Idiomatic Constructions, Visual Reference Worlds, and Language Learning

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One of the central tasks facing language learners is the acquisition of phrase structure. Although any one sentence does not provide enough information for learners to induce the structure of the language, Morgan, Meier, and Newport (1989) noted that a comparison of two or more sentences can yield clues as to the structural units of the language and the rules that govern their combination. For example, in comparing the sentences, "The children played in the park" and "They had a good time," one might notice that the phrase "the children" was replaced by a single word ("they"), and infer that "the children" represents a structural unit within the language. Morgan et al. (1989) refer to such cues as *cross-sentential cues to phrase structure*.

Kaschak and Saffran (2006) demonstrated that the cross-sentential cues to phrase structure provided by *idiomatic syntactic constructions* (i.e., constructions that violate the rules for typical sentences in a language; Fillmore, Kay, & O'Connor, 1988) can aid the acquisition of core phrase structure. In their experiments, participants were trained on an artificial grammar that either did or did not contain examples of a rule-violating idiomatic construction. Participants acquired the phrase structure of the whole language better when their training included a small number of tokens of the idiomatic construction.

We followed up on Kaschak and Saffran's (2006) findings by replicating their Experiment 1 in a slightly different training paradigm. Whereas Kaschak and Saffran's participants only heard the sentences during training, participants in the current experiment both heard and read the sentences alongside a visual reference world that mapped the words of the language onto specific colors and shapes. The purpose of adding a visual world to the training was to explore the role of idiomatic syntactic constructions in language learning in a way that more closely matches the functions of such constructions in natural languages: idiomatic forms are often accompanied by particular semantic and pragmatic features. We were interested in the extent to which the visual reference world would affect how the idiomatic constructions enhance acquisition of the core artificial language phrase structure.

Participants were given the same training and rule tests as used in Kaschak and Saffran (2006), except that the training included a visual reference world. Participants were tested on their knowledge of the overall language (*Core rules*) and on their knowledge of the idiomatic construction rules (*Idiomatic rules*). The results are presented in Table 1.

Table 1: Mean Proportion Correct on Rule Tests

	Rule Type	
Training	Core Rules	Idiomatic Rules
Control (Core only)	.61	.47
Core + Idiomatic	.61	.55

Statistical analysis revealed both a main effect for Rule Type and a Rule x Training interaction. Unlike Kaschak and Saffran (2006), the addition of an idiomatic construction to the training set did not affect the participants' acquisition of the core rules of the language. The data are consistent with the notion that the visual reference world set core sentences apart from idiomatic ones. This distinction between sentence types may have drawn the participants' attention away from the cross-sentential cues to phrase structure provided by the idiomatic construction.

References

Fillmore, C.J., Kay, P., & O'Connor, M.C. (1988). Regularity and idiomaticity in grammatical constructions. *Language*, 64(3), 501-538.

Kaschak, M. P., & Saffran, J. R. (2006). Idiomatic syntactic constructions and language learning. *Cognitive Science*, *30*, 43-63.

Morgan, J. L., Meier, R. P., & Newport, E. L. (1989). Facilitating the acquisition of syntax with cross-sentential cues to phrase structure. *Journal of Memory and Language*, *28*, 360-374.