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The logical syntax of number words: theory, acquisition and processing.

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Summary: Recent work on the acquisition of number words has emphasized the importance of integrating linguistic and developmental perspectives. Specifically, these studies have shown that data from experimental investigations of child language can be used to illuminate core theoretical issues in the semantic and pragmatic analysis of number terms. In this article, I extend this approach to the logico-syntactic properties of number words, focusing on the way numerals interact with each other (e.g. Three boys are holding two balloons) as well as with other quantified expressions (e.g. Three boys are holding each balloon). On the basis of their intuitions, linguists have claimed that such sentences give rise to at least four different interpretations, reflecting the complexity of the linguistic structure and syntactic operations involved. Using psycholinguistic experimentation with preschoolers ($n = 32$) and adult speakers of English ($n = 32$), I show that (a) for adults, the intuitions of linguists can be verified experimentally, (b) by the age of 5, children have knowledge of the core aspects of the logical syntax of number words, (c) in spite of this knowledge, children nevertheless differ from adults in systematic ways, (d) the differences observed between children and adults can be accounted for on the basis of an independently motivated, linguistically-based processing model. In doing so, this work ties together research on the acquisition of the number vocabulary with a growing body of work on the development of quantification and sentence processing abilities in young children. On a more general level, this work confirms the importance of integrating formal and developmental perspectives, this time by highlighting the explanatory power of linguistically-based models of language acquisition and by showing that the complex structure postulated by linguists has important implications for developmental accounts of the number vocabulary.

Classification: C50 F20 C30

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