The Cerebra Centre for Neurodevelopmental Disorders
School of Psychology
University of Birmingham

Collaborative PhD Studentships

Our goal

Children and adults who have a neurodevelopmental disorder often experience specific and sometimes unusual physical, emotional and cognitive problems in addition to global intellectual disability. These problems can effect how people feel and how they interact with their material and social world and this can mean that their behaviour is different, difficult to understand and sometimes problematic. Problem behaviours can have a significant impact on quality of life for everyone concerned by putting a strain on relationships with family and carers. The first step towards helping people who show these behaviours is understanding how people might differ in the way they feel and the way they see and experience the world and how this is related to behaviour. This is our goal at the Centre for Neurodevelopmental Disorders and PhD students play an important role in achieving this goal.

'Walking on eggshells' with Prader-Willi syndrome

An example of a PhD student project at The Centre for Neurodevelopmental Disorders is work that has been carried out to understand behaviour problems sometimes shown by people who have Prader-Willi syndrome. This syndrome is caused by the loss of a small amount of information on chromosome 15 with diverse physical and psychological effects. For example, it is well known that people only experience a sense of fullness for a very brief period after finishing a meal and so tend to eat more than other people. People can also show 'temper' outbursts and during these outbursts can be very angry, upset and aggressive. Both children and adults are often full of remorse after these outbursts and this suggests that they might not have been able to completely control what happened at the time. Parents and carers may describe these outbursts as triggered by what appeared to be an insignificant or minor change in the environment and that, at times, it feels like they are 'walking on eggshells'.

At the Centre for Neurodevelopmental Disorders, PhD student Kate Woodcock, has studied this problem in children with Prader-Willi syndrome. Working with Prof. Chris Oliver and Prof. Glyn Humphreys, Kate's lab based, experimental work has shown that children with Prader-Willi syndrome have a specific problem with switching their attention from one thing to another. Kate has also shown that when

children were required to make these unexpected switches in the real world, for example when playing a specially devised card game with Kate, their heart rate increased significantly, they began to ask the same questions repeatedly, they became more and more upset and then would have a temper outburst. The results of this research have shown how a particular cognitive deficit (attention switching) is related to social interactions in the real world (being asked to switch attention) and a problematic behaviour (temper outbursts) in children with Prader-Willi syndrome.

Areas of Research

Kate Woodcock's PhD research is a good example of how bringing cognitive and clinical psychology together can help to understand a specific problem associated with a specific disorder. This helps to build broader models of the ways in which a genetic disorder can give rise to cognitive difference and then how this difference interacts with the environment. This helps us to identify possible points of intervention and to provide advice to families and professionals via syndrome support groups, audio-visual media and the internet.

There are a number of new areas of research that we want to explore that will help us understand how people with neurodevelopmental disorders and intellectual disability feel and how they experience the world. Some examples are:

- **Long term outcome for individuals with genetic syndromes.** What are the early predictors and risk markers for poor psychological, health and social outcomes in individuals with genetic syndromes? What hurdles do families face as they seek support and services for their children. This project will provide novel and unique data that can inform government policy and resource allocation in the wider neurodevelopmental disability population.

- **Social-cognition in genetic syndromes.** Why do some syndromes show a high prevalence of autism spectrum disorder characteristics and significant social impairments (e.g. Fragile X syndrome) while others are relatively skilled in social interaction (e.g. Williams syndrome)? This project will consider whether these diverse outcomes in social functioning can be explained by differences in social-cognitive abilities which are thought to underlie social behaviour skills.

- **Early intervention.** If we can identify specific cognitive, social and environmental causes of challenging behaviour in children with severe intellectual disability at an early stage, this will enable us to implement appropriate, early psychological interventions. Are some children at higher risk for the later development of behaviour problems than others? Does early intervention stop the later development of problem behaviour such as self-injury and aggression?

- **Behavioural change and outcomes in Smith-Magenis syndrome.** How does behaviour change with age in those with Smith-Magenis syndrome and can we predict which children with Smith-Magenis syndrome will have more problems in later life? This project will follow up a sample of individuals with

Smith-Magenis syndrome, who were assessed when they were younger, to examine how their behaviour has changed with age, what factors might predict this change and also evaluate key outcomes in terms of quality of life in this group.

These are just examples of the kinds of research questions that we seek to address and we are interested in all aspects of the lives of children and adults who have neurodevelopmental disorders and intellectual disability. Importantly we want our research to be useful and to have a positive impact.

The PhD Candidate

Candidates apply to the School of Psychology and undergo a full day selection procedure that includes two interviews and a written task. We normally expect candidates to have a first class honours degree in psychology from a leading university and to have voluntary or paid experience of working with children and\or adults with neurodevelopmental disorders or intellectual disability. During selection we look for candidates who are very bright, practical and able to communicate effectively with both children and parents. We expect our PhD students to show a very high level of personal commitment to promoting the wellbeing of children and adults with neurodevelopmental disorders and to producing high quality, useful research.

PhD Supervision

Successful candidates are supervised by Chris Oliver (Professor of Neurodevelopmental Disorders). For some aspects of projects additional support is provided by Ian Apperly (Professor of Cognition and Development), Dr. Sarah Beck (Reader in Developmental Psychology), Dr. Debbie Allen, Dr. Jo Moss, Dr. Dawn Adams and Dr. Lucy Wilde (Post-doctoral Research Fellows). Other members of the School of Psycholgoy may also be involved as they have expertise in areas such as pain, motor coordination, social behaviour and language. PhD students join a team of seven research staff, six PhD students, five ClinPsyD students and fifteen undergraduate volunteers who work in the Centre for Neurodevelopmental Disorders. PhD students have access to all of the facilities and equipment available in the Centre and will be enrolled onto the PhD programme within the School of Psychology

Prof. Chris Oliver
Centre for Neurodevelopmental Disorders
School of Psychology
University of Birmingham.

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