North Valley Community & Business News

Report finds important period for learning is before preschool

Parents Should Talk About Math Early, Often with Their Children

Newswise — The amount of time parents spend talking about numbers has a much bigger impact on how young children learn mathematics than was previously known, researchers at the University of Chicago have found. For example, children whose parents talked more about numbers were much more likely to understand the cardinal number principle — which states that the size of a set of objects is determined by the last number reached when counting the set.

"By the time children enter preschool, there are marked individual differences in their mathematical knowledge, as shown by their performance on standardized tests," said University of Chicago psychologist Susan Levine, the leader of the study. Other studies have shown that the level of mathematics knowledge entering school predicts future success.

"These findings suggest that encouraging parents to talk about numbers with their children, and providing them with effective ways to do so, may positively impact children's school achievement," said Levine, the Stella M. Rowley Professor in Psychology Professor in Psychology.

The results of the study were published in the article, "What Counts in the Development of Young Children's Number Knowledge?" in the current issue of *Developmental Psychology*. Joining lead author Levine in the study were four other scholars.

Although other researchers have examined early mathematics learning, the University of Chicago team is the first to record parent-child interactions in the home and analyze the connections between parents' number talk and subsequent performance.

Parents often point to objects and say there are three blocks on the floor, for instance. Children can repeat a string of numbers from an early age, but saying "one, two, three" is not the same as actually knowing that the words relate to set size, which is an abstraction.

Frequent use of number words is important, even if the child doesn't seem to pick up on the meanings of the number words right away, Levine said. Children who hear more number words in everyday conversation have a clear advantage in understanding how the count words refer to set size. To perform the study, team members made five home visits and videotaped interactions between 44 youngsters and their parents. The taping sessions lasted for 90 minutes and were made at four-month intervals, when the youngsters were between the ages of 14 to 30 months.

The variation in number words was startling for researchers as they reviewed tapes of the 44 youngsters interacting with their parents in everyday activities. Some parents produced as few as four number words during the entire period they were studied, while others produced as many as 257.

"This amount of variation would amount to a range of approximately 28 to 1,799 number-related words in a week," said Levine.

Those differences were shown to have a big impact at the end of the study, when the children were asked to connect the words for numbers with sets of squares presented on sheets of paper. For example, those children who heard a lot of number talk were more likely to respond correctly when shown a set of five squares and four squares and asked to "point to five."

Joining Levine in the study were Linda Whealton Suriyakham, now at the Roger Williams University Center for Counseling and Student Development, Massachusetts School of Professional Psychology; Meredith Rowe, Assistant Professor of Human Development at the University of Maryland; Janellen Huttenlocher, the William S. Gray Professor Emeritus of Psychology at the University of Chicago; and Elizabeth Gunderson, a graduate student in psychology at the University of Chicago.

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