Funding

Action Medical Research and Great Ormond Street Hospital Children’s Charity
Autistica
Autour des Williams
BIAL Foundation
Bill and Melinda Gates Foundation
British Academy
Department of Health, UK
Economic and Social Research Council
Education Endowment Foundation
Edward Glover CMG and Dame Audrey Glover
European Commission
European Research Council
Garfield Weston Foundation
The Great Britain Sasakawa Foundation
Innovative Medicines Initiative – EU
Jacobs Foundation
L’Oreal UK and Ireland
Leverhulme Trust
The Maurice Wohl Charitable Foundation
Medical Research Council
MQ: Transforming Mental Health
Royal Society
Simons Foundation
Waterloo Foundation
Wellcome Trust
The Wolfson Foundation

Babylab
www.cbcd.bbk.ac.uk/babylab

Bridge Lab
www.bridgelab.bbk.ac.uk

Developmental Neurocognition Lab
www.bbk.ac.uk/psychology/dnl

Genes Environment Lifespan Lab
www.gel.bbk.ac.uk
Introduction

Welcome to our biennial progress report for the period October 2014–2016. The report illustrates some of the major projects, themes and achievements of members of the Centre for Brain and Cognitive Development (CBCD), and builds on our previous reports.

The Centre was established in October 1998 when Mark Johnson and his team moved to Birkbeck, University of London, from the former Medical Research Council Cognitive Development Unit.

Denis Mareschal joined in the same year as a founder member, and steady growth since then has involved the addition of faculty members Michael Thomas (from the Institute of Child Health, University College London in 2002), Fred Dick (from the University of California, San Diego in 2004), Annette Karmiloff-Smith (from the Institute of Child Health, University College London in 2006), Natasha Kirkham (from Stanford in 2007), Angelica Ronald (from the Institute of Psychiatry, Psychology and Neuroscience, King’s College in 2007), Emma Meaburn (from the Institute of Psychiatry, Psychology and Neuroscience, King’s College in 2009), Matthew Longo (from University College London in 2010), Marie Smith (from the MRC Cognition and Brain Sciences Unit, Cambridge in 2010), Tim Smith (from the University of Edinburgh in 2011) Iroise Dumontheil (from the Institute of Cognitive Neuroscience, University College London in 2012) Clare Press (from University of Reading in 2012), Adam Tierney (from Northwestern University in 2015) and Emily Jones when she took up a lectureship at Birkbeck in 2015. In addition, Drs Victoria Southgate and Atsushi Senju obtained prestigious fellowships (from the Wellcome Trust and Medical Research Council) enabling them to develop their own research teams within the Centre. In line with the Centre’s increasing impact, Professors Tony Charman (Institute of Psychiatry, Psychology and Neuroscience, King’s College) and Clare Elwell (University College London) have joined us as visiting professors in the last two years.

The CBCD is a dynamic and continually changing entity refreshed by new post-docs and research fellows, and it has become a major centre for postgraduate training (see CBCD Scientists). Some have retained membership of the CBCD as Affiliated Scientists. We are particularly pleased that many former members have gone on to establish their own labs and research centres elsewhere in Europe, North America and Australia.

The CBCD is also a place of training for the future generation of international researchers. We are very proud of our doctoral (PhD) students who have completed their degrees over the last few years. The calibre of their success is witnessed by the international prizes that they have received for their doctoral research from such organisations as the American Psychological Association and the Cognitive Science Society (USA).

The work of CBCD members continues to be characterised by its use of converging methods (behavioural testing, eye tracking, ERP, EEG, optical imaging, EMG, computer modelling, functional and structural MRI), and by its theory-driven programmes of empirical research on visual, cognitive, and language development in human infants, children and adults.

While the CBCD shares common infrastructure, it is further organised into several constituent labs, each with its own particular focus. Some members of the CBCD are also members of associated centres such as the Centre for Educational Neuroscience (educationalneuroscience.org.uk), Birkbeck-UCL Centre for Neuroimaging (BUCN; http://bucni.psychol.ucl.ac.uk/), the Birkbeck Psychology Genetics Grouping (bbk.ac.uk/psychology/our-research/research-groups/genetics-grouping), and the BRIDGE Lab (bridgelab.bbk.ac.uk).

We are delighted to have received funding from the Maurice Wohl Charitable Foundation and the Wolfson Foundation for a new, state of the art ToddlerLab facility. Using the latest wireless technologies, the Wohl Wolfson ToddlerLab will enable the advanced scientific study of brain development for children from 18 months to three or four years, in an environment simulating familiar surroundings for toddlers. It will enable us to understand development in more real world contexts, in which the children interact with each other and are free to roam about.

In addition to many individual collaborations, the CBCD also maintains strong collaborative partnerships with the Institute of Psychiatry, Psychology and Neuroscience (King’s College London), the Institute for Research in Child Development (University of East London), University College London Medical Physics, and the LonDownS Consortium in London. We have several partnerships with commercial companies including Acuity ETS Ltd and Procter and Gamble.

Needless to say, the work undertaken at CBCD is only possible through the generous support of our many funders, Birkbeck and the numerous families and children who have volunteered their time. We hope that you enjoy reading the report.
Members of the CBCD take collective responsibility to create an advanced training environment to increase expertise in our area of science at a national, European, and international level. In addition to the many PhD students, post-docs and research fellows we have trained, we are leading our third EU Marie Curie Doctoral Training Programme (European Industrial Doctorate: Individualised Interventions in Learning: Bridging Advanced Learning Science and 21st Century Technology).

Students, postgraduates, and faculty of the CBCD have continued to win awards over the past two years that reflect not only on their personal achievements and excellence, but also on the supportive research environment provided by the CBCD.

Research at the CBCD is characterised by being both theoretically motivated and methodologically rigorous. For example, the BabyLab has pioneered methods for measuring brain functions in babies. Our regular training courses have contributed to a very rapid expansion in the number of labs that now conduct this kind of work internationally. In addition, with collaborators in Medical Physics at UCL we have helped to develop optical imaging methods (NIRS) for studying brain functions in infants. We are also collaborating on the development of wearable technology suitable for toddlers.

The Developmental Neurocognition Lab and BabyLab have developed computer-modelling techniques for simulating the development of aspects of cognition, their individual variability and gene-environment interactions. Recently, we have facilitated genetic approaches to understanding individual differences in infant and child behaviour and brain function, and a new “wetlab” facility for DNA analysis has been constructed (The Bridge Lab).

Methods commonly used at the CBCD include:

- ERP: Event-related potentials – a method to measure the changes in the electrical activity of the brain triggered by a specific sensory event.
- Functional MRI: An MRI method which allows researchers to see which regions of the brain are active.
- NIRS: Near infrared spectroscopy – a method of imaging brain function that involves tiny changes in light levels.
Awards

Professor Frederic Dick
Appointed Fellow of the Association for Psychological Science, 2014

Dr Iroise Dumontheil
British Psychological Society, Spearman Medal, 2015

Dr Maria Laura Filippetti
American Psychological Association ‘Division 7: Developmental Psychology’ Dissertation Award, 2015

Dr Teodora Gliga
British Psychological Society, The Neil O’Connor Award, 2016

Professor Mark Johnson
Huttenlocher Prize (for Developmental Cognitive Neuroscience), 2015

Professor Annette Karmiloff-Smith
Elected chair of the Bloomsbury Centre for Genetic Epidemiology and Statistics, 2014

Dr Angelica Ronald
American Psychological Society Janet Taylor Spence Award, 2014

Dr Atsushi Senju
Margaret Donaldson Early Career Prize, British Psychological Society, 2015; Nakayama Award, Award for Distinguished Early and Middle Career Contributions (Shorei-sho), Nakayama Foundation for Human Science, 2015

Professor Michael Thomas
Appointed Fellow of the Association for Psychological Science, 2014

Dr Kristen Swan Tummeltshammer
American Psychological Association ‘Division 7: Developmental Psychology’ Dissertation Award, 2016

Media

Studies carried out at CBCD are frequently recognised in the national and international media, including:

BBC One
BBC Two
BBC Radio Four
Canadian Discovery Channel
Fox News
National Geographic
New York Times
Radio Five Live
The Daily Telegraph
The Daily Mail
The Evening Standard
The Guardian
The Huffington Post
Wired Magazine
Yahoo News

Media Highlights

Radio 4’s Today Programme
9 October 2014
Discussion led by Professor Denis Mareschal on an educational neuroscience-based intervention aimed at improving primary school children’s math and sciences academic achievement.

BBC World News Horizons
23 November 2014
“The Brain”

The Guardian
10 June 2015
“The Secret Life of Babies” event
Scientists

Professor Mark Johnson FBA
Director of CBCD and MRC Programme Leader

Currently, Professor Johnson’s main project involves leading large-scale longitudinal studies on babies at-risk for a later diagnosis of Autism Spectrum Disorder (ASD; BASIS – British Autism Study of Infant Siblings) or attention deficit hyperactivity disorder (ADHD; STAARS – Studying Autism and ADHD in at-Risk Siblings), a project that now involves multiple sites across Europe (EU-AIMS, Eurosibs). These studies attempt to elucidate mechanisms of typical and atypical cognitive development through analyses that include genetics, various measures of brain structure and function, cognitive studies, parent-child interaction and family context. In essence, we attempt to trace the typical and atypical postnatal functional development of the human brain within its surrounding social and physical environment. Recently, research has been directed to potential early interventions that may boost aspects of development in infants at-risk for less optimal outcomes.

To read about our latest work in Nature please follow this link: nature.com/news/the-big-baby-experiment-1.18701


Professor Denis Mareschal
Co-Director of CBCD

Professor Mareschal has continued to investigate the mechanisms of perceptual and cognitive development across infancy and childhood. His recent research has focused on how young children maintain distant goals in everyday action sequences, for example when making a sandwich. A second line of research has asked how our understanding of time and duration may be grounded in early infant motor activity. The repeated actions that we see so often in infants provide them with an opportunity to learn how long actions on the world last. Finally, he has been involved in promoting the use of developmental cognitive neuroscience to develop better and more effective educational programmes - an approach sometimes referred to as Educational Neuroscience. He has been leading a large-scale project (UnLocke unlocke.org) exploring the impact of teaching children to “Stop and think” rather than just respond with their immediate intuition, and on learning counterintuitive math and science concepts.


Professor Michael Thomas
Director of the Centre for Educational Neuroscience and Director of Developmental Neurocognition Laboratory

Professor Thomas’s recent work has focused on computational modelling of development in large populations, and translational research in educational neuroscience focusing on brain plasticity. With regard to computational modelling, he has investigated how brain plasticity is linked to intelligence, the possible mechanisms by which autism impacts on brain development; and how behavioural interventions can alleviate developmental deficits. With regard to educational neuroscience, he has explored the implication of new findings from genetics (e.g., on the heritability of children’s exam results) for parents, teachers, and policymakers. Current projects involve ways to improve science and maths education in primary age children using principles from neuroscience, and evaluating possible influences of mobile phone use on teenage brain development.


E., Mok, K, Startin, C., Fisher, E., Hardy, J., Nizetic, D., Tybulewicz, V.


**Professor Tony Charman**  
Visiting Professor  
Professor Charman holds the Chair in Clinical Child Psychology at the Institute of Psychiatry, Psychology & Neuroscience, King’s College London. His main research interest is the investigation of social cognitive development in children with autism and the clinical application of this work via screening, diagnostic, epidemiological, intervention, and ‘at-risk’ studies. He is a Chartered Clinical Psychologist and works in a specialist service for children with autism and complex neurodevelopmental conditions at the South London and Maudsley NHS Foundation Trust. He has published more than 250 peer-reviewed papers and over 30 book chapters. He has served on a number of expert panels for the Medical Research Council and NICE in the UK, NIH in the USA and the WHO.


**Professor Clare Elwell**  
Visiting Professor  
Professor Elwell is a Professor of Medical Physics in the Department of Medical Physics and Biomedical Engineering at UCL. She leads the NIRS research group developing novel optical systems for monitoring and imaging the human body. Her research projects include studies of autism, acute brain injury in adults, children and infants, sports performance, migraine and malaria. Her most recent project is the use of NIRS to investigate malnutrition related brain development in rural Gambia, resulting in the first functional brain imaging of infants in Africa. Her research is supported by the EPSRC, MRC, Wellcome Trust, Bill and Melinda Gates Foundation and industrial collaborators Hamamatsu Photonics and Hitachi Medical Systems.


**Dr Caspar Addyman**  
Postdoctoral Researcher  
Dr Addyman is interested in learning mechanisms in early infancy and whether these are the same as those found in adults. He runs studies with babies and builds computational models of behaviour. His research on time perception has shown that babies already have a remarkably adult-like awareness of time from 4 months old, but that their ability to act on this develops later. His modelling work has led to a new theoretical explanation for how our brains judge short time intervals. He has also looked at what science can learn from baby laughter and is currently writing a book on the subject. This recently led him to Brazil working with Pampers (Procter and Gamble) to see what makes a good night’s sleep for babies. Surprisingly, Brazilian babies almost always woke up very happy. He is currently seeing if the same is true for British babies.

In September 2015, Dr Addyman left Birkbeck after 14 years (with 10 years at the CBCD). He has taken up a fellowship at Goldsmiths in South London and works in their Infant Lab with two CBCD alumni Prof Andy Bremner and Dr Rhiannon Thomas.


infants’ neglect the location of touch in the external environment until around six months of age. Dr Begum Ali has also investigated the developmental drivers of body representations; for example, the roles of active sensorimotor experience and brain maturation.

Further, her research has examined the interaction between vision and touch within the first six months of life. Currently, the research has been extended to include audio-visual interactions to examine how information from multiple sensory sources are combined and used. Her research uses a variety of behavioural and neurophysiological measures (such as EEG) in typically developing infants, children and adults.


Dr Anna Blasi
Postdoctoral Researcher

Dr Blasi has continued to investigate the early neurocognitive development of brain regions involved in social communication. She has been part of the British Autism Study of Infant Siblings (BASIS) team since 2010. She has published several papers relating brain activation and behavioural measures of infants at risk for ASD, as well as brain activation and measures of outcome at 3 years. She has also contributed to the further development of functional NIRS (fNIRS) as an imaging technique for infant studies and has combined, for the first time in babies, fNIRS with functional MRI (fMRI) in a simultaneous study.

*Blasi, A., Lloyd-Fox, S., Elwell, C.E. and Johnson, M.H. (2014). Test-retest reliability of fNIRS in infants, Neurophotonics, 1, 025005 (* Blasi and Lloyd-Fox and are joint first authors), doi: 10.1117/1. NPh.1.2.025005.


Dr Hannah Broadbent
Postdoctoral Researcher

Dr Broadbent’s current research focuses on the development of multisensory integration in pre- and primary school aged children, and whether information from different sensory modalities supports or inhibits learning across this age range. Recent studies have examined whether multisensory compared to uni-sensory information can better support the learning of incidental categorical information, and whether the addition of concurrent uni- or multi-sensory cognitive load tasks affect learning differentially between 5 and 10 years of age.


Dr Celeste Cheung  
Postdoctoral Researcher  
After completing her PhD in 2013, Dr Cheung worked as a postdoctoral researcher on the BASIS project. Her research interest is in understanding the factors and predictors of neurodevelopmental disorders across the lifespan, with a primary focus on ADHD and ASD. In 2015, she began working on a Leverhulme Trust-funded TABLET (Toddler Attentional Behaviours and LEarning with Touchscreens) project, led by Dr Tim Smith, which is the first scientific study of its kind to investigate how 6 month to 3 year old infants are using touchscreen devices and how this use (or lack of use) is influencing their cognitive, brain and social development. Dr Cheung is leaving the CBDC in September 2016 to work at The Brilliant Club, an education charity that aims to widen highly-selective university access for pupils from under-represented groups.


Dr Carina de Klerk  
Postdoctoral Researcher  
Dr de Klerk is interested in the typical and atypical development of social cognition, action understanding and imitation and the brain mechanisms that underlie these abilities. With her PhD research, Dr de Klerk investigated how action experience influences the strength of perceptual-motor couplings in the infant brain, and the role these couplings play in infants’ ability to predict others’ actions. With her current postdoctoral research, Dr de Klerk is investigating the development of mimicry in infancy using EMG and fNIRS. Together with Drs Victoria Southgate and Antonia Hamilton (UCL), and PhD student Chiara Bulgarelli, the team are following a group of sixty infants from 4 months until 3 years of age to investigate how factors such as sensorimotor experience, infants’ growing social cognitive abilities, and increasing brain connectivity, influence the development of mimicry from infancy to toddlerhood.


Dr Hana D’Souza  
Postdoctoral Research Fellow  
Dr D’Souza is interested in mechanisms of typical and atypical development, focusing on children with neurodevelopmental disorders of known genetic origin, such as Down syndrome, Fragile X syndrome, and Williams syndrome. In her PhD research, she examined motor specialisation in typically developing infants as well as infants and toddlers with Down syndrome. As part of the London Down Syndrome (LonDownS) Consortium, she is currently investigating individual differences and interactions between various domains and levels of description across development in infants and toddlers with Down syndrome. The LonDownS Consortium is a multidisciplinary team of human geneticists, cellular biologists, psychiatrists, psychologists, neuroscientists, and mouse geneticists, whose aim is to understand the link between Down syndrome and Alzheimer’s disease, and to identify protective and risk factors that could inform interventions.


Dr Iroise Dumontheil
Reader in Cognitive Neuroscience

Dr Dumontheil’s research examines social and executive functions in adulthood and their development during adolescence. In particular, she studies the interaction between social cognition and cognitive control processes. Her research combines behavioural, structural and functional neuroimaging methods, as well as the study of the effect of genetic polymorphisms on cognition. She has recently been researching the effect of genetic polymorphisms affecting the dopamine system on the development of relational reasoning, emotional regulation, and both social and standard working memory measures; the effect of mindfulness meditation training in healthy adults and adolescents on self-regulation and other executive functions; the effects of mobile phone use on adolescent cognition, in collaboration with researchers at Imperial College; she has collaborated with Cardboard Citizens to develop and evaluate the impact of Meta, a forum theatre play about the teenage brain; and she is working on the UnLocke project, investigating the potential benefit of an intervention focusing on the inhibition of misconceptions for science and maths success in primary school.


Dr Louise Ewing
Postdoctoral Researcher

Dr Ewing’s research investigates how faces are immensely rich in social information and by adulthood, most people are remarkably skilled at reading this information. She is particularly interested in how these abilities emerge and improve between infancy and adulthood, and how face processing might differ in children and adults with atypical developmental trajectories, e.g., individuals with ASD and Williams Syndrome. Dr Ewing has been working with Dr Marie Smith and Professor Annette Karmiloff-Smith at Birkbeck College, and Dr Emily Farran at the Institute of Education (UCL), on a Leverhulme Trust funded grant that is using the Bubbles technique to explore developmental shifts in the strategies used to evaluate faces in typical children and individuals with Williams Syndrome.

Dr Ewing started a lectureship at the University of East Anglia in December 2015.


Dr Teodora Gilga
Programme Leader, Infant Siblings Studies

Dr Gilga is particularly interested in the typical and atypical development of learning heuristics, e.g., how infants learn to select reliable and useful information or to weigh conceptual and perceptual input when acquiring new knowledge.


Dr Emily Jones
Lecturer

Dr Jones leads the BASIS-affiliated STAARS project and coordinates the EU-AIMS cross-European study of infants with older siblings with ASD. She is also involved in collaborative longitudinal studies of infants with genetic disorders such as Neurofibromatosis Type 1, and early intervention development for high-risk infants. Her research interests include using cognitive, behavioural and psychophysiological methods to characterise attention, learning and memory in typical and atypical development. The long-term goal of this research is to understand the mechanisms that contribute to individual differences in developmental trajectories, and how those processes may be disrupted in disorders such as ASD and ADHD.


Dr Natasha Kirkham
Senior Lecturer
Dr Kirkham is interested in how infants and children learn to understand the natural world around them, specifically how they process rich and complex multisensory inputs. Over the past two years Dr. Kirkham has been working on two lines of research: (1) In collaboration with former PhD students Dr Rachel Wu and Dr Kristen Tummeltshammer, Dr Kirkham has been investigating a) when and how infants use the patterns in their environment to predict future events, b) the roles of salience and predictability in infant learning, and c) how attention is deployed during visual learning with social/non-social cues. (2) In an ESRC-funded investigation, Dr Kirkham and Professor Mareschal are looking at the benefits/costs of multisensory information on learning during primary school years. This work is run in collaboration with current PhD student Anna Peng, and postdoctoral researcher Hannah Broadbent. All of these questions are being investigated using eye tracking methodologies and behavioural measures.


Dr Sarah Lloyd-Fox
Postdoctoral Researcher
Dr Lloyd-Fox’s research interests focus around the development and application of fNIRS to study the mechanisms of cognitive development. Her research has focused on the understanding of the development of social cognition during early infancy and how the brain becomes specialised for this purpose. A second line of her research is to understand the cognitive and neural mechanisms that contribute to individual differences in developmental trajectories, and how these processes may be compromised in early development by risk factors such as developmental disorders (ASD) and undernutrition. She also runs the fNIRS Lab at the CBCD and has spent the last nine years developing this technique for use with infants. Recently, she has been involved in promoting its use in low-income and/or field-based settings in Africa and Asia.


Dr Luke Mason
Postdoctoral Researcher
Dr Mason joined the CBCD in 2013 having completed his PhD on motor preparation and attention in 2012. He uses EEG and eye tracking to investigate attention, visual processing and multisensory integration from infancy to adulthood in disorders such as ASD and ADHD, specialising in large multimodal datasets such as the BASIS, EU-AIMS and BRIGHT studies.


Dr Emma Meaburn
Senior Lecturer
Dr Meaburn leads the Behavioural Genomics Research Group at the Department of Psychological Sciences, Birkbeck. The broad aim of their research is to use measured genomic information to better understand the biological basis of individual differences in behavioural domains and psychopathologies in childhood and adolescence. They employ cutting-edge experimental methods for genomic data generation and use established and emerging statistical approaches to interrogate the data. Dr Meaburn is also the Director of the Birkbeck Research Into Developmental GENomics (BRIDGE; bridgelab.bbk.ac.uk/) Lab, a state-of-the-art biobanking and molecular biology lab where they conduct much of their research.


Dr Clare Press
Senior Lecturer
Dr Press has been studying the mechanisms that underlie our ability to map between action and perception, as needed for action control, imitation and other social abilities. Action control and sensory processing impairments are widely reported in individuals with ASD alongside their more widely publicised social problems, but it is unclear what underlies these difficulties or the relationship between them. Her recent work has demonstrated that atypicalities in the way people with ASD move themselves, can explain their problems with understanding the subtleties of others’ facial expressions and body movements.


Dr Angelica Ronald
Reader
Dr Ronald conducts behavioural genetic and molecular genetic research on psychopathology from infancy to adolescence. Her research has particularly focused on the genetic and environmental causes of autism spectrum conditions, psychotic experiences, and the causes of co-occurring psychopathology in childhood and adolescence. Dr Ronald is a Reader at the CBCD and the Director of the Genes Environment Lifespan laboratory, a lab group within the CBCD established in 2011 (www.gel.bbk.ac.uk).


Dr Simona Salomone
Postdoctoral Researcher
Dr Salomone completed her PhD at the Institute of Neuroscience at Trinity College in Dublin, where she investigated the effects of a new partially home-based attention training programme for adults with ADHD. She also explored the neuropsyhosiological markers of sustained attention deficits in adult ADHD using EEG. After spending 20 months as a post-doctoral researcher at the Institute of Psychiatry, Psychology and Neuroscience (IoPPN), she joined the Centre for Brain and Cognitive Development in 2015, where she is coordinating the INTER-STAARS project, a clinical trial to test the efficacy of a novel attention training programme for infants at risk of ADHD. Her main research interests are cognitive rehabilitation, neuro-rehabilitation, ADHD and EEG.


Dr Atsushi Senju
Reader and MRC Research Career Development Fellow

Dr Senju has been studying how people effortlessly and spontaneously understand signals of social communication, and how such skills develop. His recent work has greatly contributed to our understanding of how brains process social communication, how infants and young children develop such a skill, how the social environment changes the way these skills develop, and why such a spontaneous processing of social information is difficult in individuals with ASD. His team is also developing new research methods using an infant-friendly head-mounted eye-tracker, to assess the use of eye gaze in real face-to-face interaction between infants and their caregivers.


Dr Marie Smith
Senior Lecturer

Dr Smith’s research focuses on the perception and categorisation of visual stimuli, with a particular focus on the perception of faces and facial expressions of emotion. She is working to understand how information is processed during the perception of faces and how this processing is affected by emotional content, task demands, expectations and level of awareness. Recent projects seek to explore the development of specialised face processing abilities in young children (6-12yrs), in healthy ageing across the adult lifespan (65yrs+) and in patient populations (e.g., individuals with Williams syndrome, Down syndrome and ASD).


Dr Adam Tierney
Lecturer

Dr Tierney has been studying the neural foundations of the perception and production of rhythm. His work has revealed that rhythmic skill heavily relies upon the stability and precision of neural processing in the auditory system. He has also uncovered robust relationships between rhythm perception and language skills across multiple subject groups drawn from a variety of developmental stages. This suggests that the development of rhythm skills and language proficiency may rely upon overlapping neural resources, suggesting that rhythm training may be an effective remedial strategy for some children with language learning impairments.


Dr Hannah Wilkinson
Postdoctoral Researcher

Dr Wilkinson (née Smith) investigates the neuropsychological profiles of primary school pupils, especially those disadvantaged by social, emotional and behavioural difficulties, low socioeconomic status, or extreme poverty, to inform the development and evaluation of interventions that aim to improve behaviour and learning. This has involved taking an Educational Neuroscience approach to examine the association between executive functions, classroom behaviour, and academic achievement. She is currently working on a large-scale project (UnLocke) exploring the impact of using a computerised learning activity to teach pupils to inhibit their immediate response, in order to learn counterintuitive concepts in maths and science.


Affiliated Scientists

Dr Rachael Bedford, King’s College London
Prof Andy Bremner, Goldsmiths, University of London
Dr Mayada Elsabbagh, McGill University
Dr Teresa Farroni, Centro Neuroscienze Cognitive
Dr Roberto Filippi, Anglia Ruskin University
Dr Karla Holmboe, King’s College London
Dr Elena Kushnerenko, University of East London
Dr Evelyne Mercure, University College London
Dr Greg Pasco, King’s College London
Prof Gaia Scerif, University of Oxford
Dr Przemek Tomalski, University of Warsaw
Dr Sam Wass, University of East London

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Laura Pirazzoli
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Isabel Quiroz
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Michaela Rae
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Chloe Taylor
Research Assistant

Angelina Vemetti
Research Assistant

Administrative support

Marian Greensmith
BabyLab Administrator

Bree Pall
Senior Finance Administrator

Declan Clear
Administrator

Candice Moore
UnLocke Project Administrator
**Completed PhDs at the CBCD 2014–2016**

**Katarina Begus**  
The importance of active participation in learning, 2015

**Maria Laura Filippetti**  
Body Perception in Infancy, 2015

**Livia Freier**  
The interplay of top-down and bottom-up constraints in the development of the selection of action, 2015

**Kostas Papageorgiou**  
Individual differences in infant visual attention: links to child temperament, behaviour and genetic variation, 2015

**Barbara Pomiechowska**  
Linguistic and conceptual contributions to the development of object representations in infancy, 2015

**Irati Rodríguez Saez de Urabain**  
Investigating the mechanisms underlying fixation durations during the first year of life: a computational account, 2015

**Ayden Saffari**  
Discovering pathways to autism spectrum disorder by using functional and integrative genomics approaches to assess monozygotic twin differences, 2016

**Dominika Sieradzka**  
Investigation into the contribution of common genetic variants to the aetiology of dimension-specific psychotic experiences in the general population of adolescents and the association with schizophrenia, 2016

**Kristin Swan Tummelshammer**  
Learning from statistics in the infant’s visual world: toward an ecological approach, 2015

**Current PhD students**

**Jonathan Batten**  
Audio-visual influences on attention and perception in dynamic scenes.

**Annie Brookman**  
The cognitive and neural mechanisms of adolescent science and maths reasoning.

**Chiara Bulgarelli**  
The role of functional and effective connectivity in the development of social cognitive skills - An investigation on fNIRS and EEG data in a longitudinal sample exploring mimicry and self-other differentiation processes.

**Francesco Caprini**  

**Daisy Crawley**  
Cognitive and biological risk markers that relate to symptom severity and predict clinical outcome in ASD.

**Viktoria Csink**  
Information as reward.

**Rachel Davis**  
Computational modelling to investigate developmental trajectories of autism.

**Georgina Donati**  
Emotion Regulation in Adolescence: Genetic effects and Academic Outcomes.

**Rosanna Edey**  
The relationship between individual action kinematics and perception of others’ actions.

**Jennifer Glennon**  
Autism profiles in fragile X and Down Syndrome.

**Amy Goodwin**  
Investigating mechanisms of effortful control and emotionality in infancy: a potential avenue for early interventions for ADHD.

**Anna Gui**  
Risk and protective factors in neurodevelopment: Investigating genetic, familial and epigenetic contributions to social attention in infants with emerging Autism Spectrum Disorder and their first-degree relatives.

**Rianne Haartsen**  
The development of functional connectivity in autism and its relation to emerging repetitive behaviour.

**Jen Haensel**  
Cross-cultural development research on face processing.

**Nanami Harada**  
Cultural influence in typical development and autism: comparing the UK and Japan.

**Alexandra Hendry**  
Cognitive and behavioural development in toddlers at familial risk of ASD and ADHD.
Kate Hughes
Studying risk and protective factors in 4- to 16 year-olds to identify early genetic behavioural, neural and/ or cognitive relations between Down syndrome and subsequent Alzheimer’s disease.

Anna Kolesnik
Investigating gamma oscillatory activity as a biomarker Excitation/ Inhibition imbalance in infants with an increased risk of ASD.

Ines Mares
Processing of eye contact in the subcortical pathway - testing the fast-track modulation model.

Suzanne Pahlman
An empirical and computational investigation of learning.

Oliver Pain
The Genetic Basis of Adolescent Psychotic Experiences.

Anna Peng
Task-switching in a multisensory environment across development.

Elena Serena Piccardi
Information sampling mechanisms in typical and atypical development.

Laura Pirazzoli
An investigation into the mechanisms and role of social touch in early development.

Sinead Rocha
Do we dance because we walk? Studying the development of sensorimotor synchronisation.

Maheen Faisal Siddiqui
The role of cytochrome in neural responses in infants.

Ana Maria Da Silva
Spontaneous fixation durations in children with Autism Spectrum Disorders.

Angelina Vernetti
Social attention and reward processing in typical development and autism.

Daniel Yon
What’s special about motor contributions to perception?

In addition over 25 Master’s students have successfully completed their training at the CBCD in the period 2014-2016. Congratulations to all.
London’s only specialist provider of evening higher education.
Prestigious University of London qualifications. World-class research environment.