

## Gender star semantics and comprehension from a linear discriminative learning perspective

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Gender-inclusive language has gained increased attention within the German-speaking world in the last few years. At the centre of such discussions one commonly finds generic masculines, as linguistic research has repeatedly shown that generic masculines are, counter to grammarian accounts, not comprehended as gender-neutral but instead biased towards male referents (Gygax et al., 2008). One rather new approach to gender-inclusive language meant to represent all genders is the ‘gender star’ form. Here, the novel suffix *-\*in* (Völkening, 2022) is attached to the masculine form, e.g. *Lehrer\*in* ‘teacher (of any gender)’.

Due to the rather recent emergence of the gender star form, to date there is little linguistic research available on the actual semantic content and comprehension of such forms. Studies thus far suggest that gender star forms show increased levels of female representation (Schunack & Binanzer, 2022a). However, this increase of female representation might come with a female bias (Körner et al., 2022) and, with that, little representation of non-binary individuals (Kurz & De Mulder, 2023; Zacharski & Ferstl, 2023). The aim of the present study is to provide novel insight into the semantics and comprehension of gender star forms, which will inform the interpretation of previous and future findings.

Following recent research on the male bias of generic masculines (Schmitz et al., 2023), the present study made use of the framework of discriminative learning. As a usage-based, error-driven approach, discriminative learning argues that the relation between form and meaning is fundamentally discriminative (Rescorla & Wagner, 1972). Hence, a word’s semantics and its comprehension emerge from the word’s resonance within the entire mental lexicon.

To gain insight into the semantics and comprehension of gender star forms, 100 target words were selected. Target words were generic masculines and their specific masculine, specific feminine, and gender star counterparts. A 1.6 million sentence corpus of contemporary German was created to train semantic vectors using *fastText* (Bojanowski et al., 2016). The corpus consisted of a corpus by Schmitz et al. (2023) with readily annotated traditional forms, excerpts of the online version of the newspaper *Tagesspiegel* with gender star attestations, and further linguistic material from the Leipzig Corpora Collection (Goldhahn et al., 2012). The semantic vectors were then used in an implementation of linear discriminative learning (Baayen et al., 2019), in which the comprehension process of the mental lexicon was simulated. Comprehended semantic vectors and different semantic measures were extracted from this implementation for further analyses.

Using cosine similarity as a measure, it was found that the comprehended semantics of gender star forms are significantly closer to those of specific feminines than to those of specific masculines; the opposite was found for generic masculines, confirming previous findings of a masculine bias. The extracted measures showed significant effects in predicting reaction times taken from Körner et al. (2022), proportions of female and male exemplars from Kurz & De Mulder (2023), and ratios of men vs. women in social and occupational groups from Schunack & Binanzer (2022b), revealing the nature of the effects found in the original studies.

The present results show that the semantic content and comprehension of gender star forms is significantly different to that of generic masculines. Gender star forms are semantically more similar to female forms, indicating a female bias, and are comprehended differently than generic masculines. These new insights allow a re-interpretation of previous behavioural findings and will allow a more insightful interpretation of future data.

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