





# An exploration of the underlying semantic features of masculine generics in German

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in German, role nouns such as Anwalt 'lawyer' can be used as generic forms

word	referent gender(s)	grammatical gender	number
Anwalt	male	masculine	
Anwalt	male or female	masculine	singular
Anwältin	female	feminine	
Anwälte	male	masculine	
Anwälte	male and/or female	masculine	plural
Anwältinnen	female	feminine	



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- generic forms are not different from explicit masculine forms in their orthographic or phonological form
- they are used to describe individuals of all genders in singular and plural contexts
- generic forms are traditionally assumed to "abstract away" notions of gender; to be "gender-neutral" (Doleschal, 2002)





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- even though a masculine generic may be used by a speaker with the intention of considering all genders...
- ...this intention is not fully translated by the receiver's comprehension system
- instead, a reading favouring male individuals is received





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→ use linear discriminative learning (e.g. Baayen et al., 2019) to explore semantics



#### **Research questions**



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• we simulate an individual's mental lexicon by implementing a linear discriminative learning network (e.g. Baayen et al., 2019)



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- triphones of target word paradigm members and content/function words




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 $\rightarrow$  semantic vectors for bases, function words, and inflection

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- we used each sentence to predict each individual word within the sentence by the other words in that sentence





	all	lawyer	PLURAL	be	nice	villain	evil
lawyer							
villain							





#### Example: All lawyers are nice.

	all	lawyer	PLURAL	be	nice	villain	evil
lawyer	+						
villain							

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villain	0.0003	0.001	0.0005	0.0004	0.0091	1.0	0.96



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target form	base		number		gram. gender		genericity
Anwalt	Anwalt	+	singular	+	masculine	+	generic
Anwalt	Anwalt	+	singular	+	masculine	+	explicit
Anwältin	Anwalt	+	singular	+	feminine	+	explicit



Forms



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target form	#an	anv	nva	val	alt	lt#	nvE	vEl	Elt	ltI	tIn	In#
Anwalt	1	1	1	1	1	1	0	0	0	0	0	0
Anwalt	1	1	1	1	1	1	0	0	0	0	0	0
Anwältin	1	1	0	0	0	0	1	1	1	1	1	1



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Learning comprehension



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 comprehension is learnt by linearly mapping the matrix of forms onto the matrix of semantic vectors



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 using the original semantic vectors and the semantic vectors estimated by the comprehension learning, we can extract semantic measures





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Variables



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• STEREOTYPICALITY JUDGEMENTS taken from Gabriel et al. (2008)



**Multinomial logistic regression** 



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• dependent variable: GENERICITY



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singular masculine generic; singular masculine explicit; singular feminine explicit plural masculine generic; plural masculine explicit; plural feminine explicit

• explanatory variables



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• dependent variable: GENERICITY

- explanatory variables
  - ACTIVATION DIVERSITY
  - a PC consisting of COMPREHENSION QUALITY & NEIGHBOURHOOD DENSITY



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## **Activation diversity**





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## **Activation diversity**





## **Activation diversity**





## Comprehension quality & neighbourhood density



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## Stereotypicality judgements



#### no significant differences

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- feminine explicits are **significantly different** as compared to masculine forms in regard to all semantic measures



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    - $\rightarrow$  they live in similarly dense neighbourhoods
- feminine explicits are **significantly different** as compared to masculine forms in regard to all semantic measures
- stereotypicality judgements do not show a significant effect





## **Research Question 1**

# Is the bias of masculine generics affected by stereotypicality? $\rightarrow \mathbf{no}$





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# Is the bias of masculine generics affected by stereotypicality? $\rightarrow \mathbf{no}$

### **Research Question 2**

Does linear discriminative learning offer an insight into the underlying nature of the masculine generic's bias?

 $\rightarrow$  yes





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  - Irmen & Linner (2005)
    - semantic similarity of masculine generics and explicits due to their resonance with the lexicon and each other



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semantic similarity of masculine generics and explicits due to their resonance with the lexicon and each other

 Gygax et al. (2012) and Gygax et al. (2021) masculine generics activate the underlying representations of masculine explicits, leading to a semantic activation of masculine explicits, thus a male bias




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- future research will show
  - whether the LDL measures computed for our data are predictive of behavioural measures
  - how (new) more neutral forms, e.g. Anwält\*innen, AnwältInnen, perform (cf. Portuguese alun@s 'students', todxs 'everyone', amigues 'friends')



# Thank you!



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 masculine generics and the explicit masculine are semantically most similar





- masculine generics and the explicit masculine are semantically most similar
- the explicit feminine is more similar to the explicit masculine than to masculine generics





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- all comparisons are highly significant









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- 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