



The Acquisition of Liaison by American Learners of French


*A study in word extraction across
development*

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Liaison and its phonological status

- C/∅ alternation (Tranel, 1981)
 - Les amis ont été pris. Les petits amis ont été pris.
[le zami ã (t)ete pri] [le∅pti zami ã (t)ete pri]
'The friends were taken.' 'The small friends were taken.'
- Auto-segmental phonology (Clements & Keyser, 1983; Booij, 1984; Encrevé, 1986; Prunet, 1992)
 - Prunet (1992): Linking required by Integration
 - | | | |
|-------|---|---------|
| x x | + | x x x x |
| | | |
| l e z | | a m i z |
- Other accounts: multiple URs



Liaison as a word extraction problem

- **Strategy 1:** Assume that PWord and UR align
Extract multiple URs (Chevrot, Dugua & Fayol, 2005)

un ours [nurs] 'a bear'

des ours [zurs] 'some bears'

petit ours [turs] 'small bear'

Lexical variants : /nurs/, /zurs/, /urs/ (all attested in Louisiana French, for example)


speech errors (cf. Wauquier-Gravelines, 2002; 2003)

zèbres: dé èbres, des nèbres

un zours

Michif (Bakker & Papen 2001):

Norvégien: un norvégien, un zorvégien



Liaison as a word extraction problem, cont'd

- **Strategy 2:** Use acoustic correlates of phonological mappings
- Fougeron, Bagou, Stefanuto, & Frauenfelder (2002)
 - Shorter length of a consonant in enchaînement (resyllabification of a stable consonant)
Ex. cale égale, cas légal
- Spinelli, McQueen, & Cutler (2003), and Gaskell, Spinelli, & Meunier (2002)
 - Liaison consonants: 15% shorter
- Length distinctions already present in French with ə -deletion; in English before voiced consonants



Liaison as a word extraction problem, cont'd

- ★ Domain corrolary
 - ★ Obligatory liaison coincides with the projection of phonological phrase (Post, 2000)
 - ★ Automatically includes the left branch satellites, but not the complement.
 - ◆ However, optional liaison did not coincide with realization of tone.
 - ★ Forbidden liaison: between singular noun and following adjective (not prosodically restricted)
- ★ Computation
 - ★ PhonP: Recovered from boundaries in the signal
 - ★ PhonP: Computed from attempts at syntactic category assignment, as soon as available



Extracting vowel-initial words in liaison context in English French

- ★ **Hypothesis 1:** As a function of English-phonology induced categorization, alignment is assumed triggering multiple representations
 - ★ Acquisition consists in:
 - ★ developing a procedure for selecting appropriate URs in context (Chevrot, Dugua & Fayol, 2005) or restructure URs to a single representation (Morel, 1994).



Extracting vowel-initial words in liaison contexts in L2 French

- ★ **Hypothesis 2:** Acoustic properties trigger phonological representations
 - ★ Acquiring the (relevant properties in) the signal
 - ★ Accommodate to talker providing input (Pisoni, 1973)
 - ★ Relative strength invites distinct phonological representations
 - ★ Acquisition consists in:
 - ★ Encoding representations in lexicon
 - ★ Increase sensitivity to left-edge misalignment (enchaînement) as a result of lexical representations



Extractions in liaison context: Learnability problems

- ★ Limited tolerance for deviance at the left edge (Marslen-Wilson & Zwitserlood, 1989; Marslen-Wilson, Moss & Van Halen, 1996)
- ★ A lexical decision task: Honing 'honey'
 - ★ Condition 1 (phonological neighbor):
 - ★ **Prime:** woning 'Appartment' **Target:** BIJ 'bee'
 - ★ Condition 2 (semantic relatedness):
 - ★ **Prime:** Honing 'Honey' **Target:** BIJ 'bee' (facilitation)
 - ★ Condition 3: (distorted onset)
 - ★ **Prime:** foning 'Honey' **Target:** BIJ 'bee' (loss)



Context effects (at the left-edge)

- Sensitivity to assimilation (Gaskell & Marsen-Wilson, 1996)
 - ★ Condition 1:
Prime: [lin] in 'lean bacon'
Probe: LEAN
 - ★ Condition 2:
Prime: [lim] in 'lean bacon'
Probe: LEAN
 - ★ Condition 3:
Prime: [lim] in 'lean gammon'
Probe: LEAN (inhibition)



Overcoming assimilation in English-French acquisition: Evidence of an intermediate-level processing

- ★ Undoing assimilation in word recognition (Darcy 2006)
 - ★ Place assimilation in English
 - ★ Lean (UR: /lin/) : [lim] bacon/*gammon
 - ★ Voicing assimilation in French
 - ★ Robe (UR: /rob/) : [rop] sale/*rouge
- ★ AX -Task: respondents must indicate as soon as possible whether they heard word A in sentence X

French native speakers: word detection level

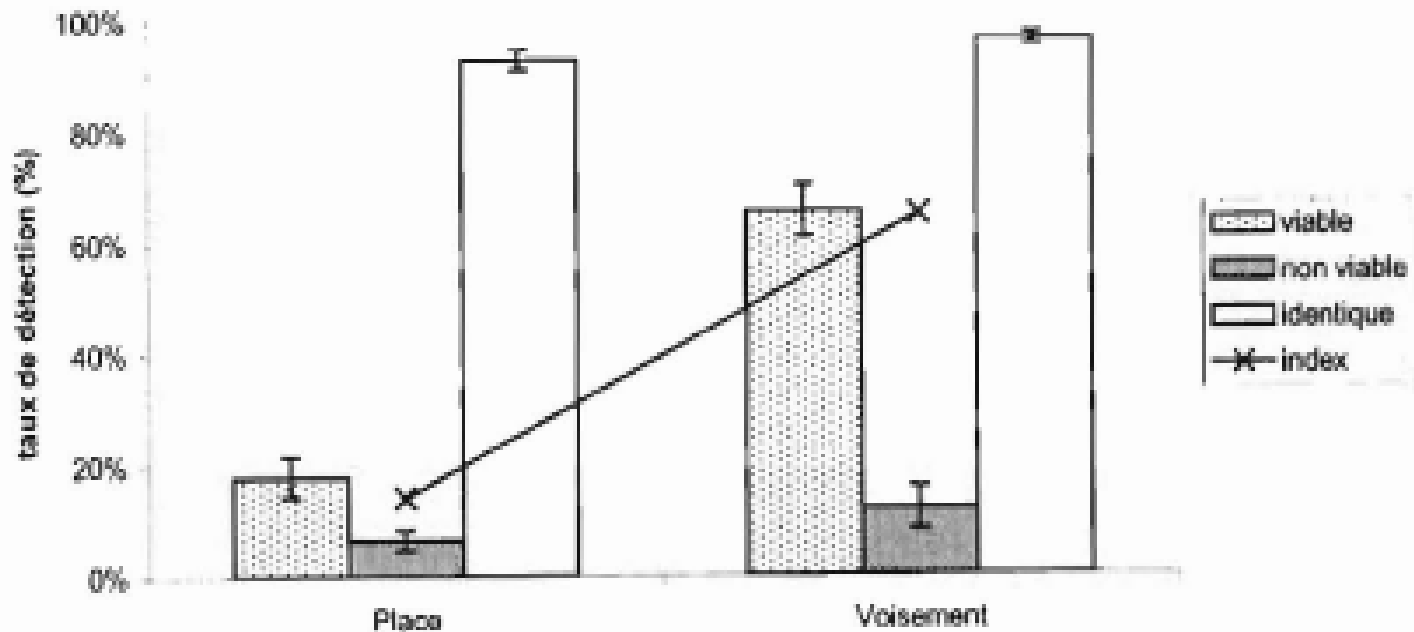


Figure 2-1. Locuteurs Français, phrases françaises: taux de réponse «oui» en fonction de la condition et du type de contraste – N=18

A developing ability to 'repair' in French as L2

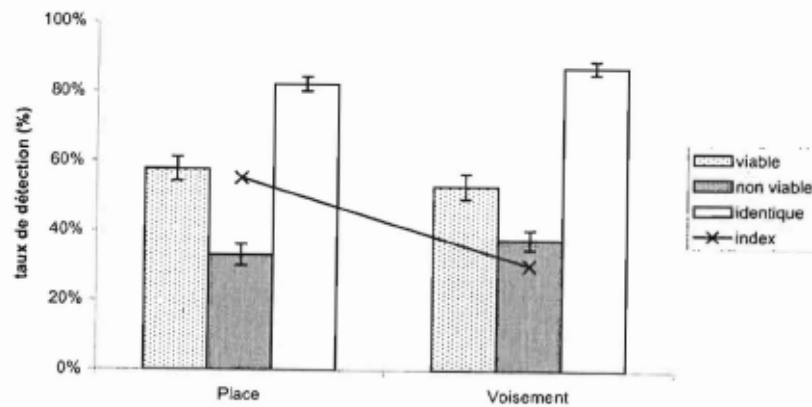


Figure 3-1. Anglais sur phrases françaises (débutants). Taux de réponse «oui» en fonction de la condition et du type de contraste – N=23

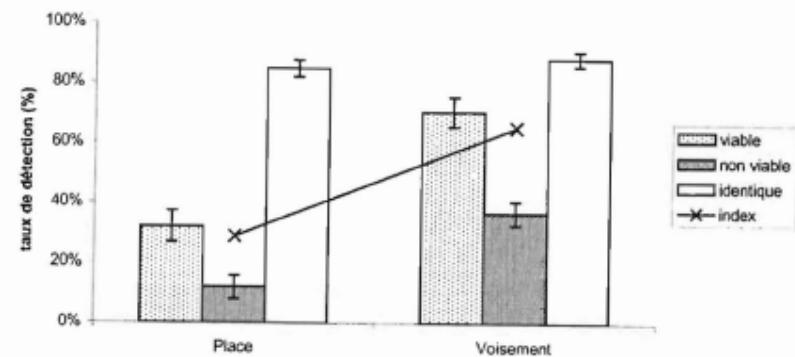


Figure 3-2. Anglais sur phrases françaises (avancés). Taux de réponse «oui» en fonction de la condition et du type de contraste – N=14



Evidence for phonological decoding at the segmental level prior to lexical access

- ★ Findings:
 - ★ Reverse phonological decoding before lexical access based on language-specific compensation of phonological rules:
 - ★ Limited ability where input mismatches phonological expectations
 - ★ Development of more target-like reverse phonological decoding in the L2 (by adding voicing to their sensitivity)
- ★ Questions to be resolved:
 - ★ How might such a change occur?
 - ★ Learners must be sensitive to something in the input, which reaches the phonological level, even if this does not translate from the L1 in the task.
 - ★ PhonP likely plays a role, providing a conditioning environment



Acquiring the left edge (of new words)

- ★ Central research question:
 - ★ Acquisition
 - ★ Is there evidence that (as exposure to French increases) the phonology and prosody of liaison also guides the categorization of onsets?
 - ★ Is there evidence that (as exposure to French increases) the syntax of liaison guides the alignment of segments?



Hypothesis

- ★ Learners will increasingly make use of phonological (and syntactic) criteria to determine word boundaries and extract vocabulary
 - ★ Increase ability to perform reverse phonological decoding



Methodology

- ★ Participants:
 - ★ 7 native speakers of French
 - ★ 18 graduate students
 - ★ 13 second-semester students
- ★ 111 items
- ★ Fill-in-the blank task
 - ★ Listeners heard a sentence with a nonce adjective (either V- or C-initial)
 - ★ Target word blanked out
 - ★ Word appeared in
 - ★ 56 test sentences, 14 semi-test sentences (optional liaison), 41 fillers (non-liaison consonants)
 - ★ one of four configurations (slides 24-25)



Task

- ★ Instructions

- ★ Write word they hear, being sure to get the beginning rather than the end
- ★ Told words rhymed and were repeated

- ★ Recording:

- ★ Native speaker of French (from Biarritz)
- ★ Significant difference (slide 23) between length of stable consonants and length of liaison consonants ($p < 0.000$), as well as between the lengths of /n/ and /z/ ($p = 0.040$)
- ★ Each sentence read once, followed by a pause

Results: Accuracy of phon. target

Contexts tested			beginners	advanced	natives
/z/	V-initial	obligatory	90.69%	89.21%	71.42%
		forbidden	88.33%	63.02%	28.57%
	C-initial	obligatory	11.75%	15.96%	38.77%
		forbidden	27.98%	55.46%	85.71%

Contexts tested			beginners	advanced	natives
/n/	V-initial	obligatory	63.05%	79.83%	73.46%
		forbidden	40.64%	44.53%	14.28%
	C-initial	obligatory	82.93%	42.15%	42.85%
		forbidden	75.95%	63.86%	93.87%

All 3 pairs are $p < 0.020$

All four pairs are $p < 0.010$



Overall

- ★ Significant main effect for segment identity (n vs. z) ($p \leq .04$) only
 - ★ Also significant effect for consonant status (liaison vs. stable), but only when qualified by group ($p \leq .002$)
- ★ Significant interactions between consonant status and context (obligatory vs. forbidden) ($p < .0005$), consonant status and segment identity ($p < .0005$), and segment identity and context ($p < .0005$)



Discussion

- ★ Suggests that learning liaison is not merely a matter of having multiple URs
 - ★ Nonce words don't allow retrieval of lexical items
 - ★ Each word, under the multiple UR hypothesis, should have roughly the same rate of recognition
 - ★ However, learners are sensitive to acoustic (and somewhat) syntactic cues, and are able to use them for phonological decoding



Future directions

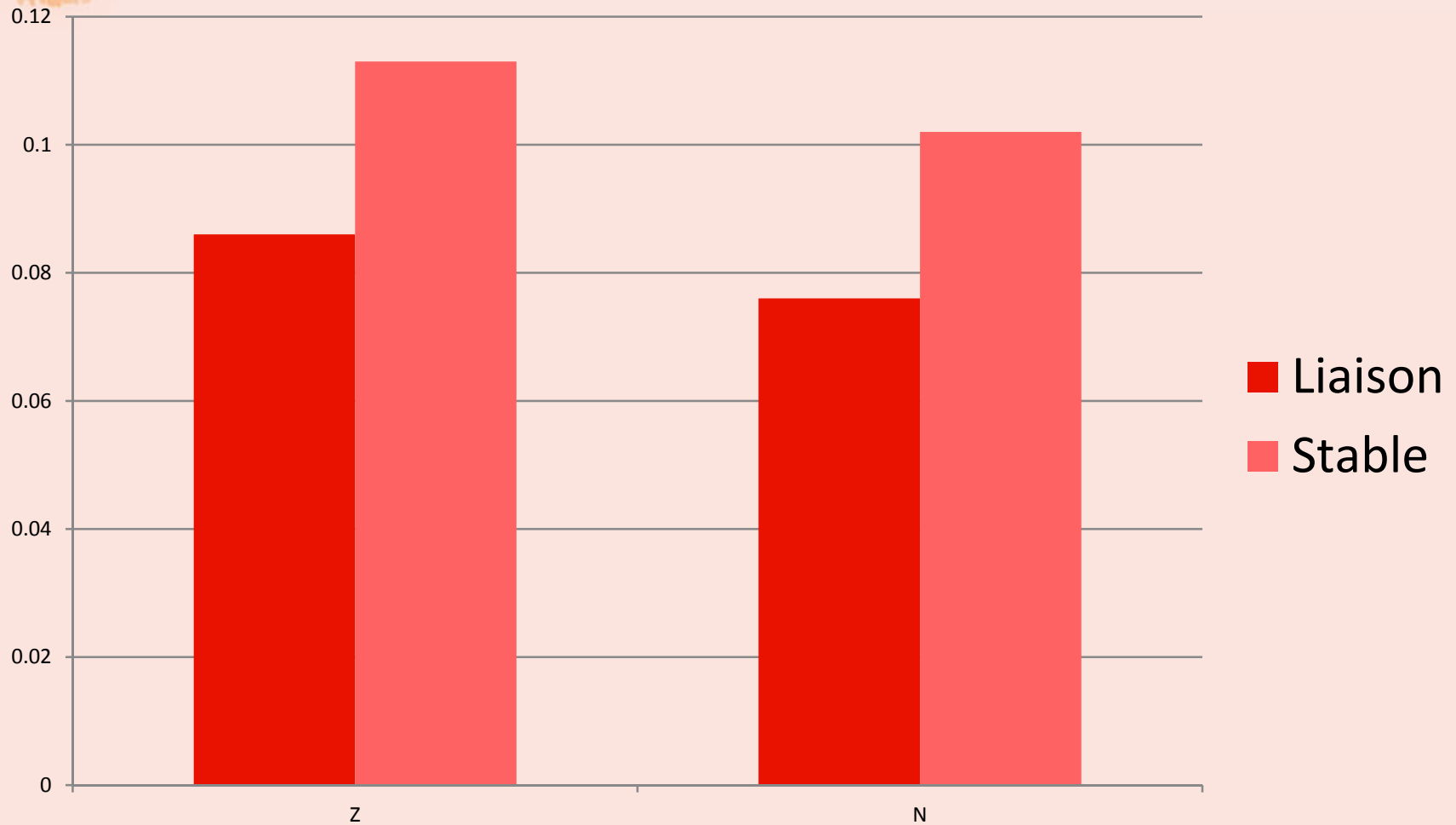
- ★ Computerized ABX task:
 - ★ 2 possible nonce words as primes, followed by the sentence
 - ★ Include monolingual English speakers and students instructed in rules of liaison
 - ★ Include response times



◆ Thank you!

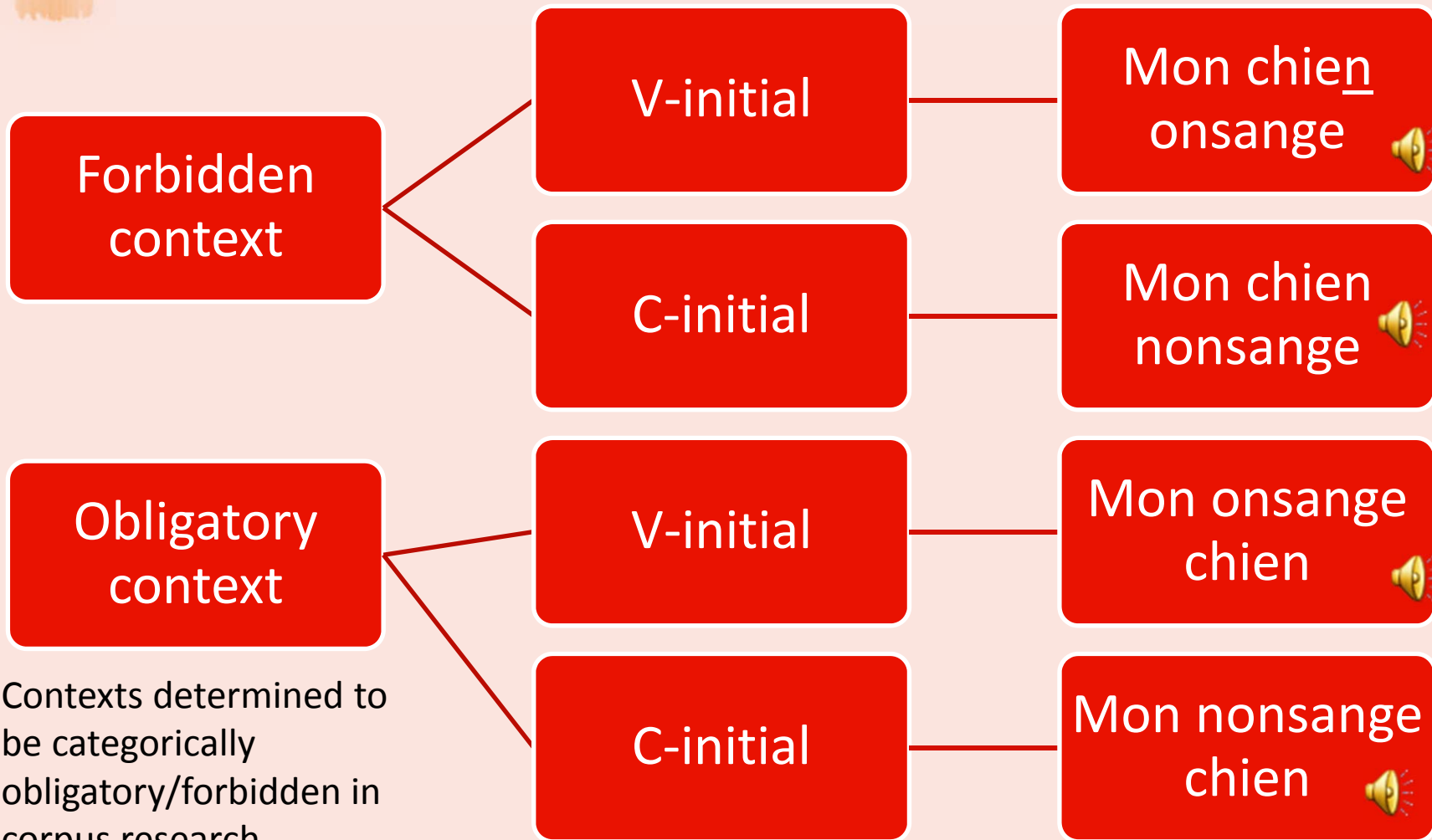


Onset Consonant Length





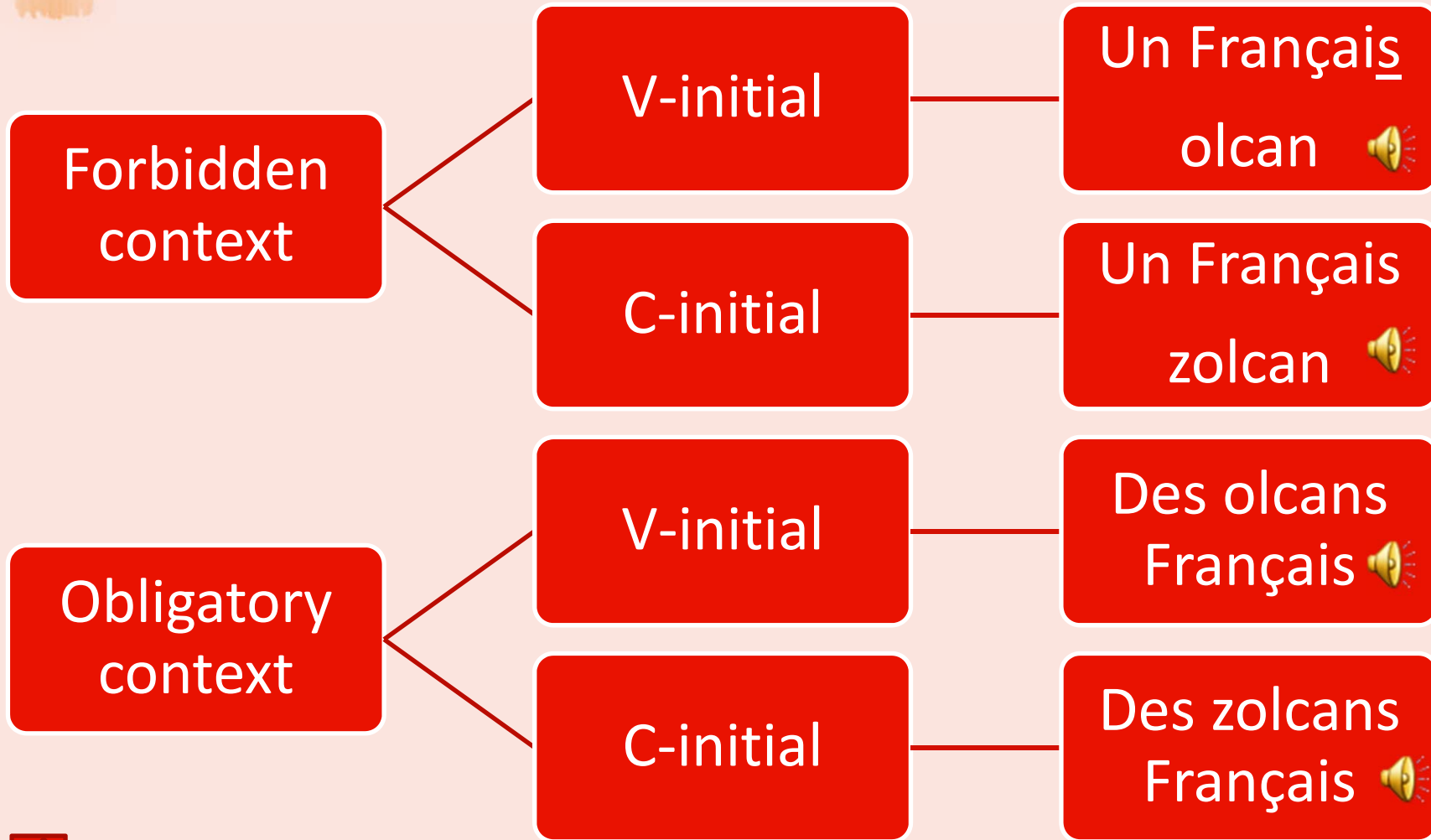
Target NPs



Contexts determined to be categorically obligatory/forbidden in corpus research (Durand & Lyche 2008)



Target NPs





- ★ Detecting the right edge
 - ★ Is there evidence that native English perceivers with no exposure to French and L2 learners with English as L1 will categorize speech sound on the basis of the acoustic properties of onsets?



Beginners

- Significant effect for **latency** ($F= 7.678, p < 0.018$) and for **segment** ($F= 6.602, p < 0.026$)
 - No significant effect for position ($F= 1.706, p < 0.216$)
- Significant interactions **between latency and position** ($F= 18.861, p < 0.001$), **latency and segment identity** ($F= 88.207, p < 0.000$), and **segment identity and position** ($F= 23.843, p < 0.000$)



Advanced learners

- Significant effect of **latency** ($F= 13.748, p < 0.006$), but not for position ($F= 2.633, p < 0.143$) or segment ($F= 1.149, p < .315$)
- Significant interaction between **latency and position** ($F= 10.389, p < 0.012$), and **between latency and segment** ($F= 27.390, p < 0.001$),
 - But not between position and segment ($F= 3.387, p < 0.103$).



Natives

- ★ No significant effect of any of the three variables
- ★ Significant effect of **latency and position** ($F=51.643, p < 0.001$)
 - ★ But not between latency and segment identity ($F=0.957, p < 0.373$) nor between position and segment ($F=0.690, p < 0.444$)