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Goal Understanding in the Autistic Brain

The aim of this project is to test a hypothesis of social disability in autism by examining the brain systems underlying a key social skill – goal understanding – which may be abnormal in autism. Most people effortlessly infer goals; if you see a boy reach towards a cookie, you know he wants the cookie and his goal is to take the cookie. This ability depends on a set of brain regions called the ‘mirror neuron system’, which are critical for imitation and social interactions. Some researchers hypothesize that the mirror neuron system is broken in children with autism, causing social disabilities in imitation, language and emotions.

The present project tests the broken mirror hypothesis of autism by studying how the autistic brain processes other people's goal-directed actions. Typical adults and adults with autism or Asperger's syndrome will be asked to watch videos of goal-directed actions, such as a person taking a cookie, during functional magnetic resonance brain imaging. Analysis of brain activation will demonstrate if goal processing is normal or abnormal in the autistic brain. If goal processing is normal, this means that the broken mirror hypothesis of autism is incorrect, and that therapies for autism should build on the autistic individual's understanding of goals to teach other social skills. In contrast, if the data show that goal processing is abnormal in autism, this will mean that behavioural interventions that target the function of the mirror neuron system would be beneficial for individuals with autism.

What this means for people with autism: The results of this study will have important implications for our theoretical understanding of the neural and cognitive causes of social disability in autism, and for the development of interventions to improve these social disabilities.