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Distributed semantic representations of inanimate nouns are gender biased in gendered languages

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Abstract

Does grammatical gender influence the meaning of inanimate nouns? We examined word embeddings from distributional semantics models, representing meanings in a vector space. In 26 gendered languages and non-gendered English, we measured the meaning similarity of inanimate nouns to gendered anchor nouns like 'male' and 'female.' In gendered languages, noun meanings aligned more with the anchor noun congruent with grammatical gender. This effect persisted when comparing the same nouns across languages (e.g., 'cucchiaio' vs 'cuchara' vs 'spoon'). We propose that grammatical gender introduces a gender bias into lexical semantics through distributional similarities with anchor words, revealing masculine/feminine features even without direct sensorimotor experience. This suggests that embodiment in language processing may become statistically embedded in word usage patterns.