

August 2023

Dear parents,

Thank you for participating in our early learning study during the 2022-2023 school year. We wanted to share some of our initial findings with you. The purpose of this study was to help us understand how providing parents with information about mathematics would affect their mathematics beliefs, knowledge, and support related to their preschool-aged children. We focused on two areas of mathematics: numeracy, which involves the ability to reason about and apply simple number concepts such as comparing the size of numbers and adding and taking away small numbers, and repeating patterning, which involves the ability to identify, copy, continue, and describe predictable sequences in objects or numbers.

Parents participated in two sessions that typically took place two weeks apart. During the first session, parents completed a survey about their beliefs about their child's math ability, their knowledge about the math skills that typically developing preschoolers can be developing, and the math activities they do with their child at home. After completing the survey, parents engaged in a five-minute play session with their child using provided toys (beads and strings). A member of our research team then shared information about either numeracy or repeating patterning skills that four-year-olds may be developing. The information included definitions of four numeracy or repeating patterning skills, video clips of children demonstrating these skills, and examples of ways parents can engage their children in practicing these skills at home. Parents were also asked to brainstorm and share activities or materials they could use at home as they engage their children. Our research team also sent parents 6 text messages about some of the same numeracy or repeating patterning skills across the weeks between the first and second sessions. During the second session, parents completed the same survey and play session and gave feedback on the study.

The findings shared in this report are preliminary and are based on the 107 families who completed the entire study during the 2022-2023 school year. The 107 children included in this report attended one of 21 participating schools: 11 public preschools and 10 private preschools and childcare centers. Almost half of the parents included in this report identified as racial or ethnic minorities (46%), most had received at least a bachelor's degree (74%), and many reported annual incomes above \$90,000 (54%).

We found that parents believed it is important for their child to be good at both numeracy and repeating patterning in the future. Similarly, parents reported that they spend time doing both numeracy and repeating patterning activities with their children on a weekly basis. Additionally, parents' knowledge about both numeracy and repeating patterning development was high, with parents correctly identifying which numeracy skills most typically-developing children tend to master before their 5th birthday 89% of the time and identifying which repeating patterning skills most typically-developing children tend to master 93% of the time.

In regard to the effectiveness of the intervention, parents who received information about numeracy skills had more accurate knowledge of children's numeracy development after receiving the information than before. They also talked about numeracy concepts significantly more often with their child during the play session after receiving the information. Finally, parents who received information about repeating patterning talked about repeating patterning concepts significantly more often with their children during the play session after the intervention. Notably, they also talked about the most complex repeating patterning skills that are appropriate for preschoolers to learn about (i.e.,

adding on to patterns, creating the same patterns with new materials, and identifying the part of patterns that repeat) significantly more often after the intervention.

These findings indicate that informing parents about important early numeracy and repeating patterning skills can increase the support that parents provide to their children as they are developing these skills at home. Overall, parents' feedback suggests that parents are open to and value receiving additional information about early math development. We are using this data to publish our findings in academic journals to inform future training and research. We are also sharing our findings with parents and teachers so that they can utilize this information.

Again, we appreciate your participation in our study. Please feel free to visit our [parent resource website](#) which has been updated to include the resources used in our study as well as a list of math books, games, and websites that you might find useful as you continue to support your children's learning at home or our [project website](#). Also, please feel free to follow us on Twitter [@childrens_lab](#) or contact us via [email](#) with any questions.

Sincerely,
Ashli-Ann Douglas, PhD, and Bethany Rittle-Johnson, PhD
Children's Learning Lab
Vanderbilt University