Do French-speaking learners simply omit the English /h/?
- Articulatory measures on glottal opening -

KAMIYAMA Takeki1, 2, HONDA Kiyoshi1, MAEDA Shinji3, VAISSIÈRE Jacqueline4
1. Laboratoire de phonétique et phonologie (UMR 7018) CNRS / Paris III
2. LCAO, Paris Diderot
3. Télécom ParisTech ENST
4. IPREM, Université d'Orléans

/h/ “dropping”

[h]
- Faute courante : L.F. (locuteur francophone) tend à omettre fréquemment l'articulation de cette consonne.
(Ostiguy et al. 1996)

… except in some cases:
- hour, honour, herb (GA), …
- a hotel ~ an hotel
- Yes, I met him.

[h]: voiceless “glottal fricative”?

• Judging by its current place on the chart it appears to be a voiceless glottal fricative. But this is a misnomer, in that most forms of [h] have very little friction at the glottis. The vocal cords are apart and any turbulent airflow that there might be is due to what Pike (1943) calls "cavity friction" rather than local friction at a particular point. [h] has no more friction at the glottis than [f] or any other voiceless sound with a comparable airflow. […] [h] is best described as the voiceless approximant without any particular place of articulation.
(Ladefoged 1990)

[h]: voiceless “glottal fricative”?

- Observed also in some varieties in England (social connotation: stigmatising), West Indies (Wells 1982, among others)

[1] 
[2] 
[3] 
[4] 
[5] 
[6] 
[7] 
[8] 
[9] 

/h/ “dropping” and the glottal stop

- The glottis (the vocal folds) must be open for [h] to be articulated.

- Some French-speaking learners tend to produce a glottal stop (pronounced with the glottis closed) when [h] is not articulated (as native speakers of some varieties of English).
/h/ “dropping” and the glottal stop: Research question

- Do French-speaking learners of English produce a glottal stop systematically when they drop /h/?
- Is the glottis open or closed?

Corpus

- 1. Target words
  heed, had, hot, who’d, behind, ahead
  eat, add, odd
  sat, pool, top, keep

- Carrier sentence “I say ____ eight times” presented with the word in it on a sheet of paper.

Participants

- 2 female native speakers of French (from the northern half of France) and 2 female native speakers of (American) English.

Procedures

- The participants were asked to read the corpus printed on a sheet of paper.
- Recording:
  - Astro-Med Dash8
  - in a recording room
  - at 20.000 Hz

Glottal opening measurement

- Larynx contains a pair of vocal folds.
- Vocal folds are wide apart for normal breathing and voiceless consonants.
- The edges of the vocal folds are touching each other or almost touching: the vocal folds vibrate (Bernoulli effect) for voicing.
- The opening between the two vocal folds: glottis.

Corpus

- 2. Reading of the nursery rhyme “Humpty Dumpty”.

  Humpty Dumpty sat on a wall
  Humpty Dumpty had a great fall
  All the king’s horses and all the king’s men
  Couldn’t put Humpty together again
Some preliminary results

One French speaker

Vocal folds

Recorded data
- Audio
- Glottal opening: ePGG
- Oral airflow

New development?: ePGG
Honda & Maeda
External lighting and sensing PGG (ePGG)
The ePGG sensor detects transillumination from a high-power LED placed on the neck skin.

What is PGG?
Sawashima & Hirose (1981), In Vocal Fold Physiology

Example of ePGG + Airflow records
Thank you for your attention!

Conclusion

• Native speaker(s) of French tend(s) to close their glottis when the English /h/ is “not pronounced”.

Prospects

• Further data collection
• Effect of the prosodic position
• Comparison with h-dropping varieties of English (acoustic measures, at least)
• Relation with h-epenthesis
• Comparison with the phonetic realisations of the “h-aspiré” in French

Application to teaching

• Activities associating [h] with relaxing gestures, such as sigh, will help to relax and open the vocal folds, instead of making them tense (e.g. lifting a heavy object).

References