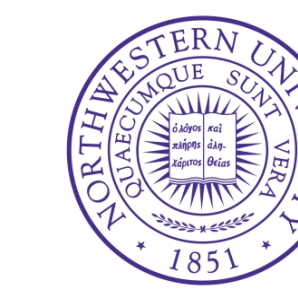


Speech Segmentation in Liaison Contexts by Native and Non-Native French Listeners

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BACKGROUND

Speech segmentation

- Listeners must break the mostly continuous speech stream into discrete lexical units
- *French liaison* may further complicate this task due to syllable/word misalignment

French liaison

Liaison is a phonological process in which a latent (phonetically unrealized) word-final consonant is produced only when the following word begins with a vowel. The liaison consonant is re-syllabified to the onset of the following word:

- *petit chou* [pə. ti. [u.] 'little cabbage'
- *petit ami* [pə. ti. ta. mi.] 'boyfriend'

1) How do both L1 and L2 French listeners compensate for liaison during speech segmentation?

Prior work suggests that listeners make use of:

- Duration of consonants: word-initial consonants are typically longer than liaison consonants (1, 2, 3, 4)
- Lexical knowledge (2, 3, 4)

2) Do native and non-native listeners use distinct strategies?

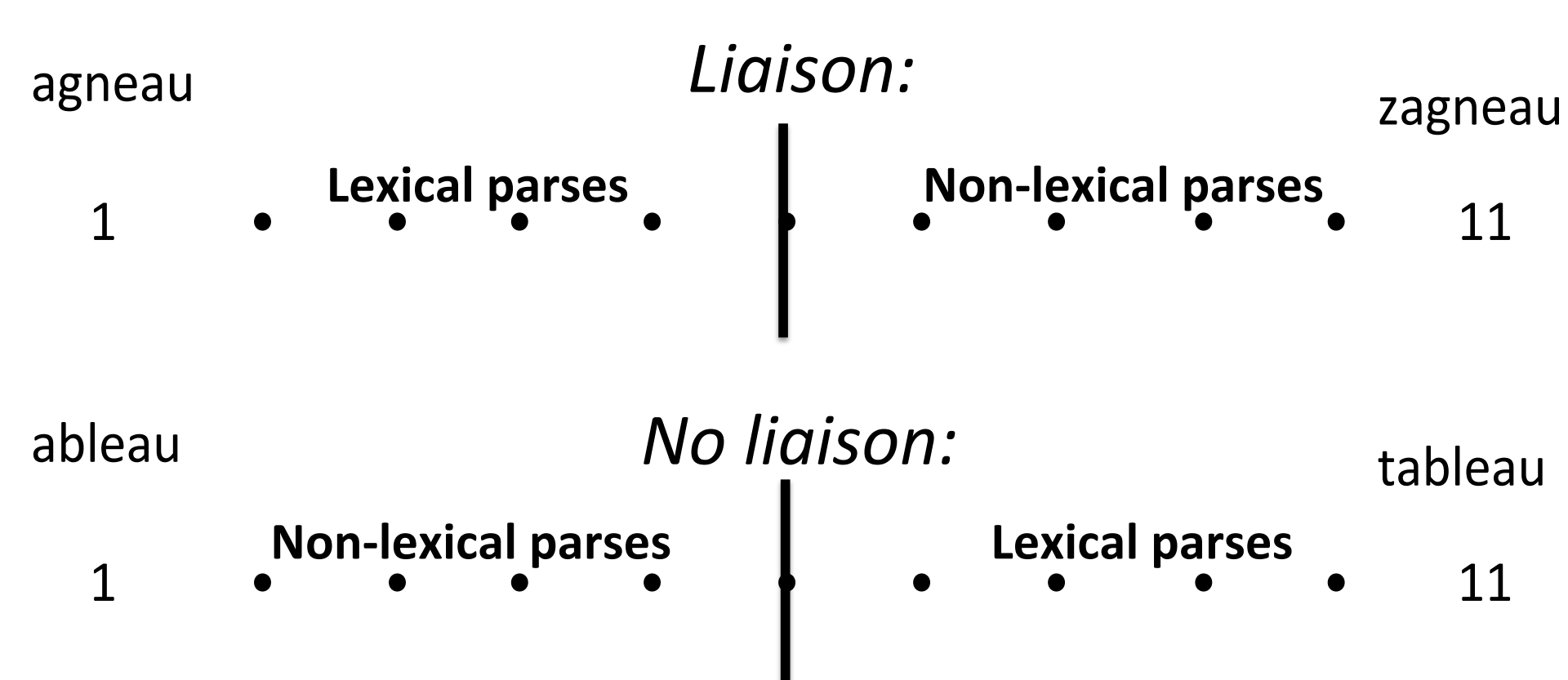
Prior work on English word segmentation showed:

- Natives show lexical drift (rely on knowledge-based cues; e.g., lexical information), but less so in noisy conditions (5, 6)
- Non-natives, who have less language knowledge, do not show lexical drift by default (7)

METHODS

Participants: 18 native & 18 non-native (English L1, intermediate proficiency) French listeners

Procedure: hear two-word (adjective-noun) sequence (e.g., [kyrjɔzəno] (*curieux agneau*/**zagneau*) or [pətɪtablo] (*petit *ableau/tableau*)) and identify second word of sequence:



Manipulations:

- **Consonant duration:** word-initial consonant (e.g., /t/ in *tableau*) manually manipulated to be longer than liaison consonant (e.g., /z/ re-syllabified to *agneau*)
- **Noise:** quiet or -8 dB SNR

Dependent measure: Degree of "lexical drift" (6, 7); proportion lexical responses (binned at midpoint of scale)

RESULTS

Analysis: logistic mixed effects regression with maximal random effects structure supported by the data; significance assessed via nested model comparison

Listeners use knowledge-based segmentation, conditioned on native status and liaison context

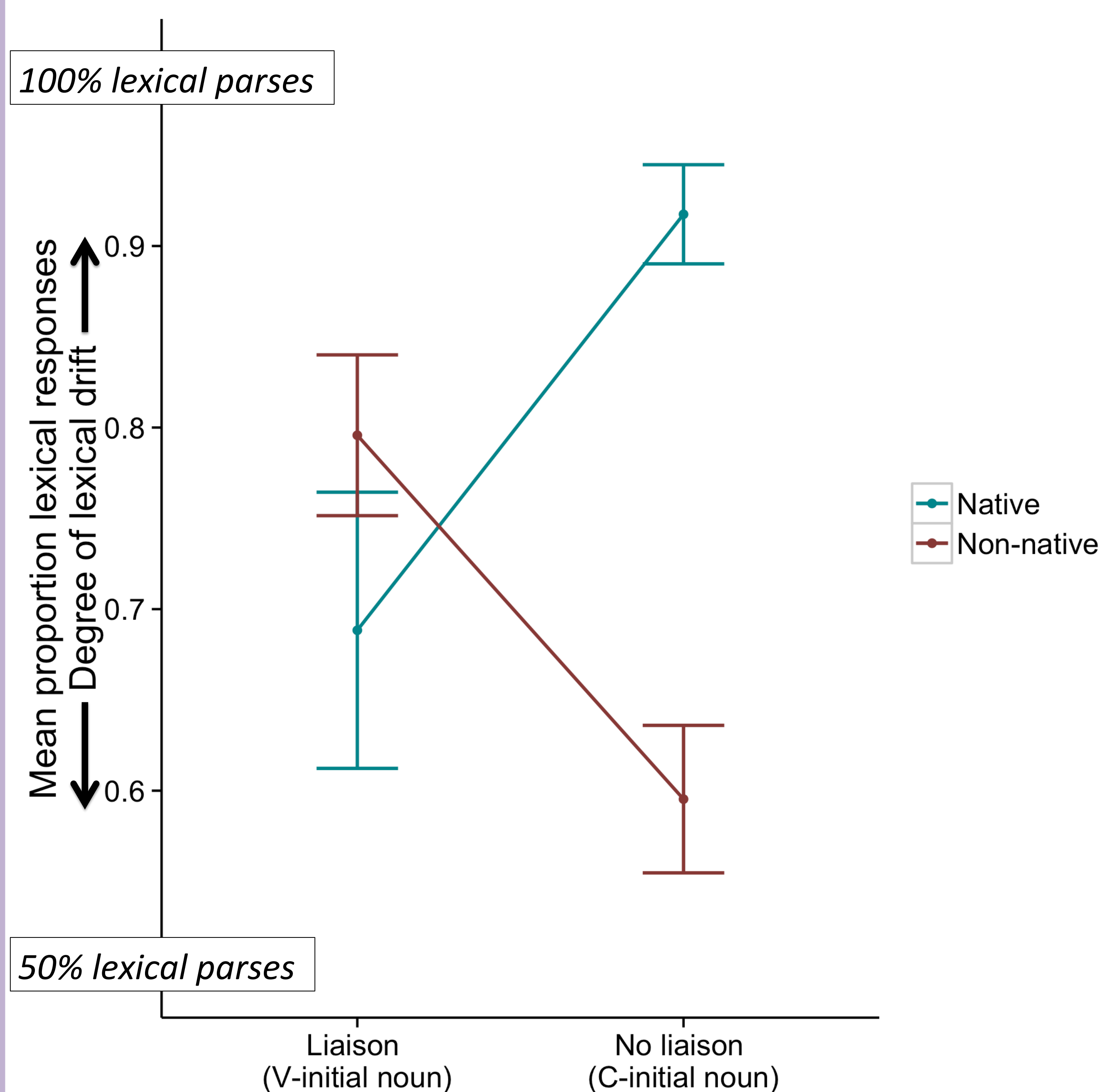


Figure 1. Speech segmentation averaged across noise conditions

1) How do both L1 and L2 French listeners compensate for liaison during speech segmentation?

- ✓ Listeners show lexical drift (more than 50% lexical responses overall)

2a) Do native and non-native listeners use distinct strategies?

- ✓ Yes:
 - *Main effect of group:* Natives gave significantly higher proportion lexical responses than non-natives overall
 - *Group x liaison interaction:* Natives and non-natives apply knowledge of liaison differently
 - Natives: appropriately constrain liaison, giving high proportion of lexical responses for both liaison and non-liaison sequences
 - Non-natives: over-compensate for liaison when it did not apply by giving higher proportion of non-lexical (liaison) parses vs. when liaison did apply (e.g., responding **ableau* rather than *tableau* in *petit tableau*), suggesting listeners show uncertainty when liaison did not apply

Noise affects degree of lexical drift

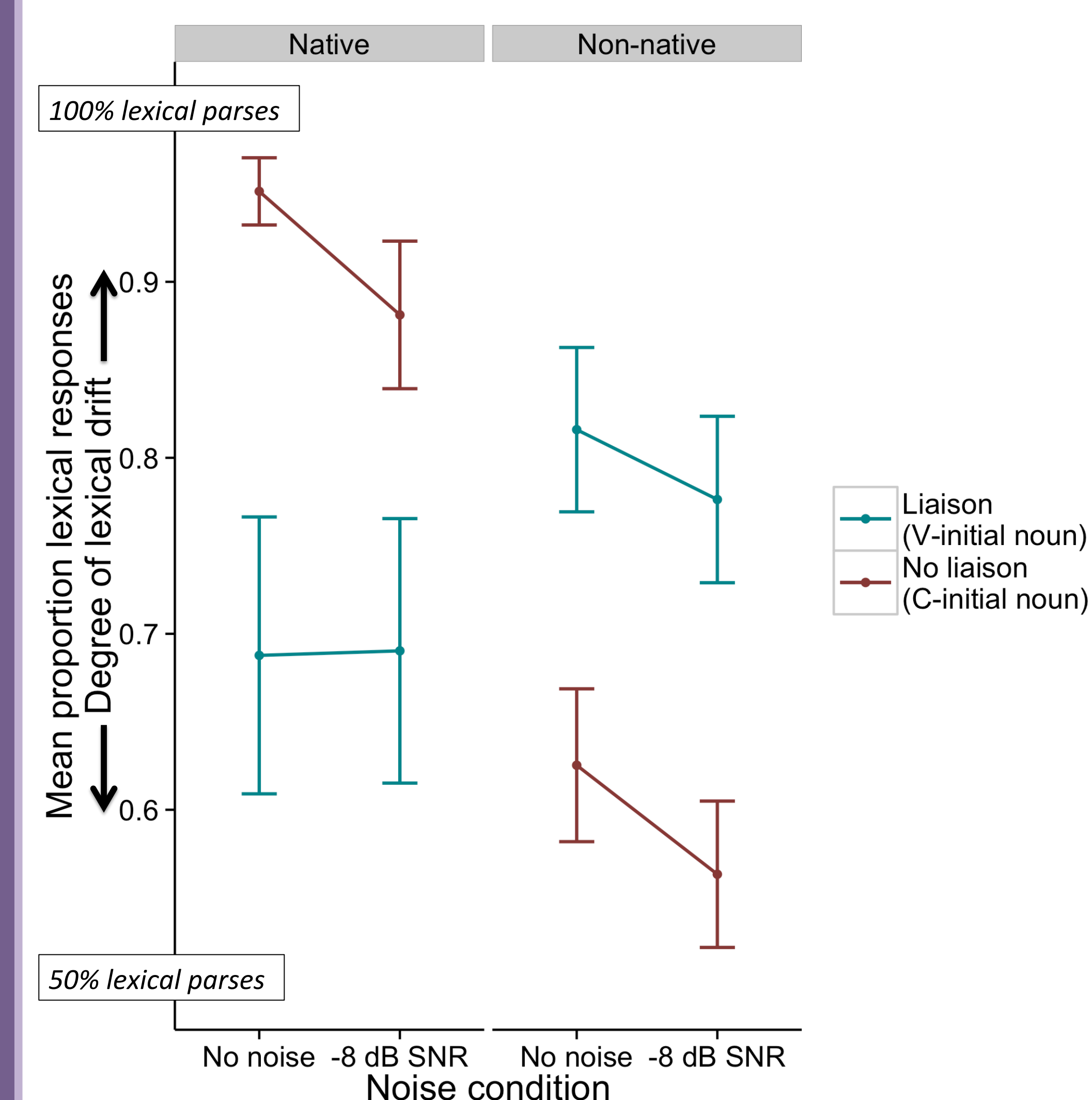


Figure 2. Speech segmentation in quiet vs. noisy conditions
2b) Do native and non-native listeners use distinct strategies in noise?

- ✓ Yes: *Group x Liaison x Noise interaction:*
 - Both groups generally show less lexical drift in noise
 - However, natives do not shift strategies when proportion of lexical responses is already relatively low (when liaison applied)

CONCLUSIONS

Speech segmentation strategies differ as a function of 1) native status, 2) phonological structure of items, and 3) signal clarity

- 1) Overall, both native and non-native listeners **rely on knowledge-based cues** to word boundaries, but differ in degree of lexical drift
- 2) Intermediate proficiency non-native French listeners have **acquired knowledge about liaison but over-apply it**, yielding word-nonword parses in non-liaison contexts
- 3) There may be a lower limit to which native (but not non-native) listeners are willing to deviate from a knowledge-driven strategy, even in noisy conditions

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