

## Iconicity Affects Children's Production of Adverbial Clauses

Shijie Zhang<sup>1</sup>, Silke Brandt<sup>2</sup>, Anna Theakston<sup>1</sup>

<sup>1</sup>Division of Psychology, Communication and Human Neuroscience, University of Manchester, Manchester, United Kingdom. <sup>2</sup>Department of Linguistics and English Language, Lancaster University, Lancaster, United Kingdom

### Abstract

In English, adverbial clauses can occur in two orders: (1) subordinate-main (e.g., *After he plays the drum, he eats a pear.*) or (2) main-subordinate (e.g., *He eats a pear after he plays the drum.*). In (1), the clause order reflects the order of events in the real world—it is iconic. In (2), the clause order is non-iconic. The semantic account proposes that young children assume that what they hear first, happens first and therefore process iconic sentences (subordinate-main order for *after-*, *because-*, and *if-* sentences; main-subordinate order for *before-* sentences) better than non-iconic ones (Clark, 1971). However, the processing-based account proposes that main-subordinate orders are generally easier to process as they carry a reduced processing load (Diessel, 2005). In comprehension at least, the semantic account provides a closer match to children's data than the processing-based account (De Ruiter et al., 2018). The present study tests the relative impact of iconicity and clause order on children's sentence production across four different connective types (*after*, *before*, *because*, *if*) to determine whether the factors that underpin the comprehension of adverbial sentences also apply to production, which involves utterance planning and articulation.

We used a sentence completion task in which clause order and connective type were manipulated. We also measured children's general language skills, memory, and inhibitory control to determine their contribution to sentence production. Data from 42 four-year-old, 42 five-year-old, and 22 eight-year-old monolingual English-speaking children, plus 20 adult controls were collected.

The results show that both four- and five-year-olds produced iconic sentences more accurately than non-iconic ones. In contrast, clause order alone did not play a key role. However, the effect of iconicity was not observed for the eight-year-olds, whose performance was more similar to that of the adults. Our findings suggest that while comprehension and production likely impose different demands on children, iconicity as a general semantic strategy benefits children's early processing of adverbial clauses. In addition, there was an independent contribution of vocabulary in all groups of children's production of adverbial clauses, suggesting that children with better vocabulary produced adverbial clauses more accurately.