Heinrich Heine Universität Düsseldorf

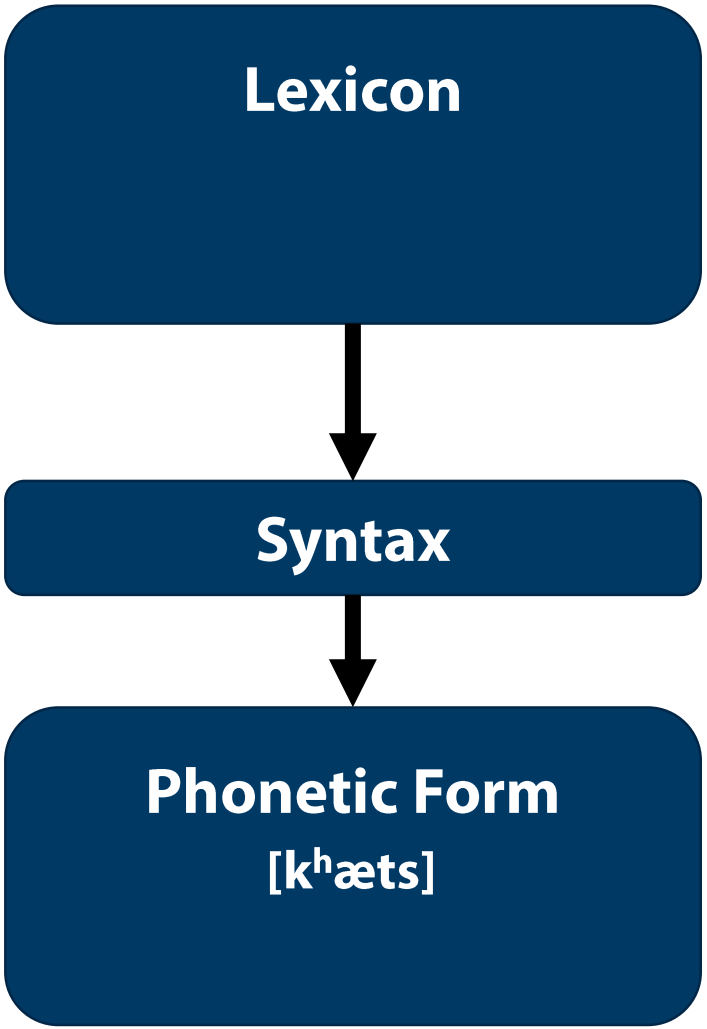
How real are acoustic differences between different types of final /s/ in English?

Evidence from pseudowords

Dominic Schmitz, Ingo Plag, Dinah Baer-Henney

In theory...

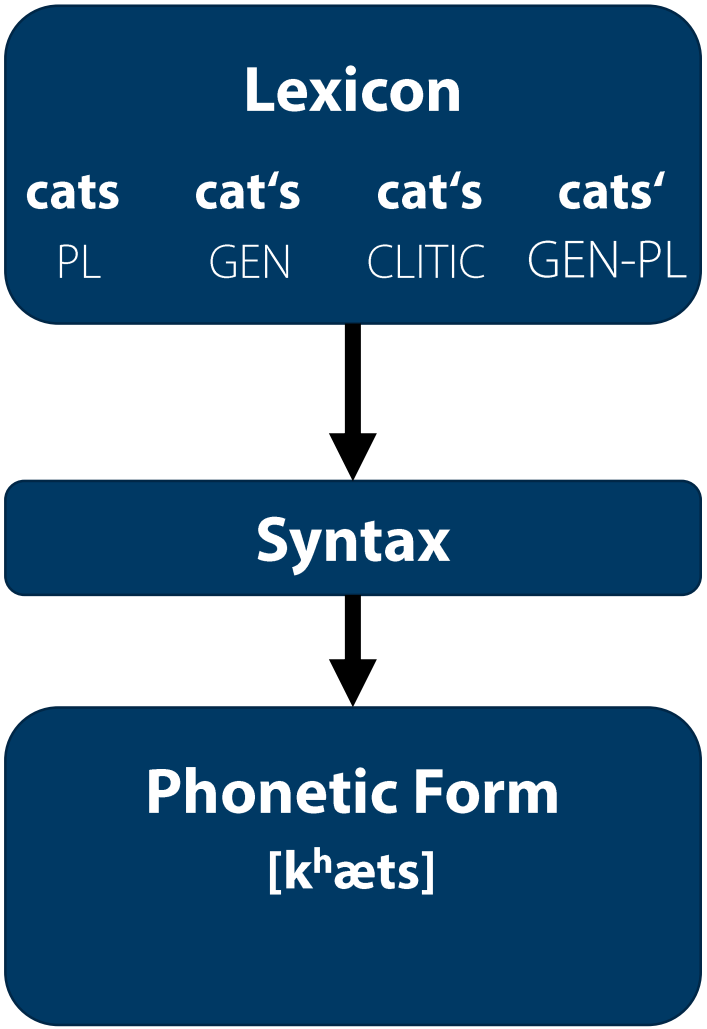
Lexical Phonology



Post-Lexical Phonology

In theory...

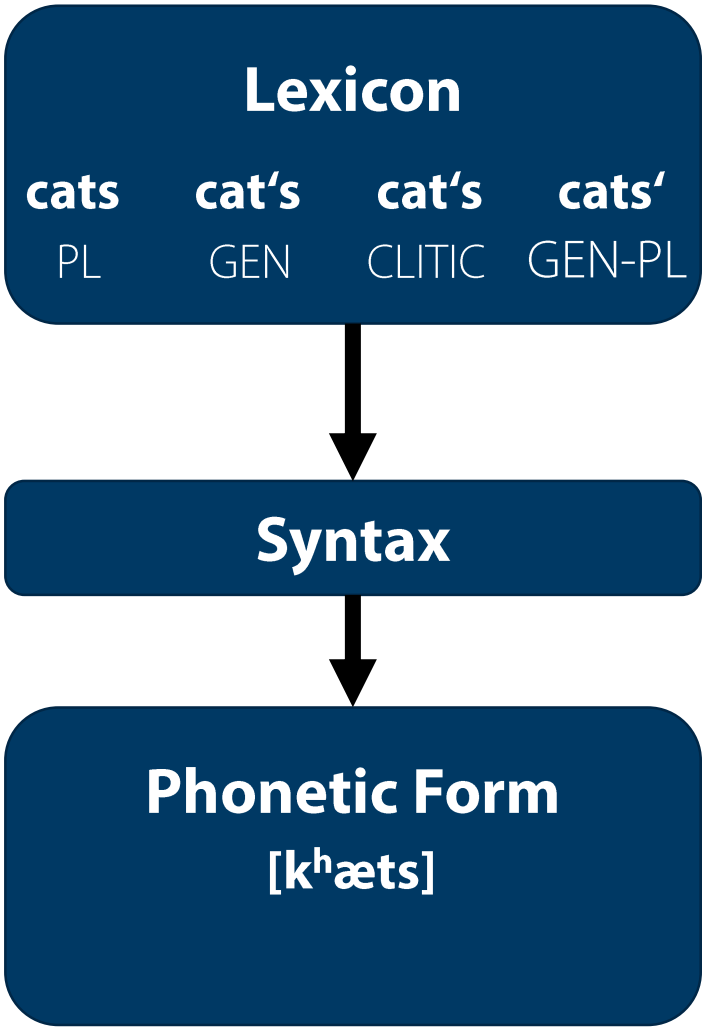
Lexical Phonology



Post-Lexical Phonology

In data...

Lexical Phonology



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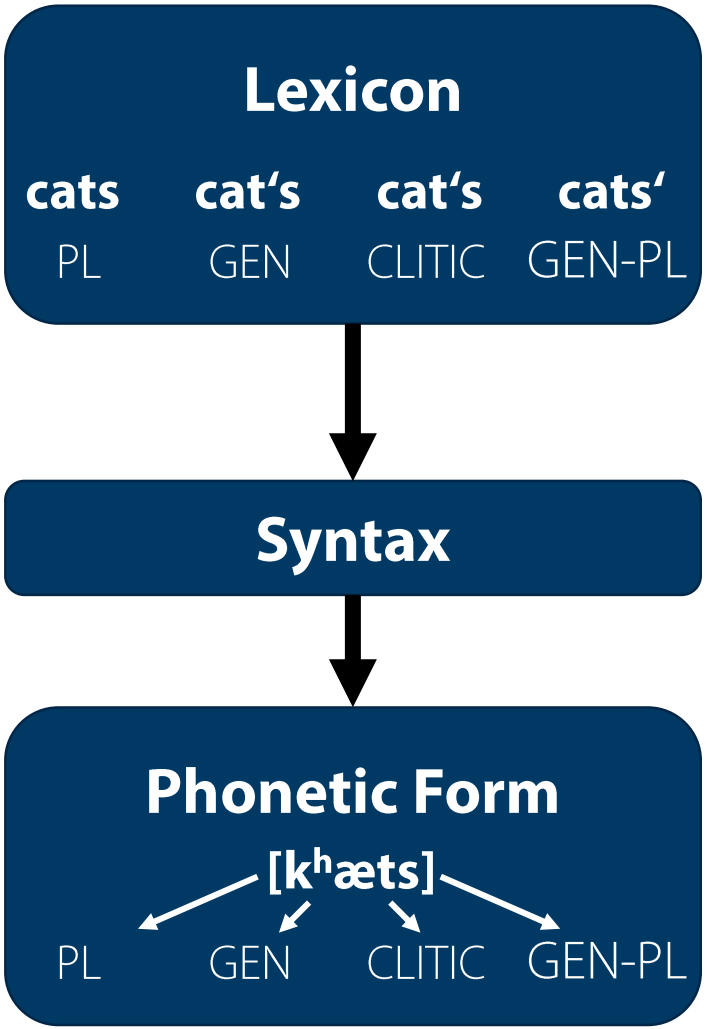
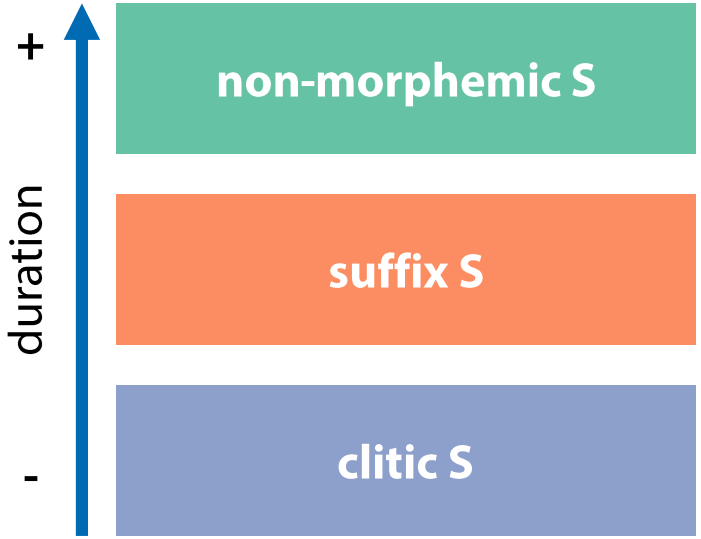


Post-Lexical Phonology

Corpus findings

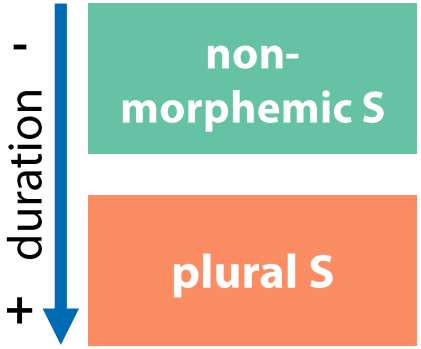
Zimmermann (2016), Plag et al. (2017), Tomaschek et al. (2019)

/s/ duration is longest in **non-morphemic** > **suffixes** > **clitics**



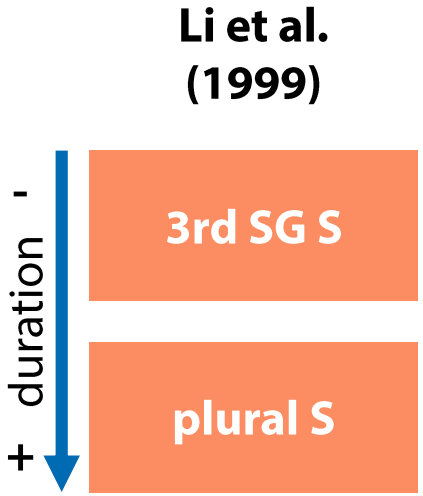
Experimental findings

Walsh & Parker (1983)



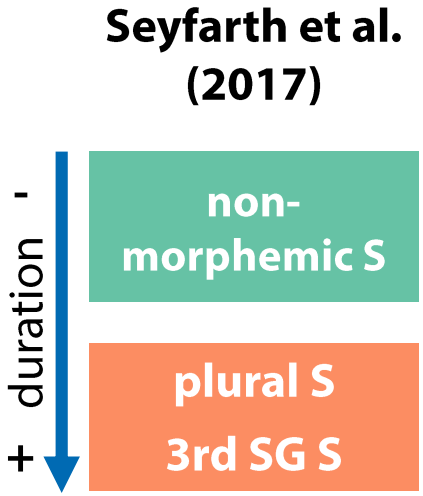
- Very small data set, n=361
- Lack of inferential statistic analysis
- No integration of phonetic covariates

Experimental findings



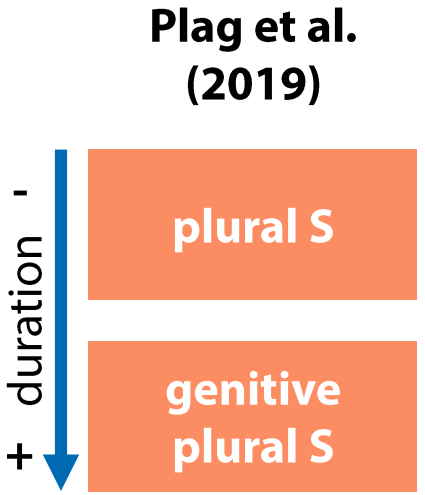
- Rather small data set, n=823
- Imbalance of sentence-medial and -final occurrences of word-final /s/

Experimental findings



- No differentiation of /s/ and /z/ with a clear majority of /z/ items
- No reliable evidence for duration of /s/ due to lack of data

Experimental findings



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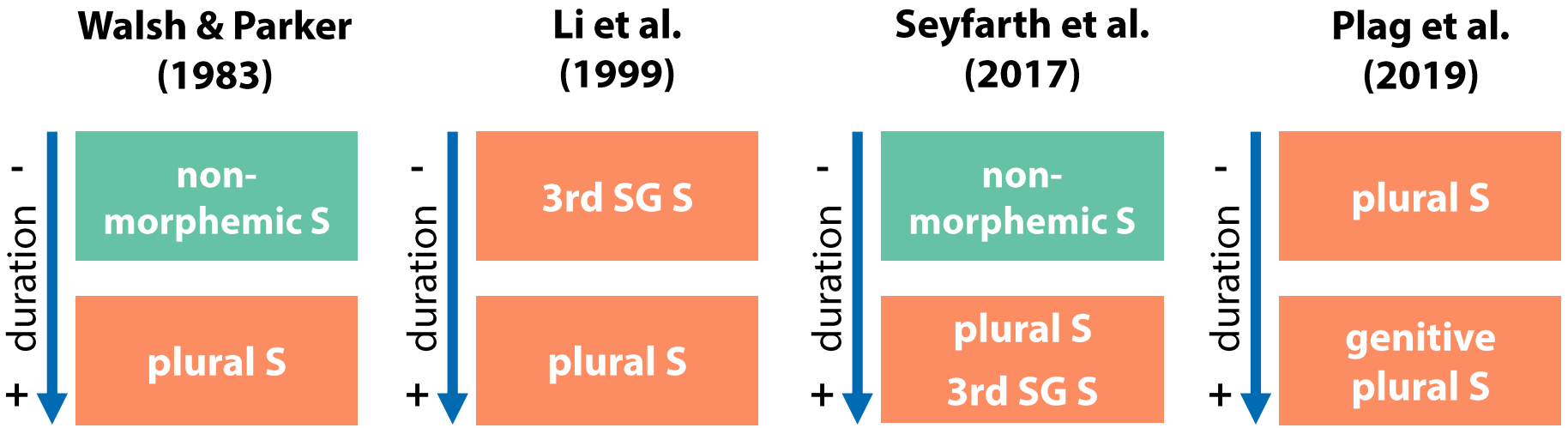

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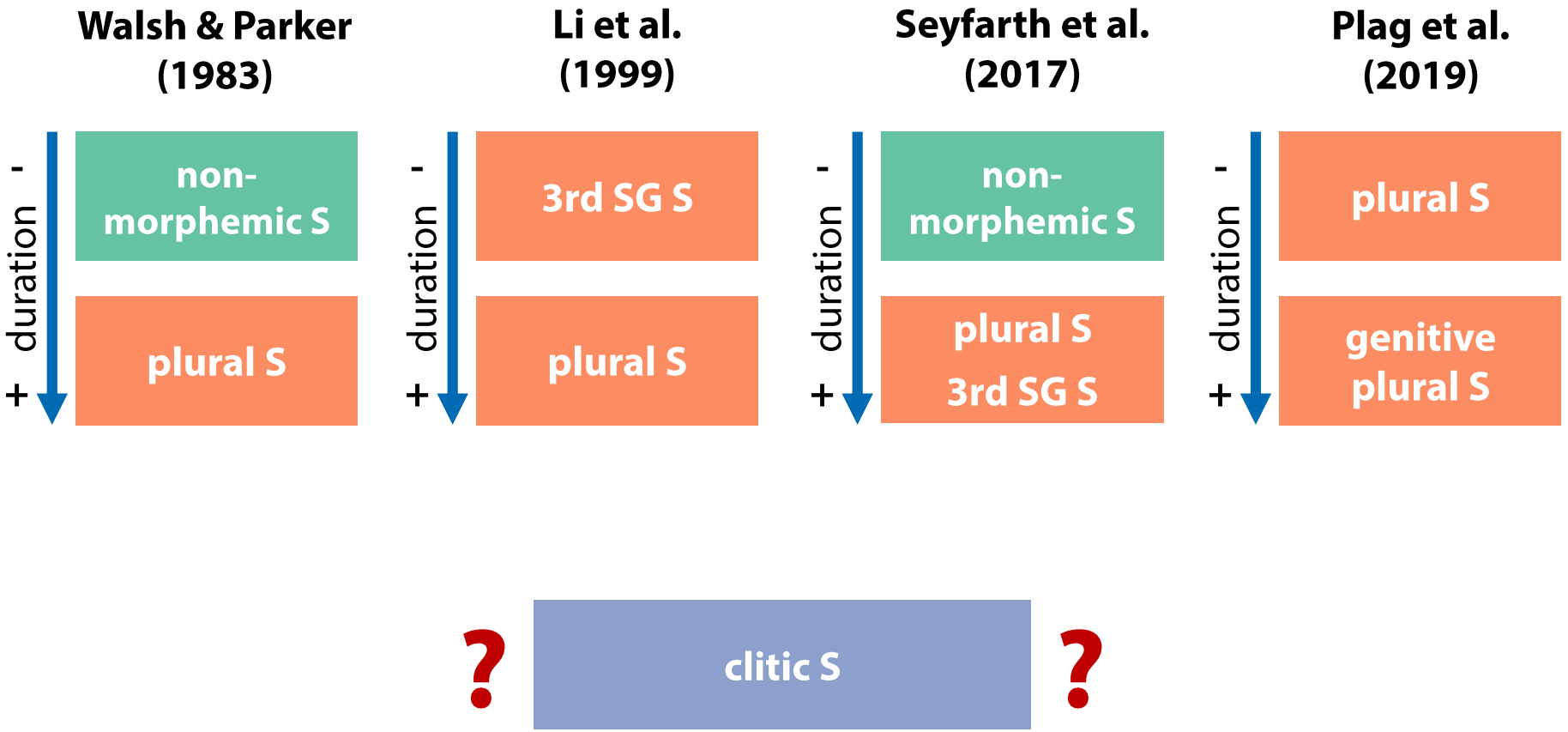

? clitic S ?

Previous findings

Question

- How real are acoustic differences between different types of final /s/ in English?

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non-morphemic S

plural S

clitic S

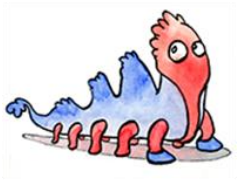
Production study

- Balanced data
- Control of potentially intervening variables
- Data without potentially confounding effects of lexical and contextual properties, e.g. storage effects (Caselli et al. 2016)

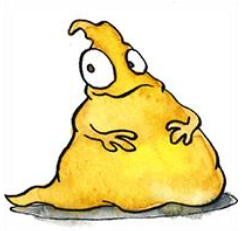
Production study

- Adaption of Berko-Gleason's (1958) classic pseudoword ('wug') paradigm
- Stimuli corresponding to alien lifeforms represented by little images → pseudowords

a glip



a pleets



a clook

a prufs

a bloup

a glait

Pseudowords

CC	V	C(C)
Stop + Approximant	/ɪ iː uː ʌ aʊ eɪ/	/p, t, k/ & /f/ /ps, ts, ks/ & /fs/

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ɪ	iː	uː	ʌ	aʊ	eɪ
glip	pleep	cloop	prup	bloup	glaip
glit	pleet	cloot	prut	blout	glait
glik	pleek	clook	pruk	blouk	glaik
glif	pleef	cloof	pruf	blouf	glaif
glips	pleeps	cloops	prups	bloups	glaips
glits	pleets	cloots	pruts	blouts	glaits
gliks	pleeks	clooks	pruks	blouks	glaiks
glifs	pleefs	cloofs	prufs	bloufs	glaifs

Procedure

- Items were embedded in contexts

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  - Question to elicit the pertinent form of /s/

'What happened last week?'

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'This is another one'

  - Simple situation the respective aliens are in

'Last week, they listened to each other's songs'

  - Question to elicit the pertinent form of /s/

'What happened last week?'

  - Expected answer

*'The **glips** listened to each other's songs'*

Recordings

- 40 participants
  - 26 female, 14 male; average age 28.7 years
  - native speakers of Southern British English

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  - 26 female, 14 male; average age 28.7 years
  - native speakers of Southern British English

- 1146 target items with word-final /s/ were produced

non-morphemic	plural	has	is
315	380	159	292

Statistical modelling

- Linear mixed effects regressions analysis using LME4 in R
- Response variable: /s/ duration
- Fixed effects:
  - Type of /s/
  - Type of following segment
  - Mono-/Multilinguality of speaker
  - Base duration
  - Pause following the /s/
  - Speaking rate
- Random effect:
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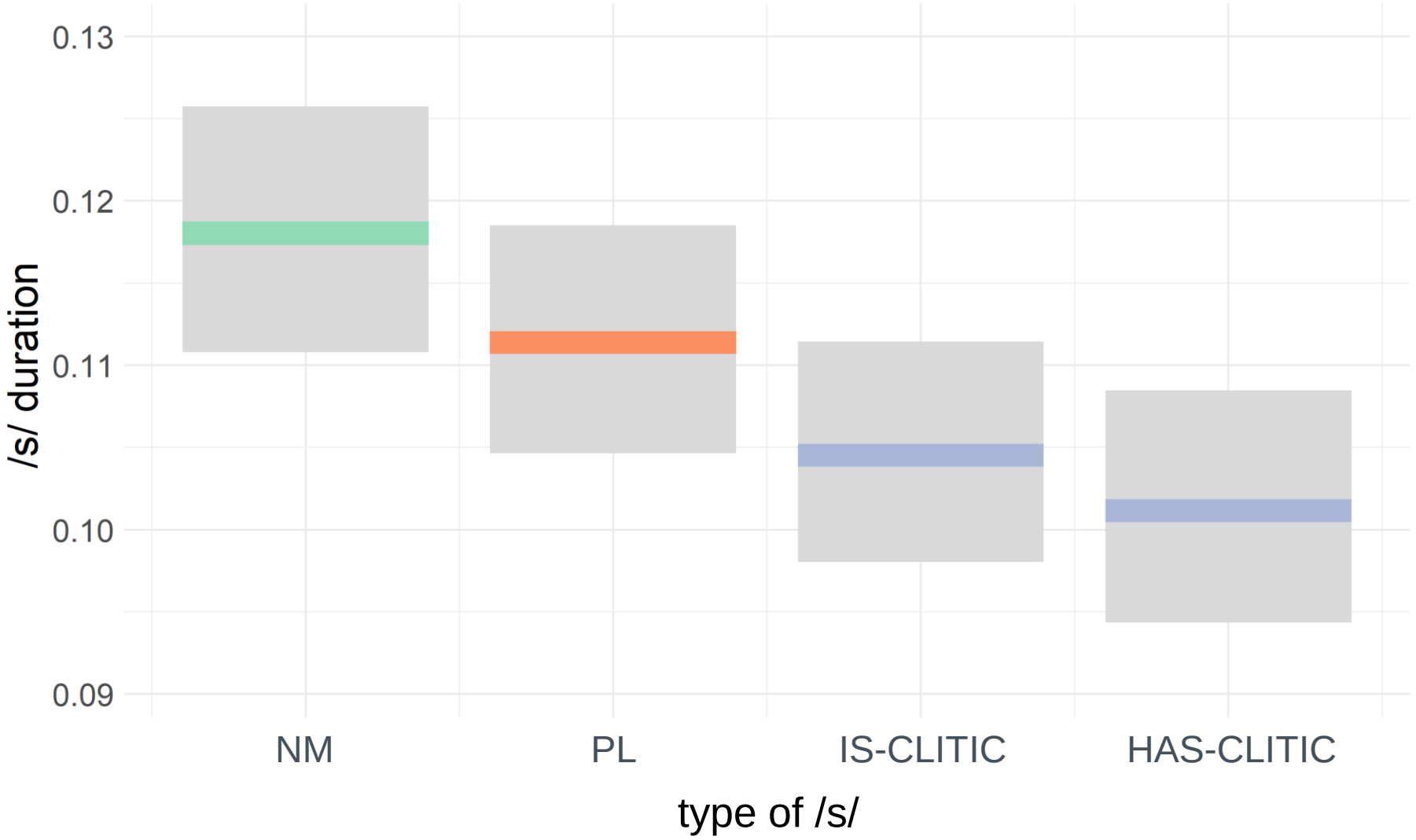
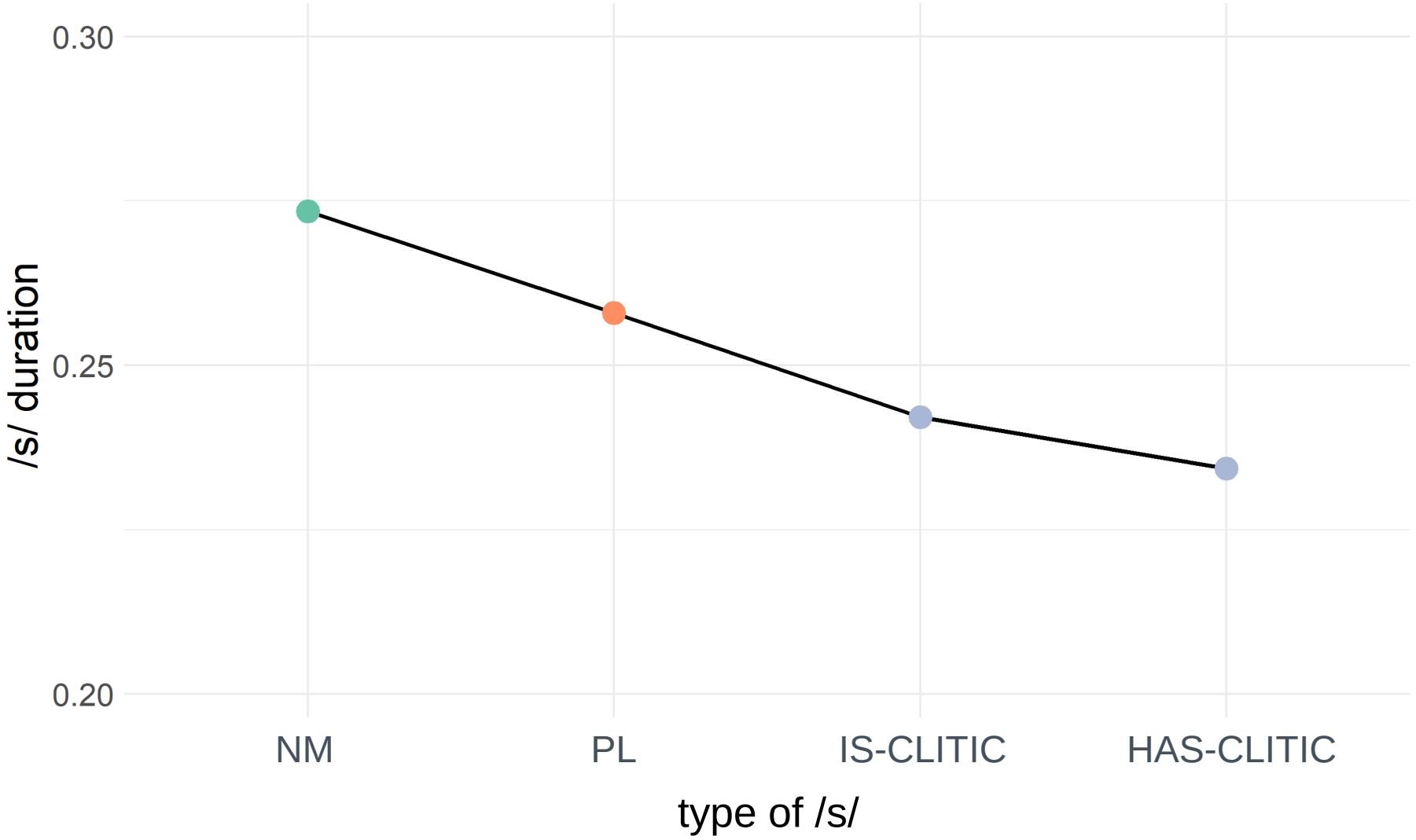
Effect of type of /s/



/s/ durations overall



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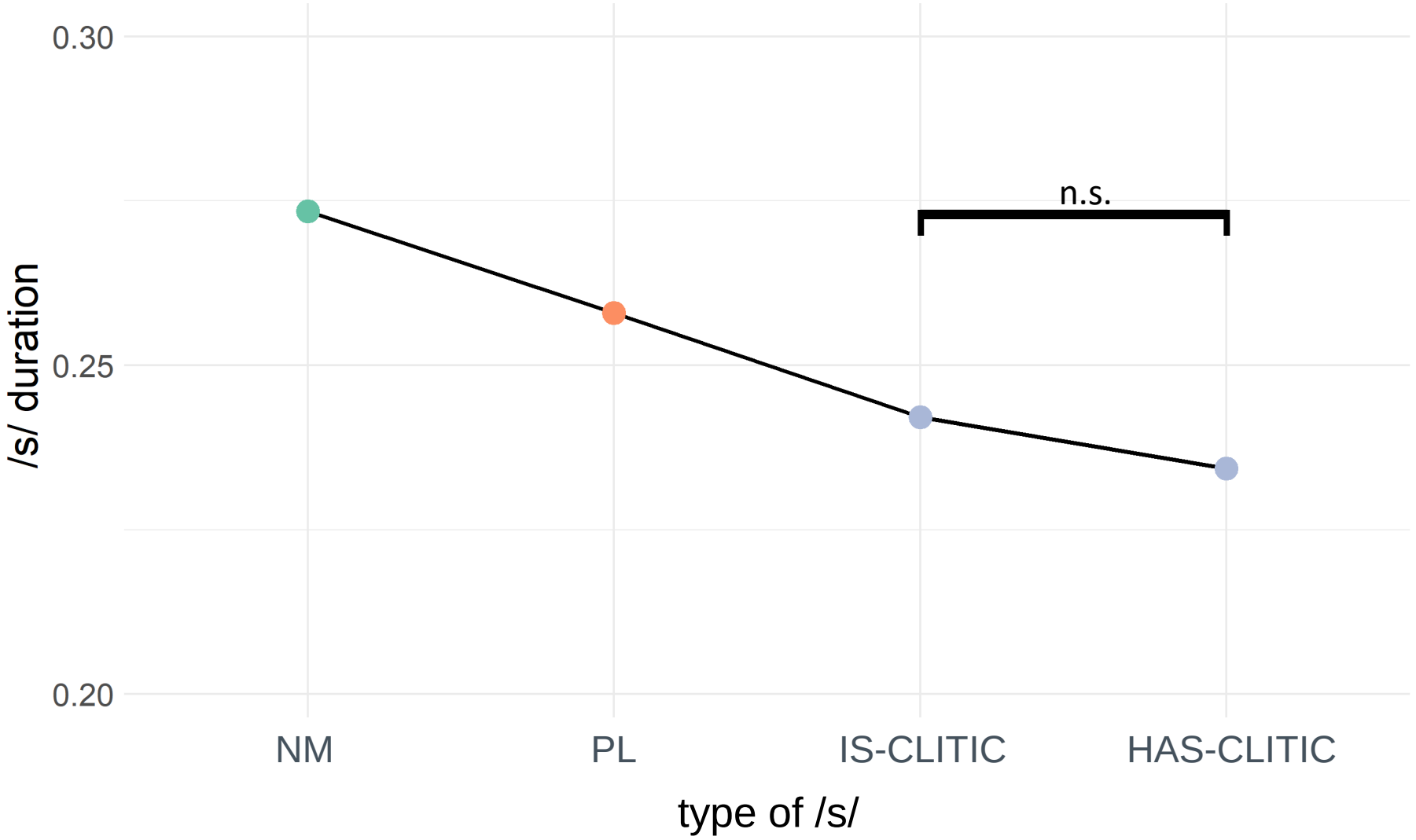
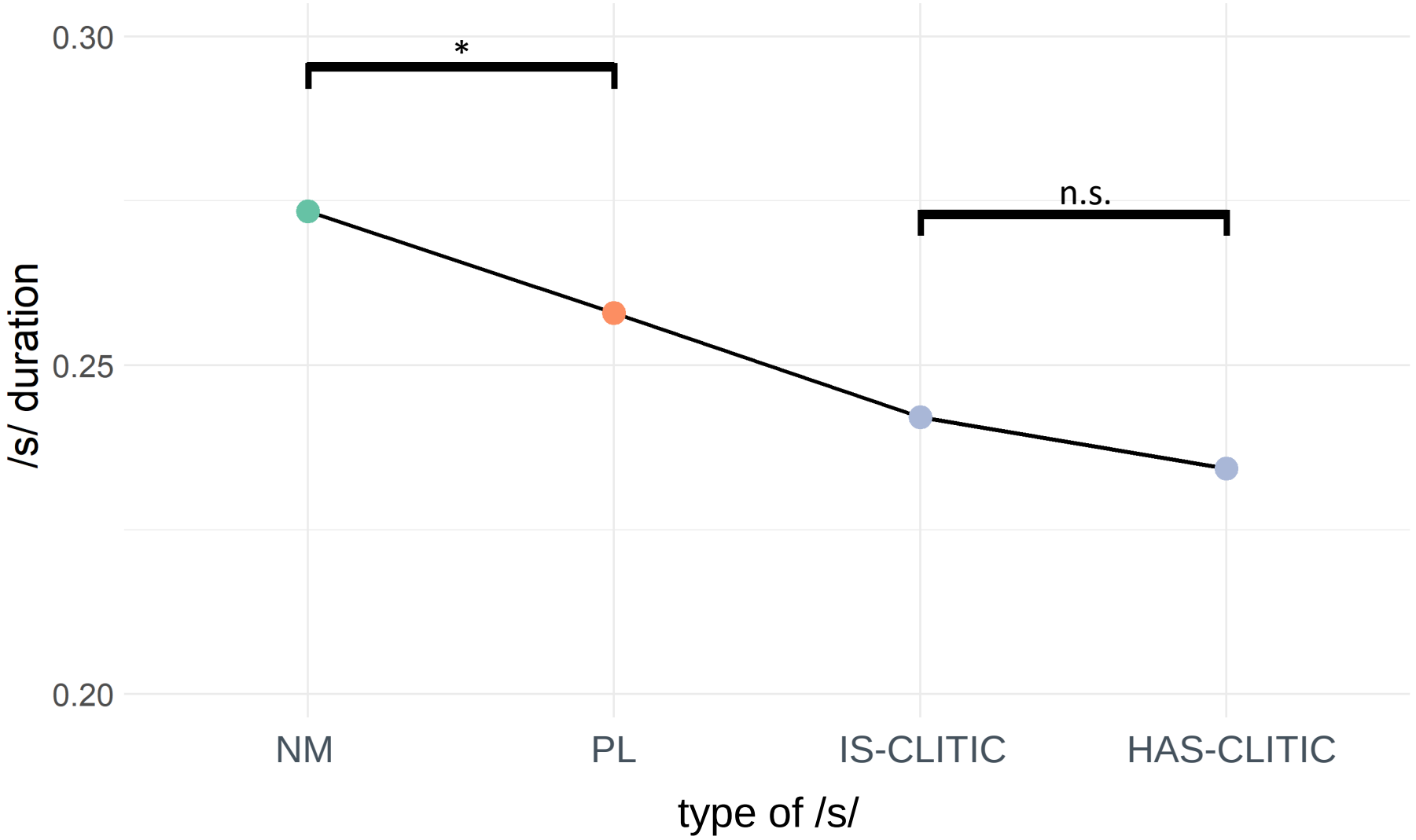


/s/ durations overall



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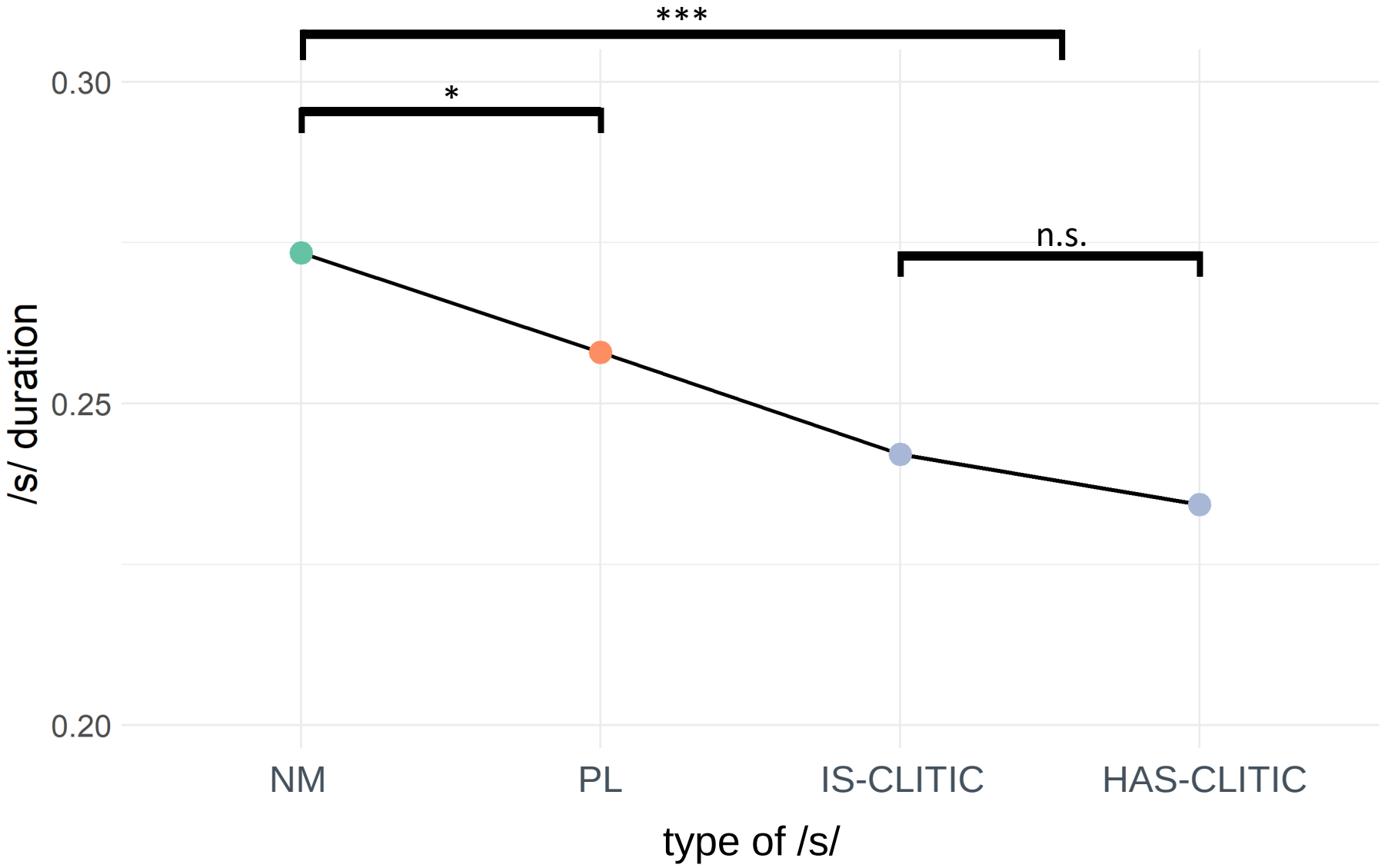
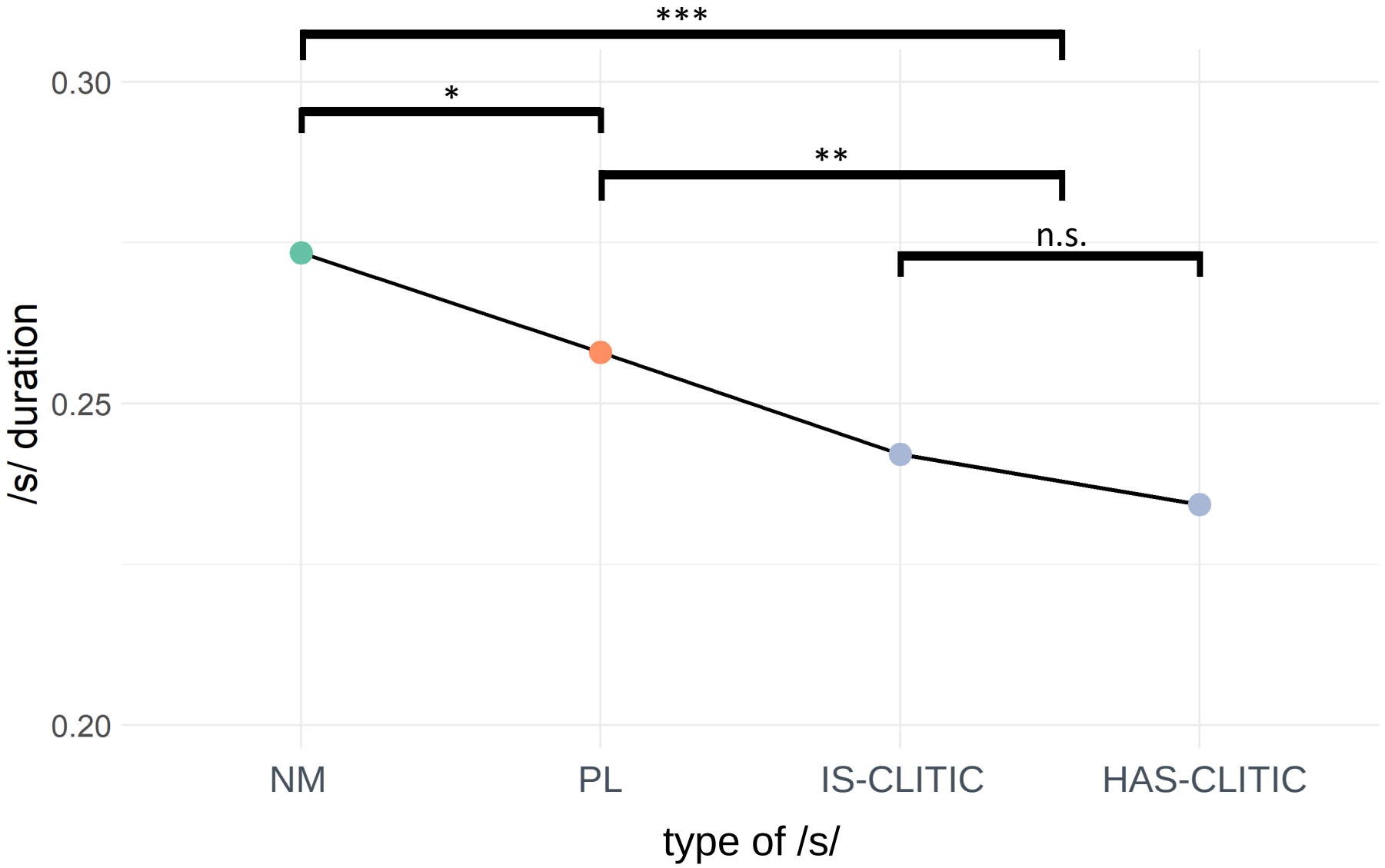


/s/ durations overall



Discussion

New Zealand English nm > pl > clitics

Zimmermann 2016

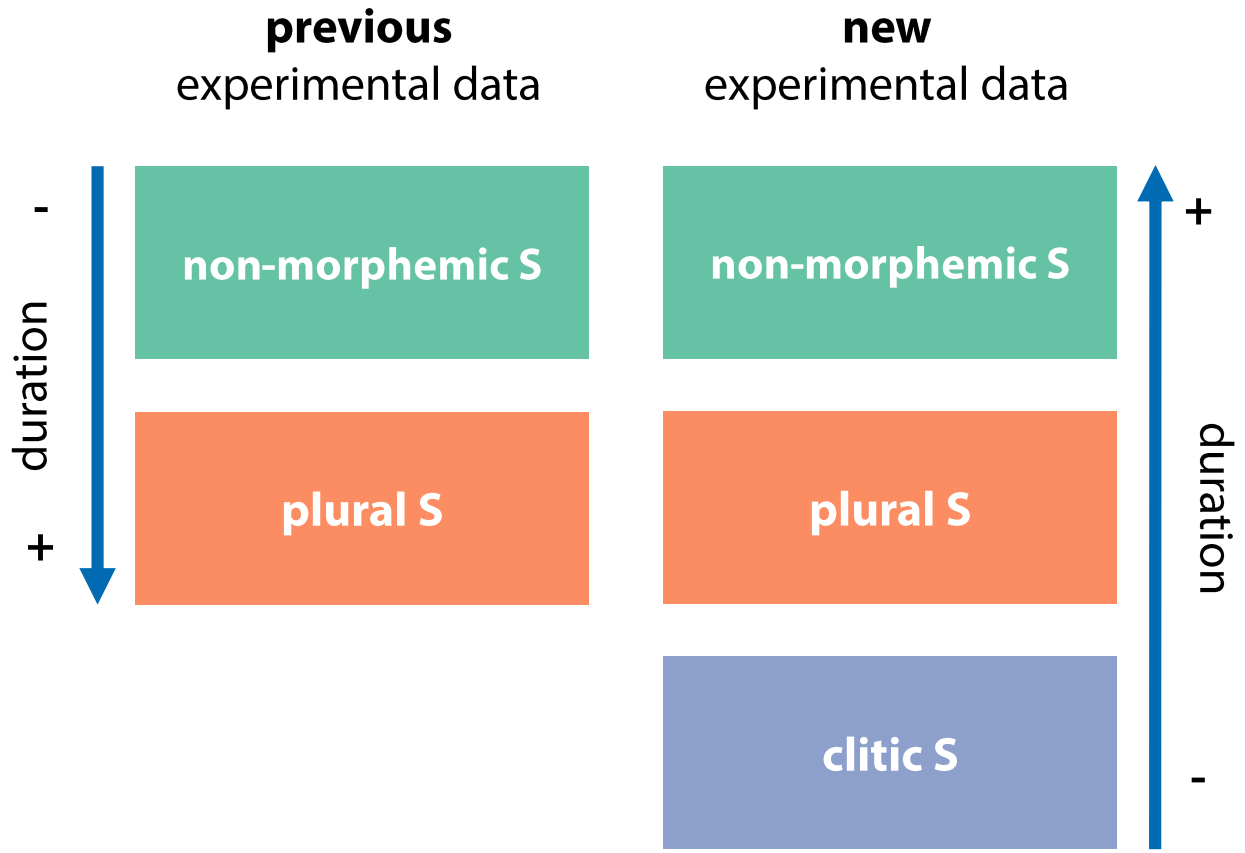
North American English nm > pl > clitics

Plag et al. 2017, Tomaschek et al. 2019

Southern British English nm > pl > clitics

pseudowords

Discussion

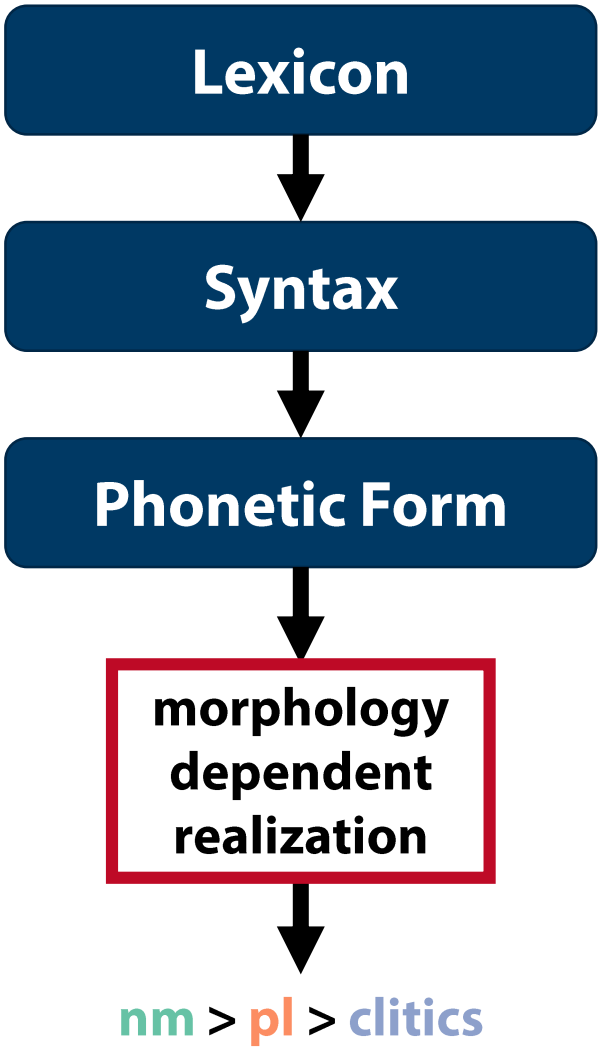

previous
experimental data
new
experimental data
-
duration
+
non-morphemic S
plural S
non-morphemic S
plural S
clitic S
+
duration
-

Conclusion

- First study to use pseudowords to examine durational differences of differing /s/ morphemes
  - This rules out the influence of potential storage effects (e.g. Caselli et al. 2016) which might have been part of previous results
- Hence, durational differences appear to be of a robust morphological nature rather than a simple by-product

Conclusion

- This then calls into question the distinction between lexical and post-lexical phonology, which predicts homophony for all types of /s/




Thank you!

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