

# Rethinking reading: study breaks new ground in reading development research

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A recent University of Iowa study indicates that variation in words may help early readers learn better. Photo by Tim Schoon.

Many educators have long believed that when words differ on only one sound, early readers can learn the rules of phonics by focusing on what is different between the words. This is thought to be a critical gateway to reading words and sentences.

But scientists at the University of Iowa are turning that thinking on its

head. A recent study published in "[Developmental Psychology](#)" shows certain kinds of variation in words may help early readers learn better. When children see the same phonics regularities, embedded in words with more variation, they may learn these crucial early reading skills better. What might appear to make [learning](#) a more difficult task—learning about letter-sound relationships from words with more variation—actually leads to better learning.

Doctoral student Keith Apfelbaum and associate professors Bob McMurray and Eliot Hazeltine of the Department of Psychology in the UI College of Liberal Arts and Sciences (CLAS) studied 224 first-grade students in the West Des Moines, Iowa school system over a period of three months. The group used a version of an online supplementary curriculum called Access Code.

Access Code was developed by Foundations in Learning, a company founded by Carolyn Brown and Jerry Zimmermann. Brown and Zimmermann earned their doctorates from and are now adjunct faculty in the Department of Communication Sciences and Disorders, also in CLAS. Based on the Varied Practice Model, which helps children master early reading skills like phonics, the research team used Access Code to conduct the study directly in the classroom.

During the study, one group of students learned using lists of words with a small, less variable set of consonants, such as maid, mad, paid, and pad. This is close to traditional phonics instruction, which uses similar words to help illustrate the rules and, presumably, simplify the problem for learners. A second group of students learned using a list of words that was more variable, such as bait, sad, hair, and gap, but which embodied the same rules.

After three or four days of training on phonics skills, partaking in activities such as spelling and matching letters, the students from both

groups were tested to see if they could read words that they had never seen before, read novel non-words, and apply their newly-learned skills to tasks they hadn't done before.

"We were interested in not just whether they could do exactly what we were teaching, but whether they could learn something more robust that would enable them to apply what they had learned to new tasks and new words," McMurray says. "Critically, we wanted to know if variability or similarity would impact this ability to learn and generalize."

Results surprised even the research team.

"We were expecting a very subtle effect, maybe similar words would help students learn the words they were trained on but maybe not generalize as well, or maybe similar words would help them learn the more difficult rules but variability might work for the easier ones, but in no case was similarity helpful," McMurray says. "This suggests a powerful principle of learning. While we've known about this in a variety of laboratory tasks for a while, this study shows for the first time that this principle also applies to early reading skills."

Overall, variation led to much better learning. Students experiencing more variation in words showed better learning when tested on the words and tasks they encountered in training. More importantly, it helped them generalize these new skills to new words, and to new tasks.

"Variability was good for the low-performing students, it was good for the high-performing students. It was good for the boys, it was good for the girls. It was good for the words, it was good for the non-[words](#)," Apfelbaum says. "Among the students who struggled the most, the kids who weren't exposed to variation didn't show any learning at all, while the kids who were exposed to variation did."

Robert Davis, an educator for 36 years and principal of Hillside Elementary, which was one of the schools that participated in the study, says he is eager to work with his teachers on ways to apply varied practice to the classroom.

"If we really look at what happened with the research, there is a multitude of applications that could go forward with this," Davis says. "We could certainly look at varied practice as a method for learning new vocabulary, as a new method for learning basic math facts, maybe even something involved with music. As educators, we need to figure out how to take that model and apply it to the umbrella of learning for a variety of things that kids struggle with."

Brown, whose research has focused on child development, language acquisition, and reading for more than three decades, says she looks forward to continued collaboration with the UI research team.

"We hope this collaboration is only the beginning to bringing the science of learning to the art of teaching children to read," Brown says. "We have missed many children because reading pedagogy has been driven by systems of belief in how reading should be taught rather than by how children learn. The importance of variation in this process will be a surprise to many educators and a help to many children."

Provided by University of Iowa

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