Lifespan Development in Autism: From Embryo to Employee

Scottish Autism Research Group

Friday 27th February 2015
School of Education, University of Edinburgh
Godfrey Thomson Hall

09.15	Registration
09.40	**Dr Evelyn McGregor** *University of Edinburgh* Introduction to SARG, the re-launch and the seminar
09.50	**Dr Mary Stewart** *Heriot-Watt University* Mood, Depression and Loneliness across the autism spectrum
10.30	**PhD/Early Career 'Research in a Flash' Talks**
11.00	Coffee break
11.30	**Dr Beatriz López** *University of Portsmouth* Adulthood in autism: Applying theoretical models to the development of successful employment programmes
12.10	**Dr Eva Loth** *King's College London* Identifying biomarkers and new treatment targets for Autism Spectrum Disorders: EU-AIMS
12.50	**Lunch**
13.45	**Future Scottish Research Directions** *Round table small group discussions*
14.45	**Reconvene and submit discussion outcomes**
15.00	**Prof Simon Baron-Cohen** *University of Cambridge* Why is autism more common in males?
16.00	**Plenary lead by Dr Jeremy Parr** *Newcastle University*
16.30	Close of seminar

Information for Participants

Funding

This seminar has been possible thanks to the generosity of the following funders:

- Scottish Autism
- The Patrick Wild Centre, University of Edinburgh
- The Moray House School of Education, University of Edinburgh

Photography/Filming

Portions of this seminar may be photographed/filmed for wider dissemination (e.g. via SARG website). Please contact a member of the organising committee for further details if required.

SARG Organising Committee:

Bonnie Auyeung, Katie Cebula, Sue Fletcher-Watson & Evelyn McGregor
University of Edinburgh

María Núñez
Glasgow Caledonian University

Juan Carlos Gómez
University of St Andrews

David Simmons & Paula Regener
University of Glasgow

Mailing List

If you haven't already done so, please join our mailing list at: www.sarg.ed.ac.uk

Abstracts

Dr Mary Stewart
Heriot-Watt University
Mood, Depression and Loneliness across the autism spectrum

It is well documented that individuals with Autism Spectrum Conditions (ASC) suffer from comorbid psychiatric disorders. In a series of studies we assessed mood and risk factors of mood disorder across the autism spectrum. In both a student (n=238) and a general population sample (n=147) we found that autistic trait scores were positively correlated with negative mood and negatively correlated with positive mood. In a second study we found that higher levels of autistic traits were associated with a more negative attributional style. AQ scores were identified as the strongest predictor of attributional style, with Social Skill accounting for the most variance. In a third study, again using the AQ, we showed that as AQ scores increase there is a preference for using Facebook over face-to-face interaction. Those who reported feeling isolated scored significantly higher on the AQ and the majority of those who reported feeling isolated suggested that Facebook helped (54%). This series of studies outlines that low mood and feelings of depression are highly related to autistic traits, and that people who score highly on autistic traits may be at more risk of developing depression. Social networking sites may be particularly useful for those individuals who find face-to-face interaction overwhelming and may help with feelings of isolation and loneliness.

Mary Stewart Research Profile:
https://pureapps2.hw.ac.uk/portal/en/persons/mary-elizabeth-stewart%28a6f0d067-3b81-49f3-9d15-65ec62b3092f%29.html

PhD/Early Career 'Research in a Flash' Talks

Alyssa Alcorn
University of Edinburgh
It's all fun and games until someone puts a yellow ball in the red box, and then it's hilarious!

Louisa Miller
University of Aberdeen
Motor deficits in Autism Spectrum Disorder

Lee Seul Shim
University of Glasgow
Multimodal driving displays under varying situational urgency for control and ASD people

Sarah Hampton
University of Edinburgh
Bilingualism and autism: exploring families' experiences and developing novel methods

Scott Jackson
University of St. Andrews
Peaceful life, peaceful mind: The role of deficient social problem-solving on emotional distress in adults on the autism spectrum

Gillian Little
University of Strathclyde
Joint attention with an interactive virtual character in children with autism

Dr Beatriz López
University of Portsmouth
Adulthood in autism: Applying theoretical models to the development of successful employment programmes

Despite the demonstrated effectiveness of interventions to promote employment in people with ASD, unemployment rates in the UK still approaches 85%. One contributing factor to the low employment and job retention rates in ASD relates to the lack of integration of theoretical models of ASD in employment research and practice. Research on theoretical models of ASD has unequivocally demonstrated that ASD is characterised by unusual sensory profiles, executive function difficulties and social and communication impairments. However, employment research and programmes do not fully address how cognitive difficulties may impact in the working life of employees with ASD, with programmes and research focusing instead on employability skills. A second contributing factor to the high unemployment rates relates to employers' limited awareness of the needs of employees with ASD. A new model to address these limitations will be discussed.

Link to Autism Research Network, University of Portsmouth:
http://www.port.ac.uk/department-of-psychology/community-collaboration/autism-research-network/

Dr Eva Loth
King's College London
Identifying biomarkers and new treatment targets for Autism Spectrum Disorders: EU-AIMS

Autism Spectrum Disorders are a heterogeneous group of common life-long neurodevelopmental conditions. Currently, diagnosis is solely based on (to some extent subjective) behavioural observations and effective treatments for the core symptoms are still lacking. EU-AIMS is a public-private partnership that has two main goals: First, we combine cellular assays and animal models to identify new etiology-based treatment targets for ASD. Second, we carry out two linked multi-centre multidisciplinary clinical research studies spanning infants at high familial risk for ASD to children and adults with an existing ASD diagnosis to identify biomarkers for ASD. In this talk I will present our biomarker approaches and argue that biomarkers are needed to a) help diagnose the condition earlier and more reliably, b) to stratify patients into more homogeneous biological subgroups that may benefit from a given treatment, c) to serve as surrogate end-points, and d) to predict an individual's outcome in adulthood.

Link to the EU-AIMS Project, IoP:
http://www.eu-aims.eu/the-group/consortium/king-s-college-london/

Simon Baron-Cohen
Autism Research Centre, Cambridge University
Why is autism more common in males?

Autism affects males more often than females. This is likely to be true even after taking into account under-diagnosis of females with Asperger Syndrome (AS). One candidate biological mechanism for this are prenatal steroid hormones that shape brain development, which themselves are under genetic control and have epigenetic properties. In this lecture I summarize work from our lab from 4 lines of evidence: (1) Testing if one steroid hormone, testosterone, measured in the womb is associated with individual differences in typical children's language and social development, attention to detail and narrow interests, autistic traits, and later brain structure and function. (2) Testing if elevated prenatal steroid levels are associated with autism itself. (3) Testing if proxies of prenatal steroid levels in people with autism are also atypical. (4) Testing if post-natal steroid hormones in autism are elevated. These studies implicate a specific biological pathway (the Δ4 sex steroid pathway) as one important factor in the aetiology of autism. The ethics of translating these findings is discussed.

Key Books
Baron-Cohen, S, (2003) *The Essential Difference: men, women and the extreme male brain*. Penguin/Basic Books.
Baron-Cohen, S, et al (2005) *Prenatal testosterone in mind: Studies of amniotic fluid.* MIT Press/Bradford Books.

Links: www.autismresearchcentre.com

Key Journal Articles
Baron-Cohen, S, et al (2005) Sex differences in the brain: implications for explaining autism. Science, **310**, 819-823.
Baron-Cohen, S, et al (2014). Attenuation of typical sex difference in 800 adults with autism vs. 3,900 controls. PLoS ONE, **9,** e102251.
Baron-Cohen, S, et al (2011) Why are Autism Spectrum Conditions more prevalent in males? Public Library of Science Biology, **9**, 1-10 And Supplementary Material.
Baron-Cohen, S, et al (2014) Elevated fetal steroidogenic activity in autism. Molecular Psychiatry, 1-8.
Chakrabarti, B, et al (2009) Genes related to sex-steroids, neural growth and social-emotional behaviour are associated with autistic traits, empathy and Asperger Syndrome. Autism Research, **2,** 157-177.
Lai, et al (2013) Biological sex affects the neurobiology of autism. Brain, **136**, 2799-2815.
Lombardo, et al (2012) Fetal testosterone influences sexually dimorphic gray matter in the human brain. Journal of Neuroscience. **32**(2): 674-80.
Pohl, et al (2014) Uncovering steroidopathy in women with autism: a latent class analysis. Molecular Autism, **5**, 27.
Ruigrok, et al (2014) A meta-analysis of sex differences in human brain structure. Neuroscience and Biobehavioral Reviews, **39**: 34-50.
Ruta, L, et al (2011) Increased serum androstenedione in adults with Autism Spectrum Conditions. Psychoneuroendocrinology. **36**(8), 1154-63.
Schwarz, E, et al (2010) Sex-specific serum biomarker patterns in adults with Asperger's Syndrome. Molecular Psychiatry. **16** (12): 1213-20.