The role of feedback and instruction on the cross-situational learning of vocabulary and morphosyntax: Linear mixed effects reveal local and global effects on acquisition

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Abstract

First language acquisition is implicit, in that explicit information about the language structure to be learned is not provided to children. Instead, they must acquire both vocabulary and grammar incrementally, by generalizing across multiple situations that eventually enable links between words in utterances and referents in the environment to be established. However, this raises a problem of how vocabulary can be acquired without first knowing the role of the word within the syntax of a sentence. It also raises practical issues about the extent to which different instructional conditions – about grammar in advance of learning or feedback about correct decisions during learning – might influence second language acquisition of implicitly experienced information about the language. In an artificial language learning study, we studied participants learning language from inductive exposure, but under different instructional conditions. Language learners were exposed to complex utterances and complex scenes and had to determine the meaning and the grammar of the language from these co-occurrences with environmental scenes. We found that learning was boosted by explicit feedback, but not by explicit instruction about the grammar of the language, compared to an implicit learning condition. However, the effect of feedback was not general across all aspects of the language. Feedback improved vocabulary, but did not affect syntax learning. We further investigated the local, contextual effects on learning, and found that previous knowledge of vocabulary within an utterance improved learning but that this was driven only by certain grammatical categories in the language. The results have implications for theories of second language learning informed by our understanding of first language acquisition as well as practical implications for learning instruction and optimal, contingent adjustment of learners' environment during their learning.