

**Homophonous semantic minimal pairs differ in their  
subphonemic acoustic durations:  
The case of generic and specific masculines in German**

Dominic Schmitz

*Heinrich Heine University Düsseldorf, Germany*

# Suphonomic differences

- previous research found durational differences where established theories of speech production do not expect them (e.g. Kiparsky 1982, Levelt et al. 1999)

- homophonous free and bound (pseudo-)stems (e.g. Seyfarth et al. 2017)

*frees* vs. *freeze*

- homophonous prefixes (e.g. Ben Hedia & Plag 2017)

*impossible* vs. *implant* (negative vs. locative)

- types of /s/ (e.g. Plag et al. 2017, Schmitz et al. 2021)

*bus* vs. *cats* vs. *cat's* (non-morphemic vs. suffix vs. clitic)

- similar phonology + different morphology = differences in phonetics
- similar phonology + similar morphology + different semantics = ???

# Specific and generic masculines in German

- in German, masculine role nouns with feminine counterparts can be used generically, i.e. independent of a referent's gender (e.g. Kotthoff & Nübling, 2024)

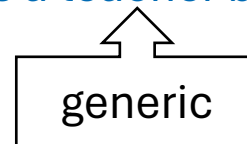
*Tim ist **Lehrer** von Beruf.*

'Tim is a teacher by profession.'

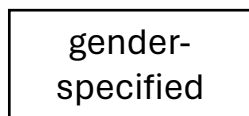


*Anna ist **Lehrer** von Beruf.*

'Anna is a teacher by profession.'

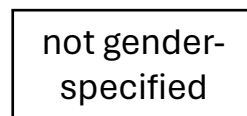
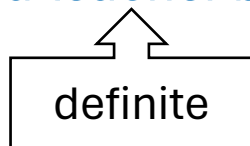


- may be further differentiated in terms of 'gender definiteness'



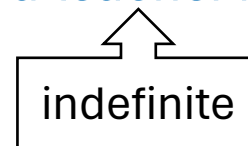
*Anna ist **Lehrer** von Beruf.*

'Anna is a teacher by profession.'



*Mein Kind ist **Lehrer** von Beruf.*

'My child is a teacher by profession.'



# Research questions

## RQ 1

Does the semantic difference between **specific** and **generic** masculines lead to subphonemic durational differences?

## RQ 2

Does the semantic difference between **definite** and **indefinite** generic masculines lead to subphonemic durational differences?

# Experiment: Reading Task

# Materials

## Items

- **targets:** 20 role nouns ending in the -er suffix, i.e. /ɐ/

stereotypically female (Misersky et al., 2014)

<i>Balletttänzer</i>	<i>Eiskunstläufer</i>	<i>Flugbegleiter</i>	<i>Geburtshelfer</i>	<i>Haushälter</i>
<i>Hellseher</i>	<i>Kosmetiker</i>	<i>Pfleger</i>	<i>Schneider</i>	<i>Verkäufer</i>

stereotypically male

<i>Bauarbeiter</i>	<i>Elektriker</i>	<i>Fußballspieler</i>	<i>Kranführer</i>	<i>Maurer</i>
<i>Programmierer</i>	<i>Rennfahrer</i>	<i>Reporter</i>	<i>Schreiner</i>	<i>Wahrsager</i>

- **fillers**
  - feminine forms of target items, e.g. *Balletttänzerin*, *Bauarbeiterin*
  - used with female referents only

# Materials

## Contexts

- phrase or sentence introducing the referent
- phrase or sentence containing the target item

specific

**Matteos Vater** kann richtig gut nähen.

Er ist **Schneider** von Beruf.

indefinite generic

**Mein Kind** kann richtig gut nähen.

Es ist **Schneider** von Beruf.

definite generic

**Marlenes Mutter** kann richtig gut nähen.

Sie ist **Schneider** von Beruf.

# Materials

## Lists

- 4 lists with 40 items, i.e. 30 targets + 10 fillers

- per list:

		type	number
15	5	SM	singular
	5	GMd	
	5	GMi	
15	5	SM	plural
	5	GMd	
	5	GMi	
10	5	SF	singular
	5	SF	plural

- pseudo-randomised: trials with the same item did not directly follow each other



# Participants & procedure

## Participants

- 40 participants
- L1 German
- age: mean 29.1 years, range: 20 – 64 years

## Procedure

- 1 set of context and target phrase/sentence per trial
- instructions: read quietly before reading aloud
- self-paced

# Acoustic analysis

- annotation of base and suffix durations in Praat (Boersma & Weenink, 2024)
- utterances with production errors, stutter, laughter were excluded ( $n = 87$ )
- extraction of durational information via rPraat (Bořil & Skarnitzl, 2016) in R (R Core Team, 2024) ( $n = 1113$ )
- example: *Geburtshelfer*
  - one is a definite generic plural, one is a specific singular



# Statistical analysis

- **initial** linear mixed-effects regression model, fitted with *lme4* (Bates et al., 2015)

durEr ~

```
durBase + # duration of the base
typeOfEr + # specific, definite or indefinite generic
preType + folType + # type of preceding and following segment
number + stereotypicality + # singular/plural, male/female
speechRate + trialNumber +
age + gender +
attGM + # attitude towards generic masculines
(1 | speaker) + (1 | word)
```

- model with **best fit**, found with *lmerTest* (Kuznetsova et al., 2017)

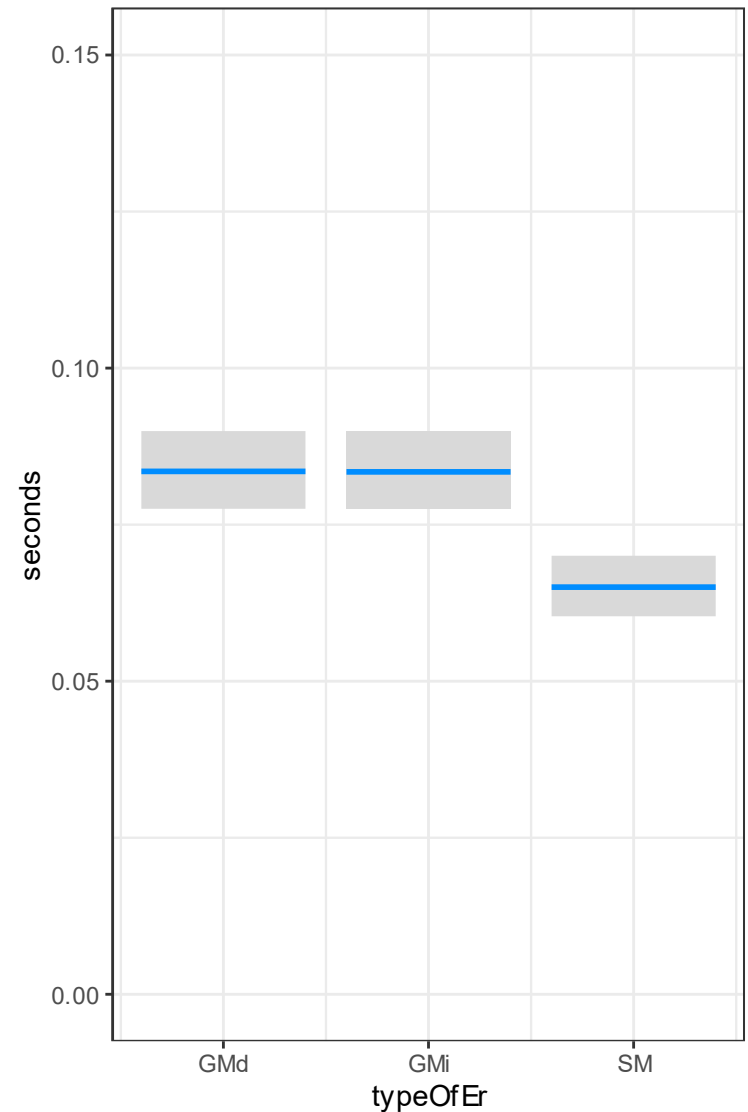
```
durEr ~ typeOfEr + (1 | speaker) + (1 | word)
```

# Results

- the type of masculine shows a clearly significant effect, i.e. GMd = GMi > SM

	<b>GMd</b>	<b>GMi</b>	<b>SM</b>
<b>mean</b>	0.0869	0.0871	0.0682
<b>(sd)</b>	(0.0262)	(0.0258)	(0.0217)

- the effect size is large with  $\eta^2 = 0.2$ , with 95% CI of [0.48, 1.00]



# Discussion

## RQ 1

Does the semantic difference between **specific** and **generic** masculines lead to subphonemic durational differences?

→ YES

## RQ 2

Does the semantic difference between **definite** and **indefinite** generic masculines lead to subphonemic durational differences?

→ NO

# Discussion

- the semantic difference between specific and generic masculines comes with a durational difference of the *-er* suffix
- relevant factors that do not explain this difference in the present data are
  - **stereotypicality**  
whether a role noun is stereotypically male or female and, with that, more or less expected with certain referents does not influence the durational difference
  - **attitude** towards the generic masculine  
one might speculate that proponents of the generic masculine behave differently than opponents, but this seems not to be the case

# Discussion

- so, what might explain this durational difference?

- **markedness**

grammatically masculine role nouns for non-male gendered referents are more marked than for male referents, cf. cognitive markedness (cf. Haspelmath, 2006)

- **semantic load**

generic forms have a higher semantic load, i.e. more (potential) semantic content, than specific forms (cf. Schmitz, 2024)

- **comprehension effort**

mismatch of masculine and non-male referent may lead to increased efforts regarding comprehension

**THANK YOU!**

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