Warm Welcome to our Annual Meeting 2023

4 NEURODEVELOPMENT

London, 10 November 2023

Thank you for joining us:

- 189 in-person attendees
- 109 on-line attendees, including
- Participatory Research Committee
- Scientific Advisory Committee
- Early Career Researcher Network
- Industry Board
- EPSRC/ MRC UKRI
- Old members
- New members
- Special thanks to: Organising Team at IoPPN/ KCL and Birkbeck

R4N Core Team

Eva Loth
Cognitive Neuro-scientist

Emily Jones,
Developmental Neuroscientist

IliasTachtsidis,
Bioengineer

Tomoki Arichi,
Clinical Scientist

Liz Burchell,
Communications Officer

Amy Goodwin
Network Coordinator

What has motivated this network?

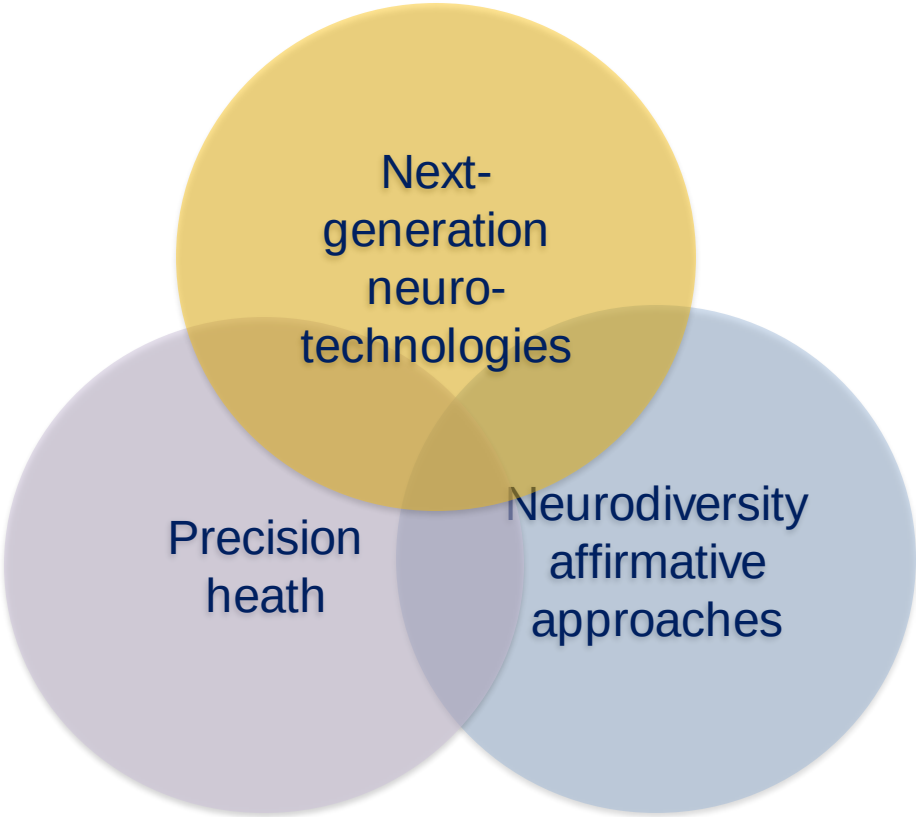
- PhD experience: small lab, creativity, but:
  - limited resources, limited access to “cutting-edge” technologies and participants
- Consortia experience: Multi-disciplinary expertise, bigger impact, but:
  - Is our research aligned with the priorities of the communities who we wanted to serve?
  - Limited signal in biomarker discovery:
  - Reliability of measures, need to increase signal-to-noise ratio
  - “One-shot” assessment at one time in longitudinal studies, need for more frequent assessments in naturalistic environments
  - If we take our work into the clinic, how can we scale it up?
  - Personalised healthcare – personalized assessment tools?

Our Vision

Build a community to co-develop the next generation of neurotechnologies for neurodivergent children that are desired, responsible, reliable, scalable, personalised and can be viably implemented in the health and educational systems.

We need a multi-disciplinary community because….

- **Engineers (academia and industry):** Cutting-edge neurotechnologies, limited access to psychiatrists, psychologists and families who will use these tools, regulatory environment for medical devices is complex
- **Psychiatrists/ psychologists:** Use tried-and-tested neurotechnologies and methods, not aware of innovations or possibilities to access them
- **Neurodivergent communities:** contribute lived experience, but left out or participatory research often seen as tokenistic
- **Ethicists:** Often separate from biomedical community rather than collaborators
- **Regulators, health care providers:** Often only involved at late stages (few innovations are presented to regulators)

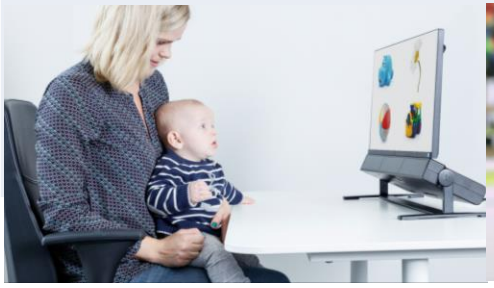
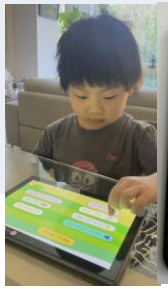


…nobody knows everything. Everyone has something to contribute!

What are neurotechnologies?

	Clinic/ lab-based	Wearable, portable
Brain anatomy, function, metabolites	 ←MRI	→ Portable MRI 
Brain function	 ←MEG → EEG → →fNIRS	 
Brain stimulation		

What are neurotechnologies?

Arousal, heart rate	 ←Skin conductance →	 
Robotics, Virtual reality	Heart rate→ →  ←Robotic assisted walking	
Eye-tracking, neuropsych tests	 	 

4 pillars of Respect4Neurodevelopment Working Groups

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Responsibility

Ensure that neurotechnologies are ethical, desired, acceptable and user-friendly for children and families

Reliability

Ensure that neurotechnologies are accurate

Scalability

Ensure that neurotechnologies can be used in different labs, clinics or homes

Personalisation

Ensure that neurotechnologies can be tailored to individual children's needs and characteristics

Lunch and Learn Webinar Series

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These are online and usually take place every 4th Monday of the month, 1-2pm UK time.

Please sign up to our newsletter and mailing list to receive registration links to these events.

Schedule 2023

23rd October
Professor David Edwards, King's College London
Title: Macroscopic connectomics in the developing brain

27th November
Professor Luca Pollonini, University of Houston
Title: TBC

Previous Talks

25th September
Professor Judith Gervain, University of Padua, Italy and CNRS, Paris, France
Title: How deaf and cochlear implanted infants perceive speech?

24th July
Professor Clare Elwell, University College London
Topic: Brain Imaging for Global Health

26th June
Dr Shruit Garg and Dr Caroline Lea-Carnall, University of Manchester.
Topic: Use of non-invasive brain stimulation for the amelioration of learning difficulties in rare genetic conditions

22nd May
Dr Paola Pinti, Birkbeck, University of London.
Topic: Mapping functional brain activity in ecological settings with mobile fNIRS: opportunities and challenges

24th April
Dr Robert Cooper, University College London.
Title: Anywhere, anytime, and any baby: functional mapping of the developing brain using light.

27th March
Dr Louisa Gossé, Birkbeck, University of London.
Title: Sleeping like a baby – how can we study infant sleep and why should we care?

27th February
Professor Mayada Elsabbagh, University of Montreal
Title: Community engagement in autism research: Finding the common ground.

23rd January
Professor Sam Wass, University of East London
Title: Why scaffolding is a bad metaphor: what using dual EEG to observe the microdynamics of dual adult-child play can tell us about how attention develops.

Early Career Researcher Network

- Lab-visits
- One-to-one mentorship (Cross-sector and cross-discipline)
- Peer-to-peer mentorship

Pump-prime feasibility studies

- First funding call: June 2023
- Four awards (average £50,000)
  - Prof Sam Wass
  - Dr Tobias Wood
  - Prof Jo Hajnal
  - Dr Chiara Bulgarelli

Travel awards

Anna De Laet
Annelies Gibson
Jason Bussell
Emerald Grimshaw
Eleonora Tilkin-Franssens

House keeping

Take control of your own noise!

Please mute when not speaking if online & in person we have set out universal adjustments.

We love to hear your opinions and ideas!

Please raise your hand if you would like to speak or put questions in the Q&A.

Chat box is for any administrative problems.

Cameras & audio will be off for Webinars by default but can be enabled for Q&A.

Watch the clock!

The chair may respectfully move discussions on to make sure we keep to time.

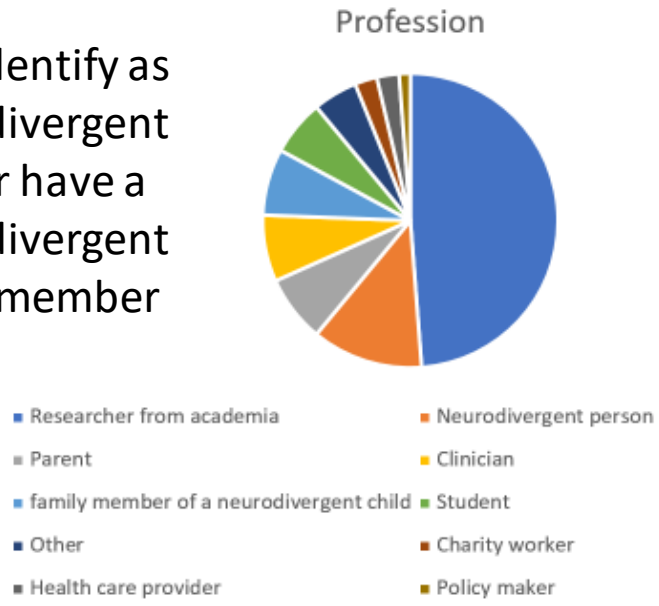
Flapplause preferred (not clapping)

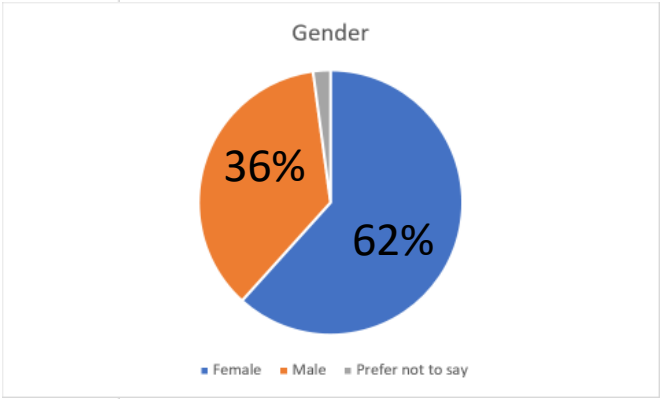
Due to the volume of people please use all rooms available. Refreshments and lunch will be served on the 1st and 2nd floor as well.

WHO ARE WE*?

- 120 people across 18 Universities, 4 Industry Partners/ SMEs and 2 Charities

18 % identify as neurodivergent and/ or have a neurodivergent family member





*Survey responses, N=47

WHO ARE WE*?

*Survey responses, N=47

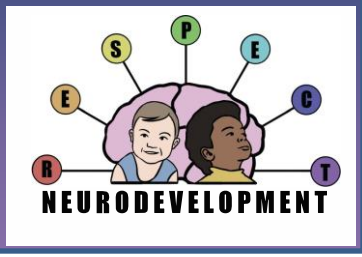
REASONS FOR JOINING?

Row Labels	Reasons for joining this network:	%
Learning about new developments in neurotechnologies for children	37	13.41
Meeting colleagues in my area of research	29	10.51
Meeting colleagues outside my area of research	28	10.14
Discussing the ethical ramifications or potential risks of the use of neurotechnologies for neurodiverse people	24	8.70
Contributing to strategic development in the neurotechnology space	23	8.33
Learning about neurodevelopmental conditions	22	7.97
Understanding the criteria for neurotechnologies to be used in healthcare	21	7.61
Learning about precision medicine	18	6.52
Learning about participatory research	17	6.16
Exploring training opportunities	16	5.80
Finding collaborators for a specific project	13	4.71
Exploring how to attain grant funding for neurotechnology research	11	3.99
Offering input from neurodivergent families with lived experience to increase awareness in professionals working in this space	11	3.99
Exploring how to carry out clinical trials	6	2.17
Grand Total	**276**	100.00

IN YOUR OWN WORDS…

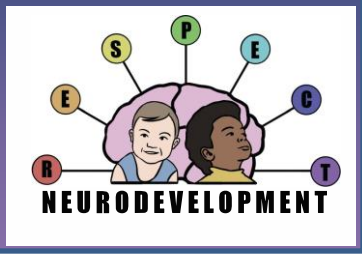
- To help develop applications that are of benefit to autistic people and which enable them to have a better quality of life.
- Increasing understanding of what the key questions are and how we might work together to answer them
- Opportunities to move the field towards clinically/individual relevant support with a tailored (focused) basis
- a better connected group of UK researchers who hear about what does and importantly doesn't work (which is so rarely published) with tech so that advances can be more rapidly made

WHAT CAN YOU CONTRIBUTE



- Research into early development, industry experience in an app company
- Provide my own expertise based on my academic studies, professional work experience, NGO volunteer work experience, life experience as an autistic person and as mother, partner and friend of many other autistic and otherwise neurodivergent people.
- Experience with many other networks, funding bodies and government
- By listening and contributing from my 20 + years in education and as a parent.

CONCERNS?



- I don't have immediate concerns, but would love to see community involvement from the get-go with regard to priority setting and the development of research questions.
- the network seems very broad - I am interested in how we can bring that into manageable projects.
- Bridging the knowledge and experience gap between users of different neuroimaging modalities will be challenging. Nonetheless it is a challenge that we need to face to build this community.
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