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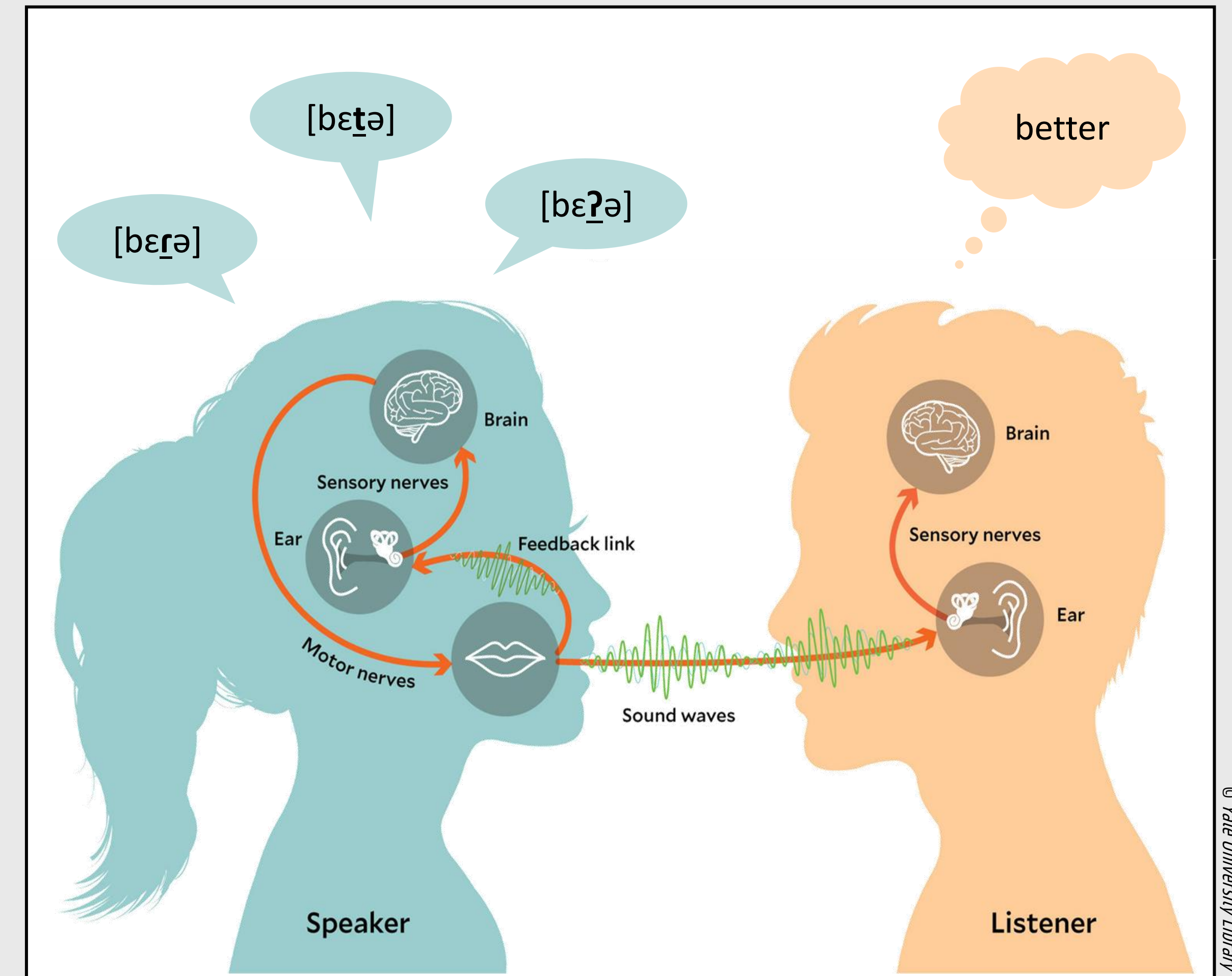
ACCENTS UNCOVERED: FROM SPEECH TO UNDERSTANDING IN SECOND LANGUAGE PHONETICS AND PHONOLOGY

1. Background

- The **speech chain model** illustrates the stages of speech communication in three steps. First, the speaker forms a thought, translates it into words, and produces sounds with their vocal system. These sounds travel through the air and reach the listener's ear. The listener then processes them in the brain and interprets them as meaningful language.
- The perceptual process occurs automatically and typically with minimal effort, despite **substantial phonetic variation** in speech. The same word can sound quite different across speakers due to anatomical factors (e.g., vocal tract shape and size, vocal cord length) and sociolinguistic factors (e.g., age, gender, regional or social background).
- Native listeners (L1) are generally able to adapt to a speaker's pronunciation and understand the message. However, non-native or **second language (L2) listeners** may struggle when speakers produce unfamiliar pronunciation variants.

2. Research objectives: Focus on accent perception

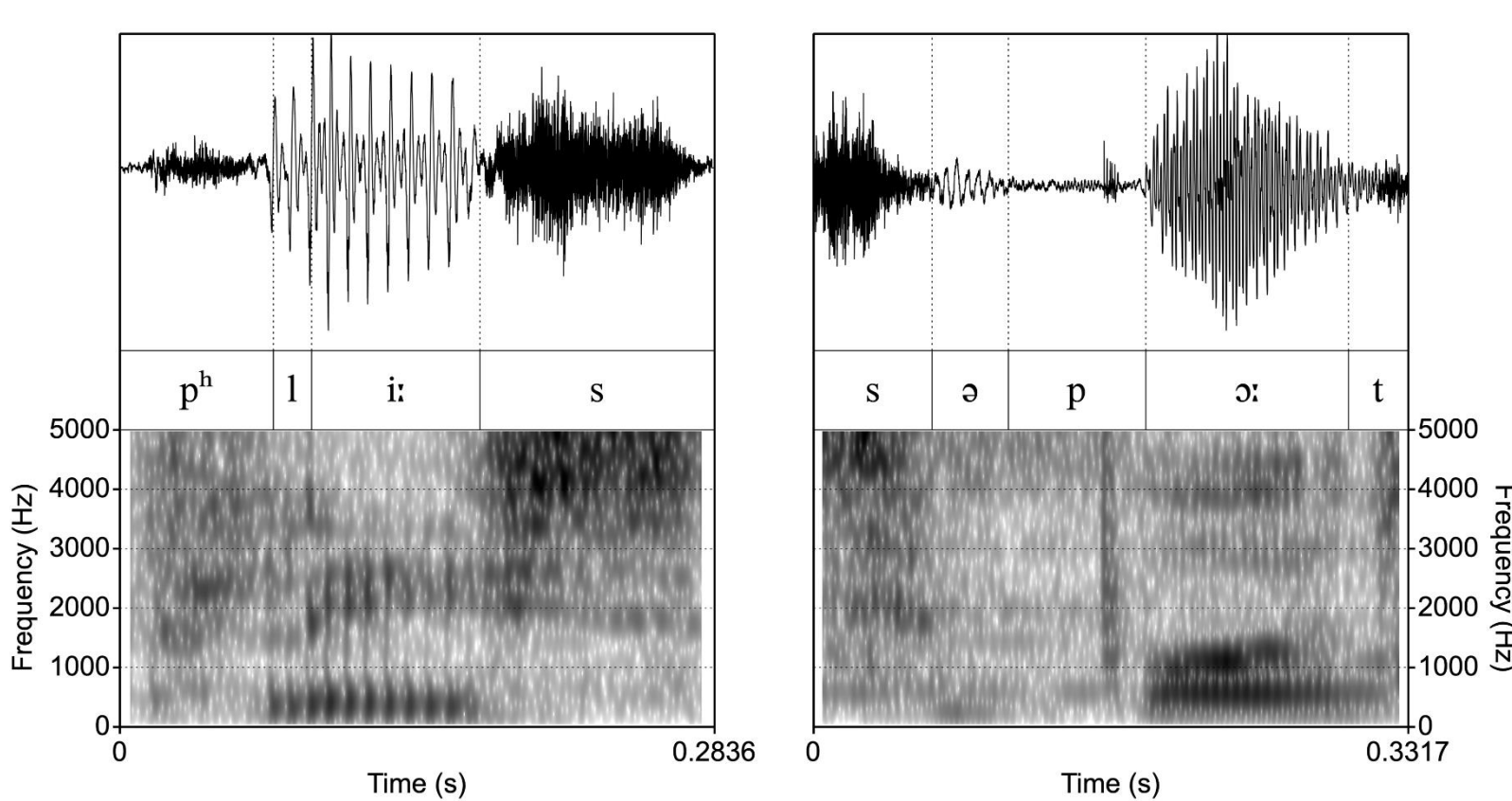
In our research, we examine how **accent variation impacts L2 perception**. Specifically, we focus on (i) how vowel and consonant differences affect intelligibility, (ii) the role of accent familiarity and language background on comprehension, and (iii) how listeners acquire sociophonetic features.



3. Experimental studies

Impact of phonetic reduction on intelligibility

Background:



Research question:

How does phonetic vowel reduction in native and non-native accents of English impact intelligibility for L1 and L2 listeners?

Design:

In a transcription task and lexical decision task, 80 Dutch- and 80 Spanish-speaking learners of English were presented with unreduced and reduced pronunciation variants in Southern British, Northern British and French-accented English.

Interpretation:

Number of correctly transcribed words was used as a proxy for spoken word recognition, while response latency was used as a proxy for speed of lexical activation.

Results:

Unreduced words were recognized more accurately and more quickly than reduced words, but no interaction effect between speaker accents and phonetic reduction was observed.

Influence of familiarity and L1 on comprehension

Background:

- Research on intelligibility of regional speech
- Exact role of familiarity for L2 listeners
- Relative intelligibility of Irish Englishes

Research Question:

How do familiarity and listener language background affect the intelligibility of accents for L1 and L2 listeners?

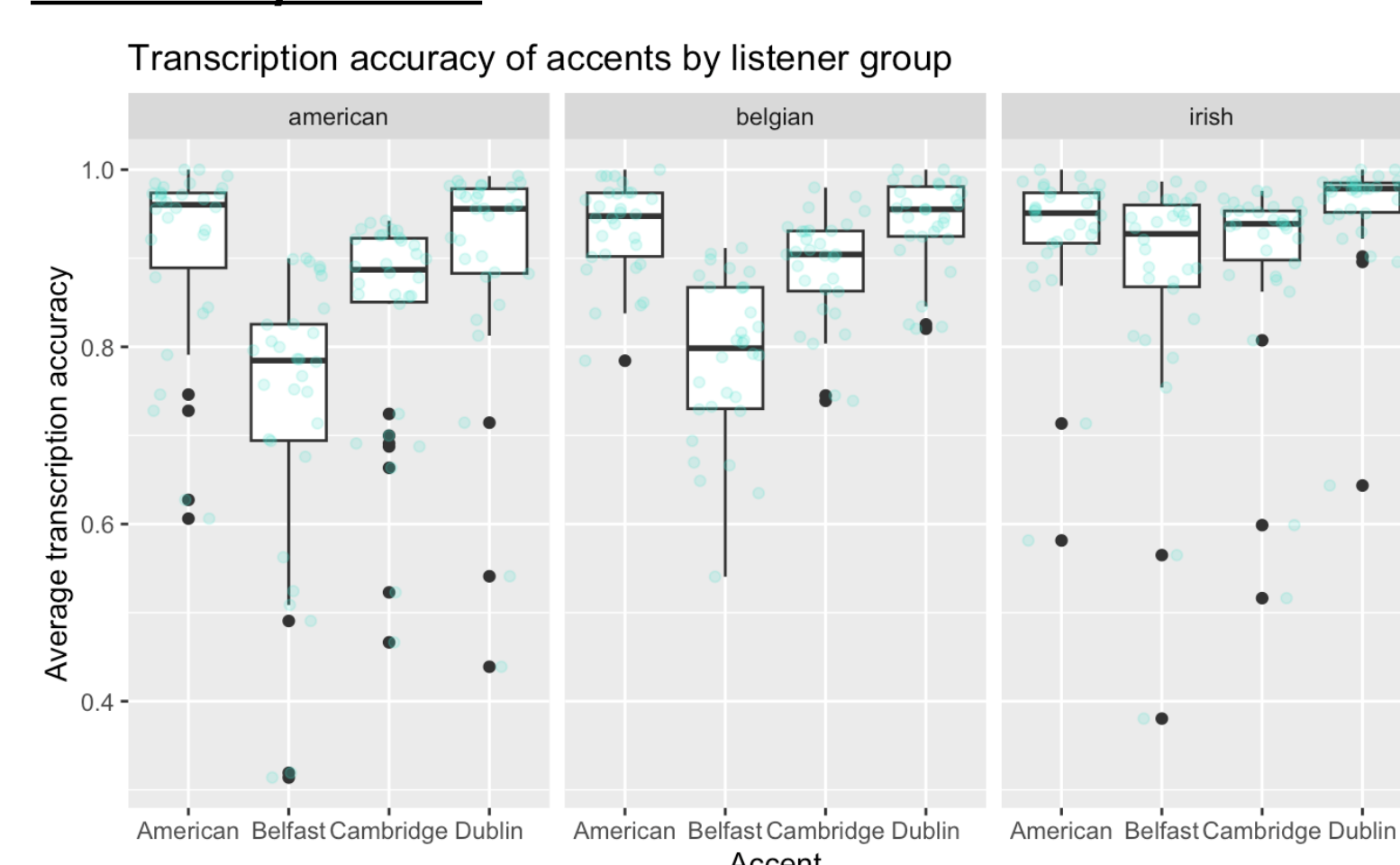
Design:

30 Irish English, 30 American English, and 30 Belgian Dutch listeners were asked to provide self-ratings (1-100) of their exposure to speakers from a variety of English-speaking countries. Then, they transcribed Southern British, General American, Belfast, and Dublin English accents.

Interpretation:

Mean exposure self-rating scores as a proxy for familiarity, and number of correctly transcribed words as a proxy for listener comprehension.

Preliminary Results:



Learning and adapting to sociophonetic features

Background:

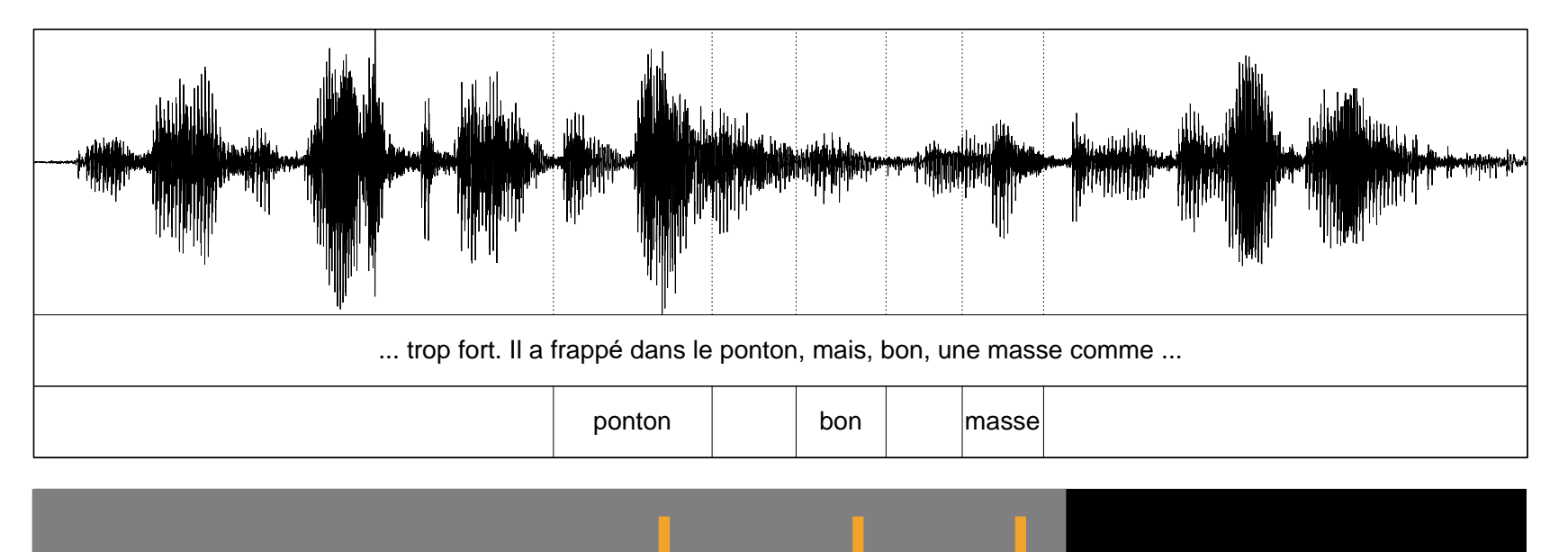
- Research on listeners' awareness of sociophonetic variation
- Offline vs. real-time reactions
- Carefully read speech vs. (semi-)authentic speech

Research question:

To what extent do L1 French listeners notice sociophonetic features in different French accents during speech processing?

Design:

60 L1 French listeners were presented with six semi-authentic voice samples representing six different French accents. For each voice sample, listeners were asked to complete three tasks: (i) a speaker judgement task; (ii) a click task, where they clicked when hearing a "distinctive" (i.e. marked) feature and (iii) a review task, where they indicated what made them click.



Interpretation:

Number of verified clicks served as a proxy for feature noticing.

Preliminary results:

Results suggest that listeners notice features well studied by phoneticians (e.g., Southern French nasal vowels), and that feature noticing correlates with speaker accent.

4. Conclusion

- Accents are a natural aspect of spoken language, and for L2 learners, understanding unfamiliar accented speech can be challenging. This difficulty often arises because their L2 phonological representations may not yet be robust enough to flexibly adapt to unfamiliar pronunciation forms. As learners progress, they need to acquire **robust L2 phonological categories** and acquire both **linguistic and sociophonetic knowledge** about regional and social accents to navigate various social contexts.
- In our research, we investigate this **acquisition process**. We set up various types of perception studies, where **behavioural responses serve as proxies of constructs** such as word recognition, intelligibility, and the noticing of phonetic features. In designing our experiments, we also carefully consider the types of auditory stimuli we use to achieve a balance between experimental control and ecological validity.

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