PARENTS AND SPECIALISTS HELP BOY DEAL WITH DYSLEXIA

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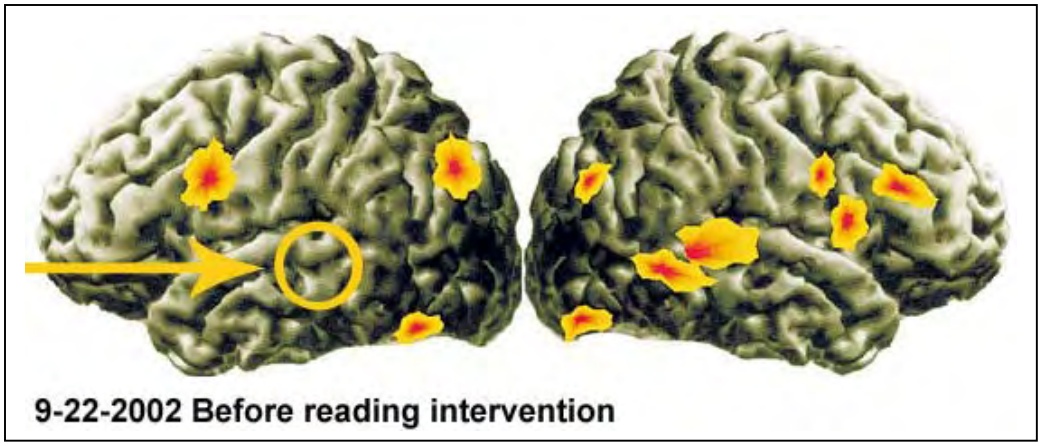
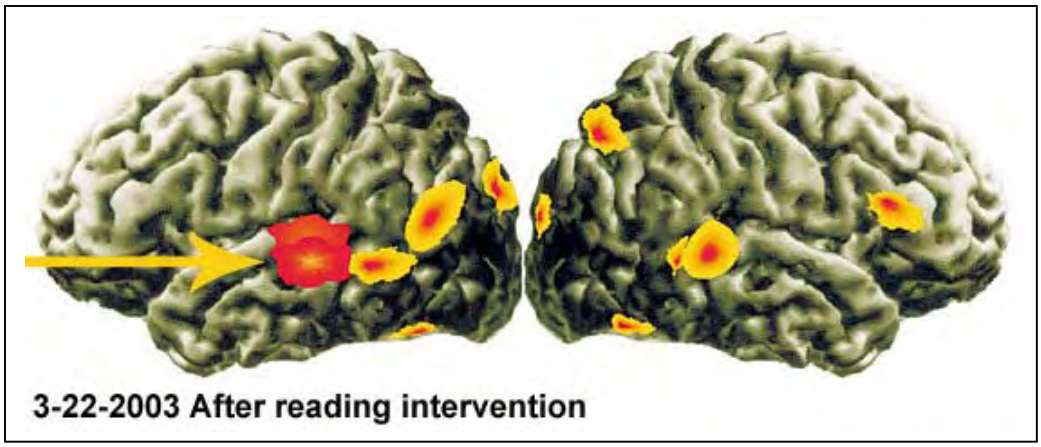
The Houston Chronicle
Sunday, March 21, 2004





Images courtesy of the University of Texas Medical School at Houston

When Peter Oathout was 5, the very thought of kindergarten made him sick. Certain activities during the day, particularly tests where he would have known the answers had he been able to decipher the questions, made him cry.

And in the evenings, when he was struggling with his homework and b's looked like d's and "d-o-g" looked like "g-o-d," he'd get so frustrated he'd cuddle up to his dad and say, "I like it better when you read."

Peter was lucky. His parents realized something was wrong, even though they couldn't pinpoint the problem. His vision was fine. He wasn't hyperactive or developmentally delayed. They talked to his teacher. She recommended a reading tutor. And the reading tutor recognized his reading disability.

The Oathouts scoured the Internet for information. That's how they learned researchers at the University of Texas Medical School at Houston are experimenting with noninvasive imaging to map brain function and dysfunction, including dyslexia.

RESOURCES

The kid's vision is fine. He seems to be developing normally. He's not hyperactive. Yet he's not reading as well as his peers. What's wrong and where to get help? A few suggestions for parents from researchers at the University of Texas Medical School at Houston:

• **Talk to the experts** at the child's school and see what resources are available. The staff may be able to help or make referrals.

• **Talk to the child's pediatrician,** who can make referrals as well.

• **Texas Reading Institute,** 11271 Richmond, 281-293-7904, is a small non-profit organization that works with children and trains parents to help kids. Dr. Eldo Bergman has tested about 700 children and helped more than 300 with reading problems.
http://www.texasreadinginstitute.orgT/

• **Those interested** in participating in the UT-Houston research project should call Maribel Briones at 713-797-7584. Researchers are looking for about 30 children, ages 7 to 12, and the scientists are particularly interested in left-handers. The researchers do screening and brain imaging, not treatment.

MEG, or magnetoencephalography, allows scientists to take snapshots of brain activity every millisecond. After spending about 30 minutes with Peter, including a break for a snack, UT researchers had the data they needed to identify his problem. Most people read using the left half of their brain exclusively. Peter, like other dyslexics, was using the left and right lobes.

The MEG doctors referred Peter to the Texas Reading Institute here. After hundreds of reading drills over the next 10 months, Peter's skills improved. Today the 8-year-old is a predominantly left-brain reader who enjoys second grade at Poe Elementary. He whizzes through tests required by the Houston Independent School District. He's reading above grade level. Meanwhile, researchers continue to work with MEG, hoping to unravel many more mysteries locked in the brain.

Dr. Andrew Papanicolaou, director of the medical school's division of clinical neurosciences, hopes the machine and its ability to map brain function may one day also help those who suffer from epilepsy, attention deficit disorder, spina bifida, autism, brain injury and stroke.

"We're trying to find out the brain mechanisms for all conceivable functions -- sensation, movement, speech, memory, attention, space perception. The sky is the limit," Papanicolaou says.

Dr. Guy Clifton, a colleague of Papanicolaou's at UT, is watching the progress with both professional and personal interest.

As a parent of a dyslexic child who was helped by MEG and intervention, he's glad to see that the massive machine has immediate practical applications. As a neurosurgeon and director of the $10 million project to improve function for spinal-cord and brain injury patients known as Mission Connect, he's optimistic that continued work with MEG will give scientists many more tools to help patients.

Clifton says it's amazing what doctors still don't know about the brain and its functions. MEG offers a peek in.

Papanicolaou, 53, was born in Greece, moved to the United States at 20, then threw himself into neuroscience. In the early '80s, when he was working at the UT Medical Branch at Galveston, he learned that it was possible to study the brain's magnetic waves -- and which parts of the brain handled specific tasks -- with a pioneering version of the machines used today.

Papanicolaou wanted one, and he asked for financial help from Robert Moody with the Moody Foundation. The Galveston philanthropist, who was particularly interested in head injuries and rehabilitation, agreed and contributed almost $800,000.

In 1993, when Papanicolaou moved to the UT medical school here, he got Moody's blessing to take the machine with him.

Even then Papanicolaou and colleagues were focusing on basic research in neuroscience. They wanted to figure out how the brain is supposed to work, how it sometimes repairs itself and what they could do to facilitate those repairs.

The machine, then based at the medical school, has been replaced by one now in use at Memorial Hermann. The hospital and UT's department of neurosurgery paid $2.5 million for the new equipment.

Melissa Phillip / Chronicle

Peter Oathout, 8, relaxes with a book on Greek mythology. Reading is fun now that he has mastered many of his problems with dyslexia.

A second $2.5 million machine has been installed at TIRR (The Institute for Rehabilitation and Research, which coordinates Mission Connect activities) with help from the National Science Foundation. Funds for research, space and equipment have come from the Vivian L. Smith Foundation for Neurological Research, the National Institutes of Health and Mission Connect.

"MEG is not a panacea. It's not an end-all," Papanicolaou says. "But when it comes to taking pictures of brain function, it's the best that we've got."

In a project with almost limitless possibilities, Papanicolaou and his colleagues had to establish priorities. UT doctors were the first in the nation, for example, to use MEG to locate language centers in the brain. That essential information helps surgeons avoid damage to those centers during operations.

"I did not myself discover all these things," Papanicolaou says. "Many people have worked together as a group."

UT doctors also were the first, he says, to use MEG to chart the abnormal brain-activity that defines dyslexia, which affects 2 percent to 8 percent of the school-age population in North America.

The cost is enormous for those who don't get help. "Our society is highly literate," Papanicolaou says. "Two hundred years ago, it wasn't that big a deal if you couldn't read. Today, it's very important, like being able to walk."

Papanicolaou and Panagiotis Simos launched the dyslexia screening project in 1999. Shirin Sarkari is in charge of it now. All told, they have tested about 60 dyslexic children, referred them for intensive reading tutoring and seen great improvement in their left-brain reading when tested again.

Papanicolaou says he is not sure whether all dyslexic children can benefit from this kind of one-on-one training, which starts with the correspondence of letters to sounds, then moves to the correspondence of syllables to sounds and words to sounds. But, he says, he and Sarkari are heartened by their results and look forward to testing 30 more children this year.

They're looking for dyslexics ages 7 to 12, particularly left-handers, who do not suffer from emotional or other neurological problems.

Along the way, the researchers are hoping to find out whether the slow and awkward right-brain reading is halted after a single period of intervention or whether the interventions have to be repeated. They're also wondering whether adult dyslexics can be helped or whether there is a cut-off age beyond which the brain cannot be retrained.

"We think even older people can profit," Papanicolaou says.

It's not known what causes dyslexia, though there are some indications it runs in families. It's also unclear whether dyslexics are born with the condition. Dyslexia first shows itself, Papanicolaou says, when little ones start to read.

Not all of the UT experiments have gone as well as the dyslexia studies, he says. He hopes one day researchers will unravel the mysteries of depression, anxiety and other affective disorders. But that area of brain dysfunction has been harder to decipher.

"We put on the front burner what is of most immediate urgency and what we can do something about," Papanicolaou says.

Today, interest and money are concentrated in dyscalculia, which is a math learning disability, in aspects of bilingualism -- researchers want to know whether different languages require different brain circuitry -- and in brain injury and stroke.

The question, Papanicolaou says, is why some patients recover from brain damage and others don't.

"When brain tissue is destroyed, there is no regeneration," he says. "But we've found that if one part of the brain is invaded by a malformation or tumor, the function is likely to be relegated to another area. Some other area of the brain will pick it up.

"That's the meaning of the reorganization," Papanicolaou says. "The neurons are reprogrammed."

On a recent rainy afternoon at the Oathout home, Patrick, 12, is brimming with news about middle school. Grace, 10, is reminding her mom about a field trip. In the midst of the hustle and bustle sits Peter, whizzing through his homework at the kitchen table. Occasionally he smiles beatifically at his mom and dad, lawyers who are sharing painful stories about Peter's kindergarten year.

"We thought he was just having problems adjusting to school," Monica says. "We thought he just had to buck up. Looking back, we realize he was trying to tell us something. We just missed it. He was so frustrated by the dyslexia."

Peter also was frustrated by the reading therapy, which lasted two hours a pop, twice a week, for 10 months. In addition, he had to do reading drills at home. His dad, Mark, coaxed him through. When the child did well, he earned coins from a bottle filled with spare change. He also earned $100 to $150 per visit to TIRR. Because the dyslexia project is still considered experimental and is largely funded by grants, all clients accepted into the program are paid for their time and contribution to research.

Monica is not sure exactly how much Peter has saved, but she knows where a bit of the money is going. Later this week, her mother is treating Peter to a trip to New York. It's a tradition the grandmother has celebrated with each of her other seven grandchildren when they turned 8.

"It's a welcome to the world of traveling," says Monica, who gets to go, too.

She is not sure what all they will see and do on their trip. But Peter has vowed he's taking his mother and grandmother to dinner while they're in New York.

"We'll have to find someplace Peter thinks is really spectacular," she says.

They also will be hunting for ice cream.

Monica says she was talking to Peter about the museums, exhibits and Broadway plays when he stopped her.

"I'm in search of the perfect banana split," he said.

There are fewer and fewer reading drills going on at the Oathout house. Instead, they simply read. The other night, Peter read his mom a story about ancient Egypt.