R4N Autumn Workshop 2024
16th –18th October 2024

Join us for the first Autumn School Workshop

The Respect 4 Neurodevelopment Network is delighted to announce our inaugural **Autumn School, set amidst the beautiful scenery of Cumberland Lodge** in Windsor Great Park, UK, from **October 16th –18th 2024.**

The goal of this 2 1/2-day retreat is for researchers to train in cutting-edge concepts and analysis approaches to shape the future of developmental research with neurodivergent infants and children.

Rapid advances in neurotechnologies, such as brain imaging or eye-tracking techniques, present remarkable opportunities to track the variability of brain and cognitive development from birth throughout life. Diverse applications range from researching genetic and environmental factors in brain and cognitive development, to identifying markers that may improve early detection or prognosis and using neurotechnologies for new interventions or support. The mission of Respect 4 Neurodevelopment is to address the overarching core issues of ethical responsibility, reliability, scalability and personalisation, so that neurotechnologies make a meaningful impact on children's lives in clinical or educational settings.

r4n@kcl.ac.uk
www.respect4neurodevelopment.com

This autumn retreat follows the ethos of our network: in order to tackles these issues, we need to bring together the perspectives and expertise from multiple disciplines, including participatory research, biomedical engineering, physics, computing/statistics, psychology and psychiatry. It will combine plenary sessions on the pillars of the network, participatory research and ethics, practical issues for researchers (e.g. attaining research funding and collecting neurocognitive data in developmental populations), as well as in-depth training in one dedicated topic of the attendee's choosing.

This year will focus on three exciting topics:

1) **Qualitative research (Dr Felicity Sedgewick, Sarah Douglas):** There is an increasing recognition of the need and value of involving people with lived experience in research in general, and particularly biomedical research with neurodivergent populations. Qualitative research can have an important role in this. However, few biomedical researchers receive formal training in qualitative methods. This stream will provide an overview of qualitative research methods, with a focus on thematic analysis and interpretative framework analysis.

2) **MRI Methodology and Connectivity Analyses (Dr Jonathan O'Muircheartaigh, Dr Tomoki Arichi)**. Recent advances in MRI methodologies range from portable ultra-low field imaging that can be used more equitably in low-resource settings to ultra high-resolution imaging at 7T. This stream will focus on cutting-edge neonatal and infant-specific acquisition sequences for both ultra-low field and ultra-high field imaging. This includes key practical considerations for study design and data collection, an introduction to functional and structural connectivity, discussion on what can and can't be done with the methods, and a practical introduction to analysis approaches to model connectivity networks in the developing brain.

3) **Developmental trajectory modelling (Prof Andrew Pickles, Dr Virginia Carter Leno).** Much research on neurodevelopmental conditions is cross-sectional and focuses on mean-group comparisons. These approaches are

unsuited to make predictions about a particular child, neglecting both heterogeneity within conditions and different developmental trajectories. This stream will focus on various developmental trajectory modelling approaches to longitudinal data to identify subgroups that differ in terms of changes in clinical profiles, cognitive or brain development.

Who should attend?

The Autumn School welcomes researchers from all career stages; from PhD students to Senior Researchers, eager to expand their knowledge and skills sets in developmental research methodologies. Applications from BAME and/or neurodivergent researchers are particularly welcomed.

Learning Objectives (All):

1. Gain insight into different methodological approaches of studying early brain and cognitive development through daily plenary sessions.
2. Understand ethical challenges and practical considerations pertaining to neurotechnologies and their potential clinical application.
3. Choose **one** analysis method out of the three training streams and dive into specialised training; **Qualitative Analyses**, **Developmental Trajectory Modelling**, or **MRI Methodology and Connectivity Analyses**. For more details on requirements and learning objectives of each analysis stream, click [here].
4. Engage in stimulating formal discussions, multi-disciplinary cross talk and informal networking sessions to foster collaborations and innovations in the field.

Highlights

- Be taught by some of the leading scientists in the field.
- Experience training in a relaxed environment in a historic, grade II listed, former royal residence in Windsor Great Park, and enjoy the spacious grounds and comfortable facilities.
- Accommodations for neurodivergent researchers, such as available quiet spaces.

Registration and Fees:
To apply, please complete the attached application form and return it to R4N@kcl.ac.uk

- The deadline for applications is **Friday, 9 August 2024, 5pm (UK time).**
- We aim to respond to applicants by Friday, 30th August 2024.

	Fees
Academic	
UK*	£550
EU/Overseas	£650
Industry UK, EU and Overseas	£750

Fees include: teaching, 2 nights overnight accommodation (16th and 17th October 2024), breakfast, lunch, dinner and refreshments during the course of the school.

*UK based participants' fees benefit from additional UKRI+ sponsorship.

Provisional Timetable

Times	**Wednesday, 16 October**	**Thursday, 17 October**	**Friday, 18th October**
9-10 am		Plenary 3	Plenary 5
10-11 am		Training streams (incl short break)	Training streams (including short break)
11-12 am	Arrival		
12-1 am	Lunch		
1-2 pm	Welcome and Plenary 1	Lunch	Lunch
2-3 pm	Training Streams (incl short break)	Training streams Practical + Discussion (including short break)	ECR career development
3-4 pm			
4-5 pm			Leaving
5-6 pm	Plenary 2	Plenary 4	
6-7 pm	Networking, Drinks, own time / Tour of venue	Networking, Drinks, own time	
7 pm	Dinner	Dinner	

Plenary Sessions will be held by Core Team members of the R4N Network

Biographies - Qualitative research Stream

Dr Felicity Sedgewick

Dr Felicity Sedgewick is a Senior Lecturer in Psychology of Education at the University of Bristol, having received her PhD from UCL in 2017. Her research focuses on understanding the lived experiences of autistic and other neurodivergent people, especially in terms of their relationships and mental health. She has used a range of research methodologies across her career and specialises in qualitative approaches. She is committed to developing ways of working with neurodivergent collaborators to conduct co-produced research and analysis, particularly individuals who have little previous research experience.

Sarah Douglas

Sarah Douglas is a late diagnosed AuDHD and disabled cis woman who is living proof that with the right support, a person who has additional needs can have a good quality of life and do amazing things. I am a published author, a participatory autism research study advisor and have embarked on my own MRes work on spiritual abuse. I also support survivors of sexual abuse as a volunteer, a co-facilitator of peer support groups and as a member of an autism and ID advisory group for SARSAS."

Biographies - MRI Methodology and Connectivity Analyses

Dr Jonathan O'Muircheartaigh	
Jonathan O'Muircheartaigh is a Reader in Developmental Neuroimaging at King's College London with experience in acquiring and analysing MRI data from the fetal to childhood period. His focus is on conditions that can alter neurodevelopment such as epilepsy and prematurity.	
Dr Tomoki Arichi	
Tom Arichi is a Clinical Scientist and Clinical Senior Lecturer and Reader in Perinatal Imaging in the School of Biomedical Engineering and Imaging Sciences, King's College London whose research focuses on developing and applying advanced novel neuroimaging methods (particularly MRI and EEG) to understand early human brain development in health and disease. He is also a Consultant in Paediatric Neurodisability at the Evelina London Children's Hospital.	

Biographies - Developmental Trajectory Modelling

Emeritus Professor Andrew Pickles	
Andrew Pickles is Emeritus Professor at the Department of Biostatistics and Health Informatics, King's College London. His career has passed through universities in the UK and US and has spanned natural, social and medical sciences. His research in the field of mental health and neurodevelopment, strongly influenced by a spell as statistician in Michael Rutter's MRC Child Psychiatry Unit that gave rise to long-term collaborations with Catherine Lord, Emily Simonoff and many other exceptional scientists and colleagues, has focussed largely on children, particularly those with autism. An important more recent shift has been towards the study of infants and early developmental signals and processes. Much of his methodological work has dealt with longitudinal models for developmental data and the many and varied impacts of measurement error. With colleagues Rabe-Hesketh and Skrondal, he contributed to the development of generalized multilevel latent variable models.	
Dr Virginia Carter Leno	
Dr Virginia Carter Leno is a Career Development fellow at the Centre for Brain and Cognitive Development at Birkbeck, University of London. Her research focuses on the neurobiological and cognitive mechanisms that drive differences in child development and mental health. She is particularly interested in better understanding the mechanisms that drive the overlap of mental health difficulties and autism, to promote positive mental health outcomes for autistic youth. Her research combines experimental techniques such as electroencephalography and neurocognitive paradigms with statistical models that can handle complex data such as is found in longitudinal cohorts.	

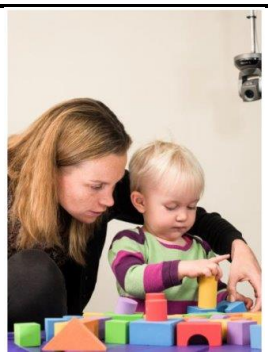
Biographies (Plenary Speakers)

Professor Eva Loth

Eva Loth is a Professor of Cognitive Neuroscience at the Institute of Psychiatry, Psychology and Neuroscience (IoPPN), King's College London (KCL). She is also the Deputy Director of AIMS-2-TRIALS, which is a large-scale European consortium aimed at developing precision healthcare for autism. Her work combines developmental, cognitive and neuroimaging approaches to better understand the relationships between social, emotional, motivational and cognitive processes in 'typical development' and neurodevelopmental conditions.

Professor Emily Jones

Emily Jones is a Professor at the Centre for Brain and Cognitive Development, Birkbeck, University of London. Her research interests centre on understanding the cognitive and neural mechanisms that drive variability in developmental trajectories. In this context, she runs a number of prospective longitudinal studies of neurodevelopment from infancy and directs electrophysiological and eye-tracking acquisition across several large-scale European and Global Health studies of children and adults with neurodevelopmental conditions.



Professor Ilias Tachtsidis

Ilias Tachtsidis is a Professor of Biomedical Engineering at the department of Medical Physics and Biomedical Engineering at University College London. He is a senior member of the Biomedical Optics Research Laboratory and leads the MultiModal Spectroscopy group and the MetaboLight team. His work is cross-disciplinary integrating engineering, physics, neuroscience and clinical medicine; with the research focus to engineer the next generation of optical near-infrared systems to image the brain. His team currently develops neurotechnology instruments based on broadband Near-Infrared Spectroscopy systems or bNIRS with the capacity to monitor and image both brain oxygenation and metabolism.

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