

# To [h] or not to [h]?

## L2 production of /h/ in semi-spontaneous speech by French learners of English and German

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## Introduction

### Context:

- ▶ Studies of production and perception difficulties in French learners of German (Wottawa et al., 2018, Wottawa, 2020)
- ▶ New research question: Do French learners encounter similar difficulties in L2 German and L2 English?
- ▶ English and German = typologically close languages (West Germanic) (Konig & Van der Auwera, 2013)
  - ▶ Common linguistic features (morphology, vocabulary, syntax & phonemic inventory to some extent)
- ▶ Present study: focus on /h/ production in L2 German and L2 English in French university students

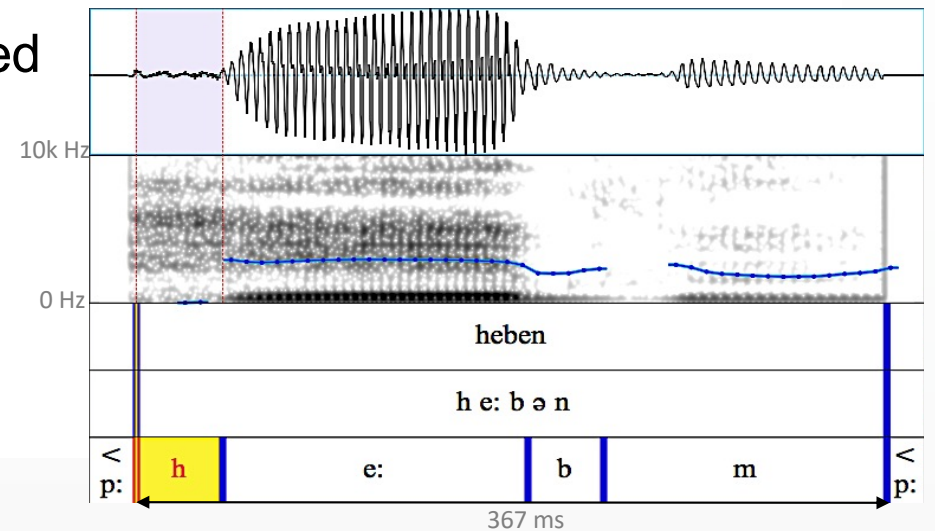
## Introduction

- ▶ L2 production difficulties are predicted in comparing the phonemic inventories (Flege, 1995)
  - ▶ no /h/ in the French consonantal system
  - ▶ /h/ present in both German and English inventories
- ▶ /h/ production in French native speakers with L2 English and L2 German have been studied separately (*English*: Kamiyama et al. 2011, Exare 2021, Capliez forthcoming; *German*: Quiehl 1906, Wottawa 2018)
  - ▶ canonical productions
  - ▶ /h/-deletion
  - ▶ /h/-substitutions with [ʔ]
  - ▶ [h]-epenthesis in hiatuses or vowel-initial words

## /h/ in German and English

### German:

- Syllable initial  
*heben* ['he:bən] (to lift); *gehoben* [gə'hobən] (lift (participle))
- Appears in stressed syllables only
- The segment can be unvoiced or voiced (Zimmerer & Trouvain, 2015)
- No regional variation ([h] cannot be omitted)



## /h/ in German and English

### English:

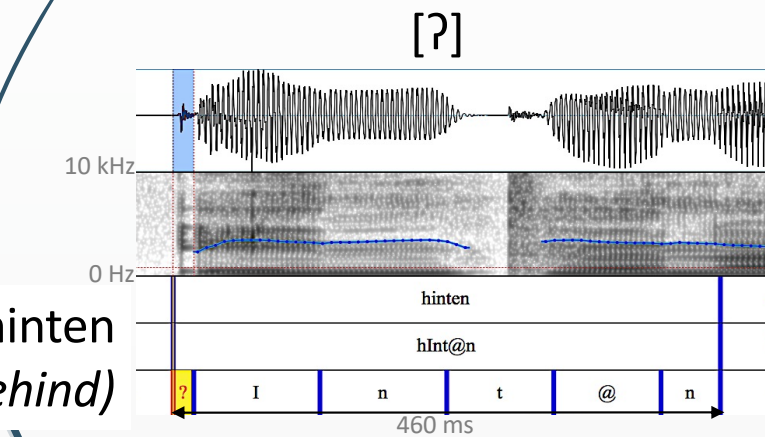
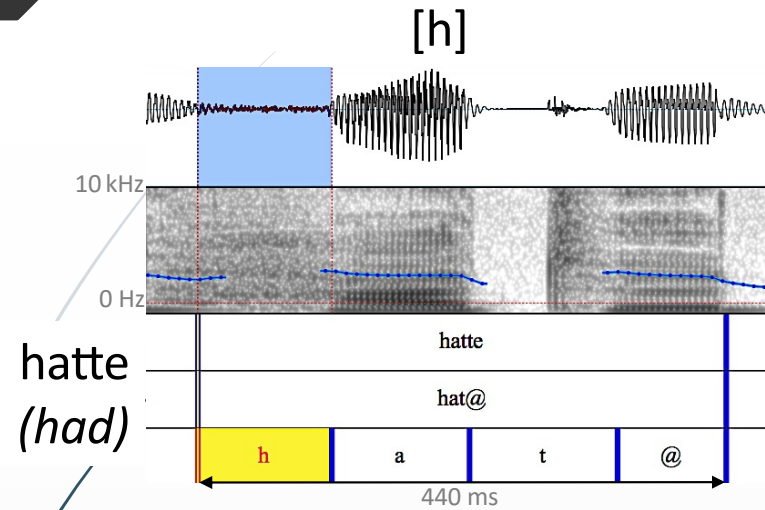
- More complex pronunciation rules than German
- Syllable initial in lexical words: *house* /'haʊs/, *comprehension* /,kɒm.prə'hɛn.ʃən./ (Cruttenden, 2008)
- Exceptions: *honour, heir, honest...herb (General American), -ham* in place names – graphic code does not account for /h/
- Often omitted in sentence medial pronouns and auxiliaries : *tell (h)er to stop, I could (ha)ve done it.* (Rogerson-Revel, 2011)
- /h/-dropping also a socio-linguistic feature in English native speakers (Milroy, 1981; Wells, 1982; López Murillo, 2007)

## Grapho-phonemic rules of /h/ in French, English & German

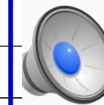
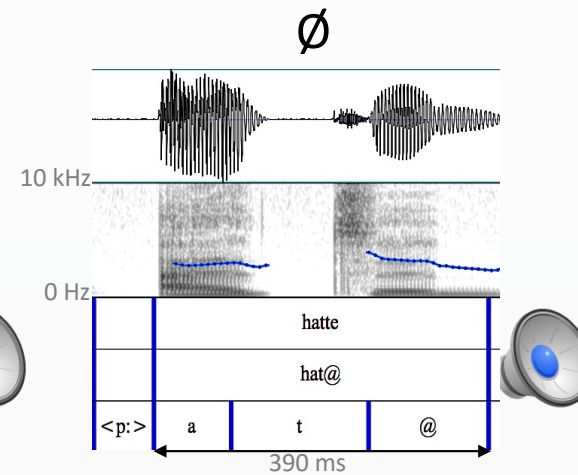
- ▶ In French graphical <h> (les haricots) can be realised as a glottal stop
- ▶ In English and German, a glottal stop often precedes a word-initial vowel (Wells 1982, Wiese 1996)
  - ▶ e.g. English *eat* /ʔi:t/ vs. *heat* /hi:t/
  - ▶ e.g. German *eben* /ʔe:bŋ/ (even) vs. *heben* /he:bŋ/(to hoist)



# Example of /h/ production in L2 German

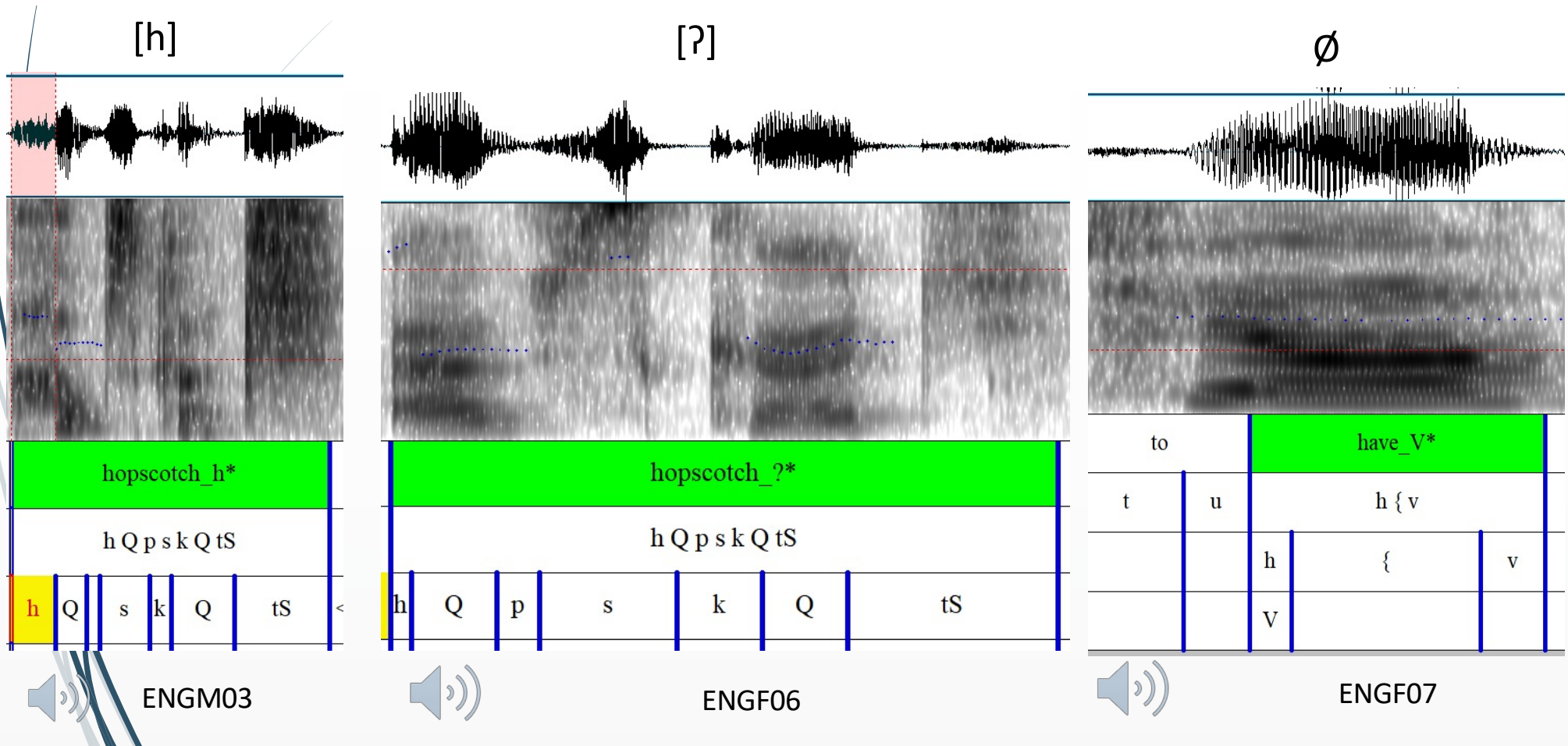


hinten  
(behind)



hatte  
(had)

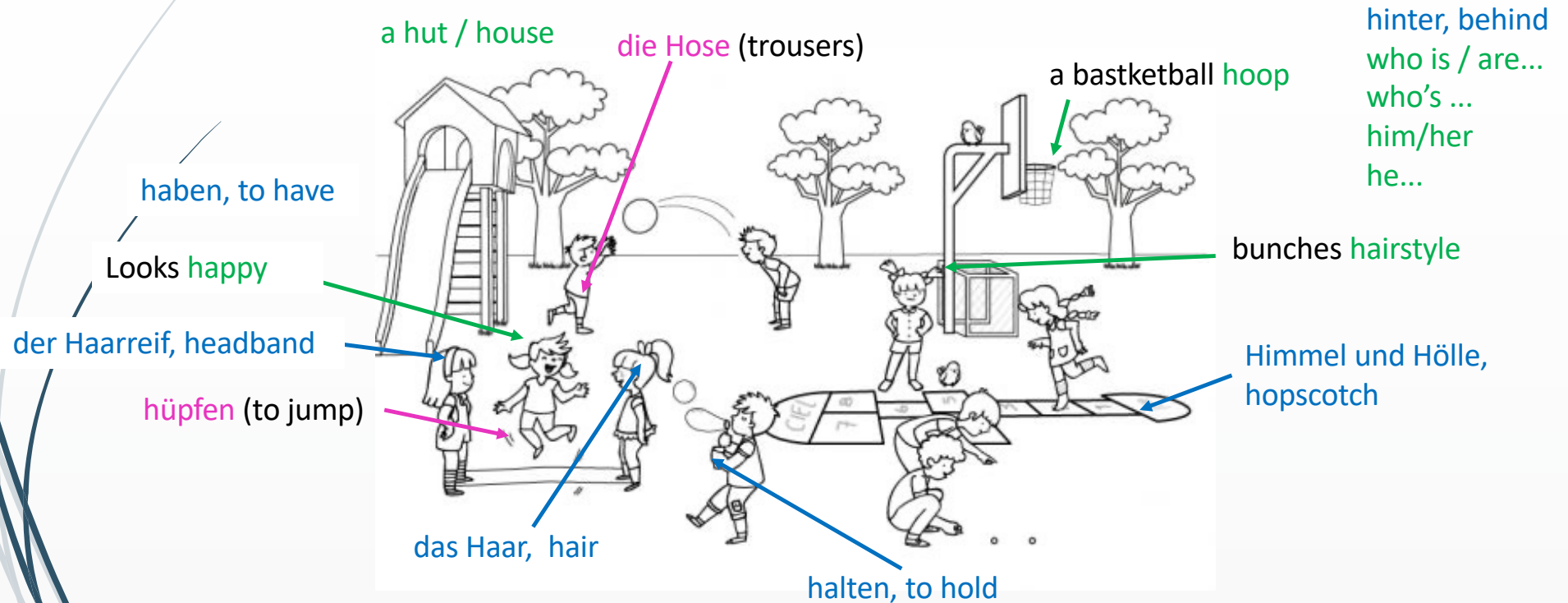
# Example of /h/ production in L2 English





## Methods- Material

Material to elicit semi-spontaneous L2 speech production in English and German



## Methods- Participants

### German

- 15 first year university students majoring in English and German, all women
- aged between 17 and 23 years old

### English

- 12 first year university students English majors (repeat session)
- aged between 18 and 20 years old

## Hypotheses

- ▶ French learners of L2 German and English encounter similar production difficulties
  - ▶ a majority of canonical /h/ productions
  - ▶ in semi-spontaneous tasks, empty onsets are more frequent than [ʔ] productions
- ▶ Learners who know about their weakness with /h/ might avoid producing words containing /h/
- ▶ [h]-duration will be similar in both speaker groups
  - ▶ In German, non-native speakers produce longer [h] segments than do native speakers (Wottawa, 2018)

## Results – Types of /h/ realisation

### German

	[h]	[ʔ]	∅	Tokens
<b>L2 German (group)</b>	<b>160 (95%)</b>	<b>5 (3%)</b>	<b>3 (2%)</b>	<b>168</b>

- ▶ None of the participants avoids words containing /h/  
(*M = 8.4 words, sd = 5.4 words, min = 5 words, max = 18 words*)
- ▶ All participants produce canonical [h]
- ▶ 2 participants produce [ʔ] at least once
- ▶ 3 (other) participants produce each one empty onset

## Results – Types of /h/ realisation

### German

Deletions or substitutions occur in:

- ▶ Unknown or rare words
  - ▶ One participant produced 4 glottal stops either word internally *Schulhof* (schoolyard) or for a word they discovered recently *Himmel* (sky). All tokens of these two words were produced with glottal stops.
  - ▶ Another participant produced an empty onset for *Hölle* (hell)
- ▶ Pronoun-verb units (*sie hat* (she has) / *sie haben* (they have))
  - ▶ One participant produces a series of glottal stops while linking the two words, two participants produce empty onsets



## Results – Types of /h/ realisation

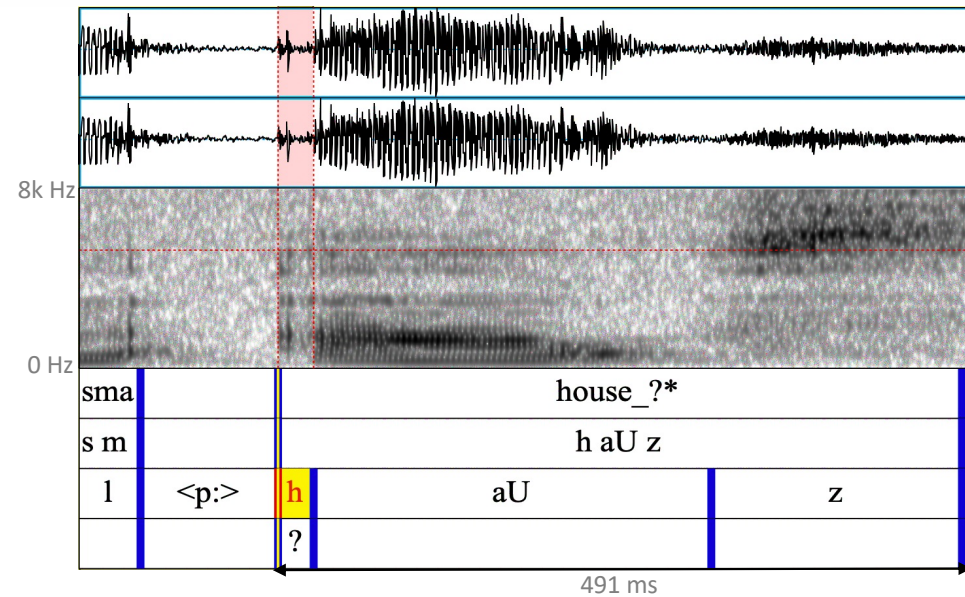
### English

	[h]	[ʔ]	∅	Tokens
<b>L2 English (group)</b>	<b>119 (54%)</b>	<b>50 (22%)</b>	<b>53 (24%)</b>	<b>222</b>

- None of the participants avoids words containing /h/  
(*M = 8.8 words, sd = 7.5 words, min = 6 words, max = 52 words*)
- All participants produce canonical [h]
- /h/ is produced as an empty onset more frequently (8 participants) than as [ʔ] (6 participants)
- All participants who produce [ʔ] produce also empty onsets

## Results – Types of /h/ realisation

- All [ʔ] are produced after pauses
- No specific distribution for empty onsets



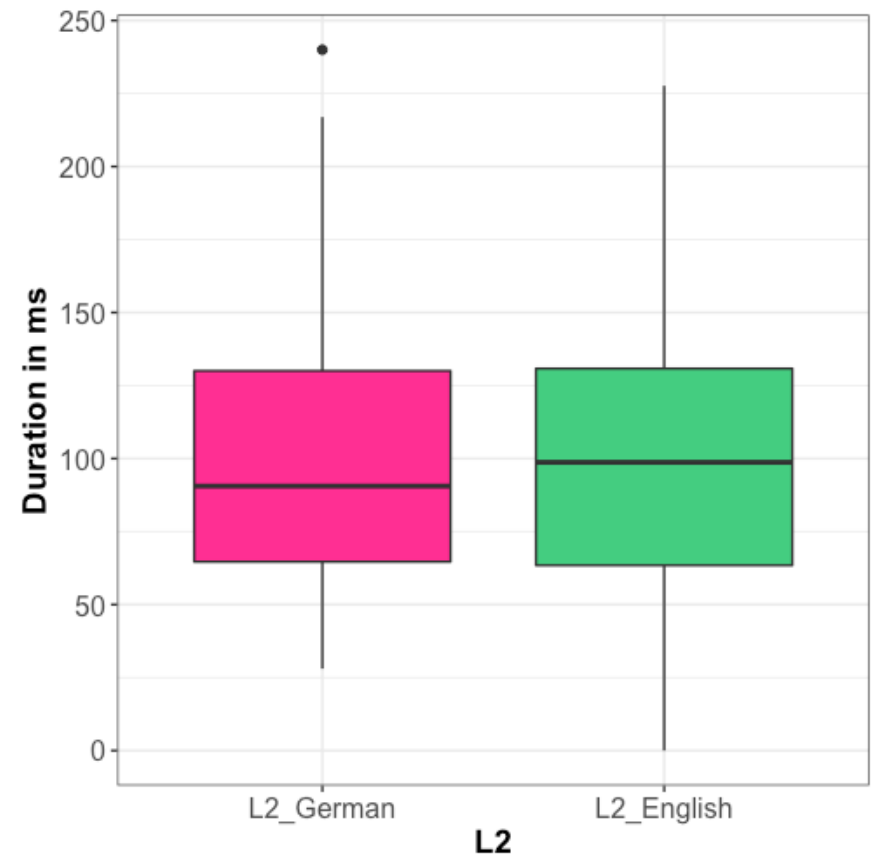
## Results – Types of /h/ realisation

- **Pronouns:** around 50% either [ʔ] or empty onsets.
- **Auxiliaries:** have / has / having => glottalised (48%, 78%, 100%)
- **Content words initial /h/:** [h] more than 67%, otherwise: glottalisation)
- **Inervocalic /h/:** *behind* => 3 speakers produce empty onsets systematically. 5 pronounce the [h], 1 uses the 3 forms evenly.



## Results – Duration of [h] productions

- ▶ L2 German:  
 $M = 99$  ms,  $sd = 45$  ms (160 tokens)
- ▶ L2 English:  
 $M = 99$  ms,  $sd = 52$  ms (119 tokens)
- ▶ Statistical tests not conclusive



## Discussion- Types of /h/ realisation

### German:

- ▶ Great majority of canonical [h] productions (i.e., 95%)
- ▶ Unexpected, score was lower in a previous study (75%)
- ▶ Substitutions and deletions are linked to individual speaking styles

### English:

- ▶ Canonical [h] productions in more than half of the cases (i.e., 54%)
- ▶ Type of realization depends on the grammatical word category

## Discussion- Types of /h/ realisation

- ▶ Content words are most often produced with canonical [h], if not glottal realisation is more likely than empty onsets.
  - ▶ This aligns with Kamiyama et al.'s study (2010) on L2 English.
  - ▶ Similar results for L2 German in Zimmerer & Trouvain (2015)
- ▶ Function words present more often empty onsets or [ʔ]
  - ▶ Does this behaviour align with native variation?
  - ▶ In the sentence, less emphasis is put on function words than content words
  - ▶ Are /h/ substitutions and deletions linked to little emphasis on the word?
- ▶ Individual speaking styles: two participants use more substitutions than deletions → sign of acquisition?

## Discussion – Duration of [h] productions

- Both speaker groups produce [h] with similar durations
- Very long segments, German natives on the same material produce [h] with shorter durations ( $M = 74.0$  ms)
  - Emphasis on [h] (segments are as long as the following vowel)
  - It's a difficult segment for French speakers of English and German
  - Sign of awareness?
- Semi-spontaneous productions allow to observe productions across different word categories
  - Content words and function words are produced in different ways because of their weight in the sentence?
  - Are French learners of English aware of the native /h/-dropping strategies?

## Conclusions

French learners of L2 German and English encounter similar production difficulties

a majority of canonical /h/ productions

in semi-spontaneous tasks, empty onsets are more frequent than [ʔ] productions

*Asymmetrical patterns across groups but also across word categories*

Learners who know about their weakness with /h/ might avoid producing words containing /h/

[h]-duration will be similar in both speaker groups

In German, non-native speakers produce longer [h] segments than do native speakers (Wottawa, 2018)

*Comparison with native speakers would be helpful for both languages*

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