UNIVERSITY OF CALIFORNIA, DAVIS / SCHOOL OF EDUCATION

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Learn how the RAD Center answers parents' questions on page 11.

COVER STORY

Paying Attention

A UNIQUE READING INTERVENTION OPENS THE DOOR TO BETTER READING FOR CHILDREN WITH AUTISM—AND CHILDREN WITHOUT

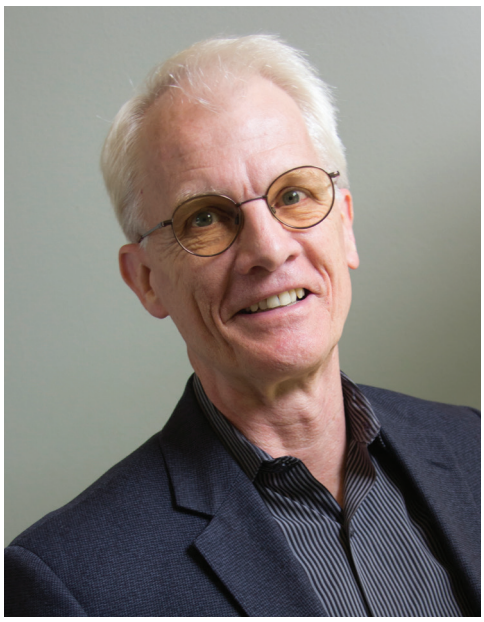
Early intervention programs have been extremely effective at identifying and treating children with autism in their first years. So why aren't those successes translating into better long-term educational outcomes, especially in reading?

That's what Professor Peter Mundy was asking himself in 2012. A developmental and clinical psychologist, an expert in the education and development of children with autism, and Director of Educational Research at the UC Davis MIND Institute, Mundy has devoted his 32-year career to defining the major dimensions of autism. He knew that early intervention efforts were going so well that nearly two-thirds of children with autism had sufficient language skills to enter general education classes.

But the news wasn't all good. "These children were much more communicative than we'd ever thought possible," said Mundy, "and they were seen as having optimal outcomes. But over time, we began realizing that they still had significant issues."

Mundy submitted an Institute for Education Sciences (IES) research proposal to explore his hypothesis that the impaired social attention of children with autism was keeping them from succeeding academically in school. "Children with autism have an idiosyncratic pattern of attention," he said. "It can be hard for them to learn in a classroom because they don't bring their attention to a common point of reference with their teachers. Essentially, they have trouble learning from other people." Mundy wanted to develop a classroom-based intervention tailored to their needs, using a virtual-reality tool as the vehicle for the intervention.

The project was funded for $1.5 million over four years, allowing Mundy and his team to conduct a longitudinal study of 160 students ages 8-18. Half had been diagnosed with autism; the other half, a control group, was split equally between children with ADHD and children with typical development. The team collected data three times, 15 months apart, about their language, attention, and other factors related to cognition and academic achievement.



Professor Peter Mundy and Associate Professor Emily J. Solari.

Social Communication Holds the Key

Mundy's team expected that using virtual-reality tools to see how children attended to other people in simulations would reveal the source of their learning problems. Instead, the research data led them to look at social communication.

"The most important thing we learned is that high-functioning children with autism start to fall behind in their reading comprehension development," said Mundy, "and the effect worsens every year. This was by far the strongest finding of the study, and it matters because if they're falling behind in reading comprehension, that means they're losing out on a lot of their educational experience." In fact,

reading comprehension issues significantly affected writing and math skills as well.

How could social communication problems affect reading, which appears to be a solitary pursuit? "Reading is actually a socially communicative activity," said Mundy. "When we read, we have to focus on what the person who wrote the book is trying to tell us. Children with autism may not understand that at all, because they have difficulty adopting a common focus with other people."

With that crucial information in hand, the next step was to design and test a combined reading and social intervention.

Partnering with a Reading Expert

Mundy's team turned to Associate Professor Emily J. Solari, who had recently been recruited from the University of Texas Health Science Center in Houston. Solari was one of a handful of researchers nationally who were exploring how children's reading difficulties might be related to problems with comprehending both oral and written language. "When I was recruited, I was working on early reading development from ages 4-10," said Solari, "and how language factors—whether that means language delays, or being an English Language Learner—affect reading outcomes."

Supported by two IES grants, Solari also was developing a new type of reading curriculum for struggling readers. She and her team had written and piloted a comprehensive vocabulary and writing curriculum specifically to be used in the classroom by K-3 teachers to supplement their existing instruction.

The work was vitally important and long overdue. "Research shows that about 20 percent of all students struggle with reading," Solari said. "Schools don't have enough resources to address that, and it's a real shame, because we have evidence-based methods of improving reading skills, methods that have gone through

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Emily and Ryan Phillips with son Matthew, who participated in groundbreaking research studies.

Answers Found Here

RAD Center Opens to Meet Community Need for Reading Intervention Services

"When you're a parent of a child with special needs, all you want are resources to help you, and someone to answer your questions," said Emily Phillips.

Emily's son Matthew was diagnosed with autism in second grade, and she and her husband Ryan were having trouble getting him the support he needed to do well in school, particularly in reading. Their concern for Matthew led the couple to enroll him in Professor Peter Mundy's longitudinal study of children with autism.

"The study was a really good fit for our need for more information," she said. "Matthew had always struggled in school, so we had some urgency to figure out what was going on so he could do better."

The Phillips family was just one of many who were eager for answers about why their high-functioning children with autism were falling behind in school, and as a result of their participation, the research team of Professor Peter Mundy and Associate Professor Emily J. Solari was able to break new ground into why children with autism struggle in school.

Months later, when they heard that volunteers were needed for a pilot study to test and refine a reading intervention based on Solari's curriculum, the Phillips signed up Matthew immediately. The structure of this reading intervention was carefully designed to support social learning as well as reading instruction. Matthew, like all participants, was assigned a well-matched learning buddy with whom he would attend his sessions for the eight weeks of the study.

At their first session, children developed their own rules for participation, such as "take turns talking," and they read the rules aloud before every subsequent session. Every session was led by one trained undergraduate student teacher, who focused on the reading curriculum, and also included a behaviorist who focused on the children's social skills. The behaviorist quietly noted good behavior by adding a sticker to a

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>
> PROFESSOR PETER MUNDY

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randomized trials. I wanted to develop a method to implement research-based reading instruction methods that could be used by teachers in their classrooms."

Translating Research Results into Classroom Solutions

Solari had worked with children with autism in the past, so when she learned about Mundy's ongoing study, she realized her curriculum could work very well for reading comprehension issues in this population. And she was well aware of the need for such an intervention.

"There are very few academic interventions for individuals with autism," said Solari. "Most of those developed to date have been behavioral interventions only, and parents and teachers really want to know what to do academically for these students. This was a chance to fill in the very large knowledge gap about school-age children with autism."

The scope of Solari's curriculum, including the sequencing of reading concepts and the level of vocabulary, was a good match. However, the curriculum needed adjustments to support the development of social skills, in keeping with the results of Mundy's research.

Solari and her team reframed it as a two-teacher and two-student model that seamlessly included a social skills component (see "Answers Found Here" starting on page 11). "Emily's expertise fit in so perfectly with the needs of children with autism that she's helped us move the research forward very rapidly," said Mundy.

The revised curriculum was tested in a series of short pilot studies. The results were promising. "We're seeing that they're responding to this curriculum," said Solari. "Even though the pilot programs were only eight weeks long, we saw gains in expressive vocabulary."

A successful intervention could be a game-changer for thousands of students with autism who struggle to learn in an educational system that doesn't know how to make a connection with them. For an example, said Solari, the majority of students with autism stay in high school for eight years, as allowed by federal law, before they're able to complete their studies.

"I don't think the general public understands that 68 percent of children with autism have normal IQ scores," said Solari. "It's just that their reading comprehension problems are acting as a bottleneck that prevents them from accessing the rest of their subjects in school so they can succeed."

That success has the potential to go far beyond classroom achievement. "Because we're designing these reading interventions to have an impact on social interaction and social learning," said Solari, "we hope that the intervention will one day help them succeed beyond high school so they can engage with coworkers, for example. Social learning is related to lifelong success as a full member of society, and these children deserve that just like everyone else."

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chart—with enough stickers, children could earn small prizes—and helped the children stay on task with prompts such as "I like how Julie is ready to listen."

"One of the most important elements of the curriculum is that it's always positive reinforcement, never negative," said Solari, who is the Director of the Center. "It's also very structured, because children with autism really, really like structure. If they know what to expect, know they'll get stickers, know the routine, it helps them stay engaged."

The results have been gratifying. Before he participated in the pilot study, Matthew avoided reading as much as possible. "If he had to answer a question based on reading material, he would scan through the book looking for the answer so he wouldn't have to read it," said his father Ryan Phillips. "He was managing to get along that way, but just barely. We signed him up for the study and he loved it, and we've seen a dramatic increase in his grades and his effort levels ever since."

The pilot study was funded by a $30,000 gift from the Brett Cornett Fund, which was established by Sarah Cornett-Hagan to honor the memory of her son Brett, whom she believes had autism. Thanks to that gift and the participation of students like Matthew, the Solari-Mundy team have founded the Reading and Academic Development (RAD) Center.

The RAD Center now provides educational and clinical services such as assessments and tailored reading interventions on a sliding scale fee basis to school-aged children with developmental disabilities, including autism. The UC Davis Committee on Research recently provided $25,000 in seed money to attract further funding and support research.