Investigating neurodevelopmental disorders with big data
Great data = great responsibility

Organized by:
Dr Jo Cotton

With support from:
Dr Silvana Mareva
and
Maria Vedechkina

WEBINAR

What inferences can we responsibly make?

The use of big data to study neurodevelopmental disorders (NDDs) has increased dramatically in the last decade, even more so since the Covid-19 pandemic has curtailed primary research. Whilst large sample sizes provide power for sophisticated statistical analyses, the scientific principles of causal inference still apply.

We bring together an exciting panel of international experts in NDDs and research methods to discuss opportunities and challenges that should be carefully considered in the design and interpretation of NDD studies based on big data.

Dr Joe Bathelt **Prof Joni Holmes** **Prof Henrik Larsson** **Prof Helena Kraemer** **Prof Edmund Sonuga-Barke**

Debbie Roberts from Engage Visually will create an infographic to summarise the content of this event

Speaker abstracts and bios on pages 2 & 3

Agenda
14:00- Introduction (JC)
14:10- Heterogeneity and overlap in NDDs (JB)
14:25- Transdiagnostics and big data (JH)
14:40- Registries: opportunities and challenges (HL)
14:55- Break
15:05- Such a thing as too much power? (HK)
15:20- Infer with caution... (ES-B)
15:35- Discussion and Q&A
16:00- Finish

REGISTRATION REQUIRED (FREE OF CHARGE)

https://tinyurl.com/gdgr28Apr22

Join us!

28 APRIL 2022
14:00-16:00 (LONDON)
ZOOM (Link provided with registration)

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Abstracts and bios

Introduction (14:00)

Jo will introduce the background, aims, and format for the webinar.

Jo is an ESRC postdoctoral research fellow at the MRC Cognition and Brain Sciences Unit, University of Cambridge. Her aim is to improve understanding of malleable factors that moderate the relationship between childhood ADHD symptoms and adult wellbeing.

Dr Jo Cotton

Heterogeneity and overlap in NDDs (14:10)

Joe will summarise findings from his recent research on functional brain connectivity and phenotypic clustering in ADHD and ASD, and discuss what they might mean for drawing inferences in big data studies about individuals classified by diagnostic criteria.

Joe is a Lecturer in Psychology at the Royal Holloway, University of London. His research investigates the contribution of brain maturation to cognitive development in typically developing children and in children who struggle in school, have genetic disorders, or sensory impairments.

Dr Joe Bathelt

Transdiagnostics and big data (14:25)

Practitioners frequently use diagnostic criteria to identify additional needs and to guide intervention decisions. This assumes that diagnostic criteria reflect an underlying reality. Joni will talk about how big data challenges this assumption, and argue for the use of an alternative transdiagnostic approach. She will highlight the advantages afforded by big data for studying neurodiversity, with consideration of its limitations.

Joni is a Professor of Psychology in the School of Psychology at the University of East Anglia, and a Senior Affiliated Scientist at the MRC Cognition & Brain Sciences Unit. Joni's current research challenges the use of diagnostic frameworks to identify and support children's needs.

Professor Joni Holmes

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Registries: opportunities and challenges (14:40)

Henrik will talk about strengths of registry-based data analysis, the wide variation in quality of NDD studies using big data, and the importance of considering confounder bias.

Henrik Larsson is Professor of Psychiatric Epidemiology at Örebro University and Karolinska Institutet, Sweden. The overall objective of his research team's work is to understand how genes and environment influence mental and physical health problems across the life span, and benefits and risks associated with pharmacological treatment interventions. His team use large cohorts identified from national health registers, the Swedish twin register and clinical populations.

Professor Henrik Larsson

Is there such a thing as too much power? (15:05)

Helena will talk about how big data has moved the field from worrying about too little power to too much, to the point that findings and inferences can mislead. Large observational datasets were not designed for the purpose of drawing causal inference, so how can we use them responsibly?

Helena Chmura Kraemer is Professor of Biostatistics in Psychiatry, Emerita, at the Stanford University School of Medicine. She has served as biostatistics expert for the National Institute of Mental Health (NIMH), and the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (APA DSM).

Prof Helena Kraemer

Interpret with caution... (15:20)

Edmund will reflect on concerns about a 'big data fallacy' and the need for caution when drawing inferences from studies of NDDs based on big data.

Edmund Sonuga-Barke (FBA FMedSci) is Professor of Developmental Psychology, Psychiatry and Neuroscience at the Institute of Psychiatry, Psychology and Neuroscience, King's College London. He is also editor in chief for the Journal of Child Psychology and Psychiatry. Edmund's research focuses on understanding neurodevelopmental disorders and mental health conditions across the life span.

Professor Edmund Sonuga-Barke

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