NEWS | POSTED SEPTEMBER 24, 2013

# Playing With Blocks May Help Children's Spatial and Math Thinking

PRESS RELEASE / CHILD DEVELOPMENT: Embargoed for Release on September 24, 2013

PRESS RELEASE

Published

Tuesday, September 24, 2013

12:01am

Deconstructing Building Blocks: Preschoolers' Spatial Assembly Performance Relates to Early Mathematics Skills

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Playing with blocks may help preschoolers develop the kinds of skills that support later learning in science, technology, engineering, and math (STEM), according to a new study by researchers at the University of Delaware and Temple University. And for low-income preschoolers, who lag in spatial skills, such play may be especially important.

The study is published in the journal *Child Development*.

More than a hundred 3-year-olds of various socioeconomic levels took part in the study. Children who were better at copying block structures were also better at early math, the study found. Among the skills tested were whether children could figure out that a block belongs above or below another block and whether they aligned the pieces.

The study also found that by age 3, children from lower-income families were already falling behind in spatial skills, likely as a result of more limited experience with blocks and other toys and materials that facilitate the development of such skills. And parents of low-income toddlers reported using significantly fewer words such as “above” and “below” with their children.

Blocks are affordable and enjoyable, and they’re easily used in preschool settings. Giving children—especially those from low-income families—such toys to play with can help them develop skills that will have long-lasting effects on later STEM-related educational outcomes, the researchers suggest.

The children’s spatial skills were assessed using a block-building task. Math skills were examined using a measure developed for 3-year-olds that focuses on a wide range of skills, from simple counting to complex operations like adding and subtracting.

“Research in the science of learning has shown that experiences like block building and puzzle play can improve children’s spatial skills and that these skills support complex mathematical problem solving in middle and high school,” explains Brian N. Verdine, a postdoctoral fellow at the University of Delaware and one of the study’s authors. “This is the first research to demonstrate a similar relationship in preschoolers.”

The study was funded by the National Institutes of Health and the National Science Foundation.

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Summarized from *Child Development*, Deconstructing Building Blocks: Preschoolers’ Spatial Assembly Performance Relates to Early Mathematics Skills by Verdine, BN, Golinkoff, RM (University of Delaware), Hirsh-Pasek, K, Newcombe, NS (Temple University), Filipowicz, AT, and Chang, A (University of Delaware).
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