German Morphosyntactic Gender and Lexical Access

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Previous eye-tracking research has shown that, during spoken-word recognition, gender marking on articles restricts the competitor set to gender-matching nouns: Upon hearing *"Cliquez sur le*$_{[masc]}$ *bouton"* ('Click on the button'), French listeners did not take the picture of a gender-incongruent 'bottle' (*bouteille*$_{[fem]}$) into consideration, despite onset similarity between *bouton* and *bouteille* (Dahan et al., 2000). However, the study's results also seemed to show that, by itself, a gender-marked article preceding the target does not lead to activation of all same-gender nouns: Hearing *"la*$_{[fem]}$ *louche"* ('the ladle') did not increase fixations to a non-onset-overlapping 'sock', *chaussette*$_{[fem]}$. Yet, the possibility remains that time between article and noun was too short to observe priming of gender-matching pictures, because the target onset immediately excluded them from competition.

The present study increased the delay between article and noun by inserting an adjective. In a German eye-tracking study, we asked 46 participants to mouseclick on pictures in displays containing a target *(Anker*$_{[masc]}$, 'anchor'), a gender-matching picture *(Lastwagen*$_{[masc]}$, 'truck'), and two gender-mismatching pictures *(Melone*$_{[fem]}$, 'watermelon' and *Kiste*$_{[fem]}$, 'chest'). In the instructions, the target was preceded by its gender-marked definite article and an adjective unmarked for gender *("Wo befindet sich der*$_{[masc]}$ *schwere*$_{[\varnothing]}$ *Anker"*, 'Where is the heavy anchor'). Pre-tests established the adjective fit all four pictures equally well, and the pictures' function (gender-matching or gender-mismatching) was alternated in different lists. The delay between display appearance and instruction onset was the same as in Dahan et al. (2000), namely 500 ms, and pictures were not shown in advance to participants.

Immediately after article offset, participants began fixating targets and gender-matching pictures more often than gender-mismatching pictures. The advantage of gender-matching pictures over gender-mismatching pictures was highly significant during the adjective. Fixations to gender-matching pictures only decreased after target noun onset. Because of the relatively low frequency of article-adjective-noun sequences, these results suggest the gender effect draws on morphosyntactic gender categories, instead of being based on co-occurrence frequencies. Grammatical gender carried by the article seems to facilitate recognition of all gender-matching nouns and/or inhibit all gender-mismatching nouns.

The earliness of the effect makes it unlikely that listeners consciously used gender information to restrict their attention to pictures whose names matched the article's gender. Furthermore, fixation patterns during the first and second halves of the experiment were comparable, suggesting no strategy was developed. Finally, debriefing confirmed that participants were unaware of any article or gender manipulation. For all these reasons, we assume the results do not reflect experimentally induced behavior, but rather reflect normal language processing mechanisms in the context of object-identification.

Reference

Dahan, D., Swingley, D., Tanenhaus, M., & Magnuson, J. (2000). Linguistic gender and spoken-word recognition in French. *Journal of Memory and Language, 42,* 465–480.