

\$2.5M NIH Grant Awarded to USU Professor to Improve Comprehension Skills for Children with Developmental Language Disorder

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The listening therapy aims to improve the sentence comprehension abilities of children who have difficulty understanding spoken language.

Ron Gillam, professor and Lillywhite endowed chair in the Department of Communication Disorders and Deaf Education (COMDDE) within the Emma Eccles Jones College of Education and Human Services at USU, is part of a collaborative research team that was recently awarded a combined \$2.5M four-year grant. The team of speech pathologists will provide listening therapy that aims to improve the sentence comprehension abilities of elementary and middle-school children who have difficulty understanding spoken language. The grant is funded by the National Institute on Deafness and Other Communication Disorders in the National Institutes of Health (NIH). The other researchers on the project are speech pathologists at Ohio University and the University of Arizona.

“Students with developmental language disorder struggle every day to understand the words and sentences they encounter in school,” says Teresa Ukrainetz, assistant department head of COMDDE and speech-language pathologist at USU. “Educators know how to teach the vocabulary of science and literature, and how to motivate students to learn about these ideas, but they are puzzled when it comes to teaching students how to understand the complicated sentences that carry those ideas. This

large-scale, rigorous scientific study has the potential to fill that missing puzzle piece and make a fundamental difference in the educational success of many children with language-learning difficulties.”

Developmental language disorder (DLD) affects about eight percent of children in the United States. “These children have difficulty learning and using language, but they don’t have a hearing impairment or intellectual disabilities,” says Gillam. “The language therapy they get is helpful to them to the extent that they no longer require special help, but about 50% have life-long difficulties.



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Beginning as toddlers, children with language impairment often need additional support. “When language-impaired kids are little and just learning the language, they need ten times more repetition than an average child does—even when they’re learning a word,” Gillam explains. “A normally developing kid will hear a word one or two times and learn it.”

While similar research has been done on preschool-age children, this is the first study that focuses on the academic challenges of DLD children between the ages of 8 and 11. Because they’re at the age where they’re falling farther and farther behind their peers academically, it’s a critical time to provide intervention. “The books and academic materials they’re exposed to at that age contain complex sentences that are very difficult for them to understand and to produce,” says Gillam. “These children struggle to understand, speak, and write these types of sentences.”

Special education teachers and speech-language therapists already have methods to teach children with DLD to *produce* sentences correctly. It's *comprehension*, explains Gillam, that is more complicated. For this reason, the four-year, multi-site research project is focused on improving comprehension skills by providing a total of 20 therapy sessions to 8- to 11-year-olds over a 10-week period. Some 250 children will participate in the intervention study across three states—Utah, Ohio, and Arizona—over the four years. Each site will collect its own data.

"We're comparing two different instructional techniques for complex sentence construction," Gillam says. "One is explicit, or direct, instruction where we explain the grammar and the rule. The other is implicit instruction, which is based on a cognitive psychology principle called 'priming.' I say a sentence and show a picture, then I prime the construction: 'A zebra was chased by a lion.' Then I ask the child to tell me about the picture, but I never say the rule."

"This is a new thing to study," Gillam continues. "We've written papers explaining why we think implicit instruction for complex sentence structure is better, but there are very few studies that show it and they're all done with young children and with less complex sentences. We need strong evidence that implicit learning is most effective so we're doing this with older kids and with more difficult sentence structures to make the case."

The therapy is designed to go beyond the child's working memory, or short-term memory, which is where explicit instruction techniques are most effective. Implicit instruction, on the other hand, takes more time to learn, but the child tends to create the rule in long-term memory and therefore, has a stronger, more permanent grasp of the concept.

"We know that with explicit instruction, kids learn faster, but they don't generalize it," explains Gillam. "They'll do it with you, but when they walk out the door and hear someone else saying it as a construction, they still struggle to understand it."

Within USU's Department of Communication Disorders and Deaf Education, Gillam's colleagues are enthusiastic about the forthcoming research. "Dr. Gillam is a preeminent scientist and scholar in the overlapping fields of communication disorders and learning disabilities," says Ukrainetz. "He has made tremendous contributions to understanding and remediating language-learning disabilities. We are proud to have him in our department

and institution, and we look forward to the outcome of another ground-breaking research project."

The primary goal of the project is to provide an effective intervention that will help children who struggle to understand complex sentences, and Gillam is hopeful about its immediate and long-term impact on students' academic success.

"The most important and direct benefit to a child who participates in this study is that his or her understanding of spoken sentences may improve by going through the sessions," says Gillam. "The final benefit of this study is broad-based. If, after this study, we find that one technique works better than the other to improve children's listening comprehension, we will be in a good position to train others to use the technique with more children. That's what we're hoping for."

Note: Dr. Gillam and his colleagues are currently recruiting participants for this study. They are seeking children between the ages of 8 and 11 who have difficulty understanding complex language that is spoken or written. The intervention lasts for 10 weeks and can be conducted in person or over Zoom at a time that is convenient for the participants and their families. Participants will receive a total of \$220 (\$10 per session). To learn more about the study, please contact Dr. Gillam at ron.gillam@usu.edu or call 435-797-1704.