Smart technology to help doctors detect autism earlier

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Someday your doctor may be able to examine your infant, notice a telltale physical characteristic and say, “Your child has autism — but we’ve caught it early, so don’t worry.”

Ron Hartung

For now, that kind of autism biomarker doesn’t exist, and most autism is not discovered until a child is 4 or 5 years old, when the brain is fairly set in its ways.

But with the help of a five-year, nearly $2.5 million National Institutes of Health grant, Florida State University researchers are spearheading a project that will screen infants who are only 12 months old using smart technology that can search simultaneously for both autism and communication delays.

FSU College of Medicine Distinguished Research Professor Amy Wetherby, director of the FSU Autism Institute, is leading the research.

The project will establish a network of frontline doctors who will ask the parents of every infant they examine to answer 10 online questions designed to identify delays in communication skills. The answers automatically will trigger as many as 20 additional, autism-specific questions, which are designed to instantly indicate whether the child is at risk for communication delays or autism so that early intervention can begin as soon as possible.

“If we can catch it early, we can treat it early,” Wetherby said. “Our goal is that all or most children with autism can go to regular kindergarten if we catch it early.”

The diagnostic tool they’re using is the Smart ESAC (Early Screening for Autism and Communication Disorders). Developed by Prometheus Research in New Haven, Conn., it can work on a smart phone, an iPad, a notebook computer or a regular computer. To save time, parents can even fill in the answers before the doctor’s appointment.

The Autism Institute is also working with Prometheus and the Florida Center for Interactive Media to develop online training that will use hours of video clips to teach parents, physicians...
and early-intervention providers what autism looks like. Autism spectrum disorder (ASD) is a neurobiological disorder defined by impairments in reciprocal social interaction and verbal and nonverbal communication, accompanied by restricted interests and repetitive behaviors.

Wetherby and her team plan to recruit as many as 32 primary-care physicians in the Florida Panhandle, then screen roughly 8,400 infants and follow them for two years. They predict about 10 percent will have communication delays and about 1 percent will have autism spectrum disorder. Throughout the project, they’ll keep fine-tuning the online questions to make them more effective.

“They’ll get screened at 12 months, get an automatic reminder at 18 months and again at 24 months,” Wetherby said. “You need to keep rescreening because the early signs actually unfold gradually from 9 to 18 months. So if you screen too early, you can miss it.”

Catching a communication delay is as important as catching autism, according to Wetherby.

“Most children who have school-age reading problems, other language problems and academic challenges have a history of a language delay in preschool,” she said. “So this is trying to catch those children earlier as well, and then try to give parents some resources to help foster their child’s development early.”

Among the project’s co-investigators is Heather Flynn, associate professor in the FSU College of Medicine’s Department of Medical Humanities and Social Sciences. She’s an expert in a technique called motivational interviewing, which will be used in this project to engage parents in understanding and addressing their children’s learning challenges.

“We want our methods to really be usable in the community, so that families can actually benefit from advances in science,” Wetherby said. “Autism can get worse as children get older because the autism symptoms themselves interfere with learning and development.

“Children with autism often have incredible talents. We want to minimize the symptoms and prevent the social difficulties that they have. So they can have a happy, productive life — that’s really what it’s all about.”

The Smart ESAC will be part of a suite of research-based resources for professionals and families that the Autism Institute has developed over nearly three decades of study. Florida State is working with a newly formed company, Autism Navigator LLC, which will distribute the free tools, resources and certification courses throughout the United States and internationally.

“We want to help families all over the world and give them hope,” Wetherby said. “There is clearly a window of opportunity to help mitigate the effects of autism spectrum disorder — and it is early diagnosis and intervention. The Smart ESAC and this project are important parts of our mission and vision.”
In addition to Wetherby and Flynn, the research team includes FSU co-investigators Elizabeth Slate, the Duncan McLean and Pearl Levine Fairweather Professor in the Department of Statistics, and Juliann Woods, a professor in the School of Communication Science and Disorders. The lead consortium investigator is David Voccola, chief operating officer at Prometheus Research. Catherine Lord, professor of psychology at Weill Cornell Medical College and founding director of the Center for Autism and the Developing Brain, serves as consultant on the project.

Florida State University