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Readily grasping 'who' and 'whom': child-directed speech facilitates semantic role learning

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Abstract

A key aspect in child language development involves inducing the rules that determine the relations of the arguments to their verbal predicate, i.e., semantic roles. Here, we investigate whether child-directed speech facilitates learning 'who does what to whom' in English and Russian, two languages that strongly differ in their amount of case-marking and word order variation. We ask whether a contextual, distributional learner can more easily learn to assign semantic roles to arguments based on child-directed speech versus adult-directed speech. To this end, we represent the arguments of a verb with contextualised word embeddings extracted from neural language models. We compare the classification accuracy of semantic roles based on these representations between utterances extracted from corpora of child-directed speech and adult-directed speech. We further study to what extent semantic roles can be predicted based on arguments represented by different levels of information, such as non-contextualised representations, the position in the sentence, and case marking. We find that child-directed speech facilitates the learning of semantic roles, an important cornerstone for learning the morphosyntactic features of a language. However, the effect of child-directed speech is more pronounced in Russian than in English, indicating that child-directed speech may be optimised more strongly in a language where arguments are expressed in more varied forms and positions, as is the case in Russian.

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