

The Eyes Have It

Researchers use eye-tracking technology to develop an early diagnostic tool for autism

When it comes to autism spectrum disorders, early intervention is critical to helping children cope with their disabilities. Today, the median age of diagnosis is about 4 years; early diagnosis can occur at 18 to 24 months. However, a group of researchers at the Marcus Autism Center is working to create a tool that could diagnose autism in the first 6 months of life.

Ami Klin, Ph.D., and Warren Jones, Ph.D., are leading the group, which moved from Yale University earlier this year. Dr. Klin is Director of the Marcus Autism Center and Chief of the Division of Autism and Developmental Disabilities at Emory University. Dr. Jones is an Assistant Professor of Pediatrics at Emory and Director of Research at the Marcus Autism Center.

For more than 10 years, Drs. Klin and Jones have mapped the way children with autism spectrum disorders look at the world. They use special infrared cameras and eye-tracking software to measure eye movement while children watch video scenes. They've created short videos of social interactions—such as scenes of children at play or scenes of a mom looking directly into the camera—and then measured how children with autism pay attention to these scenes.

“The time a child spends looking at the eyes of people is predictive of social ability or disability,” Dr. Jones said. In comparison with typical children, children with autism look



Dr. Ami Klin uses special infrared cameras and eye-tracking software to measure a child's eye movements and attention span.

less at other people's eyes and more at mouths and background objects.

The researchers will continue to study the eye movements of patients at the Marcus Autism Center, but they will also begin working with pediatricians to collect large sets of data on what typically developing children pay attention to, starting in the first months of life.

During the next few years, they will collect enough data to turn their research measures into an objective, clinical tool for diagnosing autism. “Essentially, we're developing growth charts for social engagement,” Dr. Jones said. By comparing the eye movements of children with autism to those of typically developing children, Drs. Klin and Jones will be able to pinpoint the age at which an autistic child's social development begins to diverge from that of typical children.

Noting those divergences will allow doctors to diagnose autism at an earlier age, according to Drs. Klin and Jones. “The earlier the diagnosis, the earlier we can start treatment and the better a child's outcome will be,” Dr. Klin said.

Just as a pediatrician charts a child's height and weight today, future well-child visits could include an eye-tracking evaluation for social development. The eyes truly are windows—and, with the help of technology, our doctors can see right through to the inner workings of a child's brain. ☕