



# In German, all professors are male

Dominic Schmitz

# The generic masculine in German

*Professor*  
'professor'



*Professorin*  
'professor'

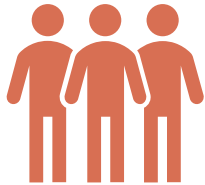


**SINGULAR**

---

**PLURAL**

*Professoren*  
'professors'



*Professorinnen*  
'professors'



# The generic masculine in German

Professor  
'professor'



Professor  
'professor'



Professorin  
'professor'

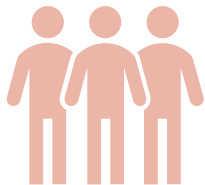


masculine generics abstract away notions of gender

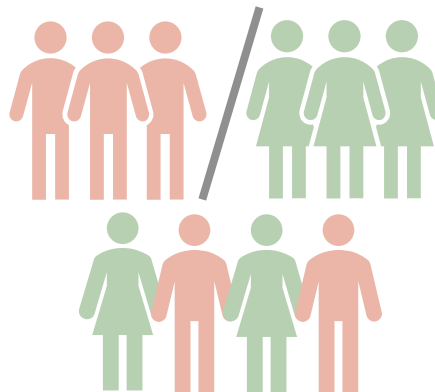
—

they are gender-neutral

Professoren  
'professors'



Professoren  
'professors'



Professorinnen  
'professors'

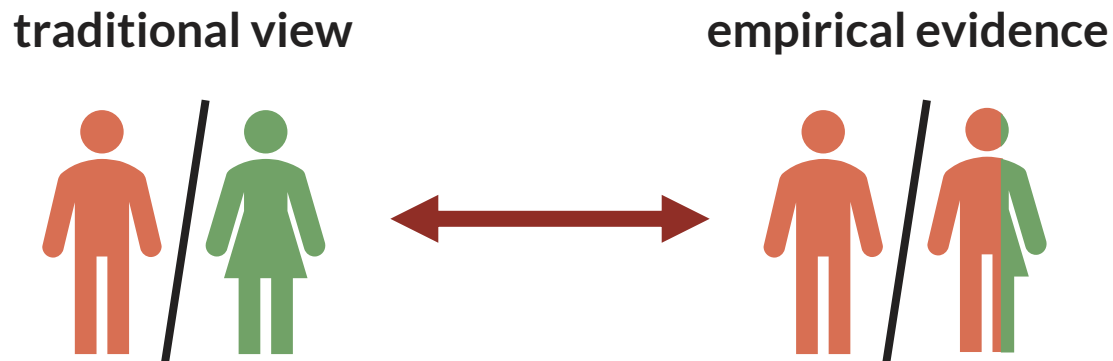


cf. Doleschal (2002)

# Previous research: Findings

- previous behavioural research has cast doubt on the gender-neutrality of masculine generics
- most (if not all) studies find a clear bias towards the explicit masculine

**reading** (e.g. Demarmels, 2017; Garnham et al., 2012; Gygax et al., 2008; Irmen & Kurovskaja, 2010; Irmen & Linner, 2005; Koch, 2021; Misersky et al., 2019; Stahlberg & Sczesny, 2001; Trutkowski, 2018)



- generic intention and actual comprehension differ

# Previous research: Issues

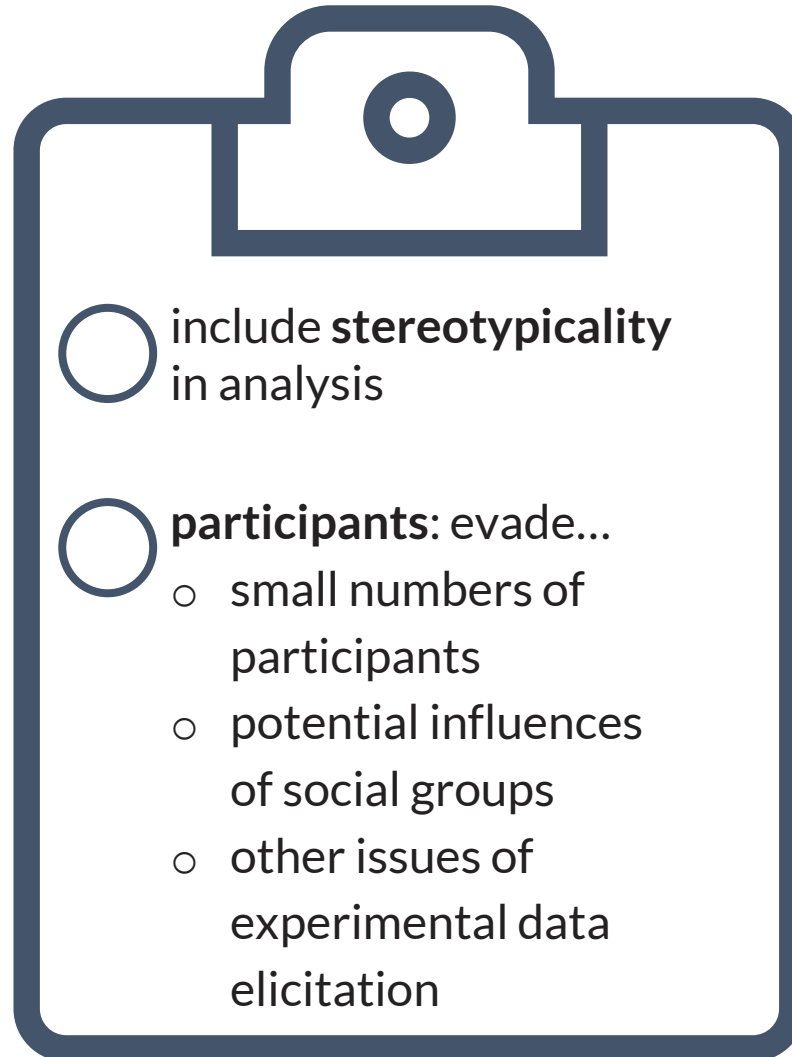
## **Issue 1: Stereotypicality**

Almost no previous research included potential effects of stereotypicality in their analyses on masculine generics.

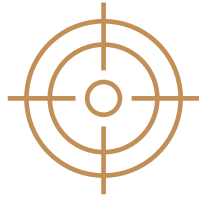
## **Issue 2: Participants**

Most studies' results rely on small numbers of participants, most of which were students.

# To-do list



# Method



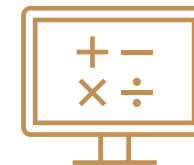
target words with available  
stereotypicality ratings <sup>1</sup>



text corpus containing  
target + further words <sup>2</sup>



annotation of bases, inflectional  
functions, genericity <sup>3</sup>



computation of semantic vectors  
via Naive Discriminative Learning <sup>4</sup>

<sup>1</sup> Gabriel et al. (2008); <sup>2</sup> Goldhahn et al. (2012); <sup>3</sup> Schmid (1999); <sup>4</sup> Baayen & Ramscar (2015)

# Method

Professor  
'professor'



$$\mathbf{=} \overrightarrow{\text{Professor}} + \overrightarrow{\text{SINGULAR}} + \overrightarrow{\text{MASCULINE}} + \overrightarrow{\text{EXPLICIT}}$$

Professor  
'professor'



$$\mathbf{=} \overrightarrow{\text{Professor}} + \overrightarrow{\text{SINGULAR}} + \overrightarrow{\text{MASCULINE}} + \overrightarrow{\text{GENERIC}}$$

Professorin  
'professor'



$$\mathbf{=} \overrightarrow{\text{Professor}} + \overrightarrow{\text{SINGULAR}} + \overrightarrow{\text{FEMININE}} + \overrightarrow{\text{EXPLICIT}}$$

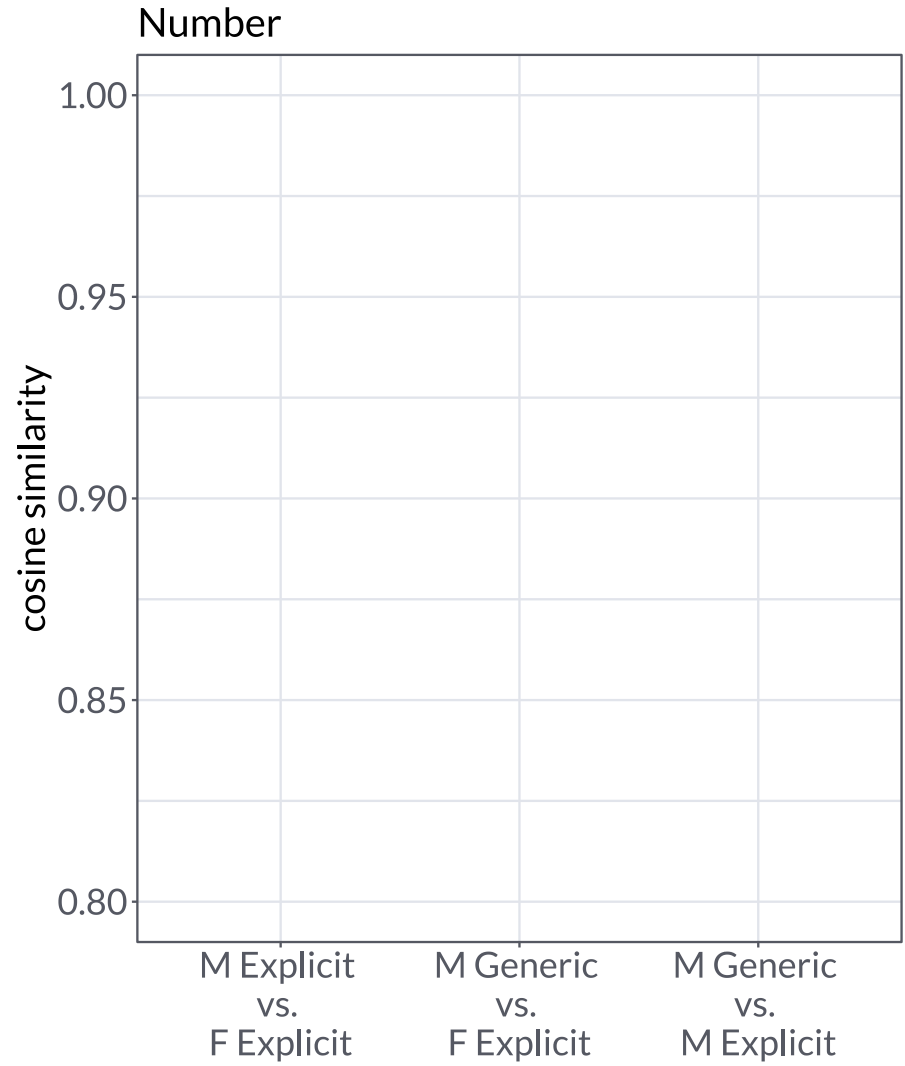
cf. Baayen et al. (2019)



# Analysis

- the resulting vectors of masculine generics & masculine and feminine explicit were then compared via cosine similarity
- cosine similarity
  - measure to describe the similarity of vectors
  - takes values in the interval of  $[0,1]$
  - higher values indicate a higher similarity
  - lower values indicate a lower similarity
- in the present case:  
similarity of vectors reflects similarity of two words' semantics

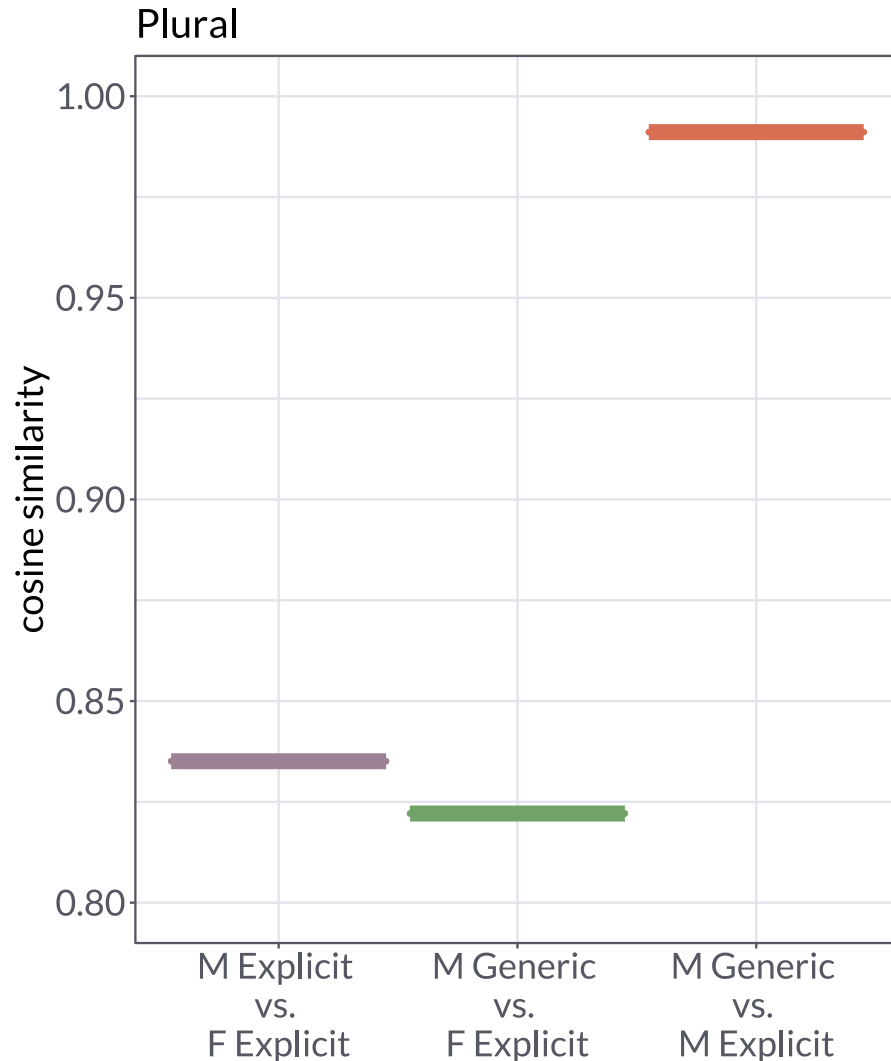
# Analysis: Bias



# Analysis: Bias

- **masculine generics** and the **explicit masculine** are semantically most similar
- the **explicit feminine** is more similar to the **explicit masculine** than to **masculine generics**
- all comparisons are highly significant

# Analysis: Bias



- **masculine generics** and the **explicit masculine** are semantically most similar
- the **explicit feminine** is more similar to the **explicit masculine** than to **masculine generics**
- all comparisons are highly significant
- differences are more pronounced

# Analysis: Stereotypes

- check whether stereotypicality significantly influences the bias
- beta regression models

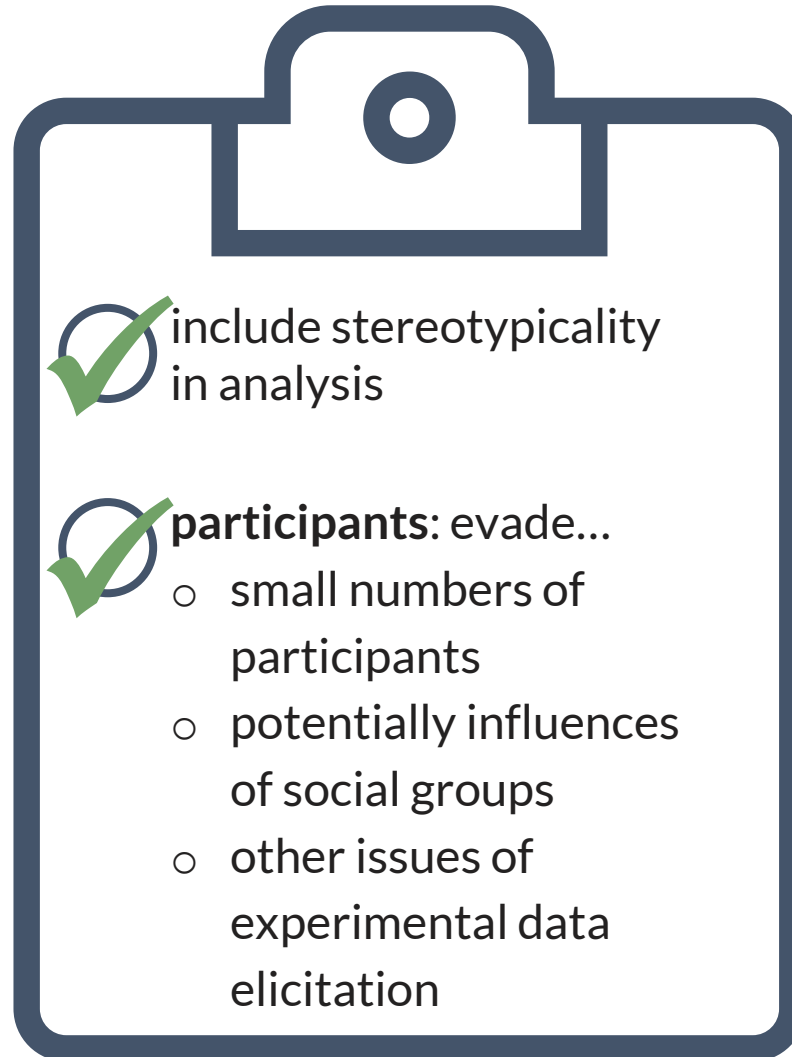
*cosine similarity values ~ stereotypicality ratings*

- if stereotypicality ratings **show a significant effect**, the bias is **modulated by stereotypicality**
- if stereotypicality ratings **show no significant effect**, the bias is **not modulated by stereotypicality**

# Analysis: Stereotypes

	cosine similarities of...	effect of stereotypicality?
singular	masculine generic & masculine explicit	
	masculine generic & feminine explicit	
	masculine explicit & feminine explicit	
plural	masculine generic & masculine explicit	
	masculine generic & feminine explicit	
	masculine explicit & feminine explicit	

# To-do list



# Discussion

- masculine generics and the explicit masculine are semantically most similar
- the explicit feminine is more similar to the explicit masculine than to masculine generics
- masculine generics show a clear bias towards the masculine reading, producing a ‘male bias’ in the language system itself
- the present findings confirm the bias found in previous behavioural studies (e.g. Demarmels, 2017; Garnham et al., 2012; Gygax et al., 2008; Irmen & Kurovskaja, 2010; Irmen & Linner, 2005; Koch, 2021; Misersky et al., 2019; Stahlberg & Sczesny, 2001; Trutkowski, 2018)
- future research – and indeed already on-going research<sup>1</sup> – will shed light on the underlying semantic features of the masculine generic and the explicit forms, providing further insight into the nature of the ‘male bias’

<sup>1</sup>cf. Schmitz et al. (2022)



# Thank you!



# References

- Baayen, R. H., Chuang, Y.-Y., Shafaei-Bajestan, E., & Blevins, J. P. (2019). The discriminative Lexicon: A unified computational model for the lexicon and lexical processing in comprehension and production grounded not in (de)composition but in linear discriminative learning. *Complexity*, 2019, 1–39. <https://doi.org/10.1155/2019/4895891>
- Baayen, R. H., & Ramscar, M. (2015). Abstraction, storage and naive discriminative learning. *Handbook of Cognitive Linguistics*, 39, 100–120. <https://doi.org/10.1515/9783110292022-006>
- Demarmels, S. (2017). „Gesucht: Assistentin oder Sekretär der Geschäftsleitung“ – Gendersensitive Formulierungen in Stellenanzeigen aus der Perspektive der Textsorte. In *Stellenanzeigen als Instrument des Employer Branding in Europa*. [https://doi.org/10.1007/978-3-658-12719-0\\_11](https://doi.org/10.1007/978-3-658-12719-0_11)
- Doleschal, U. (2002). Das generische Maskulinum im Deutschen. Ein historischer Spaziergang durch die deutsche Grammatikschreibung von der Renaissance bis zur Postmoderne. *Linguistik Online*, 11(2). <https://doi.org/10.13092/lo.11.915>
- Gabriel, U., Gygax, P., Sarrasin, O., Garnham, A., & Oakhill, J. (2008). Au pairs are rarely male: Norms on the gender perception of role names across English, French, and German. *Behavior Research Methods*, 40(1), 206–212. <https://doi.org/10.3758/BRM.40.1.206>
- Garnham, A., Gabriel, U., Sarrasin, O., Gygax, P., & Oakhill, J. (2012). Gender Representation in Different Languages and Grammatical Marking on Pronouns: When Beauticians, Musicians, and Mechanics Remain Men. *Discourse Processes*, 49(6), 481–500. <https://doi.org/10.1080/0163853X.2012.688184>
- Goldhahn, D., Eckart, T., & Quasthoff, U. (2012). Building Large Monolingual Dictionaries at the Leipzig Corpora Collection: From 100 to 200 Languages. *Proceedings of the 8th International Language Resources and Evaluation (LREC'12)*.
- Gygax, P., Gabriel, U., Sarrasin, O., Oakhill, J., & Garnham, A. (2008). Generically intended, but specifically interpreted: When beauticians, musicians, and mechanics are all men. *Language and Cognitive Processes*, 23(3), 464–485. <https://doi.org/10.1080/01690960701702035>
- Irmen, L., & Kurovskaja, J. (2010). On the semantic content of grammatical gender and its impact on the representation of human referents. *Experimental Psychology*, 57(5), 367–375. <https://doi.org/10.1027/1618-3169/a000044>
- Irmen, L., & Linner, U. (2005). Die Repräsentation generisch maskuliner Personenbezeichnungen. *Zeitschrift Für Psychologie / Journal of Psychology*, 213(3), 167–175. <https://doi.org/10.1026/0044-3409.213.3.167>
- Koch, M. (2021). Kognitive Effekte des generischen Maskulinums und genderneutraler Alternativen im Deutschen – eine empirische Untersuchung. Technische Universität Braunschweig.
- Misersky, J., Majid, A., & Snijders, T. M. (2019). Grammatical Gender in German Influences How Role-Nouns Are Interpreted: Evidence from ERPs. *Discourse Processes*, 56(8), 643–654. <https://doi.org/10.1080/0163853X.2018.1541382>
- Schmid, H. (1999). Improvements in part-of-speech tagging with an application to German. In S. Armstrong, K. Church, P. Isabelle, S. Manzi, E. Tzoukermann, & D. Yarowsky (Eds.), *Natural language processing using very large corpora* (pp. 13–25). Springer. [https://doi.org/10.1007/978-94-017-2390-9\\_2](https://doi.org/10.1007/978-94-017-2390-9_2)
- Schmitz, D., Schneider, V., & Esser, J. (2022). Evidence for a non-generic masculine generic in German. *EDLL 2022: The Second International Conference on Error-Driven Learning in Language*, University of Tübingen, Germany. 1-3 August. [https://www.researchgate.net/publication/360889297\\_Evidence\\_for\\_a\\_non-generic\\_masculine\\_generic\\_in\\_German](https://www.researchgate.net/publication/360889297_Evidence_for_a_non-generic_masculine_generic_in_German)
- Stahlberg, D., & Sczesny, S. (2001). Effekte des generischen Maskulinums und alternativer Sprachformen auf den gedanklichen Einbezug von Frauen. *Psychologische Rundschau*, 52(3), 131–140. <https://doi.org/10.1026//0033-3042.52.3.131>
- Trutkowski, E. (2018). Wie generisch ist das generische Maskulinum? Über Genus und Sexus im Deutschen. *ZAS Papers in Linguistics*, 59, 83–96. <https://doi.org/10.21248/zaspil.59.2018.437>