents*. Amsterdam: John Benjamins.
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