MRC Autism Research Forum

Brain and Mind

Date: 4 March 2003
Location: Medical Research Council Head Office, 20 Park Crescent, London W1B 1AL

Aim: The aim of the forum was to bring academics in relevant disciplines together, to discuss the research areas of neuropsychology and neuroimaging, with particular reference to children with autism spectrum disorders. The expectation was that these broad discussions would aid interested researchers to submit high quality proposals for research in areas that had been highlighted in the recent MRC Review of Autism.

Professor Carol Dezateux (Professor of Paediatric Epidemiology at the Institute of Child Health, and Chair of the MRC Autism Research Steering Group) began the meeting by briefly described the MRC Autism Research Initiative. This initiative was set up by the MRC in the light of the £2.5 million given by the English Department of Health, and the subsequent £250,000 from the Chief Scientist’s Office of the Scottish Executive, to take forward the research recommendations of the MRC Review on Autism: Epidemiology and Causes (2001), but to also include research on interventions.

The format of the meeting was of informal, open discussion around a number of topics:

Neuropsychological tests

There was considerable discussion of the heterogeneity of phenotypes seen in autism spectrum disorders, both in the degree of severity of a particular impairment and in the relative contributions of the triad of impairments. Heterogeneity could be considered at a behavioural, neuropsychological, neurobiological or genetic level. Analogies were made with the heterogeneity seen with schizophrenia, where significant advances had been made by focusing on a specific symptom, rather than attempting to consider the whole phenotype. It was acknowledged that current standard neuropsychological tests were not specific enough at present to identify specific cognitive phenotypes. Advances in the understanding of genetic phenotypes may help in the characterisation of specific phenotypes.

It was agreed that there had been substantial advances in understanding the cognitive basis of autism spectrum disorders, an area of research where the UK was world-leading. However, it remained that there was not a widely accepted cognitive model for autism spectrum disorders. This had hampered the development of
specific neuropsychological tests that could be employed across the spectrum of potential studies.

There was considerable discussion over current neuropsychological tests, and their applicability and utility in autism spectrum disorder research. The consensus was that there was a need to develop and validate novel tests, across the age range. It was agreed beneficial to have alternative tests of the same cognitive deficit, although the impracticality of using a vast battery of tests was acknowledged. As a first step, it was considered sensible to focus on a subset in a hypothesis-driven manner.

It was noted that there was at present no measure in relation to the assessment of stereotypies.

**Neuroimaging**

There was a wide-ranging discussion of possible standardised structural imaging / neuropsychological protocols. There was general agreement that a normative database would be a significant aid in the study of autism spectrum disorders, but that at present such a resource did not exist. Such an undertaking would require a large, multi-centre UK collaboration. The specific issue of adequate controls in functional imaging experiments was discussed, and the importance of matching for IQ was re-iterated. The substantial efforts being undertaken in ongoing genetic studies to identify specific phenotypes, as well as broader phenotypes, were considered to be potentially fruitful areas for co-ordination with functional imaging studies.

The potential practical and ethical issues surrounding the imaging of individuals with autism spectrum disorders was acknowledged, especially the very young.

The earlier discussions over the lack of specific neuropsychological tests reflected the difficulties in undertaking functional imaging studies, although it was acknowledged that significant advances had been made with regard to “Theory of Mind”. There was potential in considering studies involving pharmacological functional imaging, but this research was at an early stage. The session concluded with a brief discussion of potential stimuli that may be used in functional imaging studies, noting the current excitement surrounding facial processing.

**Development of Measures**

The meeting discussed the need for the development of measures for use in intervention studies, with a recognition that there are a number of areas where assessment is required: characterisation of the sample, outcome, moderating or mediating variables. Furthermore, interventions may have effects that are distal to the specific outcome being measured, but are still important to be assessed (such as quality of life, improved social functioning, etc). It was noted that at present there were no quantitative measures in autism spectrum disorders, with current assessment being made on diagnostic criteria which tended to be categorical in
nature. In addition, currently used measures tended to reflect an assessment of stability, rather than change.

It was agreed that the development of outcome measures was an urgent priority for research on interventions in autism spectrum disorders, with the recognition that such tools would probably be age-dependent.

**Cross-cutting themes** that occurred during discussion included:

- The importance of proper controls, which might mean matching for IQ, and the possibility of compensatory mechanisms (especially in higher-functioning older children and adults).
- The lack of understanding of the normal cognitive and structural developmental trajectory, and how this progressed into adulthood.
- The potential confounding issues surrounding co-morbidities in individuals with autism spectrum disorders.

The meeting concluded with a short presentation by Dr Chris Watkins (MRC Autism Programme Manager) of the MRC and its funding schemes. An explanation of the application procedure was described.