

EEG test to identify autism in children

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The number of children diagnosed with autism spectrum disorder (ASD) has recently increased to one in 100. New research published in BioMed Central's open access journal *BMC Medicine* demonstrates that EEG can distinguish between children with autism and neurotypical controls. Autistic children showed a reduction in short range connectivity indicating poor function of local brain networks, especially in the left hemisphere regions responsible for language. However these children had increased connectivity between regions that were further apart indicating a compensatory mechanism.

Autism is characterized by impaired communication, including language and social skills, and often includes rigidity of interests, or repetitive, ritualistic behavior. While MRI studies have reported differing results, EEG measurements of [brain activity](#) have been more consistent.

Researchers from Harvard Medical School compared EEG measurements of almost 1000 children with and without [autism](#). Data was collected using 24 electrodes on the scalps of awake and alert subjects and results adjusted for events known to confound EEG results such as blinking, head movement or drowsiness.

Dr Frank Duffy and Dr Heidelise Als who performed this research at the Boston Children's Hospital explained, "EEG coherence is used to assess functional connectivity within the brain. Across all the age groups we tested, a set of 40 coherence measurements reliably and consistently distinguished between children with ASD and their controls."

The EEG results showed widespread differences in brain connectivity. Specifically short distance coherence (between adjacent electrodes) was reduced in the children with ASD, especially in the left frontal regions associated with language. Conversely long distance coherence was increased, suggesting a compensatory mechanism.

In addition to behavioral assessments, the use of EEG-based testing may help reliably diagnose autism in children, and may assist early detection in infants, allowing for more effective therapies and coping strategies.

Provided by BioMed Central

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