

# Are listeners sensitive to morpho-phonetic differences in English stems and word-final /s/?

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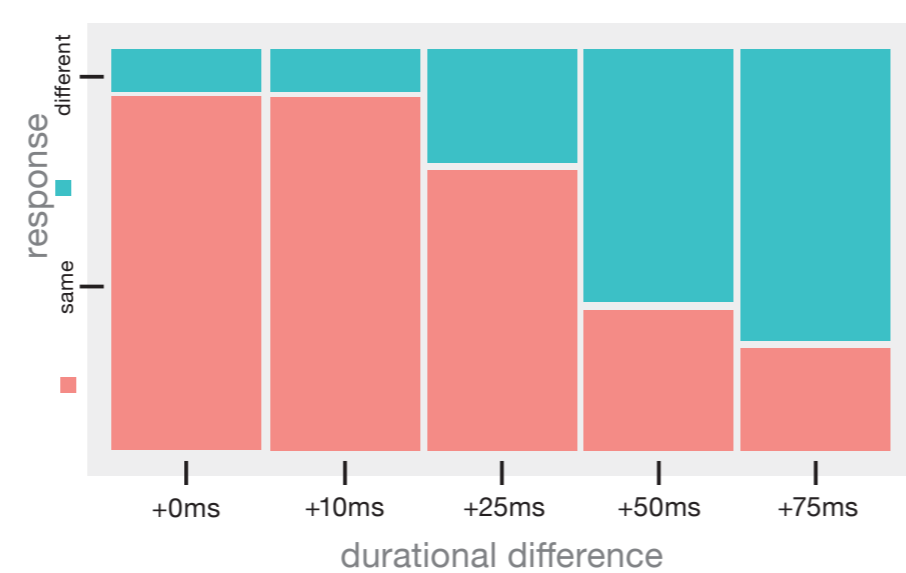
## Background

- phonologically identical morphological entities in English show systematic differences in their phonetic realization, e.g.:
  - stems of complex words are longer than stems of monomorphemic words (Engemann & Plag 2021; Seyfarth et al. 2017)
  - word-final /s/ is longest as a non-morphemic segment, shorter as suffix, and shortest as clitic (Plag et al. 2017; Schmitz et al. 2020)
- Can listeners perceive these differences?

## Perceiving stems

### Same-different task

- target items had 5 lengths:
  - A = original, B = +10ms, C = +25ms, D = +50ms, E = +75ms
- items were presented in 9 conditions:
  - AB, AC, AD, AE, AA, BB, CC, DD, EE
- differences perceptible partially at +25ms; reliably at +50ms and +75ms → evidence for **H1a**



## Methodology

- 2 experiments with 2 parts each:
  - same-different task & comprehension task with mousetracking
- 1 experiment investigating stems
- 1 experiment investigating word-final /s/
- about 42-45 participants per experiment
- conducted in Christchurch, NZ
- analyzed using glmer, qqams, mousetrap

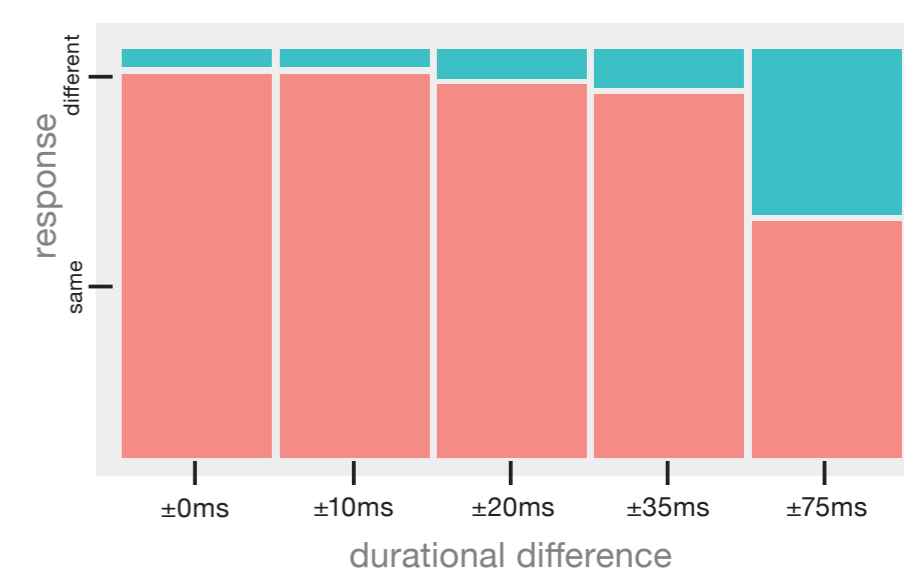
## Hypotheses

- H1:** Listeners can perceive a durational difference between item A and item B and recognize whether these are the same or different.
  - H1a: This holds true for stems.
  - H1b: This holds true for word-final /s/.
- H2:** Listeners are slowed down in their lexical processing when they are exposed to a form with a mismatched stem and ending.

## Perceiving word-final /s/

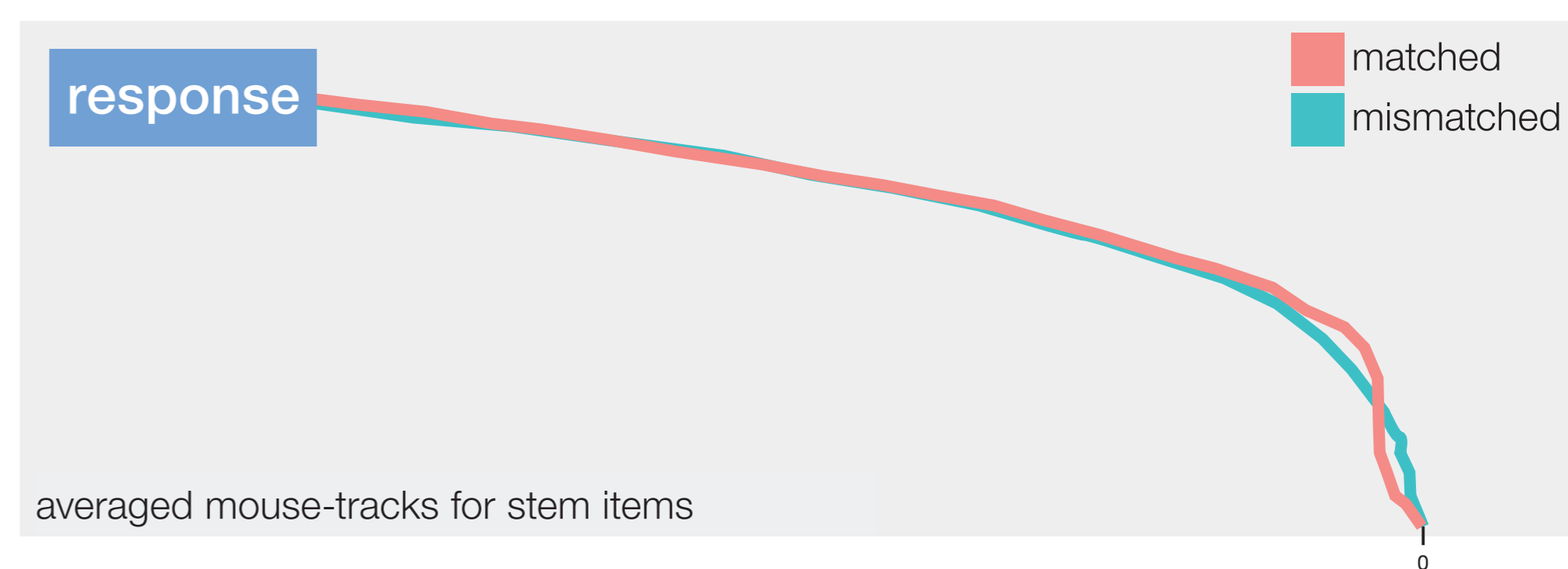
### Same-different task

- target items had 5 lengths:
  - A = original, B = ±10ms, C = ±20ms, D = ±35ms, E = ±75ms
- items were presented in 9 conditions:
  - AB, AC, AD, AE, AA, BB, CC, DD, EE
- differences perceptible partially only at ±75ms → evidence for **H1b**
- however, a difference of 75ms is far bigger than durational differences found in real data on word-final /s/, e.g. 35ms (Plag et al. 2017)



## Comprehension tasks

- stems: items spliced from (pseudo-)stem and (pseudo-)ending of recordings of base words (A, e.g. *day*), plural words (B, e.g. *days*) or monomorphemic homophones (C, e.g. *daze*) in 6 different combinations:
  - AB, AC, BC, CB, BB, CC, e.g. BC = *days* + *daze*
- word-final /s/: items spliced from (pseudo-)stem and (pseudo-)ending of recordings of monomorphemic words (A, e.g. *corpse*) and plural words (B, e.g. *steps*) in 4 different combinations:
  - AB, BA, AA, BB, e.g. AB = *corpse* + *steps*
- participants listened to a spliced item and were shown 2 options on screen; they were instructed to mouse-click on what they thought was the correct answer as quickly as possible
- for stems, there is no significant difference between mouse-tracks of matched and mismatched items
- for word-final /s/, mouse-tracks of matched and mismatched items are significantly different



## Are listeners sensitive to morpho-phonetic differences in English stems and word-final /s/? → Yes and no

- for stems, perception is sensitive to durational differences, but comprehension is not
- for word-final /s/, comprehension is sensitive to durational differences, but perception is not

→ How can one explain these seemingly contradictory findings?

## References

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We would like to thank Heinrich Heine Universität Düsseldorf and the Deutsche Forschungsgemeinschaft (DFG) for funding of this research as part of the research unit FOR 2373 - Spoken Morphology (Projects PL 151/7-1, PL 151/8-1, and BA 6523/1-1).

Presented at the 17<sup>th</sup> Phonetik und Phonologie Tagung (P&P), 29-30 September 2021, Frankfurt, Germany