The acquisition of novel constructional patterns by five-year-olds and adults

Elizabeth Wonnacott¹, Jeremy K. Boyd², Jennifer Thomson¹ and Adele E. Goldberg³

University of Oxford¹
University of Illinois at Urbana-Champaign²
Princeton University³

While computational models of language development invariably cite input-related factors as affecting the acquisition of linguistic generalizations, isolating these effects experimentally can be daunting. In particular, it is difficult to separate effects of input from the age of the learners in question. Here, we use a novel construction learning paradigm (Boyd, Gottschalk, & Goldberg, 2009; Wonnacott, Newport, & Tanenhaus, 2008)—which affords significant experimental control over the input—to explore the effects of input structure and learners’ age on the development of clausal syntax.

Our experiment compared the learning of five-year-old and adult participants. The procedure consisted of exposure and test blocks. Exposure was to 64 exemplars of a novel VOS construction across three days. The construction described APPROACH events in which an agent moved towards a goal in a manner denoted by a novel verb (English nouns were used). In exposure trials the experimenter enacted approach scenes using stuffed animals, then described them for participants with an instance of the novel construction—e.g. a bear flew towards a frog with the description “Wugging frog bear.” Input structure (specifically type frequency) was manipulated as a between-participants variable: half of all participants were exposed to exemplars using the same novel verb; half were exposed to equivalent input using four equally frequent verbs.

Testing occurred after exposure on days one and three, and consisted of three tasks. Actout comprehension: the experimenter produced an exemplar of the novel construction and participants enacted its meaning. Production: the experimenter enacted an approach event and started a description by producing a verb; participants’ job was to finish it with the appropriate nominals. Forced-choice comprehension: participants heard an exemplar of the novel construction, then indicated which of two movies matched it. Each test contained items involving both familiar verbs (i.e., from the exposure set) and new verbs (not from the exposure set). This made verb novelty a within-participants variable.

Across conditions and test types, five-year-olds showed learning of the novel construction. However, performance was tentative and was affected by the quantity and structure of the input. First, performance was stronger on day three than day one (with both familiar and new verbs, and in both input conditions). Second, on both days there was an interaction between input structure and verb novelty, with children showing particular reluctance to extend the construction to new verbs when their input had exemplified that construction with a single verb. In contrast, adults showed strong performance across the board, with no effect of day of testing, and no difference in usage of the construction with familiar and new verbs in either input condition.

Although other experiments have found that input structure also affects generalization in adults (Wonnacott, et al., 2008), the current results demonstrate that given matched input, adults generalize to a greater extent than children do. This outcome suggests that conservatism in children’s learning (Tomasello, 2000) may be a function both of the statistical structure of their input, and of their age.
References

