

Footing is not always about stress: Formalizing variable high vowel deletion in Québec French

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Introduction

Can segmental processes tell us anything about footing in a language that does not have the typical signatures of stress?

- ▶ Target language: **Québec French (QF)**
- ▶ Target process: High Vowel Deletion ('weakening' process)

Introduction

High vowels and weakening processes in QF

Two variable phenomena with high rates of application:

Devoicing presipite ~ presipite ~ presipite ~ presipite
Deletion presipite ~ pres∅pite ~ presip∅te 'to hasten'

Introduction

Devoicing

presipite, presipite, presipite

- ▶ Conditioned by adjacent voiceless Cs
- ▶ Possible in adjacent syllables
- ▶ Not attested in word-final position

(Gendron 1966; Dumas 1972, 1987; Walker 1984; Cedergren & Simoneau 1985;
Ouellet et al. 1999; Bayles 2016; Torreira & Ernestus 2010 for EF)

Introduction

Deletion

presØpite, presipØte

- ▶ **Not** conditioned by adjacent voiceless Cs
- ▶ **Not** possible in adjacent syllables
- ▶ Not attested in word-final position

(Dumas 1972, 1987; Verluoyten 1982; Walker 1984; Cedergren & Simoneau 1985;
Cedergren 1986; Ouellet et al. 1999; Bayles 2016)

Introduction

- ▶ Devoicing and Deletion: separate processes
- Deletion **not** an advanced stage of high vowel weakening

- ▶ If voicing context does not condition High Vowel Deletion (HVD), then what does?

Introduction

- ▶ Is rhythmic structure relevant for HVD?
- ▶ Verluyten (1982): HVD is **sensitive** to alternating rhythmic structure
- ▶ Cedergren (1986): HVD is **insensitive** to alternating rhythmic structure

Verluyten:	✓s	w	s	w	s	Xs	w	s	w	s
Cedergren:	✓a	l∅	mã	ta	sjõ	✓or	ga	n∅	za	toer
	<i>alimentation</i>					<i>organisateur</i>				
	'nourishment'					'organizer'				

Does (Québec) French have feet?

- ▶ Crosslinguistically, the Foot is the domain where stress is realized
- ▶ Problem:
French does not behave like languages that have word-level stress
- ▶ **English:**
→ Iterative left-headed feet

$[(,ævə)_{Ft}('kɑ:)_{Ft}dou]_{PWd}$ 'avocado'

Does (Québec) French have feet?

► **French:**

- Only obligatory position for prominence is the right-edge of the PPh (e.g., Dell 1984)

[lə mɔvɛz avɔ'ka]_{PPh} 'the bad avocado'

- 'Stress' is formally intonational prominence; there is no foot in the language (e.g., Jun & Fougeron 2000; see Thibault & Ouellet 1996 for evidence that QF has the same rhythmic contour as EF)

Does (Québec) French have feet?

Evidence for feet?

- ▶ Resolution of stress clash in compounds or DPs with attributive adjectives (Mazzola 1992, 1993; Hoskins 1993; Post 2000, 2003)
 - a. [ma,rikris'tɪn] 'Marie-Christine'
 - b. [,mari'roz], *[ma,ri'roz] 'Marie-Rose'
- ▶ Truncation (Scullen 1997)
 - a. cinéma → ciné (si'ne) 'cinema'
 - b. réfrigérateur → frigo (fri'go) 'refrigerator'
- ▶ Schwa realization in compounds (Charette 1991)

Does (Québec) French have feet?

Evidence against feet?

- ▶ Rampant violations of word minimality (e.g., Scullen 1997)
 - a. [lɛ] 'milk'
 - b. [ʃɑ] 'chat'

- ▶ Unusual patterns of secondary stress (e.g., Fónagy 1979; Déchaine 1990; Scullen 1997; Goad & Prévost 2011)
 - a. [i,ɛspe're] ~ [i,nɛspe're] 'unhoped for'
 - b. [kõpresibili'te], *[kõ,presi,bili'te] 'compressibility'
 - c. [kɔrdə'let o'rãʒ] ~ [kɔrdə,let o'rãʒ]
 - *[kɔrdə'let o'rãʒ] 'orange rope.DIM'

Our talk

HVD in Québec French:

- ▶ Although any high vowel in non-final CV syllables can delete, **HVD is preferred in even-numbered syllables from the right edge**
 - ▶ Evidence for iterative iambic footing
- ▶ Patterns in our data indicate that HVD does not lead to resyllabification (and refooting)
- ▶ Additional competing factors regulate the application of HVD

Methods

Judgement task:

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

Methods

- ▶ Hierarchical ordinal regression with by-speaker/word random effects
- ▶ Variables:

(1) Position of deletion in foot:

Foot-dependent position (2 or 4)	$r\sigma(b\emptyset.n\varepsilon)$ $ma(n\emptyset.f\varepsilon s)(ta.sj\ddot{o})$	'faucet' 'demonstration'
Foot-head position (3 or 5)	$\sigma r(ga.n\emptyset)(za.to\varepsilon r)$ $(ka.p\emptyset)(ta.li)(za.sj\ddot{o})$	'organizer' 'capitalization'

Methods

(2) Resulting cluster mirrors a well-formed branching onset:

Well-formed:	[pr]	sup ø re	'to sigh'
	[fl]	f ø le	'fillet'
Ill-formed:	*[bn]	kõb ø ne	'to combine'
	*[lm]	al ø mātasjõ	'nourishment'

Methods

(3) Morphology:

Deletion at affix boundary:	εksklyziv-∅te	'exclusivity'
	inisjal-∅zasjõ	'initialization'
Deletion in root:	im∅tatær	'impersonator'
	al∅mãtasjõ	'nourishment'

Results

Deletion vs. non-deletion

- ▶ Overall, non-deletion preferred over deletion:

$$\hat{\beta} = 2.11, \text{ SE} = 0.30, z = 6.96$$

HVD preferred

kɔ̃bine

imitatœr

HVD dispreferred

kɔ̃b~~ø~~ne

im~~ø~~tatœr

'to combine'

'impersonator'

Results

Position in foot

- ▶ HVD preferred in foot-dependent position:

$$\hat{\beta} = 0.46, \text{ SE} = 0.19, z = 2.4$$

HVD preferred

kʰ(b \emptyset .ne)
ma(n \emptyset .fɛs)(ta.sjɔ̃)

HVD dispreferred

ɔr(ga.n \emptyset)(za.tœr)
(ka.p \emptyset)(ta.li)(za.sjɔ̃)

Results

Segmental profile of resulting cluster

- ▶ HVD preferred when it yields an illicit complex onset:

$$\hat{\beta} = 1.05, SE = 0.27, z = 3.9$$

HVD preferred

kõbøne

alømãtasjõ

HVD dispreferred

supøre

føle

Results

Morphology

- ▶ Deletion is preferred over non-deletion in one context:
when foot-dependent [i] is at the left edge of a suffix
 $\hat{\beta} = 1.62$, $SE = 0.27$, $z = 6$

HVD preferred
 $\epsilon ks(klyzi)(v-\emptyset te)$

HVD dispreferred
 $\epsilon ks(klyzi)(v-ite)$

Analysis

Formalizing HVD in Québec French

- ▶ HVD is a variable phenomenon
i.e., categorical approaches cannot account for HVD patterns
- ▶ We need probabilistic outputs (one option: MaxEnt)¹
- ▶ Weighted constraints → probabilities of output(s)

¹Hayes & Wilson 2008

Analysis

Deletion vs. non-deletion

Overall, deletion is *dispreferred*

- MAX: Do not delete
- *i: Low sonority vowels are disfavoured

/kõbine/	MAX	*i
a. [kõbine]		1
b. [kõbøne]	1	

$$w_{\text{MAX}} > w_{*i} \rightarrow a \succ b$$

w = constraint weight given our statistical results

Analysis

Foot-dependent vs. foot-head position

- o MAX-HD: Do not delete in foot-head position

/manifestasjõ/	MAX	MAX-HD	*i
a. [ma(ni.fɛs)(ta.sjõ)]			1
b. [ma(n∅.fɛs)(ta.sjõ)]	1		
/manifestã/	MAX	MAX-HD	*i
a.' [(ma.ni)(fɛs.tã)]			1
b.' [(ma.n∅)(fɛs.tã)]	1	1	

$$w_{\text{MAX-HD}} > w_{*i} \rightarrow b \succ b'$$

Analysis

Licit vs. illicit resulting cluster

- RECOVERABILITY: In a segmental string, immediate precedence relations in the **Input** are recoverable in the (perceived) **Output**



Consequence:

- ▶ If there is deletion, the deletion site must be recoverable
- ▶ This will only be the case if the resulting cluster is illicit
 - A vowel *must* interrupt the cluster in the input
- ▶ Otherwise, RECOVERABILITY is violated

Analysis

Licit vs. illicit resulting cluster

- RECOVERABILITY: In a segmental string, immediate precedence relations in the Input are recoverable in the (perceived) Output

/kõbine/	MAX	*i	RECOVER
a. [kõ(bi.ne)]		1	
b. [kõ(b∅.ne)]	1		
/supire/	MAX	*i	RECOVER
a.' [su(pi.re)]		1	
b.' [su(p∅.re)]	1		1

RECOVERABILITY → $b \succ b'$

Analysis

HVD at affix boundary vs. in root

- $A_f[*i]$: Low sonority vowels are disfavoured at affix boundaries

/ɛksklyzivate/	MAX	MAX-HD	*i	* $A_f[i]$
a. [ɛks(kly.zi)(v-i.te)]			2	1
b. [ɛks(kly.zi)(v-∅.te)]	1		1	

- ▶ Non-deletion \succ deletion overall, but...
speakers' preferences **flip** when /i/ is at an affix boundary:

$$b \succ a$$

Gang-up effect: $(w^*i + w^*A_f[i]) > wMax$

Analysis

HVD at affix boundary vs. in root

- **But** this effect is mitigated by MAX-HD:

/inisjalizasjõ/	MAX	MAX-HD	*i	* _{Af} [i]
a.' [(i.ni)(sja.l-i)(za.sjõ)]			2	1
b.' [(i.ni)(sja.l-∅)(za.sjõ)]	1	1	1	

$$b' \approx a'$$

Summary

- ▶ Overall, non-deletion \succ deletion:

$$w_{MAX} > w^*i$$

- ▶ If HVD occurs, foot-dependent positions are better targets:

$$w_{MAX-HD} > w^*i$$

- ▶ HVD resulting in ill-formed onset clusters are preferred:

$$\text{RECOVERABILITY}$$

- ▶ If HVD at affix boundary \rightarrow deletion \succ non-deletion:

$$(w^*i + w_{Af}[*i]) > w_{MAX} \quad (\text{gang-up effect})^2$$

²Mitigated by MAX-HD

Final remarks

- ▶ Earlier accounts of HVD in Québec French:
 - ▶ Verluyten (1982): HVD associated with alternating rhythmic structure; favoured in weak positions
 - ▶ Cedergren (1986): HVD insensitive to alternating rhythm; targets any unstressed HV
- ▶ Our analysis is consistent with Verluyten's: HVD is preferred in even-numbered syllables from the right edge, motivating iterative iambic footing
- ▶ Preference for HVD in strings mirroring illicit onset clusters suggests that footing remains intact after HVD

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