

1. Introduction

- **Can second language learners acquire subtle phonological processes?**
 - What if a process is variably attested?
 - What if the structure underlying a process is not signalled in output strings?

• Focus: High Vowel Deletion (HVD) in Québec French (QF)

- A process that is sensitive to foot structure, even though the typical signatures for stress and footing are absent in QF

2. Prominence in English and French

- English and (Québec) French have distinct prominence profiles.

• English:

- Lexical stress: Stress is realized in the Foot (Ft) and computed in the Phonological Word (PWd) (Lieberman & Prince, 1977); see (1)

(1) [(ævə)_{Ft}](kɑː)_{Ft}doʊ]_{PWd} 'avocado'

• French:

- Intonational prominence: The only obligatory position for prominence is the right edge of the Phonological Phrase (PPh) (Dell 1984); see (2)

(2) [lə mɔvɛz avɔ'ka]_{PPh} *le mauvais avocat* 'the bad avocado'

- Consequence: French is analysed as a foot-less language, in contrast to most languages (e.g., Jun & Fougeron, 2000; see Thibault & Ouellet 1996 for evidence that Québec French has the same rhythmic contour as European French)

• Alternative way to probe for foot structure in QF: High Vowel Deletion

- Is rhythmic structure relevant for HVD?

- Two opposing views:
 - Verluyten (1982): HVD is **sensitive** to alternating rhythmic structure
 - Cedergren (1986): HVD is **insensitive** to alternating rhythmic structure

- Experimental results from native speakers (Garcia, Goad & Guzzo, 2016) consistent with Verluyten: HVD is **preferred** in even-numbered syllables from the right edge of the word

- These HVD patterns motivate iterative iambic footing in QF

(3) kɔ̃(bɔ̃).ne, ma(nɔ̃.fɛs)(ta.sjɔ̃) > ɔr(ga.nɔ̃)(za.tœr), (ka.pɔ̃)(ta.li)(za.sjɔ̃)
 combiner manifestation organisateur capitalisation
 'to combine' 'demonstration' 'organizer' 'capitalization'

3. Our study

- **Objective:** To examine the acquisition of HVD in QF by English-speaking learners and the prosodic constraints that govern it

• Challenges faced by English-speaking learners of QF:

- Although QF has no lexical stress, it builds iterative iambic feet
 (4) u(ni.vɛr)(si.te) université 'university'
 (u.ni)(vɛr.sa)(li.te) universalité 'universality'

- HVD is regulated by footing, since it is preferred in foot-dependent position
 (5) ma(nɔ̃.fɛs)(ta.sjɔ̃) > ɔr(ga.nɔ̃)(za.tœr)

- English has a different type of footing: iterative weight-sensitive trochees

(6) (æ.pə)(læ.tʃɪ)(kɒv)lə 'Apalachicola'
 (fɑ.nə)(lɑ.dʒə)kəl 'phonological'
 (æ.k)sɪ(dɛn)təl 'accidental'

- **Hypothesis:** Because the typical signatures for stress and footing are absent in QF and HVD applies variably, L2ers will not understand the conditions under which the process applies

4. Methods

• Participants:

- 10 English-speaking learners of QF (intermediate proficiency)
- 10 native speakers of QF (controls)

• Stimuli:

- 3-6 syllable words ($n = 275$), with deletion or non-deletion of [i] in various positions within the word
- No HVD word-finally, following a branching onset, or preceding a coda consonant
- No schwas in target words

• Task:

- Words presented both orthographically and auditorily
- Participants had to judge whether the word they heard was pronounced in a natural way
- Scale: **1 = completely unnatural**; **5 = completely natural**

• Variables:

- Group: native speaker controls; L2ers

- Position of deletion in foot:

Foot-dependent position (2 or 4)	kɔ̃(bɔ̃)ne ma(nɔ̃.fɛs)(ta.sjɔ̃)	'to combine' 'demonstration'
Foot-head position (3 or 5)	ɔr(ganɔ̃)(za.tœr) (kapɔ̃)(ta.li)(za.sjɔ̃)	'organizer' 'capitalization'

- Resulting cluster mirrors a well-formed branching onset:

Well-formed	[pr] supɔ̃re [bl] abɔ̃lite	'to sigh' 'ability'
Ill-formed	*[bn] kɔ̃bɔ̃ne *[lm] alɔ̃mãtasjɔ̃	'to combine' 'nourishment'

5. Data

Figure 1: Responses based on foot dependency (all possible positions of deletion included). Deletion in foot-dependent positions yield a higher concentration of *natural* responses.

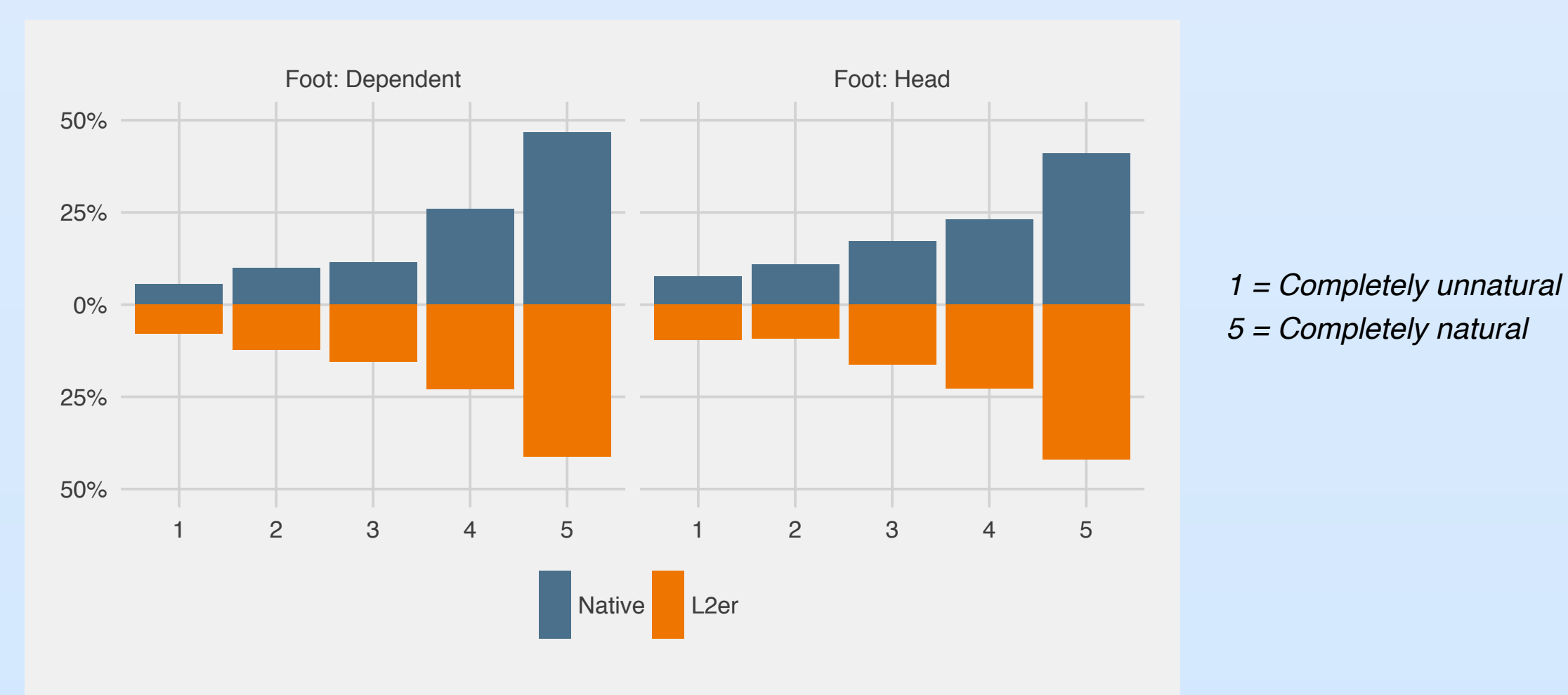
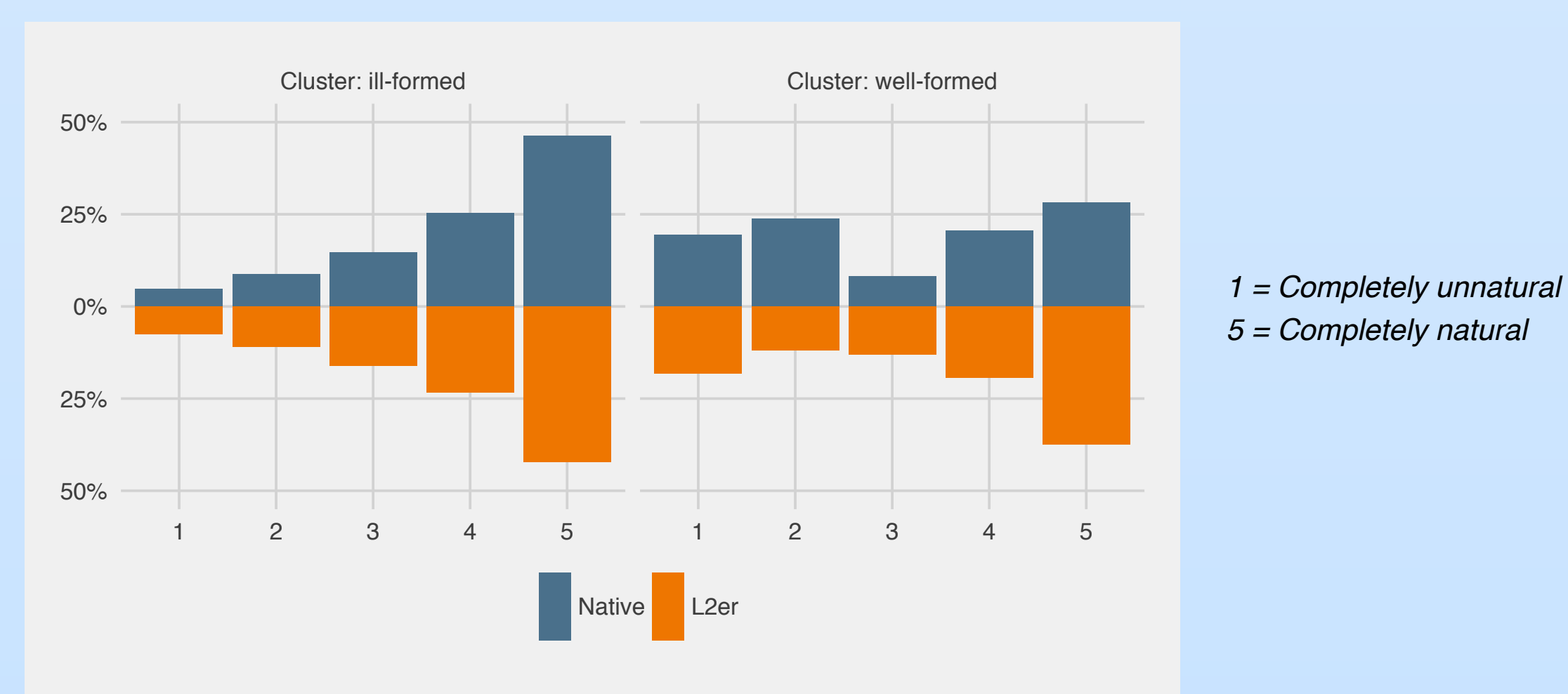


Figure 2: Responses based on resulting cluster. Deletion yielding strings mirroring ill-formed complex onsets yield a higher concentration of *natural* responses.



6. Results

- For both groups of speakers, non-deletion is preferred over deletion ($\beta = 1.55, p = 0.00001$)

• Group:

- No difference between L2ers and native speaker controls ($\beta = -0.11, p = 0.85$)

• Position of deletion in foot:

- HVD is preferred in weak positions within an iambic foot: it is equally preferred in positions 2 and 4, and equally dispreferred in positions 3 and 5 ($\beta = 0.29, p = 0.01$)

HVD preferred	HVD dispreferred
kɔ̃(bɔ̃).ne	ɔr(ga.nɔ̃)(za.tœr)
ma(nɔ̃.fɛs)(ta.sjɔ̃)	(ka.pɔ̃)(ta.li)(za.sjɔ̃)

• Clusters mirroring well-formed branching onsets:

- HVD is preferred when the resulting string is phonotactically ill-formed ($\beta = -0.72, p = 0.0002$)

HVD preferred	HVD dispreferred
kɔ̃bɔ̃ne	supɔ̃re
alɔ̃mãtasjɔ̃	abɔ̃lite

- This indicates that syllabification and foot structure remain intact after HVD: kɔ̃bɔ̃ne can only be reconstructed as kɔ̃.bV.ne, while supɔ̃re can be reconstructed as su.pre or su.pV.re

7. Discussion and Conclusions

- Learners' preference patterns for HVD mirror native speakers' preference patterns
- Learners can acquire subtle aspects of the phonology of a second language even when a process is variably attested and the structure underlying such a process is not signalled in output strings
- This is possible even at intermediate levels of proficiency
- Given the way that prominence manifests itself in English and French, transfer is not a likely source for learners' target-like behaviour

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