"Sink positive": Experience with foreign accents influences native and non-native word recognition

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INTRODUCTION

- Phoneme substitutions as in /sɪnk/ for English *think* are typical features of foreign-accented speech.
- Substitutes depend on the language background of the L2 speaker. While German learners of English substitute /θ/ mainly with /s/, Dutch learners substitute it with /t/.
- Research on L1 shows that phonological variants of words can be recognized, but the ease of recognition is modulated by production frequency (Ranbom & Connine, 2007) and perceptual similarity (Connine et al., 1993).
- Little is known about how L1 and L2 listeners process phonological variants in foreign-accented speech.

- **Goal**: **To examine whether recognition of th-mispronounced variants is influenced by substitution preferences or by perceptual similarity.**

   -> Do words with preferred substitutions, e.g. /tɛft/ for Dutch and /sɛft/ for German listeners, lead to faster recognition of English *theft* than less frequent substitutions do? Or do listeners, independently of their L1, recognize the perceptually most similar /fɛft/ faster than other variants?

METHODS

- Five eye-tracking studies with printed words
- Subjects: 72 German and 72 Dutch advanced English learners, and 31 native listeners of English
- Materials: 33 critical sentences (e.g. "Now you will hear seft") with equal number of /t/, /s/, or /f/ substitutions; 60 fillers

Printed word display

competitor → | left | mask | ← distractor

distractor → | kiss | theft | ← target
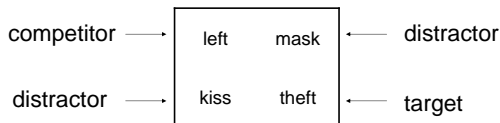
- Exp 1: sentences spoken by a Dutch speaker
- Exp 2: sentences spoken by a German speaker
- Task: participants listen passively to sentences while they look at displays (cf. Huettig & Altman, 2005)
- Subsequent production task: reading aloud English text with /θ/-words

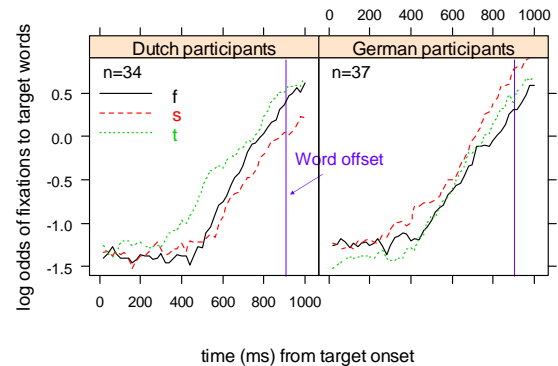| Proportions of th-substitutions	/t/ substitution	/s/ substitution	/f/ substitution
Dutch learners	**73%**	19%	8%
German learners	16%	**72%**	12%

- Subsequent vocabulary test (both groups scored 28 out of 33) and accent ratings

| Rating results	Familiarity 1 = familiar, 5 = not familiar		Comprehensibility 1 = bad, 5 = excellent		Accent 1 = native, 5 = strong L2 accent	
	German speaker	Dutch speaker	German speaker	Dutch speaker	German speaker	Dutch speaker
German learners	**2.9**	3.3	**3.7**	3.8	**3.5**	3.1
Dutch listeners	2.9	**(2.4)**	3.7	**3.7**	3.4	**3.9**

RESULTS

- Between 200 ms after target onset and 200 ms after target offset, there was a significant interaction between condition (t-, s-, and f-substitute) and listener group in both experiments.
- Main effect of condition significant within each participant group except in Exp. 2 for English (p=.25) and German (p=.07) listeners.
- No significant correlation between production preferences of individual participants and their looking behavior.

Experiment 1

Experiment 2
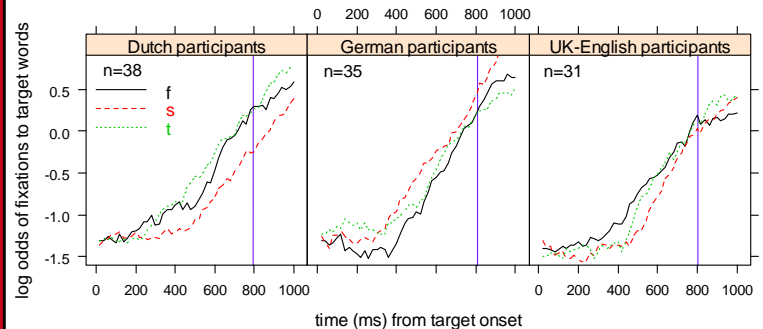
SUMMARY & CONCLUSION

- Words with th-substitutions were always fixated more than any of the competitors or distractors (max. competitors value -0.6 log odds).
- Dutch listeners fixated th-words more when they were mispronounced with /t/ than when they were mispronounced with /s/, while the reverse was true for German listeners.
- This effect held independently of whether the sentences were spoken by a German or a Dutch speaker.
- There was a larger difference in fixations to /t/- versus /s/-substitutes for Dutch than for German listeners, possibly an orthographic effect.
- The perceptually similar /f/-substitution was a dominant match for the target word only for English L1 listeners.
- Overall, the results suggest that L2 and L1 listeners can recognize words with mispronunciations, independently of their experience.
- However: **For L2 listeners ease of recognition is mainly modulated by listener's accent-specific preference for th-mispronunciations, while L1 listeners' recognition is influenced by perceptual similarity.**