

# Adult autism diagnosis by brain scan

August 10 2010

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Scientists from the Institute of Psychiatry (IoP) at King's College London have developed a pioneering new method of diagnosing autism in adults. For the first time, a quick brain scan that takes just 15 minutes can identify adults with autism with over 90 per cent accuracy. The method could lead to the screening for autism spectrum disorders in children in the future.

The team used an [MRI scanner](#) to take pictures of the brain's grey matter. A separate imaging technique was then used to reconstruct these scans into 3D images that could be assessed for structure, shape and thickness - all intricate measurements that reveal [Autism](#) Spectrum Disorder (ASD) at its root. By studying the complex and subtle make-up of grey matter in the brain, the scientists can use [biological markers](#), rather than personality traits, to assess whether or not a person has ASD.

ASD is a lifelong and disabling condition caused by abnormalities in brain development. It affects about one per cent of the UK population (half a million people), the majority of these being men (4:1 male to female). Until now, diagnosis has mainly relied on personal accounts from friends or relatives close to the patient - a long and drawn-out process hinged on the reliability of this account and requiring a team of experts to interpret the information.

Dr Christine Ecker, a Lecturer in the Department of Forensic and Neurodevelopmental Sciences from the IoP, who led the study, said: 'The value of this rapid and accurate tool to diagnose ASD is immense. It could help to alleviate the need for the emotional, time consuming and

expensive diagnosis process which ASD patients and families currently have to endure. We now look forward to testing if our methods can also help children.'

Professor Declan Murphy, Professor of Psychiatry and Brain Maturation at the IoP, who supervised the research, said: 'Simply being diagnosed means patients can take the next steps to get help and improve their quality of life. People with autism are affected in different ways; some can lead relatively independent lives while others need specialist support or are so severely affected they cannot communicate their feelings and frustrations at all. Clearly the ethical implications of scanning people who may not suspect they have autism needs to be handled carefully and sensitively as this technique becomes part of clinical practice.'

Professor Christopher Kennard, Chair of the Medical Research Council's (MRC) Neuroscience and Mental Health funding board, said: 'Bringing together the knowledge gained from neuroscience in the laboratory and careful clinical and neuropsychological evaluation in the clinic has been key to the success of this new diagnostic tool. In fact, this approach to research is a crucial theme throughout the MRC's strategy. We know that an investment like this can dramatically affect the quality of life for patients and their families. The more we understand about the biological basis of autism, the better equipped we will be to find new ways of treating those affected in the future.'

The research studied 20 healthy adults, 20 adults with ASD, and 19 adults with ADHD. All participants were males aged between 20 and 68 years. After first being diagnosed by traditional methods (an IQ test, psychiatric interview, physical examination and blood test), scientists used the newly-developed brain scanning technique as a comparison. The brain scan was highly effective in identifying individuals with autism and may therefore provide a rapid diagnostic instrument, using biological signposts, to detect autism in the future.

The research was undertaken using the A.I.M.S. (Autism Imaging Multicentre Study) Consortium, which is funded by the MRC. Support funding was also provided by the Wellcome Trust and National Institute for Health Research (NIHR).

The paper, 'Describing the brain in autism in five dimensions - MRI-assisted diagnosis using a multi-parameter classification approach' is published in the *Journal of Neuroscience* today.

Provided by King's College London

Citation: Adult autism diagnosis by brain scan (2010, August 10) retrieved 10 April 2024 from <https://medicalxpress.com/news/2010-08-adult-autism-diagnosis-brain-scan.html>

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