



Evidence-Based Ways to Play



Linear number board games support numeracy skills for young children

Nelson and colleagues, 2025

Children's early numeracy skills have been linked to long-term academic success.

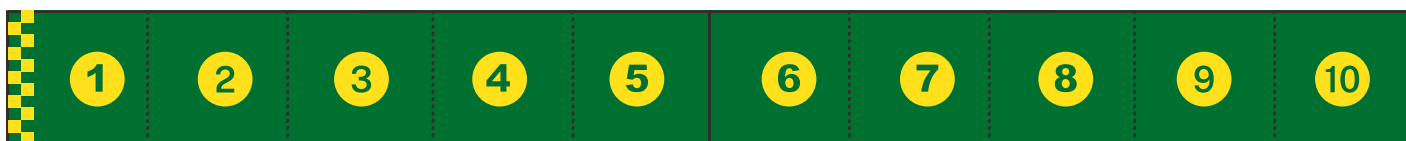
[Studies have shown](#) that caregivers play an important role in helping their children succeed on a range of school-related outcomes, including math.

But it can be difficult to know which activities are fun **and** based on evidence. In this systematic review, researchers reviewed 18 studies that included over 1,700 children in grades pre-K- 2 to test if linear number board games improve children's numeracy skills.

What are numeracy skills? Numeracy includes skills such as verbally counting in order, counting each item in a set only once, understanding that the last number counted refers to the total number of objects in the set, and mapping between sets, number words, and numerals.

What are linear number board games?

Linear number board games are any board game where players roll dice, spin a spinner, or draw a card and then move a game piece along a straight, numbered line.



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Linear number board games had large positive effects on children's numeracy skills.

SMD = 0.21, SE = 0.058, 95% CI [0.08, 0.34]

Based on these estimates, there is a **76% chance** that playing these games will improve numeracy outcomes, assuming the children and games are like those included in these studies.

Children do not need to play for a long time to benefit.

Findings showed that even a **few 10-min** sessions of game play may improve skills such as counting and identifying and comparing numerals.



Ready to play?



Create your own game or download a free template at [The Great Race Board game](#) from the Early Childhood Interaction Lab at the University of Maryland.

More resources for math at home:

[DREME Family Math](#)

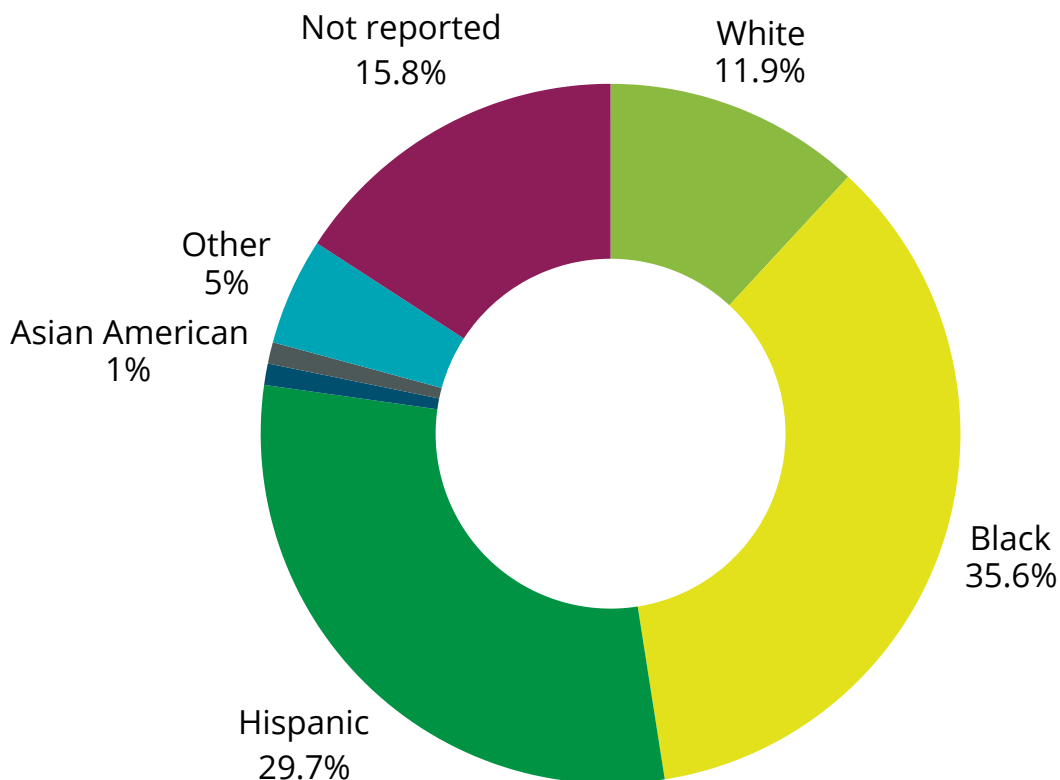
[Center for Family Math](#)

Study details

Researchers reviewed 18 individual studies that took place in the United States (11 studies), Canada (3 studies) and Germany, Hong Kong, Sweden, Turkey, and the United Kingdom (1 study each).

Most students were typically achieving (98%) and in Pre-K or Kindergarten (91%). For U.S. studies, risk statuses across studies included eligibility for free- and-reduced lunch (25%), enrollment in Head Start (73%), and dual-language learner status (14%).

For U.S. studies, most students were Black or Hispanic.



Study quality

The authors also assessed included studies on a range of quality indicators. Overall, studies met 61% of quality indicators, with the highest percent met in the areas of intervention descriptions (M = 81%) and data analysis/results (M = 86%) and the lowest for outcome measures (M = 25%). Reported study quality ratings did not significantly moderate treatment effects ($p = .607$).

This report summarizes findings from:

“Investigating Main Effects and Moderators of Linear Number Board Games: A Meta-Analytic Review”

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HEDCO Institute for Evidence-Based Educational Practice

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