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Cardiff study aims to uncover source of sensory problems in autism

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The way the brain reacts differently to the sense of touch in people with Autism will be examined as part of an innovative Cardiff University study designed to create better understanding of the condition.

Dr David McGonigle from Cardiff University's Schools of Psychology and Biosciences will use the latest brain imaging techniques to create a clearer picture of how touch is processed differently.

Sensory dysfunction is known to affect the quality of life of people with Autism. Certain qualities of touch, sound or movement are known to be distracting and unpleasant in some sufferers, while others may not even notice a particular sound or colour, which can make everyday activities difficult.

Dr McGonigle, who leads the two-year study, said: "It's common for work on Autism Spectrum Disorder (ASD) to focus on the communicative or social aspects of the disorder.

"However, there are also high incidences of sensory symptoms in people with ASD. With an estimated 80 percent of those diagnosed suffering from some aspect of sensory dysfunction this is something that we need to understand better to provide a fuller picture of the disorder."

The study will, for the first time, combine traditional experimental tests of touch, such as the ability to feel and distinguish between different sorts of vibrations delivered to the fingers, with images of the brain from

the latest state-of-the-art neuroimaging equipment.

Working in Cardiff University's Brain Research Imaging Centre (CUBRIC), Dr McGonigle will use Magnetoencephalography (MEG) to record the activity of the brain; Magnetic Resonance Spectroscopy (MRS) to measure the concentration of neurotransmitters - the chemicals that nerve cells use to communicate; and diffusion MRI (D-MRI) to provide information on how the different parts of the brain connect to one another.

Dr McGonigle added: "This study allows us to combine information across different experimental techniques and to create a clearer picture of how the brain responds to touch sensations in people with ASD.

"By doing this we hope to be able to better explain sensory symptoms in Autism. Ultimately, we hope this research will help us form a model of the kinds of sensory dysfunction of people with ASD and respond with better forms of treatment."

Funded by the Waterloo Foundation, the study is one of first to be developed in collaboration with the Wales Autism Research Centre (WARC) led by Professor Sue Leekam - a leading research figure in the behavioural and cognitive factors that affect the onset and development of Autism Spectrum Disorders.

WARC is a unique collaboration between Autism Cymru, Autistica and the Welsh Assembly Government designed to advance scientific research in areas of risk factors, early identification and the diagnosis of autism.

The importance of this research was the topic of a recent conference organised jointly by WARC and the Cardiff Neurosciences Centre (CNC).

Practitioners from across South Wales including teachers, paediatricians, speech and language therapists, occupational therapists and representatives of charities joined researchers, parents and people with autism discussed their personal experiences of the symptoms and the need for greater research in this area.

Jackie Edwards, whose two sons both experience sensory processing difficulties, told the conference: "I first realised they had sensory processing differences when they cried at the sound of the hoover or when someone flushed the toilet.

"My second son was diagnosed with classic "Kanner" Autism aged two and a half and his brother was later diagnosed with Asperger's Syndrome. They are now aged 21 and 19 and continue to find sensory processing difficult.

"For my Autistic son his home has been chosen in a quiet village where there are few cars or disturbances for him to have to process. His home is painted in natural calming colours, although he enjoys sensory stimulation that he is able to control, such as fluffy cushions and musical toys.

"My son with Asperger's is more able to use strategies such as playing his favourite music through an iPod to drown out the sound of external surroundings that he finds difficult to filter out.

"Both boys are sensitive to the feel of clothes on their skin and need to wear what's comfortable rather than what's in fashion. One is overly sensitive to the taste of food and has a restricted diet while the other will eat anything.

"Research into sensory processing is therefore essential as it will help everyone to gain a better understanding of what a person with Autism

might be experiencing rather than looking from a neurotypical perspective and expecting them to behave in a way that we expect.

"Gaining a better understanding of what their processing differences are - will help us support them in their own community."

Provided by Cardiff University