



Birkbeck
UNIVERSITY OF LONDON

CENTRE FOR BRAIN AND COGNITIVE DEVELOPMENT: BIENNIAL REPORT 2016-2018



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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
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Introduction

Welcome to our biennial progress report for the period October 2016–2018. 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 CBCD has seen steady growth since it was founded in 1998 by Mark Johnson, Gergely Csibra, Denis Mareschal and Leslie Tucker. The Centre has steadily grown in strength and depth with the addition of faculty members Michael Thomas (from University College London in 2002), Fred Dick (from UC San Diego in 2004), Annette Karmiloff-Smith (from University College London in 2006), Natasha Kirkham (from Stanford in 2007), Angelica Ronald (from the Institute of Psychiatry in 2007), Emma Meaburn (from the Institute of Psychiatry in 2009), Matthew Longo (from University College London in 2010), Tim Smith (from the University of Edinburgh in 2011) Clare Press (from the University of Reading in 2012) and Adam Tierney (from Northwestern University in 2015). Most recently, Dr Gillian Forrester has joined us (from the Universities of Oxford and Westminster 2016). In line with the Centre's increasing impact, Professors Tony Charman (Institute of Psychiatry, Psychology & Neuroscience) and Clare Elwell (University College London) have remained visiting Professors.

This has been an important transition period for the CBCD. Professor Mark Johnson (previously Director of the Centre) has moved to the University of Cambridge as the 1931 Chair and Head of the Department of Psychology. Although Mark has moved to Cambridge, he continues to hold a part-time position here at the CBCD. Professor Denis Mareschal, who originally joined the centre as a founder member in 1998 has taken on the role of new Director. Sadly, in December 2016 our dear colleague Professor Annette Karmiloff-Smith passed away. Annette had a huge influence on all members of the CBCD. A testimonial written by one of our members and describing her work and impact can be found at <https://thepsychologist.bps.org.uk/volume-30/february-2017/annette-karmiloff-smith-1938-2016>. Finally, Dr Victoria Southgate has taken up a professorship at the University of Copenhagen to start her own Babylab.

The CBCD is a dynamic and continually changing entity refreshed by new post docs and research fellows annually from across the world. Consequently, 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 evidenced by the international prizes that they have received for their doctoral research from such organisations as the American Psychological Association and the Society for Research in Child Development (USA).

The work of CBCD members continues to be characterised by its use of converging methods (behavioural testing, eye tracking, ERP, EEG, optical imaging, 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 (<http://www.educationalneuroscience.org.uk/>), Birkbeck-UCL Centre for Neuroimaging (BUCNI; <http://bucni.psychol.ucl.ac.uk/>), the Birkbeck Psychology Genetics Grouping (www.bbk.ac.uk/psyc/research/primary_research/geneticsgrouping), and the BRIDGE Lab (www.bridgelab.bbk.ac.uk).

We are delighted to have received funding from the Maurice Wohl Charitable Foundation, the Wolfson Foundation, Daniel and Elizabeth Peltz and the Wellcome Trust for a state-of-the-art, new ToddlerLab facility, which we will open in Summer 2020. Using the latest wireless technologies, the ToddlerLab will enable the advanced scientific study of the brain development of children aged 18 months to 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 & Neuroscience (King's College London), the Institute for Research in Child Development (UEL), UCL Medical Physics and Cambridge University. We have several partnerships with commercial companies, including Oefenweb, Acuity ETS Ltd, IWAL Institute Dyslexie, Transylvanian Institute of Neuroscience, Gorilla 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.

Awards

Angelica Ronald has taken up an editor role at the Journal of Child Psychology and Psychiatry. This is the top-ranked journal in developmental psychology and the sixth ranked journal in general psychology (ISI 2017 rankings).

Iroise Dumontheil's and **Tim Smith's** projects were highly commended in the College's Public Engagement Awards. Iroise Dumontheil for the 15th Elizabeth Warrington Prize from the British Neuropsychological Society for distinguished early stage career work in Neuropsychology. She gave her Prize Lecture at the BNS conference on *Social cognition and cognitive control during adolescence* on 2nd November in London.

Michael Thomas was among only 45 academics from across the globe to have been elected a Fellow of the US Association for Psychological Sciences (APS) in August 2016.

Dr Sarah Lloyd-Fox was shortlisted for the Functional Near-Infrared Spectroscopy (fNIRS) Early Investigator Award at the October 2016 Society for fNIRS Conference in Paris.

Teodora Gliga received the BPS Neil O'Connor award for her article with Bedford, R., Charman, T., Johnson, M. & the BASIS Team (2015). Enhanced visual search in infancy predicts emerging autism symptoms. *Current Biology*, 25(13), 1727-1730.

Teodora Gliga also received a British Academy Rising Star Engagement Award for *Neuroscience in the playground: Bringing together psychology, education and technology to investigate human curiosity*.

Denis Mareschal was elected to the Executive Committee of the International Congress on Infant Studies for a six-year term.

Media

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

- BBC One**
- BBC Two**
- BBC Education**
- Radio Five Live**
- The Daily Telegraph**
- The Daily Mail**
- The Evening Standard**
- The Guardian**
- New York Times**
- The Health Medicine Network**
- Nature Communications**
- The Belfast Telegraph**

Media Highlights

The Secret World of Babies

BBC Future interviewed PhD student Maheen Siddiqui, Reader Natasha Kirkham and Research Fellow Sarah Lloyd-Fox during a visit to the Babylab. Research using fNIRS to study babies' brains could help provide earlier support for infants showing atypical development.

www.bbc.com/future/story/20180327-the-secret-world-of-babies

Touchscreen Toddlers

Several media outlets, including the *BBC*, the *Evening Standard*, the *Daily Telegraph* and the *Hindu* highlighted Dr Tim Smith's research investigating links between touchscreen use in toddlers and sleep.

www.bbc.co.uk/news/health-39588453

Autism Screening System Could Benefit Millions of Indian Children

The Health Medicine Network reported on the start of a collaborative project involving our researchers that aims to introduce new, low-cost ways of detecting autism in children in India.

www.healthmedicinet.com/i/autism-screening-system-could-benefit-millions-of-indian-children

No Evidence to Back Idea of Learning Styles

The Guardian published a letter signed by Professor Michael Thomas about the lack of evidence for learning styles and their use in educational techniques.

www.theguardian.com/education/2017/mar/12/no-evidence-to-back-idea-of-learning-styles

Sense of Self in Toddlers

BBC Education documented Chiara Bulgarelli's PhD research investigating the development of the sense of self. When do infants develop a sense of self? Does self-recognition in a mirror underlie the moment when a sense of self emerges in toddlers? What are the neural underpinnings of self-recognition? This video reported how research at the Babylab is trying to answer these fundamental questions regarding infants' development.

www.bbc.co.uk/news/av/education-42967788/what-s-going-on-in-a-toddler-s-brain

Autism Diagnosis Linked to Light Response in Babies

Over 140 media outlets across the world picked up on research published in the journal *Nature Communications* by Babylab researchers Teodora Gliga and Mark Johnson and colleagues identifying early predictors of later autism diagnoses.

www.nature.com/articles/s41467-018-03985-4

Do Theatre Visits Make Your Kids Happier?

Dr Natasha Kirkham explained to *The Belfast Telegraph* how going to see live theatre productions can help aid children's understanding of emotions.

www.belfasttelegraph.co.uk/entertainment/theatre-arts/why-theatre-could-make-your-kids-happier-healthier-people-36591317.html

Emily Jones' EDEN study on infants with neurofibromatosis type 1 was featured in *Pioneer Magazine* (for supporters of Great Ormond Street Hospital).

The Big Baby Experiment

The prestigious journal *Nature* featured the Babylab in a news editorial. Read more about how the Babylab uses a wide range of techniques to study the development of the infant mind.

www.nature.com/news/the-big-baby-experiment-1.18701

A Touch-Source Disconnect for Babies

Babylab postdoctoral researcher Dr Jannath Begum Ali was featured in the *New York Times*, where she discussed her findings that "babies do not link the sensation of touch with the object or person touching them until they are about 6 months old".

www.nytimes.com/2015/10/20/science/babies-take-months-to-link-touches-to-what-touches-them.html?_r=0

Babylab uses Pioneering Technology to Help Children Suffering from ADHD

The Evening Standard published an article on children who have a greater chance of developing ADHD because they have an older brother or sister with the condition. These infants are taking part in a Babylab study that aims to detect the condition years earlier than is currently possible.

www.standard.co.uk/news/uk/babylab-uses-pioneering-technology-to-help-children-suffering-from-adhd-a2951906.html

Scientists



Professor Denis Mareschal
Director of CBCD

Professor Mareschal continues to investigate the mechanisms of perceptual and cognitive development across infancy and childhood. He has recently developed a computational neural network model of how infants learn associations across time from an auditory or visual sensory stream. Cutting up this stream into consistent units is the very first step in how infants make sense of the world. He has also explored changes in children's perceptual biases regarding where a face is looking and whether it is trying to engage with the child or not. In a further line of research, he has continued to explore how our sense of time and duration emerges from early repetitive motor activity during infancy. Finally, Professor Mareschal continues to lead the large scale UnLocke project. This project explores the efficacy of an inhibitory control educational intervention designed to enhance primary school children's uptake of difficult counterintuitive concepts in maths and science. It is a concrete example of how results from basic developmental cognitive neuroscience can be translated into real-world educational practice.

Addyman, C., Rocha, S., Fautrelle, L., French, R. M., Thomas, E., & Mareschal, D. (2017). Embodiment and the origin of interval timing: kinematic and electromyographic data. *Experimental Brain Research*, 235(3), 923-930. doi:10.1007/s00221-016-4842-y

Mareschal, I., Otsuka, Y., Clifford, C. W. G., & Mareschal, D. (2016). Are you looking at me? How children's gaze judgments improve with age. *Developmental Psychology*, 52, 695-703. <http://dx.doi.org/10.1037/dev0000100>

Mareschal, D. & French, R. M. (2016). TRACX2: A connectionist autoencoder using graded chunks to model infant visual statistical learning. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 372, 20160057. 10.1098/rstb.2016.0057



Professor Mark Johnson, FBA
Associate 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 (BASIS – British Autism Study of Infant Siblings) or ADHD (STAARS project), 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.

Green, J., Pickles, A., Pasco, G., Bedford, R., Wan, M. W., Elsabbagh, M., Slonims, V., Gliga, T., Jones, E.J.H., Cheung, C.H.M., Charman, T., Johnson, M.H., & the BASIS Team (2017). Randomised trial of a parent-mediated intervention for infants at high risk for autism: Longitudinal outcomes to age 3 years. *Journal of Child Psychology and Psychiatry*, 58(12), 1330-1340. doi: 10.1111/jcpp.12728

Johnson, M.H. (2017). Autism as an adaptive common variant pathway for human brain development. *Developmental Cognitive Neuroscience*, 25, 5-11. 10.1016/j.dcn.2017.02.004

Siddiqui, M.F., Lloyd-Fox, S., Kaynezhad, P., Tachtsidis, I., Johnson, M.H., & Elwell, C. (2017). Non-invasive measurement of a metabolic marker of infant brain function. *Scientific Reports*, 7(1), 1330. doi: 10.1038/s41598-017-01394-z



Professor Angelica Ronald
Professor of Psychology
and Genetics

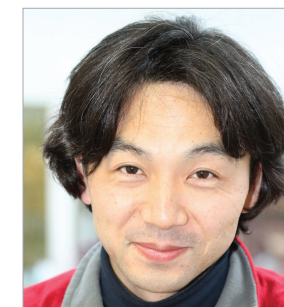
Professor Ronald conducts behaviour genetic and molecular genetic research on psychopathology from infancy to adolescence. Her research has particularly focused on the genetic and environmental causes of autism spectrum

conditions, ADHD, psychotic experiences and the causes of co-occurring psychopathology in childhood and adolescence. Professor Ronald is a Professor of Psychology and Genetics at the CBCD and the Director of the Genes Environment Lifespan laboratory, a lab group within the CBCD that was established in 2011 (www.gel.bbk.ac.uk).

Ronald, A. & Pain, O. (2018). A systematic review of genome-wide research on psychotic experiences and negative symptom traits: New revelations and their implications for psychiatry. *Human Molecular Genetics*, 1(27), R136-R152. 10.1093/hmg/ddy157

Shakoor, S., McGuire, P., Cardno, A. G., Freeman, D., & Ronald, A. (2018). A twin study exploring the association between childhood emotional and behaviour problems and specific psychotic experiences in a community sample of adolescents. *Journal of Child Psychology & Psychiatry*, 59, 565-573. 10.1111/jcpp.12839

Taylor, M. J., Lichtenstein, P., Larsson, H., Anckarsäter, H., Greven, C. U., & Ronald, A. (2016). Is there a female protective effect against ADHD? Evidence from two representative twin samples. *Journal of the American Academy of Child and Adolescent Psychiatry*, 55, 504-512. 10.1016/j.jaac.2016.04.004



Dr Atsushi Senju
Reader in Social
Neuroscience

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 experience changes the way these skills develop and why such a spontaneous processing of social information is difficult in individuals with autism spectrum disorders (ASD). His team is also developing new research methods to measure and study dynamic social interaction, such as infant-friendly head-mounted eye-trackers and interactive eye tracking.

Ganea, N., Hudry, K., Verneti, A., Tucker, L., Charman, T., Johnson, M. H., & Senju, A. (2018). Development of adaptive communication skills in infants of blind parents. *Developmental psychology*, 54(12), 2265. 10.1037/dev0000564

Verneti, A., Smith, T. J., & Senju, A. (2017). Gaze-contingent reinforcement learning reveals incentive value of social signals in young children and adults. *Proceedings of the Royal Society B: Biological Sciences*, 284(1850), 20162747. 10.1098/rspb.2016.2747

Verneti, A., Ganea, N., Tucker, L., Charman, T., Johnson, M. H., & Senju, A. (2018). Infant neural sensitivity to eye gaze depends on early experience of gaze communication. *Developmental cognitive neuroscience*, 34, 1-6. 10.1016/j.dcn.2018.05.007



Dr Adam Tierney
Senior Lecturer

Dr Tierney is interested in how auditory perception lays the foundation for language learning. Linguistic structure in speech is communicated via complex acoustic patterns, including changes in pitch, duration, and sound quality.

Not everyone is equally able to perceive these acoustic dimensions, however, which may have consequences for the ease with which individuals learn languages. Dr Tierney has been studying whether auditory perception explains individual differences in adult second language learning, whether people with severe perceptual deficits have special strategies for perceiving speech and whether children with ADHD can be trained to direct attention to a stream of sounds in the presence of a distraction.

Omote, A., Jasmin, K., & Tierney, A. (2017). Successful non-native speech perception is linked to frequency

following response phase consistency. *Cortex*, 93, 146-154. 10.1016/j.cortex.2017.05.005

Tierney, A., Patel, A. D., & Breen, M. (2018). Acoustic foundations of the speech-to-song illusion. *Journal of Experimental Psychology: General*, 147(6), 888. 10.1037/xge0000455

Tierney, A., White-Schwoch, T., MacLean, J., & Kraus, N. (2017). Individual differences in rhythm skills: links with neural consistency and linguistic ability. *Journal of cognitive neuroscience*, 29(5), 855-868. 10.1162/jocn_a_01092



Dr Carina de Klerk
Postdoctoral Researcher

Dr de Klerk is interested in the development and modulation of imitative behaviours in infancy and toddlerhood. Over the past 3.5 years, together with PIs Professor Southgate (Copenhagen University) and Professor Hamilton (UCL) and PhD student Chiara Bulgarelli,

she has been responsible for running a longitudinal study investigating the development of mimicry from infancy to toddlerhood. Using a range of methods (fNIRS, EMG and behavioural studies), this project demonstrated that infants learn to mimic others' facial actions by being imitated by their caregivers and that similar to adults, mimicry is modulated by a range of social signals such as eye contact and group status in infancy and toddlerhood. Since finishing the project, Carina has taken up a position as a lecturer at the University of Essex.

de Klerk, C. C. J.M., Hamilton, A. F. D. C., & Southgate, V. (2018). Eye contact modulates facial mimicry in 4-month-old infants: an EMG and fNIRS study. *Cortex*, 106, 93-103. 10.1016/j.cortex.2018.05.002

de Klerk, C. C. J.M., Lamy – Yang, I., & Southgate, V. (2018). The role of sensorimotor experience in the development of mimicry in infancy. *Developmental Science*, e12771. 10.1111/desc.12771

de Klerk, C.C.J.M., Bulgarelli, C., Hamilton, A., & Southgate, V. (2018). Selective facial mimicry of linguistic in-group over out-group members in preverbal infants. *Journal of Experimental Child Psychology*, (183), 33-47. 10.1016/j.jecp.2019.01.015



Professor Clare Elwell
Visiting Professor

Clare Elwell is a Professor of Medical Physics in the Department of Medical Physics and Biomedical Engineering at UCL. She leads the fNIRS 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 fNIRS 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.

Lloyd-Fox, S., Begus, K., Halliday, D., Pirazzoli, L., Blasi, A., Papademetriou, M., Elwell, C. E. (2017). Cortical specialisation to social stimuli from the first days to the second year of life: A rural Gambian cohort. *Developmental Cognitive Neuroscience*, 25, 92–104. 10.1016/j.dcn.2016.11.005

Siddiqui, M. F., Lloyd-Fox, S., Kaynezhad, P., Tachtsidis, I., Johnson, M. H., & Elwell, C. E. (2017). Non-invasive measurement of a metabolic marker of infant brain function. *Scientific Reports*, 7(1). 10.1038/s41598-017-01394-z

Siddiqui, M. F., Lloyd-Fox, S., Kaynezhad, P., Tachtsidis, I., Johnson, M. H., & Elwell, C. E. (2018). Changes in cytochrome-C-oxidase account for changes in attenuation of near-infrared light in the healthy infant brain. *Oxygen Transport to Tissue XL*, 1072, 7-12. 10.1007/978-3-319-91287-5_2



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 autism 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 those with autism move can explain their problems understanding the subtleties of others' facial expressions and body movements.

Brewer, R., Biotti, F., Catmur, C., Press, C., Happe, F., Cook, R., & Bird, G. (2016). Can neurotypical individuals read autistic facial expressions? Atypical production of emotional facial expressions in Autism Spectrum Disorders. *Autism Research*, 9, 262-271. 10.1002/aur.1508

Coll, M.-P., Press, C., Hobson, H., Catmur, C., & Bird, G. (2017). Crossmodal classification of mu rhythm activity during action observation and execution suggests specificity to somatosensory features of actions. *Journal of Neuroscience*, 37, 5936-5947. 10.1523/JNEUROSCI.3393-16.2017

Edey, R., Cook, J., Brewer, R., Johnson, M., Bird, G., & Press, C. (2016). Interaction takes two: Typical adults exhibit mind-blindness towards those with Autism Spectrum Disorder. *Journal of Abnormal Psychology*, 125, 879-885. 10.1037/abn0000199



Professor Emily Jones
Professor of Psychology

Professor Jones leads the BASIS-affiliated STAARS project (Studying Autism and ADHD Risk in Siblings) and coordinates a cross-European study of infants with older siblings with ASD as part of the AIMS-2-TRIALS consortium. 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 autism and ADHD.

Jones, E.J.H., Dawson, G., Estes, A., Kelly, J., & Webb, S.J. (2017). Parent-delivered early intervention in infants at risk for ASD: Effects on electrophysiological and habituation measures of social attention. *Autism Research*, 10(5) 961-972. 10.1002/aur.1754

Jones, E.J.H., Dawson, G., & Webb, S.J. (2017). Sensory hypersensitivity predicts enhanced attention capture by faces in the early development of ASD. *Developmental Cognitive Neuroscience*, 29, 11-20. 10.1016/j.dcn.2017.04.001

Jones, E.J.H., Venema, K., Earl, R.K., Lowy, R., & Webb, S.J. (2016). Social attention: an endophenotype of ASD-related traits? *Journal of Child Psychology and Psychiatry*, 58(3), 270–281. 10.1111/j.1469-7610.2015.01650.x



Dr Emma Meaburn
Senior Lecturer

Dr Emma Meaburn leads the Birkbeck Research Into Developmental Genomics (BRIDGE; www.bridgelab.bbk.ac.uk) Lab. Her research is centred on understanding how genes influence early brain development and later cognitive functioning, with a

focus on educational outcomes and neurodevelopmental disorders. Specifically, her group uses statistical and molecular genetic approaches to query the developmental relationship between genetic variation (the differences in DNA sequences that exist between individuals) to individual differences in brain and cognitive function and atypical development. Mapping causal paths between genes, brain and behaviour will ultimately require the integration of non-genetic (e.g. environmental) information and her current funded research includes examining how non-genetic factors might moderate genetic risk. Dr Meaburn is also a member of the Centre for Educational Neuroscience that aims to foster a dialogue between researchers and educators so that robust scientific findings can be effectively communicated and used to improve educational experiences.

Saffari, A., Silver, M.J., Zavattari, P., Moi, L., Columbano, A., Meaburn, E.L., Dudbridge, F. (2018). Estimation of a significance threshold for epigenome-wide association studies. *Genetic Epidemiology*, 42, 20– 33. doi.org/10.1002/gepi.22086

Marzi, S. J., Meaburn, E. L., Dempster, E. L., Lunnon, K., Paya-Cano, J. L., Smith, R. G., Mill, J. (2016). Tissue-specific patterns of allelically-skewed DNA methylation. *Epigenetics*, 11(1), 24–35. 10.1080/15592294.2015.1127479

Spain, S. L., Pedrosa, I., Kadeva, N., Miller, M. B., Iacono, W. G., McGue, M., ... Simpson, M. A. (2015). A genome-wide analysis of putative functional and exonic variation associated with extremely high intelligence. *Molecular Psychiatry*, 21(8), 1145–1151. 10.1038/mp.2015.108



Professor Frederic Dick
Professor of Auditory Cognitive Neuroscience and Director of Birkbeck/UCL Centre for Neuroimaging

Professor Dick's work focuses on the acquisition, development and elaboration of expert skills in higher-level audition and spoken language. This research uses

experimental models of short- and long-term auditory learning to understand the cognitive, perceptual and neural mechanisms underlying complex skills, such as spoken language comprehension and auditory scene analysis. To constrain and ground these experimental models in

basic anatomical and physiological research on auditory learning in non-human mammals, he and his collaborators have developed non-invasive MRI methods of delineating auditory areas in humans.

Carey, D., Caprini, F., Allen, M., Lutti, A., Weiskopf, N., Rees, G., Dick, F. (2018). Quantitative MRI provides markers of intra-, inter-regional, and age-related differences in young adult cortical microstructure. *NeuroImage*, 182, 429–440. 10.1016/j.neuroimage.2017.11.066

Carey, D., Krishnan, S., Callaghan, M. F., Sereno, M. I., & Dick, F. (2017). Functional and quantitative MRI mapping of somatomotor representations of human supralaryngeal vocal tract. *Cerebral Cortex*, 27(1), 265–278. 10.1093/cercor/bhw393

Dick, F. K., Lehet, M. I., Callaghan, M. F., Keller, T. A., Sereno, M. I., & Holt, L. L. (2017). Extensive Tonotopic Mapping across Auditory Cortex Is Recapitulated by Spectrally Directed Attention and Systematically Related to Cortical Myeloarchitecture. *Journal of Neuroscience*, 37(50), 12187–12201. 10.1523/JNEUROSCI.1436-17.2017



Professor Gergely Csibra
Cognitive Development Centre, Central European University, Hungary

Professor Csibra has continued his work on receptive communication in infants, and especially how infant-directed communication is exploited for learning about the world. He is also involved

in studies on infants' understanding of social relations and social interactions.

Csibra, G., Hernik, M., Mascaro, O., Tatone, D., & Lengyel, M. (2016). Statistical treatment of looking-time data. *Developmental Psychology*, 52(4), 521-536. 10.1037/dev0000083

Holmboe, K. Bonneville-Roussy, A., Csibra, G., & Johnson, M. H. (2018). Longitudinal development of attention and inhibitory control during the first year of life. *Developmental Science*, 21(6), e12690. 10.1111/desc.12690

Pomiechowska, B. & Csibra, G. (2017). Motor activation during action perception depends on action interpretation. *Neuropsychologia*, 105, 84-91. 10.1016/j.neuropsychologia.2017.01.032



Dr Gillian Forrester
Reader in Psychology

Dr Forrester is a Reader in Psychology and the Director of the Comparative Cognition Group. Her research investigates the evolution and development of cognitive abilities. She is particularly interested in the relationships between behavioural biases

(e.g. handedness and visual side preferences), brain organisation and cognitive abilities. Dr Forrester's research involves multidisciplinary approaches (e.g. behavioural, fNIRS, eye-tracking) and considers great ape species (chimpanzees, gorillas) and humans (children with and without neurodevelopmental disorders).

Forrester, G., Hudry, K., Lindell, A., & Hopkins, W. D. (2018). *Cerebral Lateralization and Cognition: Evolutionary and Developmental Investigations of Behavioral Biases* (1st ed.). San Diego: Elsevier Science.

Forrester, G.S., Davis, R., Mareschal, D., Malastrata, G., Todd B. (2018). The Left Cradling Bias: An Evolutionary Facilitator of Social Cognition?, *Cortex* (Special Issue: The Evolution of the Mind and the Brain (eds, Zilles & Thiebaut de Schotten). 10.1016/j.cortex.2018.05.011

Forrester, G.S., Rawlings, B., Davila-Ross, M. (2016). An analysis of bimanual actions in natural feeding of semi-wild chimpanzees. *American Journal of Physical Anthropology*, 159, 85-92. 10.1002/ajpa.22845



Dr Hana D'Souza
Postdoctoral Researcher

As part of the London Down Syndrome (LonDownS) Consortium, Dr D'Souza 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.

D'Souza, D., D'Souza, H., & Karmiloff-Smith, A. (2017). Precursors to language development in typically and atypically developing infants and toddlers: the importance of embracing complexity. *Journal of Child Language*, 44(3), 591-627. 10.1017/S030500091700006X

D'Souza, H., & Karmiloff-Smith, A. (2016). Neurodevelopmental disorders. *Wiley Interdisciplinary Reviews: Cognitive Science*, 8(1-2), e1398. 10.1002/wcs.1398

D'Souza, H., & Bremner, A. J. (2016). Calling for a developmental perspective on action-based consciousness. *Behavioral and Brain Sciences*, 39, e174. 10.1017/S0140525X15002034



Dr Hannah Wilkinson
Postdoctoral Researcher

Dr Wilkinson (Smith) investigates the neuropsychological profiles of primary school pupils, especially those disadvantaged by social, emotional and behaviour 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 on their ability to learn counterintuitive concepts in maths and science.

Smith, H. R., Eryigit-Madzwamuse, S., & Barnes, J. (2013). Paternal Postnatal and Subsequent Mental Health Symptoms and Child Socio-Emotional and Behavioural Problems at School Entry. *Infant and Child Development*, 22, 335-348. 10.1002/icd.1800

Smith, H. R., Polenik, K., Nakasita, S., & Jones, A.P. (2012). Profiling social, emotional and behavioural difficulties of children involved in direct and indirect bullying behaviours. *Emotional and Behavioural Difficulties*, 17, 243-257. 10.1080/13632752.2012.704315



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 been researching how the influence of genetic polymorphisms on the dopamine system affect 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; and the effects of mobile phone use on adolescent cognition in collaboration with researchers at Imperial College. Over the last two years, she has worked on the UnLocke project, investigating the potential benefits of an intervention focusing on the inhibition of misconceptions for science and maths success in primary school. As a member of the Centre for Educational Neuroscience, Dr Dumontheil is interested in the potential implications of neuroscience research for education.

Brookman-Byrne, A., Mareschal, D., Tolmie, A. K., & Dumontheil, I. (2018). Inhibitory control and counterintuitive science and maths success in primary school. *PLOS ONE*, 13(6), e0198973. 10.1371/journal.pone.0198973

Magis-Weinberg, L., Blakemore, S.-J., & Dumontheil, I. (2017). Social and Nonsocial Relational Reasoning in Adolescence and Adulthood. *Journal of Cognitive Neuroscience*, 29(10), 1739-1754. 10.1162/jocn_a_01153

Mireku, M. O., Mueller, W., Fleming, C., Chang, I., Dumontheil, I., Thomas, M. S. C., Toledano, M. B. (2018). Total recall in the SCAMP cohort: Validation of self-reported mobile phone use in the smartphone era. *Environmental Research*, 161. 10.1016/j.envres.2017.10.034



Dr Jannath Begum Ali
Postdoctoral Researcher

Dr Begum Ali investigates (multi)sensory processing and sensorimotor processing in typical and atypical infants and young children (with specific consideration of cross-modal interactions between vision, proprioception and touch).

One key finding from this body of research has been that infants' neglect the location of touch in the external environment until around six months of age. She is currently a post-doctoral researcher on the STAARS study, with much of her research focusing on

sensory processing and motoric abilities in infants with a higher familial likelihood of developing autism and/or ADHD. She is also investigating these processes in infants with genetic syndromes, such as neurofibromatosis type 1 and tuberous sclerosis. Her research uses a variety of behavioural and neurophysiological measures (e.g. EEG and fNIRS) in typically and atypically developing infants and toddlers.

Begum Ali, J., Spence, C., & Bremner, A. J. (2015). Human infants' ability to perceive touch in external space develops postnatally. *Current Biology*, 25(20), R978-R979. 10.1016/j.cub.2015.08.055

Begum Ali, J., Cowie, D. & Bremner, A.J (2014): Effects of posture on tactile localization by 4 years of age are modulated by sight of the hands: Evidence for an early acquired external spatial frame of reference. *Developmental Science*, 17(6), 935-943. 10.1111/desc.12184

Johnston, J., Begum Ali, J., Hill, E. & Bremner, A.J. (2017). Tactile localization performance in children with developmental co-ordination disorder (DCD) corresponds to their motor skill and not their cognitive ability. *Human Movement Science*, 53, 72-83. 10.1016/j.humov.2016.12.008



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. He specialises in large multimodal datasets, such as the BASIS, EU-AIMS and BRIGHT studies.

Loth, E., Charman, T., Mason, L., Tillmann, J., Jones, E. J., Wooldridge, C., ... & Banaschewski, T. (2017). The EU-AIMS Longitudinal European Autism Project (LEAP): design and methodologies to identify and validate stratification biomarkers for autism spectrum disorders. *Molecular autism*, 8(1), 24. 10.1186/s13229-017-0146-8

Loth, E., Spooren, W., Ham, L. M., Isaac, M. B., Auriche-Benichou, C., Banaschewski, T., ... & Charman, T. (2016). Identification and validation of biomarkers for autism spectrum disorders. *Nature Reviews Drug Discovery*, 15(1), 70-73. 10.1038/nrd.2015.7

Mason, L., Linnell, K. J., Davis, R., & Van Velzen, J. (2015). Visual processing at goal and effector locations is dynamically enhanced during motor preparation. *NeuroImage*, 117, 243-249. 10.1016/j.neuroimage.2015.05.066



Dr Marie Smith
Senior Lecturer

Dr Smith's research primarily focuses on the perception and categorisation 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 (funded by the Wellcome institutional fund), the factors and mechanisms underlying typical variation in face-processing ability (funded by the British Academy), face processing in clinical groups (including Williams syndrome and Down syndrome; funded by the Leverhulme Trust), and face and emotion processing in healthy ageing across the adult lifespan (65yrs+).

Ewing, L., Karmiloff-Smith, A., Farran, E. K., & Smith, M. L. (2017). Distinct profiles of information-use characterize identity judgments in children and low-expertise adults. *Journal of Experimental Psychology: Human Perception and Performance*, 43(12), 1937-1943. 10.1037/xhp0000455

Ewing, L., Karmiloff-Smith, A., Farran, E. K., & Smith, M. L. (2017). Developmental changes in the critical information used for facial expression processing. *Cognition*, 166, 56-66. 10.1016/j.cognition.2017.05.017

Smith, M. L., Grün, D., Bevitt, A., Ellis, M., Ciripan, O., Scrimgeour, S., ... Ewing, L. (2018). Transmitting and decoding facial expressions of emotion during healthy aging: More similarities than differences. *Journal of Vision*, 18(9), 10.1167/18.9.10



Professor Matthew Longo
Professor of Cognitive Neuroscience

Matthew Longo is a Professor of Cognitive Neuroscience and Director of the Body Representation Laboratory. His research investigates the cognitive and neural bases of our experiences and of the mental representation of our

own body and how this influences our perception of touch, pain and space. His research uses a broad range of methods, including perceptual psychophysics, EEG and MRI.

Calzolari, E., Azañón, E., Danvers, M., Vallar, G., & Longo, M. R. (2017). Adaptation aftereffects reveal that tactile distance is a basic somatosensory feature. *Proceedings of the National Academy of Sciences, USA*, 114, 4555-4560. 10.1073/pnas.1614979114

Fiori, F., & Longo, M. R. (2018). Tactile distance illusions reflect a coherent stretch of tactile space. *Proceedings of the National Academy of Sciences*, 115, 1238-1243. 10.1073/pnas.1715123115

Longo, M. R., & Golubova, O. (2017). Mapping the internal geometry of tactile space. *Journal of Experimental Psychology: Human Perception and Performance*, 43, 1815-1827. 10.1037/xhp0000434



Professor Michael S. C. Thomas

Michael Thomas's recent work has focused on the computational modelling of development in large populations and translational research in educational neuroscience that focuses 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 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 the possible influence of mobile phone use on teenage brain development.

Best, W., Hughes, L. M., Masterson, J., Thomas, M. S. C., Fedor, A., Roncoli, S., Fern-Pollack, L., Shepherd, D. L., Howard, D., Shobbrook, K., & Kapikian, A. (2017). Intervention for children with word-finding difficulties: a parallel group randomised control trial. *International Journal of Speech-Language Pathology*, 20(7), 708-719. 10.1080/17549507.2017.1348541

Gilligan, K. A., Hodgkiss, A., Thomas, M. S. C., & Farran, E. K. (2018). The use of discrimination scaling tasks: A novel perspective on the development of spatial scaling in children. *Cognitive Development*, 47, 133-145

31:1-12. 10.1016/j.cogdev.2018.04.001

Thomas, M. S. C. (2018). A neurocomputational model of developmental trajectories of gifted children under a polygenic model: When are gifted children held back by poor environments? *Intelligence*, 69, 200-212. 10.1016/j.intell.2018.06.008



Dr Natasha Kirkham
Reader in Psychology

Dr Kirkham is interested in the development of visuo-spatial understanding, cognition and attention in infants and preschool age children. She is involved in two streams of research: one that addresses the question of how infants learn about their visuospatial

environment with regard to the statistical regularities inherent in their perceptual world and one that investigates the roles of attention and memory in young children. In a current ESRC-funded project (with Professor Denis Mareschal), Dr Kirkham is investigating how multisensory information supports (or inhibits) learning across primary-school-age children. Dr Kirkham employs several different methodologies in her research projects, such as corneal reflection eye tracking and habituation/dishabituation with infants and executive function tasks with pre-schoolers/adults.

Broadbent, H. J., Osborne, T., Mareschal, D., & Kirkham, N. Z. (2018). Withstanding the test of time: Multisensory cues improve the delayed retention of incidental learning. *Developmental Science*, 22(1), e12726. 10.1111/desc.12726

Peng, A., Kirkham, N. Z., & Mareschal, D. (2018). Task switching costs in preschool children and adults. *Journal of Experimental Child Psychology*, 172, 59-72. 10.1016/j.jecp.2018.01.019

Xiao, N. G., Wu, R., Quinn, P. C., Liu, S., Tummelshammer, K. S., Kirkham, N. Z., ... Lee, K. (2017). Infants Rely More on Gaze Cues From Own-Race Than Other-Race Adults for Learning Under Uncertainty. *Child Development*, 89(3), e229-e244. 10.1111/cdev.12798



Dr Sarah Lloyd-Fox
Postdoctoral Researcher

Dr Lloyd-Fox's research interests focus on the development and application of fNIRS for studying the mechanisms of cognitive development. She is an Honorary Research Fellow at UCL and recently became an Affiliated Lecturer at the

University of Cambridge. She also lectures at UCL, KCL and LSHTM and supervises several PhD, MSc and BSc research students. The goals of her research programme are two-fold. First, to provide insights into the development of the cognitive and neural mechanisms that contribute to individual differences in developmental trajectories. Second, to understand how those processes may be compromised in early development by factors such as increased familial likelihood for developmental disorders (autism) and social disadvantages, such as poverty and poor nutrition. She also runs the fNIRS Lab at the CBCD,

is a Member of the Society for fNIRS (currently serving on the Education Committee) and has spent the last 13 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, such as on the BRIGHT project (www.globalfnirs.org/the-bright-project).

Lloyd-Fox, S., Blasi, A., Pasco, G., Gliga, T., Jones, E. J. H., Murphy, D. G. M., ... Johnson, M. H. (2017). Cortical responses before 6 months of life associate with later autism. *European Journal of Neuroscience*, 47(6), 736-749. 10.1111/ejn.13757

Lloyd-Fox, S., Begus, K., Halliday, D., Pirazzoli, L., Blasi, A., Papademetriou, M., ... Elwell, C. E. (2017). Cortical specialisation to social stimuli from the first days to the second year of life: A rural Gambian cohort. *Developmental Cognitive Neuroscience*, 25, 92-104. 10.1016/j.dcn.2016.11.005

Lloyd-Fox, S., Blasi, A., & Elwell, C. E. (2010). Illuminating the developing brain: The past, present and future of functional near infrared spectroscopy. *Neuroscience & Biobehavioral Reviews*, 34(3), 269-284. 10.1016/j.neubiorev.2009.07.008



Dr Teodora Gliga
Programme Leader, Infant Siblings Studies

Dr Gliga has broad interests in uncovering the cognitive and neural mechanisms of learning in typical and atypical development. She is particularly intrigued by how infants and their caregivers can modulate learning outcomes,

e.g. how conceptual development, social cues (e.g. touch), and intrinsic motivation affect how information is sampled, learned and remembered.

Begus, K., Gliga, T., & Southgate, V. (2016). Infants' preferences for native speakers are associated with an expectation of information. *Proceedings of the National Academy of Sciences*, 113(44), 12397-12402. 10.1073/pnas.1603261113

Gliga, T., Bedford, R., Charman, T., Johnson, M.H. & the BASIS Team (2015) Enhanced visual search in infancy predicts emerging autism symptoms. *Current Biology*, 25(13), 1727-1730. 10.1016/j.cub.2015.05.011

Pomiczowska, B., & Gliga, T. (2018). Lexical Acquisition Through Category Matching: 12-Month-Old Infants Associate Words to Visual Categories. *Psychological Science*, 30(2), 288-299. 10.1177/0956797618817506



Dr Tim J. Smith
Reader in Cognitive Psychology

Dr Smith's research focuses on how we actively attend to and perceive dynamic visual displays, such as real-world scenes, cinema and interactive technologies (e.g. tablets and VR). He uses advanced computational and behavioural

methods, including eye tracking, psychophysiology and EEG to understand the factors that influence visual attention; how these factors can be shaped by designers of audiovisual experiences, such as filmmakers and creators of virtual environments; and how these technologies shape us. These questions are applied to infants during their first years of life, to atypical groups (autism and ADHD), and to typical adults. Recently, Dr Smith's research team has been focused on studying the impact of touchscreen use on cognitive, behavioural and neural development during the first few years of life. His research has received exposure in the press (*Wired magazine*, *NY Times*, *Guardian*, *BBC*) and has been presented at Dreamworks Animation, the British Film Institute and the Academy of Motion Picture Arts and Sciences.

Cheung, C. H. M., Bedford, R., Saez De Urabain, I. R., Karmiloff-Smith, A., & Smith, T. J. (2017). Daily touchscreen use in infants and toddlers is associated with reduced sleep and delayed sleep onset. *Scientific Reports*, 7(1). 10.1038/srep46104

Saez de Urabain, I. R., Nuthmann, A., Johnson, M. H., & Smith, T. J. (2017). Disentangling the mechanisms underlying infant fixation durations in scene perception: A computational account. *Vision Research*, 134, 43–59. 10.1016/j.visres.2016.10.015

Smith, T. J., & Martin-Portugues Santacreu, J. Y. (2016). Match-Action: The Role of Motion and Audio in Creating Global Change Blindness in Film. *Media Psychology*, 20(2), 317–348. 10.1080/15213269.2016.1160789



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 300 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. He has also worked closely with Ambitious about Autism, the National Autistic Society, Research Autism and Autistica to advocate for services and positive policy development for individuals with ASD and their families.

Shephard, E., Bedford, R., Milosavljevic, B., Gliga, T., Jones, E. J. H., Pickles, A., ... Charman, T. (2018). Early developmental pathways to childhood symptoms of attention-deficit hyperactivity disorder, anxiety and autism spectrum disorder. *Journal of Child Psychology and Psychiatry*, 60(9), 963–974. 10.1111/jcpp.12947

Jones, C. R. G., Simonoff, E., Baird, G., Pickles, A., Marsden, A. J. S., Tregay, J., ... Charman, T. (2017). The association between theory of mind, executive function, and the symptoms of autism spectrum disorder. *Autism Research*, 11(1), 95–109. 10.1002/aur.1873

Green, J., Pickles, A., Pasco, G., Bedford, R., Wan, M. W., Elsabbagh, M., ... Johnson, M. (2017). Randomised trial of a parent-mediated intervention for infants at high risk for autism: longitudinal outcomes to age 3 years. *Journal of Child Psychology and Psychiatry*, 58(12), 1330–1340. 10.1111/jcpp.12728

Affiliated Scientists

Prof Andy Bremner, University of Birmingham

Dr Caspar Addyman, Goldsmiths, University of London

Dr Elena Kushnerenko, University of East London

Dr Evelyne Mercure, Goldsmiths, University College London

Prof Gaia Scerif, University of Oxford

Dr Greg Pasco, King's College London

Dr Karla Holmboe, University of Oxford

Dr Mayada Elsabbagh, McGill University

Dr Przemek Tomalski, University of Warsaw

Dr Rachael Bedford, King's College London

Dr Roberto Filippi, Anglia Ruskin University

Dr Sam Wass, University of East London

Dr Teresa Farroni, University of Padova



Scientific Support Staff



Annabel Page
CBCD Administrator
and UnLocke Project
Administrator



Ellie Braithewaite
Research Assistant



Laurel Fish
Research Assistant



Sarah Kalwarowsky
Research Assistant



**Berta Hortigüela
Fernández**
Administration
Team Leader



Isabel Quiroz
Research Assistant,
CBCD Administrator
and Interlearn Project
Administrator



Marian Greensmith
Administrator



Tamsin Osborne
Research Assistant



Chloe Taylor
Research Assistant



Leslie Tucker
Research Support Leader
and Centre Coordinator



Mandy Lathan
Administrator



Claire Smid
Research Assistant



Roshni Modhvadia
Research Assistant

Students: Completed PhDs at CBCD 2016–19

Jonathan Batten
Audio-visual influences on attention and perception
in dynamic scenes (2018).

Annie Brookman
The cognitive and neural mechanisms of adolescent
science and maths reasoning (2018).

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 (2018).

Georgina Donati
Emotion regulation in adolescence: Genetic effects
and academic outcomes (2018).

Rosanna Edey
The relationship between individual action
kinematics and perception of others' actions (2017).

Amy Goodwin
Investigating mechanisms of effortful control and
emotionality in infancy: A potential avenue for early
interventions for ADHD (2018).

Rianne Haartsen
The development of functional connectivity in
autism and its relation to emerging repetitive
behaviour (2018).

Oliver Pain
The genetic basis of adolescent psychotic
experiences (2017).

Laura Pirazzoli
An investigation into the mechanisms and role of
social touch in early development (2018).

Sinead Rocha
Do we dance because we walk? Studying the
development of sensorimotor synchronisation (2017).

Maheen Faisal Siddiqui
The role of cytochrome in neural responses in
infants (2018).

Angelina Vernetti
Social attention and reward processing in typical
development and autism (2017).

Daniel Yon
What's special about motor contributions to
perception? (2017)

Anna Peng
Task-switching in a multisensory environment
across development (2018).

Rachel Davis
Computational modelling to investigate
developmental trajectories of autism (2016).

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 (2017).

Current PhD Students

Francesco Caprini

Testing models of auditory learning in expert listeners: Acoustical and perceptual processing in designers of novel sounds.

Viktoria Csink

Surprised-based learning in infancy.

Jennifer Glennon

Neurodevelopmental disorders in infancy.

Anna Gui

Understanding the role of inhibition/excitation balance in the early development of ASD.

Jen Haensel

Cross-cultural development research on face processing.

Anna Kolesnik

Inhibition/excitation balance and social brain development in human infants.

Suzanne Pahlman

Modelling atypical development.

Elena Serena Piccardi

The role of early mechanisms of information sampling in driving variability in brain developmental trajectories.

Ana Maria Da Silva

Early visual experience and the relationship between visual and attention measures in infancy.

Elizabeth Booth

Executive functions in adolescence: Influence of technology use – SCAMP study.

Alicja Brzozowska

How touch mediates infant happiness and learning.

Susanne de Mooij

Tailoring the individual learning experience.

Cécile Gal

The neural dynamics of motivated learning.

Louisa Gossé

The role of sleep in early cognitive development.

Giada Guerra

Representational change in individualised and intensive language intervention.

Laura Havers

Population-reported negative symptoms across the lifespan.

Jessica Massonnié

The effect of ambient noise on early learning.

Janet Parsons

The development of visual attention in infants under 18 months old who are at risk for later learning difficulties because they are either at familial risk for autism or have been born pre-term.

Sam Blakeman

A developmental account of transfer to novel perceptual states.

Aude Carteron

Development of goal-directed sequential action selection.

Lisanne Schroer

Development of embodied planning of action sequences in pre-schoolers.

Brittney Chere

Early development of attention and learning in noisy environments.

Emily Thomas

The optimisation of perception during action.

Wikus Barkhuizen

Environmental risk factors involved in psychotic experiences during adolescence.

Claire Essex

The dynamics of attention in response to media presented on touchscreen devices.

Cathy Rogers

How executive control processes affect creativity in children of primary school age.

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