

# What Motivates High Vowel Deletion in Québec French: Foot Structure or Tonal Profile?

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# Introduction

- ▶ Prosodic domains are identified based on the phonological processes they exhibit, e.g., prominence patterns (Nespor & Vogel 1986; McCarthy & Prince 1995)
- ▶ The proposal that a language **lacks** a given prosodic domain often relies on the absence of prominence patterns associated with that domain

# Introduction

## The case of the French foot:

- ▶ In both European and Québec French, the only obligatory position of prominence is the right edge of the phonological phrase (PPh) (see Jun & Fougeron 2000 for EF; Thibault & Ouellet 1996 for QF)
- ▶ This led to the assumption that French has no foot structure (Jun & Fougeron 2000)

# Introduction

## The case of the French foot:

- ▶ French: different from languages in which stress is computed in the phonological word (PWd) and realized in the foot, such as English

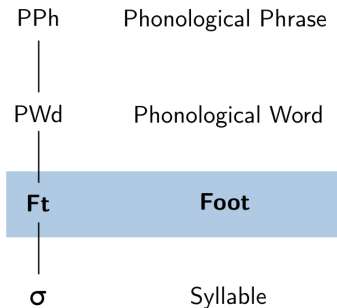
▶ **English:**  $[(,ævə)_{Ft}('kɑ:)_{Ft}dʊ]_{PWd}$  'avocado'

▶ **French:**

$(H)$                        $H^*$   
|                              |  
lə mɔ̃vɛz      avɔka              'the bad avocado'

# Introduction

- ▶ The foot: present in English, absent in French



# High Vowel Deletion in Québec French

- ▶ Possibility: Footing in Québec French (QF) is not motivated through prominence, but through the application of segmental processes (esp. ‘weakening’ processes)
- ▶ Verluyten (1982): High Vowel Deletion (HVD) in QF is sensitive to alternating rhythmic structure

✓ s w s w s  
✓ a lø mǎ ta sjõ  
*alimentation*  
‘nourishment’

X s w s w s  
X ɔr ga nø za toer  
*organisateur*  
‘organizer’

# High Vowel Deletion in Québec French

- ▶ Verluyten (1982) did not test this hypothesis empirically
- ▶ Cedergren (1986): sociolinguistic data did not support Verluyten's hypothesis
- ▶ Guzzo, Goad & Garcia (2016), Garcia, Goad & Guzzo (2017) (henceforth GGG) tested native speakers' judgements on HVD in QF:
  - **Results support Verluyten's hypothesis**

# High Vowel Deletion in QF

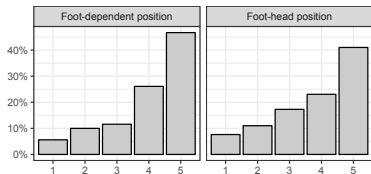
## GGG's experiment:

- ▶ Items:
  - Target vowel: [i]
  - 2-6-syllable words ( $n = 355$ ), with deletion or non-deletion
  - [i] never deleted word-finally, in closed syllable or following branching onset
- ▶ Task:
  - Words presented orthographically and auditorily
  - Participants had to judge if the word they heard was pronounced in a natural way
  - Scale from 1 to 5
- ▶ Participants: Native speakers of Québec French ( $n = 10$ )



# High Vowel Deletion in QF

## Observations from GGG's experiment:



- ▶ **HVD preferred in even-numbered syllables from the right word edge:**

HVD preferred

kǔ(b∅.ne)

'to combine'

ma(n∅.fɛs)(ta.sjɔ̃)

'demonstration'

HVD dispreferred

ɔr(ga.n∅)(za.tœr)

'organizer'

(ka.p∅)(ta.li)(za.sjɔ̃)

'capitalization'

\*Results based on hierarchical logistic regressions with by-speaker and by-item random intercepts

# High Vowel Deletion in QF

## **GGG's conclusion:**

- ▶ HVD is preferred in foot-dependent position
- ▶ **Motivation for iterative iambic footing**

# High Vowel Deletion in QF

## Additional observation from GGG's experiment:

- ▶ **HVD dispreferred in word-initial position, independent of footing:**

(f <del>ɔ̃</del> .lɛ)	'net'
v <del>ɔ̃</del> (zi.tœr)	'visitor'
(f <del>ɔ̃</del> .na)(li.te)	'finality'

## Present study

- ▶ **Is it possible that HVD in QF is conditioned by another predictor?**
- ▶ GGG's experiment only tested isolated words: the possibility that HVD is conditioned by phrasal prominence cannot be rejected
  - **HVD could be constrained by the location of the optionally-realized phrase-initial H-tone in French** (on initial H-tone, see e.g., Dell 1984, Jun & Fougeron 2000)
  - This would explain speakers' dispreference for initial deletion

# Hypothesis

- ▶ HVD in QF is affected by the tonal profile of the phonological phrase:
  - Deletion is **dispreferred** when a high vowel appears in the **first syllable of the first lexical word in a phrase**, since this is the optimal location for the initial H-tone to be realized.

# Methods

► Stimuli:

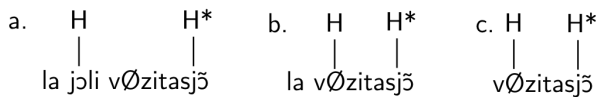
- 120 2- and 4-syllable nouns with/without deletion of [i] word-initially
- 3 types of phrases:
  - a **No determiner (N):**
    - vizaʒ 'face'
    - vizitasjõ 'visitation'
  - b **Determiner + noun (DN):**
    - lə vizaʒ 'the face'
    - la vizitasjõ 'the visitation'
  - c **Determiner + adjective + noun (DAN):**
    - lə jɔli vizaʒ 'the beautiful face'
    - la jɔli vizitasjõ 'the beautiful visitation'

# Methods

- ▶ Task:
  - Phrases presented orthographically and auditorily
  - Participants had to judge if the phrase they heard was pronounced in a natural way
  - Scale: 1 = completely unnatural; 4 = completely natural
- ▶ Participants: Native speakers of Québec French ( $n = 12$ )

# Predictions

## ► 4-syllable nouns:



1. HVD should be favored in DAN (a): H falls on the adjective's first syllable with the noun's first syllable being prosodically weaker
2. HVD should be disfavored in DN (b) and N (c) because the targeted vowel is in the syllable where H should fall
3. If there is a difference between (b) and (c), HVD should be favored in (b), i.e., when the high vowel is not in absolute initial position



# Predictions

► **2-syllable nouns:**

d.     H            H\*  
      |            |  
lə jcli   vØzaɜ

e.                    H\*  
                      |  
lə vØzaɜ

f.                    H\*  
                      |  
vØzaɜ

4. HVD should be equally favored in DAN, DN and N (d, e, f); in (e) and (f), optional initial H cannot be realized due to clash, so HVD should be natural
5. If there is a difference between (e) and (f), HVD should be favored in (e), i.e., when the high vowel is not in absolute initial position

# Predictions

## Tonal Hypothesis – Summary:

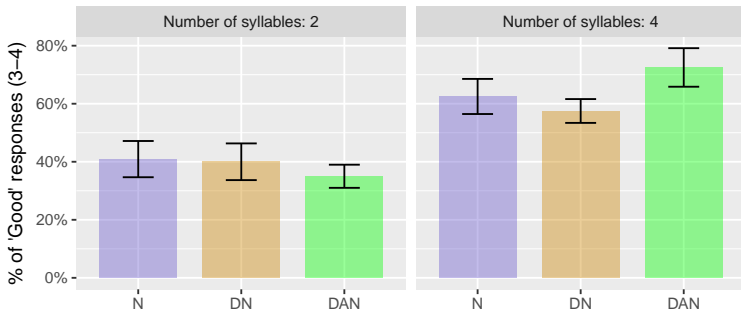
- ▶ la jɔli vøzitasjõ > la vøzitasjõ = vøzitasjõ
- ▶ læ jɔli vøzaɜ = læ vøzaɜ = vøzaɜ
- ▶ la jɔli vøzitasjõ = læ jɔli vøzaɜ
- ▶ Possibility: la vøzitasjõ > vøzitasjõ, læ vøzaɜ > vøzaɜ

## Footing Hypothesis:

- ▶ Since the target vowel is in foot-dependent position in all contexts, there should be no difference between any of the phrase types, nor between 2- and 4-syllable nouns

# Results

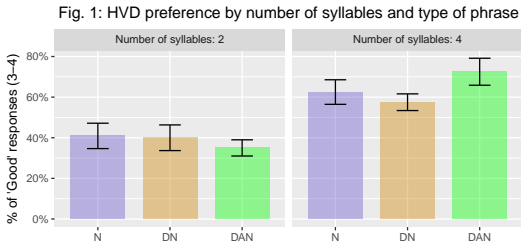
Fig. 1: HVD preference by number of syllables and type of phrase



# Results

- ▶ The data were modeled with hierarchical logistic regressions with by-speaker and by-item random intercepts
- ▶ **General model:**  $\text{response} \sim \text{numberOfSyll} * \text{typeOfPhrase}$
- ▶ Specific models:
  - **2-syllable nouns:**  $\text{response} \sim \text{typeOfPhrase}$
  - **4-syllable nouns:**  $\text{response} \sim \text{typeOfPhrase}$

# Results



## Unexpected result 1:

- ▶ HVD in 4-syllable nouns is rated significantly better than in 2-syllable nouns ( $\hat{\beta} = 1.4$ ,  $z = 2.55$ ,  $p = 0.01$ )

## Unexpected result 2:

- ▶ Phrase type is **not** significant for 4-syllable nouns

## Expected result:

- ▶ Phrase type is **not** significant for 2-syllable nouns

# Results

- ▶ **Unexpected result 1:** HVD in 4-syllable nouns is rated significantly better than in 2-syllable nouns
- ▶ **Possible explanation:**
  - HVD is constrained by word length, given that longer words are spoken more quickly (Lehiste 1970; Natatani, O'Connor & Aston 1981; for French, see Malécot, Johnson & Kizziar 1972).
  - HVD, as a weakening process, should apply more frequently as word length increases
- ▶ If this is the case, deletion and retention should yield inverse preferences: the percentage of good responses with no HVD should be lower for 4-syllable than for 2-syllable nouns
  - HVD in 4-syllable nouns > HVD in 2-syllable nouns
  - HV retention in 4-syll nouns < HV retention in 2-syll nouns

# Results

- ▶ **Unexpected result 1:** HVD in 4-syllable nouns is rated significantly better than in 2-syllable nouns
- ▶ But no statistical difference for high vowel retention between 2- and 4-syllable nouns
- ▶ **HVD and HV retention are regulated by something else, not word length**

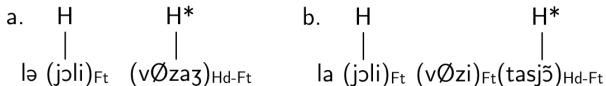
# Results

- ▶ Alternative explanation for this unexpected result:
- ▶ Iterative footing regulates HVD (following GGG's proposal)
- ▶ But HVD is **dispreferred when it targets the head foot**



# Results

- ▶ HVD in initial position is dispreferred when it targets the head foot (Hd-Ft)



- ▶ HVD is worse in (a) than in (b) because the phrase-final foot in the former is the head foot: its final syllable coincides with the obligatory phrasal prominence (H\*)

# Results

- ▶ Other results are also compatible with a foot analysis:
- ▶ **Unexpected result 2:** Phrase type is **not** significant for 4-syllable nouns
  - Initial deletion in 4-syllable nouns is in foot-dependent position
  - The initial foot in 4-syllable nouns is not the head foot
- ▶ **Expected result:** Phrase type is **not** significant for 2-syllable nouns
  - Initial deletion in 2-syllable nouns always targets the head foot

# Summary and Final Remarks

- ▶ Previous hypothesis: High Vowel Deletion motivates iterative iambic footing in Québec French
  - Guzzo, Goad & Garcia (2016, 2017): previous experiment included only isolated words
- ▶ Current hypothesis: HVD is constrained by optional phrase-initial H tone
- ▶ In a judgement task including 2- and 4-syllable nouns with HVD in initial position in 3 types of phrases, **HVD is rated better in 4-syllable nouns, regardless of phrase type**
- ▶ **Conclusions:**
  - ▶ No evidence for phrase-initial prominence effects on HVD
  - ▶ Footing regulates HVD, but deletion is dispreferred in the head-foot

# References

- Cedergren, H. J. (1986). Metrical structure and vowel deletion in Montreal French. In Sankoff, D. (ed.) *Diversity and Diachrony*, pp. 293-300. Philadelphia: Benjamins.
- Dell, F. (1984). L'accentuation dans les phrases en français. In Dell, F., Hirst, D. and Vergnaud, J.-R. (eds.) *Forme sonore du langage*, pp. 65-122. Paris: Hermann.
- Garcia, G. D., Goad, H. and Guzzo, N. B. (2017). Footing is not always about stress: Formalizing variable High Vowel Deletion in Québec French. *Proceedings of the Annual Meeting on Phonology 2016*.
- Guzzo, N. B., Goad, H. and Garcia, G. D. (2016). High Vowel Deletion in Québec French: Evidence for vestigial iambs. Paper presented at the *24th Manchester Phonology Meeting*.
- Jun, S.-A. and Fougeron, C. (2000). A phonological model of French intonation. In Botinis, A. (ed.) *Intonation: Analysis, modelling and technology*, pp. 209-242. Dordrecht: Kluwer.
- Lehiste, I. (1970). *Suprasegmentals*. Cambridge, MA: MIT Press.
- Malécot, A., Johnston, R., and Kizziar, P.-A. (1972). Syllabic rate and utterance length in French. *Phonetica* 26, 235-251.
- McCarthy, J. and Prince, A. (1995). Generalized alignment. In Booij, G. and van Marle, J. (eds.) *Yearbook of Morphology*, pp. 79-153.
- Nakatani, L.H., O'Connor, K.D. and Aston, C.H. (1981). Prosodic aspects of American English speech rhythm. *Phonetica* 38, 84-106.
- Nespor, M. and Vogel, I. (1986). *Prosodic phonology*. Dordrecht: Foris.
- Thibault, L. and Ouellet, M. (1996). Tonal distinctions between emphatic stress and pretonic lengthening in Quebec French. *Proceedings of the International Spoken Language Conference 1996*, Philadelphia, pp. 638-641.
- Verluyten, S. P. M. (1982). *Recherches sur la prosodie et la métrique du français*. PhD dissertation, Universiteit Antwerpen.

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