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Editorial Board

Cognitive Psychology

Dear Editors,

We are pleased to submit our manuscript “Do children use language structure to discover the recursive rules of counting?” to *Cognitive Psychology*. This manuscript details a large, pre-registered, cross-linguistic exploration of children’s development of number concepts, and how this trajectory is affected by the morphology of their language’s count list. In particular, using data from nearly 600 children across 6 different language groups, we tested whether acquiring the morphological rules that govern the count list may support an induction about the successor function - i.e., that every natural number *n* has a successor, *n*+1.

We tested three questions in the study. First, how do irregularities in a counting system impact children’s ability to extract productive rules that govern the count list. In some languages, like Cantonese, 10 basic number words are combined according to rules to generate the first 99 numbers. In English, although many numbers can be created by rules (e.g., four-ty-four; six-ty-four, etc.), many exceptions also exist (e.g., eleven, twelve, twen-ty-two, etc.). Our first question was how these differences impact children’s ability to transition from a memorized, partial, count list to a fully productive rule-governed list. their ability to extract rules that govern counting. We explored this question using 6 large datasets drawn from languages with relatively transparent (Cantonese, Slovenian, US English, & Indian English) and opaque count list morphology (Hindi and Gujarati). Second, we asked how differences in counting transparency affected children’s ability to learn about the logic of numbers, and in particular the successor function. We found that differences in children’s acquisition of productive counting rules across languages was related to when they acquired implicit understanding of the successor function. Third, unique to this study, we showed that despite these large cross-linguistic differences, knowledge of productive morphological rules governing counting predicted successor function knowledge across all languages.

This work provides valuable cross-cultural evidence regarding a central case study of conceptual development. The mechanisms through which children impute an infinitely productive logical principle — that every number has a successor, making the natural numbers an infinite class — are currently unknown. Our results suggest that the linguistic structure of the count list may provide a key input as children discover the successor function, and that learning how number *words* are endlessly generated may lead to an inference that the natural numbers are endless as well. These results should be of interest to a broad audience, including psychology researchers and educators.

Please let me know if there is any further information you need in connection with this submission. Thank you for your time and attention, and I look forward to hearing from you.

Sincerely,

Rose Schneider

Department of Psychology

University of California, San Diego