

# Broader look at autism

## Overturning prior beliefs, researchers find disorder's reach has impact across many brain functions

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Autism involves widespread brain changes affecting many aspects of behavior and thinking, beyond the characteristic language and social deficits, scientists at the University of Pittsburgh have found.

"This is a big change in the way most people have thought about autism," said Dr. Duane Alexander, director of the National Institute of Child Health and Human Development.

Dr. Nancy Minshew and colleagues Diane Williams and Gerald Goldstein of the University of Pittsburgh School of Medicine conducted the first comprehensive neuropsychological study of 56 high-functioning autistic children ages 8 to 15 and an equal number of non-autistic peers. The autistic group had deficits in many brain functions, including sensory and motor areas, attention, problem-solving and language. "And it affects a broad range of abilities in each of these domains," said Minshew, a professor of psychiatry and neurology. The study appears in *Child Neuropsychology*.

The researchers found deficits in processing information on sensory, motor, language, memory and reasoning areas. But more basic sensory abilities such as touch, pain, position and vibration are spared.

The scientists suspect the condition is triggered by the brain's inability to effectively integrate complex information almost anywhere in the brain.

For instance, a child will have no problems finger-tapping, but when asked to complete a more complex motor task like drawing or using scissors, the child will have trouble.

"The brain can't link skills together," Minshew said. The perceptual system is also affected. They can tell when they are touching something, but when they are asked to take features of a face and put a name to it, they often can't.

"It was amazing," Minschew said. "We see this broad pattern. There is something wrong with how the brain integrates information." The problems go beyond social, communication and repetitive behavior long the hallmark of this condition.

The brain region that controls posture is affected, with many children having an unusual gait.

Stephanie Dussel of Glen Head knows exactly what the Pittsburgh team is talking about. Her 13-year-old daughter, Samantha, showed the first signs of autism at 2. She would bang her head and bite herself. She did not speak until she was 6, a year after she was sent to live at a residential school in Massachusetts.

Dussel worked with the Genesis School in Plainview to open a group home for autistic teenagers on Long Island. Last year, the first home opened in Huntington. Another is set to open soon in St. James for older teens.

Samantha, who attends the Genesis School, now has a 30-word vocabulary. She has learned to dress herself, fix her breakfast and follow picture commands that lead her through her daily activities.

"It's definitely a multifaceted issue," said her mother. A very structured environment is key to reinforcing appropriate behavior, she said. "She's a completely different child," she added. "She has a life. ... She doesn't spend most of the day constrained because of her behavior. There is now so much hope for her."

And that is Minschew's credo as well. Knowing autism is a widespread brain problem will help scientists develop techniques to repair the broken circuitry and get regions talking to one another.