

February 2020

Dear teachers and parents,

We are writing to thank your school for their participation in our study during Fall 2019. We finished our data collection in December and wanted to share some of our initial findings with you. Knowledge of repeating and growing patterning (e.g., predictable sequences in objects and numbers) are closely connected with broader mathematical thinking and achievement. The purpose of this study was to develop a new assessment of kindergarten children's patterning skills to better understand their knowledge and to help parents and teachers plan their math activities.

After gaining parental permission, we worked with 56 kindergarten students from 2 private schools in the Nashville area. Each child completed a 20-minute session with a researcher in which they answered a series of questions about 2 types of patterns. One focused on *growing patterns*, which are sequences that follow a numeric rule (increases or decreases in objects or numbers by a set amount e.g. 1,3,5,7,9). The other focused on *repeating patterns*, which are sequences that follow a rule where one part of the sequence repeats over and over (e.g. ABBABBABB where ABB repeats over and over). Children were asked to complete patterns (e.g. ABCABC __) and identify pattern rules (e.g., "how does my pattern grow?"). Additionally, we examined children's ability to recreate repeating patterns with new materials (pattern abstraction) and distinguish repeating patterns from nonpatterns.

Overall, students performed well on the entire measure, though they demonstrated more knowledge of repeating rather than growing patterns. Children were most successful at distinguishing repeating patterns from nonpatterns and completing repeating patterns. They were fairly good at completing growing patterns, though they were better with growing patterns that changed by a unit of 1 (e.g. 6, 7, 8, _) than by a unit of 2 (4, 6, 8, _). Interestingly, they performed similarly on growing pattern tasks that utilized objects and those that utilized written numerals. As expected, children were least successful at recreating repeating patterns with new materials and identifying the pattern rule in both types of patterns (e.g. the pattern 1,3,5 grows by 2 and the pattern ABCABCABC repeats by the unit of ABC).

Currently, we are using these data to guide additional research on the development of children's patterning skills as well as patterning activities that parents and teachers can use to support their children's developing knowledge. We look forward to conducting more studies on patterning and math more broadly to support this important aspect of math education.

Again, we appreciate your participation in our study. Please feel free to contact us directly with any further questions, visit our lab [website](#), parent resource [website](#), or follow us on twitter [@childrens_lab](#).

Sincerely,



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