

Recent Research - Marcel Just 2008
Professor of Psychology at Carnegie Mellon



Science Daily (July 24, 2008) — Picking up on innuendo and social cues is a central component of engaging in conversation, but people with autism often struggle to determine another person's intentions in a social interaction. New research from Carnegie Mellon University sheds light on the neural mechanisms that are responsible for such social difficulties in autism, and on the workings of these social brain mechanisms in all of us.

According to the study, which is available on the Web site of the journal Social Neuroscience, inefficient pathways for transmitting information between certain brain regions are to blame. The research implicates abnormalities in the brain's inter-regional communication system, which connects the gray matter's computing centres.

"The communication between the frontal and posterior areas of the social brain network is impaired in autism, making it difficult to understand the intentions of others" said the study's senior author, Marcel Just, the D.O. Hebb Professor of Psychology at Carnegie Mellon.

The study is the first to measure the synchronization between the brain areas that make up the Theory of Mind (ToM) network, which is responsible for processing the intentions and thoughts of others. It is the first to provide such concrete evidence of faulty social network connections.

"This study offers compelling evidence that a lack of synchronization in the Theory of Mind network is largely responsible for social challenges in Autism" said Just, Director of Carnegie Mellon's Centre for Cognitive Brain Imaging. "That evidence can provide the foundation for therapies that are more useful than current approaches"

The findings have the potential to guide the development of theoretically based interventions for autism that could target this particular shortfall, for example, by focussing on games and activities that would strengthen the connections. Eventually, it might be possible to tailor autism therapies to the brain communication deficit on a case by case basis. Measuring the connectivity before and after an intervention could also be used to determine the effectiveness.