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autism@icn

Newsletter
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Contents

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Or you can visit our website
http://bit.ly/14cHXwQ

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Welcome to the autism@icn newsletter!

autism@icn is a group of researchers at the Institute of Cognitive Neuroscience within University College London who work to increase our understanding of autistic spectrum conditions (ASC).

This is our first newsletter which we will produce every six months. Let us know what you think!

Our new avatars help us study social interaction in virtual reality

Creativity in ASC

People with a diagnosis of ASC can be very creative, but how? Sarah Hampton, an MSc student at the ICN last year, investigated this with Paul Burgess. Participants with and without a diagnosis of ASC completed two types of creativity tasks. Firstly, they had to think of different uses for common everyday objects, such as a brick or paperclip. Next, participants were asked to produce as many different abstract drawings as they could in five minutes. Participants with and without a diagnosis of ASC were equally creative but in different ways. For example, people with a diagnosis of ASC tended to systematically explore a theme – this is called exploitative creativity. People without a diagnosis of ASC tended to use more pretence in their creativity. These results suggest that there may be a unique creativity profile amongst those with a diagnosis of ASC.
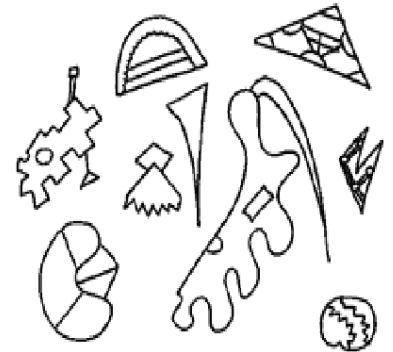
How many abstract shapes could you draw in 5 minutes?

How well can you predict your own behaviour?

Sarah White and her Masters student, Rui Sun (below) wanted to know if people can predict their own helping behaviour. They asked people if they liked to be helpful. Then some people were given the chance to help others. Sarah and Rui could compare how helpful people said they would be and how helpful they actually were. They found that people with and without a ASC diagnosis were equally helpful. However, there were differences in their predictions.

Those without an ASC diagnosis predicted that they would be more helpful than they really were. This was the case both when they were given the opportunity to help someone in a group situation (when other people were there) or alone (when there were no other people there).

Those with an ASC diagnosis also thought they would be more helpful than they really were in a group situation but accurately predicted how helpful they would be when they were alone. The results suggest that in some situations people with a diagnosis of ASC may be better at predicting their own behaviour than those without an ASC diagnosis.

The autism@icn team is a diverse group of researchers who are interested in understanding ASC. In each newsletter we highlight the role of one of our team members. In this issue, it's Paul Forbes.

For more information about the autism@icn team please visit http://bit.ly/1yzPjDM

Clockwise from top left: Uta Frith, Antonia Hamilton, Becky Lawson, Sam Gilbert, Paul Forbes, Jo Moss, Sarah White, Paul Burgess

Spotlight on…

Paul Forbes is the newly appointed Autism Research Coordinator at the ICN, taking over from Flora Thiébaut. He is the person you will meet if you take part in studies at the ICN. He is responsible for the coordination of ASC projects and for the recruitment of participants with a diagnosis of ASC. Paul is also studying for a PhD with Antonia Hamilton.

Fun fact…

Paul speaks Bislama, one of the national languages of Vanuatu.

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ART NEURO

The Art Neuro project took place from 6-9 November at the The Rag Factory in East London and will be touring the UK over the next year. In this, Sarah White collaborated with textile artist Rachael Pilston. Rachael has found inspiration for her past work in architecture. So she was immediately drawn to a test of local/detail processing that is often used with individuals with ASC. Here, people need to find a simple house shape embedded in a larger image.

Rachael was also intrigued by her own repetitive actions whilst sewing the finished piece together - thousands of identical tiny stitches. The finished piece was white to signify the way in which individuals with a diagnosis of ASC can appear untouched and untainted by the messy world we all live in - a sense of innocence. The artwork is based around the idea that individuals with a diagnosis of ASC tend to have a detail-focussed processing style and often excel in their ability to quickly locate a small shape.

Rachael hid 16 house shapes in the art work. They are all different sizes but they all have the same dimensions. How quickly can you find all the house shapes?

For more information about Sarah and Rachael's project please visit: http://bit.ly/1u4B8po

Uta Frith on BBC Two

In the spring, Uta presented an excellent documentary called *Living With Autism* on BBC Two's *Hoziron* programme. Antonia Hamilton also featured in the documentary.

To watch a clip from the show, please visit: http://bbc.in/1uvscK6

Talks

Antonia Hamilton will be speaking at an event in April 2015 which will update clinical psychologists and other practitioners on the latest neuroscience research concerning the treatment of ASC and other conditions.

For more information, please visit: http://bit.ly/11k8Pdk

PUBLICATION HIGHLIGHT

Many of the research projects conducted within the autism@icn group are published in scientific journals. In each issue we will highlight a publication of particular interest.

Can we see differences in the visual brain in ASC?

People with a diagnosis of ASC sometimes say that they "see the world in a different way." Scientists have tested this idea in the laboratory and found that when viewing a scene, individuals with a diagnosis of ASC show a bias towards processing local features of the scene rather than the global whole. This could explain why people with a diagnosis of ASC may be better at certain tasks, such as matrix reasoning (see right).

Researchers at the ICN wanted to establish whether differences in the visual system, the parts of the brain that process visual information, may underlie this 'local processing bias.' To investigate this they used functional magnetic resonance imaging (fMRI), a technique which can measure how 'active' different parts of the brain are, whilst participants viewed a moving patterned bar.
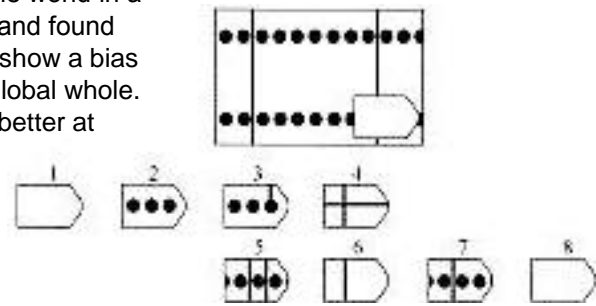
An example of a matrix reasoning problem. The correct image must be selected from alternatives. A 'local processing bias' may be responsible for superior performance in ASC on this type of task

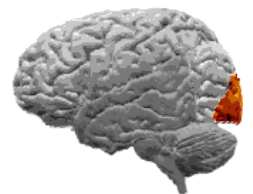### Receptive field size
Small   *Medium*   *Large*
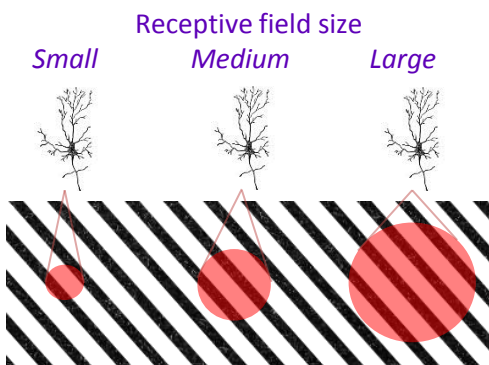
Different parts of the visual system respond to different sized patches in a visual scene. Are receptive field sizes smaller in ASC?

They wanted to determine if the visual systems of people with and without a diagnosis of ASC responded best to a small patch of an image, so have smaller receptive fields (RFs), or a big patch of an image, so have bigger RFs (see left). They thought that if the visual system in people with ASC had smaller RFs, that might explain why people with ASC are good at focusing on details.

Surprisingly, they found that in ASC, neurons in a part of the visual system called the extrastriate cortex responded best to **bigger** patches of space. So those participants with a diagnosis of ASC actually had bigger RFs.

The researchers suggested that the 'local processing bias' in ASC may instead result from differences in attention. So to understand how basic visual processing in the brain is related to how people see the world, future experiments should study how people pay attention to different parts of space.

The visual system is located at the back of the brain in the occipital lobe

The paper is:
Schwarzkopf D., Anderson E., de Haas B., White S. J. & Rees G. (2014)
Larger extrastriate population receptive fields in autism spectrum disorders
Journal of Neuroscience

For a complete list of our publications, please visit: http://bit.ly/11i6hM4
If you would like a copy of any of these publications, please email autism.icn@ucl.ac.uk

TAKE PART IN RESEARCH

autism@icn participant database

We are always looking for participants with a diagnosis of ASC for our autism@icn database.

Interested? Please email autism.icn@ucl.ac.uk or telephone 020 7679 1126 to organise an initial meeting at the ICN (left).

This meeting usually lasts about three hours during which participants are asked to perform a range of tasks and complete a series of puzzles.

Travel expenses are reimbursed and participants are compensated £7.50 per hour for their time and effort (with a minimum of £25 for this first session).

Want to spit for science?

Researchers at the University of Cambridge are studying how hormones contribute to behaviour in people with and without a diagnosis of ASC.

They are looking for adults with a diagnosis of autism, parents of a child with a diagnosis of autism, or adults unaffected by autism to give a saliva and/or blood sample to be analysed for hormones and DNA.

If you choose to participate, you will be asked to come to Cambridge for a 25 minute study visit, and to fill in some online questionnaires. Everyone who participates will be given £10 to say thank you, and travel expenses will also be reimbursed.

Questions? Want to take part? Contact the study coordinator, Alexa Pohl, at ap728@medschl.cam.ac.uk or by telephone 01223 746023.