

Research aimed at helping dyslexic children learn

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A new MRI-based study of children with dyslexia by a UT Arlington professor could explain why a small percentage of dyslexic children don't respond to current teaching strategies.

Assistant professor of psychology Timothy Odegard's work was recently published online and in the latest issue of the journal *Neurocase*. Emily Farris, Odegard's doctoral student, is the lead author on the paper that details the findings from Odegard's team.

Researchers examined functional magnetic resonance imaging (MRI) data from 15 children – ages 8-14. They found that children with dyslexia who responded to treatment and non-dyslexic readers showed greater functional connections between the interior frontal regions of their brains than dyslexic children who had not responded to treatment. The tests were conducted while the children performed basic reading tasks.

“This is really looking at what predicts treatment outcomes,” said Odegard, who was diagnosed with dyslexia as a child. “We're really looking at how the different areas of the brain work together like a network.”

Dyslexia is a brain-based learning disability that impairs reading ability.

Activities aimed at building reading skills activate regions in the front and back of the left hemisphere of the brain in typically developing

children. In dyslexic children, however, frontal regions of the left and right hemispheres of the brain working together seems to compensate for deficits in the posterior portion of the left hemisphere observed in these children, Odegard said.

“The hope is if we can identify biomarkers for kids who aren’t going to respond as well to current treatment we can modify the treatments to build on their strengths and overcome their weaknesses,” Odegard said.

The study being published in *Neurocase* was conducted in cooperation with Texas Scottish Rite Hospital for Children and UT Southwestern Medical Center, where Odegard is a member of the graduate school faculty. Besides Farris and Odegard, co-authors include researchers from UT Southwestern, UT Austin, and Scottish Rite.

In the near future, Odegard and colleagues from Scottish Rite, UT Southwestern, Southern Methodist University and the Shelton School in Dallas hope to build on the current findings with a five-year study of MRI data focused on a much larger sample population.

Reid Lyon, distinguished professor at SMU’s Annette Caldwell Simmons School of Education and Human Development and distinguished scientist in cognition and neuroscience at UT Dallas’ Center for Brain Health, has signed on to collaborate with Odegard on future work. He said the UT Arlington professor is making “major scientific contributions” by using neuroimaging to better understand the acquisition of reading skills.

“Tim’s research has broken new ground in determining the extent to which connections between these neural systems influence reading development and whether limitations in connectivity are related to [dyslexia](#) and other reading difficulties,” Lyon said.

Provided by University of Texas at Arlington

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