

Investigating the Transfer of Gender Categories in L2-learners

Summary: *It appears quite odd that L2-learners should transfer lexico-syntactic gender, because linguistically, gender is extremely arbitrary and language-specific. We explore possible reasons using an integrated neural-network model of monolingual and bilingual gender acquisition and processing. Examination of the network's gender representations, similar to bilinguals', allows predictions about the reason why.*

Keywords: Lexico-syntactic gender, transfer, model, neural networks

Previous work shows that, when recognizing L2 nouns, learners tend to transfer L1 gender if available. However, considering that linguists regard the gender of inanimate nouns as extremely arbitrary and language-specific, this behavior appears quite odd: Why should categories XY in one language be mapped onto categories AB in another?

Upon reflection, several reasons can be found:

- Linguistic labeling of genders in formal instruction (e.g. “feminine” and “masculine” in French and German),
- Incorrect generalization from the partial overlap at the semantic level for animate nouns,
- Incorrect generalization due to morphological overlap (such as French feminine “-tion” nouns, which often correspond to German feminine nouns “-ung” nouns),
- Or a combination of these factors.

We propose to use an integrated model of monolingual and bilingual gender acquisition and processing to investigate this issue. Our model is a Simple Recursive Network, a neural network known to build clusters of similar words over the course of training without being told the categories in advance—similarly to children discovering gender categories in their L1—and to lose plasticity as training proceeds, thereby allowing to model age-of-acquisition effects in L2 by training the network on one language first and then introducing a second.

In addition, SRNs have a so-called “hidden” layer that is often compared to human mental representations. Therefore, by examining the representations built during training, one can investigate human gender representations in monolinguals and bilinguals, and make predictions about the reason for the above transfer, which can ulteriorly be tested experimentally.

The effect of semantic or morphosyntactic overlap among categories is examined by training the network on different input, including or not animate nouns or derivational morphology, and the influence of labels judged by adding explicit gender information to simulate formal instruction, compared to language-immersion without explicit gender.