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Brain scans detect autism's signature

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An autism study by Yale School of Medicine researchers using functional magnetic resonance imaging (fMRI) has identified a pattern of brain activity that may characterize the genetic vulnerability to developing autism spectrum disorder (ASD). Published today in the early edition of *Proceedings of the National Academy of Sciences*, the study could eventually lead to earlier and more accurate autism diagnosis.

ASD is defined by impaired social interaction and communication, and can disrupt the brain's ability to interpret the movements of other people, known as "biological motion."

ASD is a strongly genetic, highly prevalent disorder.

Using fMRI, Yale researchers Martha Kaiser, Kevin Pelphrey and colleagues scanned the brains of children with autism and their unaffected siblings, as well as those of typically developing children as the three groups watched animations of biological movement. The study included 62 children age 4 to 17.

The team identified three distinct "neural signatures": trait markers-brain regions with reduced activity in children with ASD and their unaffected siblings; state markers-brain areas with reduced activity found only in children with autism; and compensatory activity-enhanced activity seen only in unaffected siblings. The enhanced brain activity may reflect a developmental process by which these children overcome a genetic predisposition to develop ASD.

"This study may contribute to a better understanding of the brain basis of ASD, and the genetic and molecular origin of the disorder," said first author Kaiser, a postdoctoral associate in the Yale Child Study Center.

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