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 [pa. ti. Ju.] ‘little cabbage’
  - petit ami [pa. 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., [kyojaxano] curieux agneau/*agneau) or [pattabalo] petit *ableau/tableau) and identify second word of sequence:
- agneau
  - Liaison: 1
  - No liaison: 1
- zagneau
  - Liaison: 11
  - No liaison: 1
- ableau
  - Liaison: 1
  - No liaison: 11
- tableau
  - Liaison: 1
  - No liaison: 11

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

<table>
<thead>
<tr>
<th>Noise affects degree of lexical drift</th>
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<tbody>
<tr>
<td>Native</td>
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<td><img src="image" alt="Graph of mean proportion lexical responses vs. degree of liaison drift" /></td>
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Figure 2. Speech segmentation in quiet vs. noisy conditions
- 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

REFERENCES


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