

Engaging children in math at home equals a boost in more than just math skills

November 10 2017, by Amy Patterson Neubert



Amy Napoli, a doctoral student, and David Purpura, an assistant professor in the Department of Human Development and Family Studies, found that preschool children who engage in math activities at home with their parents not only improve their math skills, but also their general vocabulary. Their findings were published in the *Journal of Experimental Child Psychology*. Credit: Purdue University photo/Mark Simons

Preschool children who engage in math activities at home with their parents not only improve their math skills, but also their general vocabulary, according to research from Purdue University.

"Exposure to basic numbers and math concepts at home were predictive, even more so than storybook reading or other literacy-rich interactions, of improving [preschool children](#)'s general vocabulary," said Amy Napoli, a doctoral student in the Department of Human Development and Family Studies who led the study. "And one of the reasons we think this could be is the dialogue that happens when [parents](#) are teaching their children about math and asking questions about values and comparisons, which helps these young children improve their oral [language skills](#)."

The findings are published online in the *Journal of Experimental Child Psychology*.

"It's never too early to talk about numbers and quantities. One of the first words [young children](#) learn is 'more,'" said David Purpura, an assistant professor in the Department of Human Development and Family Studies, and senior author of the study.

There are a number of ways parents can encourage math learning at home, such as talking about counting, connecting numbers to quantities and comparing values – more and less. It also helps to focus on counting as purposeful, such as "there are three cookies for a snack" rather than "there are cookies for a snack."

"This focus on math typically isn't happening at home, but this shows that when parents do include [math concepts](#) it can make a difference," said Napoli, who is working on tools to help parents improve math-related instruction at home. "When working with families, there is a math-related anxiety aspect and that is probably why more parents focus on literacy than on math. But, if you can count, then you can teach

something to your child."

This study evaluated 116 preschool children, ages 3-5. The researchers assessed the children's math and language skills in the fall and spring of the preschool year and examined how what their parents reported about [math](#) and literacy activities at home predicted children's improvement over time. Napoli and Purpura do caution that these findings are only correlational and the future experimental work is needed to evaluate the causal nature of these findings. This research is ongoing work supported by Purdue's Department of Human Development and Family Studies.

More information: Amy R. Napoli et al. The home literacy and numeracy environment in preschool: Cross-domain relations of parent–child practices and child outcomes, *Journal of Experimental Child Psychology* (2017). [DOI: 10.1016/j.jecp.2017.10.002](https://doi.org/10.1016/j.jecp.2017.10.002)

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