

Exposure to more diverse objects speeds word learning in tots

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Two toddlers are learning the word "cup." One sees three nearly identical cups; the other sees a tea cup, a sippy cup and a Styrofoam cup. Chances are, the second child will have a better sense of what a cup is and -- according to a new University of Iowa study -- may even have an advantage as he learns new words.

Published this month in [Psychological Science](#), a journal of the Association for Psychological Science, the research showed that 18-month-olds who played with a broader array of objects named by shape – for example, groups of bowls or buckets that were less similar in material, size or features – learned new words twice as fast as those who played with more similar objects.

Outside the lab, one month after the training, tots who had been exposed to the diverse objects were learning an average of nearly 10 new words per week. Kids in the other group were picking up four a week – typical for [children](#) that age without any special training. Researchers aren't sure how long the accelerated learning continued for the variable group, but they can explain why it may have occurred.

All of the children given extra training with words figured out that shape was the most important distinguishing feature when learning to name solid objects. This attention to shape, called a "shape bias," is not typically seen until later in development. However, the researchers believe that kids exposed to more variety took the knowledge a step further, also learning when not to attend to shape. Tots in the variable

group learned, for example, to focus on material rather than shape when hearing names for non-solid substances.

perry "Knowing where to direct their attention helps them learn words more quickly overall," said lead author Lynn Perry (left), a UI doctoral student in psychology. "The shape bias enhances vocabulary development because most of the words young kids learn early on are names of categories organized by similarity in shape. And, developing the ability to disregard shape for non-solids helps them learn words like pudding, Jell-O or milk."

Samuelson Perry conducted the study with psychologist Larissa Samuelson (right) of the UI College of Liberal Arts and Sciences, and UI alumni Lisa Malloy and Ryan Schiffer. The study involved 16 children who knew about 17 object names when the study began. Half of the kids were taught names of objects by playing with groups of toys that were nearly identical; the other half used toys that differed significantly – for example, a small, cloth, jack-o-lantern bucket; a trash bucket with no handle; and a traditional plastic bucket.

When tested on unfamiliar objects that fit into the categories they'd been taught – such as a bucket they'd never seen before – kids in the variable group performed better. This showed an ability to generalize the knowledge.

"We believe the variable training gave them a better idea of what a bucket was. They discovered that the buckets were all alike in general shape, but that having a handle or being a particular texture didn't matter," Perry said. "In contrast, the children exposed to a tightly organized group of objects developed such strict criteria for what constitutes a bucket that they were reluctant to call it a bucket if it was different from what they'd learned."

In additional tests, researchers looked at whether the tots learned names of new objects by focusing on substance or shape. The variable group tuned into shape for solids but material for non-solids, a distinction children aren't typically capable of making until the age of 3, when their vocabulary reaches 150 nouns.

Further investigation is necessary to pinpoint exactly why the variable group had more success in this area, but the researchers say their study is the first to show that variability at the local level can help children learn something more global about the importance of particular object features for different categories of things.

"What children learn about one category sets the stage for their future [learning](#)," Samuelson said. "Similar exemplars help children learn specific names for specific objects. But variable exemplars teach them more about the whole category, which helps them learn names of other new things faster. That's why kids in the variable group learned more outside the lab – they learned more about naming in general, not just specific examples of the specific categories they'd seen in the lab."

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