

Institution: Birkbeck, University of London
Unit of Assessment: 4 - Psychology, Psychiatry, & Neuroscience
<p>1. Unit context and structure, research and impact strategy</p> <p>1.1 Unit context and overview</p> <p>In RAE2008 and REF2014, Birkbeck's Department of Psychological Sciences was ranked among the top five Psychology departments in the UK. Since then, we have further enhanced our reputation as a world-leading research institution in cognitive and developmental neuroscience, cognitive modelling, health and lived experience. This was achieved by consolidating our position after rapid expansion during the last REF period. We have maintained existing staffing levels with internal promotions replacing retirements and bereavements, further major infrastructure investments, and by implementing our strategic aims for research. Our research excellence during the census period is reflected by our published work (over 1420 publications, or 47 per FTE staff member), our ability to attract large-scale external grant funding (with new grants awarded since 2014 totalling £20.8M and research spend at £2.18m pa vs. £2.11m pa in REF2014 and £1.16m pa in RAE2008), a vibrant doctoral training program with 14.8 PhDs awarded pa vs. 10.5 pa in REF2014 and 5.4 pa in RAE2008, and many prestigious awards for both senior and early-career staff including fellowships of the British Academy (Eimer) and the German National Academy of Science Leopoldina (Hahn), two EPS Early Career Awards (Longo, Cook), two Spearman medals (Dumontheil, Cook), an APS Janet Taylor Spence award (Ronald), and one of the most senior British Psychological Society awards: the BPS Honorary Fellowship (J. Smith).</p> <p>Our research is structured around four thematic clusters that represent our core areas of research excellence. The boundaries between them are fluid, with several staff members linked to more than one cluster. This structure fosters coherence within research teams, and facilitates collaboration between clusters and with other institutions. The four research clusters are:</p> <ul style="list-style-type: none"> • Brain and Cognitive Development. This cluster is organised around the world-leading Centre for Brain and Cognitive Development (CBCD), established in 1998. Research is conducted in the BabyLab and associated labs, including the <i>Birkbeck</i> Genes Environment Lifespan (GEL) lab. Research in this area has been further enhanced in this census period by the construction of the new Birkbeck ToddlerLab at a cost of £8.5M. • Cognitive Modelling. Research in this cluster builds on our continuing excellence in cognitive computational modelling. This group is organised around the multidisciplinary Centre for Cognitive and Computational Modelling (CCCM). • Perception, Attention, Action, and Emotion. Research in this cluster is focused on cognitive and affective neuroscience and sensorimotor control. This group is organised around the Brain and Behaviour Lab and the Affective and Cognitive Neuroscience Lab. • Health and Lived Experience. This new cluster employs mixed quantitative and qualitative methods to examine health and development. A distinctive feature of much of the cluster's work is a focus on the detailed examination of lived experience. It includes the Centre for Building Resilience in Breast Cancer and the Interpretative Phenomenological Analysis Research Group. <p>Cutting across these four clusters is the Birkbeck/UCL Centre for Neuroimaging (BUCNI). During the census period our 1.5T fMRI scanner has been supplemented with a 3.0T scanner and new associated lab space.</p> <p>1.2 Research Clusters</p> <p>Brain and Cognitive Development (Csibra, Dick, Dumontheil, Forrester, Johnson, Jones, Kirkham, Mareschal, Meaburn, Ronald, Senju, Thomas). This cluster, centred on the CBCD (Mareschal, Director), studies the neural basis of typical and atypical perceptual,</p>

cognitive and language development from infancy through to adolescence and early adulthood. It has been strengthened by the appointment of **Jones** as a FT Professor (formerly co-ordinator of EU-AIMS project) and by **Senju** moving from an MRC Fellowship to a FT Reader. This cluster has hosted several independent post-doctoral research fellows funded by the *Leverhulme*, *Wellcome*, and *EC Marie Skłodowska Curie* programmes. It is a major centre for PhD research training, the lead hub for several EU and international networks, and regularly hosts sabbatical visits from world-leading researchers (e.g. Jay McClelland, Stanford, 2015).

The work of the group is characterised by its theory-driven research programme that uses converging methods (behavioural testing, eye tracking, ERP, EEG, EMG, motion capture and kinematic analyses, optical imaging, computer modelling, behavioural genetics, functional and structural MRI). CBCD is organised into labs which share common infrastructure. The BabyLab (**Mareschal**, **Csibra**, **Johnson**, **Jones**, **Kirkham**, and **Senju**) focuses on typical, at-risk, and atypical brain and cognitive development over the first years. The Developmental Neurocognition Lab (**Thomas**) investigates variability and individual differences in typical development and developmental disorders. The GEL lab (**Ronald**, **Meaburn**) employs genetic, epigenetic and transcriptomic methods to tease apart the causes of typical and atypical development. fMRI studies at **BUCNI** focussing on learning, plasticity, and development in children, adolescents and adults are led by **Dick** (**BUCNI** Director) and **Dumontheil**. The arrival of **Forrester** brings a comparative cognition dimension assessing neurodevelopmental profiles across human and non-human primate species (chimpanzees, gorillas and humans).

The CBCD has an outstanding reputation for interdisciplinary research, often conducted within the context of national and international initiatives (including global health initiatives with partners in India, Ghana and the Gambia). This includes large-scale multi-disciplinary studies of infants at-risk for later autism or other atypical outcomes. **Jones** and **Johnson** are co-PIs and Chairs of a national network funded by a consortium of UK charities (*British Autism Study of Infant Siblings*). They also lead a key component of the largest ever academic-industry collaboration for autism research (*European Autism Intervention*) which now extends to several NIH-funded sites in North America. Other examples of major interdisciplinary work include the **Centre for Educational Neuroscience** (**Thomas** [Director] and **Dumontheil**), a joint initiative of Birkbeck, and the UCL Institute of Education, where psychologists, neuroscientists, and education practitioners come together to develop innovative methods for improving learning outcomes and provide clear and robust evidence to inform education policy.

Cognitive Modelling (**Cooper**, **Davelaar**, **Hahn**, **Mareschal**, **Oaksford**, **Thomas**). This cluster based around the **Centre for Cognition, Computation and Modelling** (**Hahn**, Director) builds on the unique strength of the department in cognitive modelling. The centre runs multidisciplinary research programmes designed to provide formal accounts of the mechanisms of behaviour. It includes active collaborations and co-supervision of PhD students with partners throughout the Psychological Sciences, as well as Neuroscience, Computer Science, Philosophy, Economics and Education. Research utilises Bayesian models, rule-based architectures, connectionist and neural computational approaches, and neurodynamical modelling. A unique new dimension developed during this census period is the focus on providing mechanistic accounts of socially relevant issues. This includes modelling SES effects on brain and behavioural development (**Thomas**), linking subjective lived experiences to underlying neural mechanisms (**Davelaar**), improving children's educational outcomes (**Mareschal**), and understanding argumentations and reasoning fallacies portrayed in the media, especially in the context of major socio-political phenomena such as Brexit the Covid-19 pandemic (**Hahn**, **Oaksford**). This shift towards greater social relevance is reflected in the new CCCM international seminar series exploring "Technology and Democracy". In the assessment period, modelling approaches have also been successfully applied to many basic cognitive and neural phenomena, including the control and break down of sequential action selection (**Cooper**), conflict monitoring and neural feedback (**Davelaar**), optimism bias and reasoning (**Hahn**), infant statistical learning (**Mareschal**), reasoning and argumentation (**Oaksford**), and multi-level gene-environment interactions in developmental disorders (**Thomas**).

Notably, members of this cluster have received large (£1M+) research awards for the design of Bayesian-reasoning support systems (*IARPA*; **Hahn**) and an Intelligent Games platform for training inhibitory control during maths and science primary schools lessons

(*Wellcome and the Education Endowment Foundation*; **Mareschal, Thomas**). The Centre also contributes to the key government priority of maintaining the UK's world-leading position and competitiveness in the technology and services industry. It is represented on the steering group of the *EPSRC's Human-Like Computing* programme (**Hahn**) and on the resulting UK-wide HCI network (**Hahn, Mareschal**) aimed at better understanding Artificial Intelligence and developing ethically sound human-like computing systems.

Perception, Attention, Action and Emotion (Berggren, Cook, Derakhshan, Eimer, Jasmin, Longo, Press, Richards, Shepherd, M Smith, T J Smith, Tierney). This cluster focuses on visual and auditory cognition, sensorimotor control, and affective processing. It adopts a multi-method approach, which combines behavioural testing and psychophysics with electrophysiology, functional brain imaging, eye tracking, motion capture and computational modelling techniques. State-of-the-art specialist facilities are available in the *Henry Wellcome Building* and the **MERLIN** labs. This group also works on real-world visual and auditory scene perception, body representation, and imitation.

This group includes the research teams of a world-leading expert in cognitive electrophysiology (**Eimer**, Director of the Brain and Behaviour Lab). Methodological innovation is a major focus of this group. This includes the development of methods for the combination of EEG and eye tracking data (**T Smith** and **Eimer**), fMRI/EEG co-registration, using a recently installed fMRI-compatible EEG amplifier system at BUCNI (**Eimer** and **Press**), using machine learning techniques to classify neural signatures of face and emotion processing (**M Smith**), and designing new methods to investigate salience cues in audition (**Tierney**). In addition to basic research, the group also investigates clinically, socially, and culturally relevant issues, such as **M Smith's** work on face processing in Williams and Downs syndrome adults, **Shepherd's** research into migraine and headaches, **Richards'** research on the impact of anxiety on reasoning and decision making, **Derakhshan's** research on the interplay between anxiety and attentional control, **Tierney's** work on auditory salience in Dyslexia and ADHD, **Longo's** work on body representation and eating disorders, **Eimer's** and **Cook's** investigations into the causes and consequences of developmental prosopagnosia, and **T Smith's** contributions to cognitive film theory (leading to consultancies at the *American Academy of Film*, USA) and systematic evaluations of the social and cognitive impact of tablet usage on attention in early development (funded by the *Nuffield Trust*).

This rich and stimulating research environment regularly attracts early stage career fellows wishing to develop their research potential. This includes 2 *Marie Skłodowska-Curie Postdoctoral* fellows, 1 *ESRC Early Career* fellow, 1 *Leverhulme Early Career* fellow, and 1 *Royal Society Newton* fellow, along with numerous shorter-term international visitors, all within the current census period. The group also includes early career independent researchers working on the neural and behavioural basis auditory processing in music and language (**Jasmin**; mentored by Tierney), and links between attention and affective processing (**Berggren**, mentored by Eimer).

Health and Lived Experience (Derakhshan, Eatough, Grunfeld, Miles, Shepherd, J Smith, Tasker). This cluster studies the health, wellbeing and development of individuals and families, using a range of quantitative and qualitative methodologies. It has been strengthened by the recruitment of **Grunfeld** at Professorial level during the census period.

The Interpretative Phenomenological Analysis Research Group (**IPARG**) (**J Smith, Eatough**) conducts qualitative research on personal lived experience of health and well-being. **Smith's** work has led to IPA becoming one of the world's foremost qualitative approaches in psychology. IPARG acts as an international hub for IPA training and research activities, with 60 regional and international networks. The Group also collaborates with quantitative researchers on major mixed-methods studies. For example, **Smith** leads the qualitative arm of an NIHR programme grant examining issues such as the impact of multi-systemic therapy and valuation of modified CBT treatment for young people with Epilepsy. **Eatough** conducts research into the experience of depression, Parkinson's Disease, family therapy, and men's expression of emotion.

The **Building Resilience in Breast Cancer (BRiC) Centre**, founded by **Derakhshan**, uses neuroscientific methods to develop cognitive control training to empower sustainable

resilience and improve quality of life in survivorship. This unique approach has led many NHS staff to refer breast cancer patients to BRiC for educational support. With just under 2000 UK women members with breast cancer, BRiC collaborates with Breast Cancer Now, the largest UK breast cancer charity for research and care.

The Psychology Applied To Health (PATH) Lab conducts research on people's health behaviours, the experience of cancer and chronic conditions and the issues facing survivors of these conditions through mixed methods research and intervention development. **Miles** led the patient-experience strand of NIHR-funded diagnostic accuracy trials, including multisite trials examining the effectiveness of whole-body MRI on the accurate staging of cancers of the lung and colorectum. **Grunfeld's** research focuses on determinants of psychosocial outcomes following diagnosis and treatment (mainly among patients with benign and non-benign lesions) and on the development of interventions to support patients.

The **Institute for the Study of Children, Families and Social Issues** has continued its commitment to undertaking both basic and applied research related to the development, functioning, and well-being of children and families and to addressing contemporary social issues. Recent work by **Barnes** and **Melhuish** (both now emeritus) has included a randomized control trial of nurse-led group support for young mothers and an evaluation of the importance of the home learning environment on early child development. A centrepiece of **Tasker's** research is family relationships and children's social and emotional development in both non-traditional and new family forms which has widespread national and international impact.

1.3 Research Strategy

Our goal since 2014 has been to further enhance our profile as one of the leading research-intensive Psychology departments in the UK. Our research strategy for the current assessment period is based on these key principles:

- Build on the department's strengths in emerging areas of research that are both cutting-edge, and unique in the UK context.
- Consolidate our research areas of international excellence through appointing new staff and progressing excellent research staff with outstanding track records and research agendas to faculty positions, to replace leavers, retirees, and bereavements.
- Provide substantial ringfenced research time in the departmental workload model.
- Provide all researchers with optimal infrastructure, including purpose-built labs, specialist equipment, dedicated research support staff and financial and technical support.
- Provide academic leadership and interdisciplinary collaboration and support within and across research clusters, including dedicated mentoring and support mechanisms for research career development.
- Maximise the value of our key Central London location in close proximity to outstanding neighbouring institutions in health, cognitive neuroscience, and education.
- Implement an internationally competitive doctoral training programme, with a major focus on translational research, methods development, and industrial partnerships.
- Encourage and support research-led impact and open science initiatives.

Our research and innovation strategies are reviewed monthly at the department's Strategic Planning Group, which liaises closely with the Research Committee. These groups prioritise horizon scanning to identify future and emerging areas of research that dovetail with the existing skills and profile of the department. They make strategic decisions on the composition and future trajectory of research clusters, on targeted infrastructure investments, on new appointments, and on strategic succession planning for key research centres.

To implement our research strategy, and to address leavers, retirements and bereavements, we have made significant changes to our staff, research infrastructure and organisation. Based on our strategic decision to strengthen our research in health-related areas, we have created the new **Health and Lived Experience** research cluster to replace our previous Child, Family and Health cluster. A new Professor of Health Psychology was appointed to help implement this new initiative. We have further developed our internationally leading

profile in developmental sciences by appointments and progression to senior faculty positions, and in cognitive neuroscience by appointments.

In line with our research strategy outlined in REF2014, we have made major new research infrastructure investments to provide the best research facilities and to upgrade research space for our staff. Substantial fund-raising activity and considerable financial commitment from the College has resulted in a new £8.5M extension of CBCD to provide a new **ToddlerLab**. This lab came on stream in 2020 and utilises the latest wireless and virtual environment technology to allow, for the first time, the study of brain functions in home and pre-school environments in toddlers during active play and social interactions. As planned in our 2014 research strategy, we have also extended our capacity for brain imaging research at **BUCNI**, which has developed into a world-leading fMRI facility. We have supplemented the current research-dedicated Siemens 1.5T Avanto with a second research-dedicated state-of-the-art 3T Siemens system, funded by shared infrastructure investments by Birkbeck and UCL. The new 3T scanner went online in March 2019. Office space from the former Institute for the Study of Children, Families and Social Issues has now been converted to provide new high-spec qualitative research labs and additional departmental doctoral student office space to accommodate our expanding PhD student numbers. Finally, we have installed a new Faraday insulated space in the Merlin Labs to enable high frequency brain recording to facilitate the research of a recent appointment. These new research facilities complement our major infrastructure investments between 2008 and 2014, which included the purpose-built **Mace Experimental Research Laboratory in Neuroscience (MERLIN)** (completed in 2011) and the Birkbeck Research Into Developmental GENomics (**BRIDGE**) wet-lab facility; colocation of research staff in the Malet street building; and large scale refurbishment of office space, including additional testing rooms.

Over the last two REF census periods, the department had seen a very substantial expansion in both staff numbers (an additional 8 lecturers appointed since 2010) and substantial investment in infrastructure (*BUCNI, BRIDGE, Henry Wellcome Building, ToddlerLab, MERLIN*). Our strategic objectives post 2021 will therefore be focussed on consolidation rather than further expansion, in order to retain our resilience in the face of any volatile changes in the research environment likely to occur in the next 5 to 10 years. By optimising the use of our recent investments, we aim to maintain our status as one of the most successful mid-size UK psychology departments. We will further develop the strategic goals and activities that have supported our research excellence in the previous REF period, while at the same time place even greater emphasis on the impact-related aspects of our research. Specific aims include:

- Build on our world-leading status in developmental cognitive neuroscience, with a specific focus on projects utilising the new research facilities in the ToddlerLab.
- Further develop our international excellence in computational cognitive modelling.
- Expand our focus on mixed-methods approaches through investments enhancing our new Qualitative Lab facilities.
- Focus on targeted investments to maximise collaborative projects across research clusters.
- Enhance our existing impact activities through funded (and co-funded) impact-related studentships, fellowships, and industry collaborative grants.
- Actively encourage and support (e.g., through targeted seed funding) the development of new research projects responding to government priorities such as well-being, global health, and educational challenges.

1.5 Impact Strategy

Our impact strategy is an integral part of the department's research policy. This tight coupling has been highly effective to date at producing research which is both of the highest international calibre and produces political, societal or health-related impact. To further strengthen this link, the department recruited an **Impact Officer** during the census period who supports decision making around departmental research impact and ensures that it is integrated with the wider College Impact Strategy. The Impact Officer provides training for staff and research students and promotes understanding of impact for staff and students. Our research impact is embedded

in long-term research lifecycles. It is a central part of the role of the Impact Officer to monitor and facilitate these research impacts, working closely with research leads to ensure that impacts are both recorded and communicated. This ongoing capture of impact data supports our future planning and also produces an expanding knowledge base about external stakeholders and partners, which we can then exploit in future impact-related research projects.

Several mechanisms are in place to ensure that impact is fostered, identified, monitored, and nurtured as it develops to its full potential.

- Impact is a standing item on key strategic committee agendas such as the Staff, Strategic Planning Group, and Research committees.
- Staff are actively encouraged to take on advisory roles on external bodies in parallel with their research programmes, as a means of co-developing cutting-edge research with maximum impact.
- Impact activities feature prominently in the departmental newsletter to ensure that they get wide praise and recognition within the department, College, and beyond.
- We actively seek out CASE and other studentships in collaboration with industry (such as the *INTERLEARN* EC funded *European Industrial Doctoral programme* at the CBCD combining basic developmental cognitive neuroscience research with training and internships in industrial and 3rd sector partners).
- The department Research Committee has a budget that is frequently used to provide seed funding for activities that are likely to lead to impact.

Emerging Impact activities: Specific Impact-related activities since 2014 have evolved as natural extensions of basic, translational, and applied research projects in all of our research clusters. In addition to the work described in the three major impact case studies submitted in the current REF, other examples of emerging impact activities that the department is monitoring and nurturing include the following:

- The **British Autism Study of Infant Siblings** study (BASIS), is a unique collaboration with ten charities led by Autistica (the UK's national autism research charity) that provides a national network for the study of babies at-risk for later emerging autism, as well as information and support for families through newsletters, advisory groups, and the media. A central goal is to identify early markers that predict a later diagnosis of autism, to facilitate early intervention strategies for high-risk infants and toddlers. Led by **Jones** and in collaboration with the AIMS-2-TRIALS multisite consortium, a novel EEG-based stratification biomarker for autism was discovered (using a task designed at Birkbeck). This biomarker has received Qualification Advice and endorsement by the *European Medicines Agency* in 2020 in view of certification as a biomarker for clinical trials. Through collaboration with the *US National Institute of Health Autism Biomarker Consortium-Clinical Trials*, these biomarkers were also the first to be accepted into the *US Food and Drug Administration (FDA)* in 2020. The BASIS team at Birkbeck is also developing a suite of bespoke stimulus presentation and analysis tools to collect eye-tracking markers of atypical development and outcome measures in international randomised clinical trials of novel treatments for ASD and ADHD in the US and Europe, and in observational studies across 22 sites in 11 countries. This has generated a database of over 9700 datasets from more than 3600 participants to date. The Birkbeck BASIS team has also led on the biomarker development for large global health initiatives to improve diagnosis and screening in low-to middle income countries (n=4500 South Africa, n=3500 Malawi/India).
- The **Toddler Attentional Behaviours and Learning with Touch-screen** (TABLET) project (led by **T Smith**) investigates the impact of digital technology (specifically touchscreen devices) on the early development of toddlers and pre-school children. Their initial research (on which basis Smith has recently obtained funding for a large-scale randomised control trial) revealed both positive (fine-motor control) and negative (sleep, attention control) effects of toddler touchscreen use. These findings have directly

contributed to the policies and practices adopted by various national and international agencies and charities. Their findings were cited in the Canadian Paediatric Society and the American College of Pediatricians' recent screen time guidelines, and have contributed to new guidance and professional practices around screen time for the National Childbirth Trust (NCT, the UK's largest pre and postnatal charity), the Early-Years Alliance (EYA, the UK's largest union/provider of nursery provision) and the Infant and Toddler Forum (a national not-for-profit organisation focussing on early-years health and nutrition). Their research findings directly informed the decision by Hopster (the UK's highest grossing pre-school educational app) to limit video autoplay.

- The **Study of Cognition, Adolescents and Mobile Phones (SCAMP)**, led by **Thomas and Dumontheil**, investigates whether teenagers' use of mobile phones affects their cognitive development and language development. SCAMP is the world's largest longitudinal cohort study of this question. Initial research reports have focused on health outcomes, including sleep disruption due to late night device usage and the impact on health-related quality of life of social networking site use. The main results are likely to have a significant impact on government health and educational guidance regarding mobile phone usage in adolescents, as well as empowering teenagers around the world to make informed choices about their device usage.
- The **Centre for Educational Neuroscience (CEN)** is regularly called upon to provide expert advice to policy makers and practitioners. As director of CEN, **Thomas** gave evidence on the importance of early years' investment to the *Work and Pensions and Education Select Committees* (July 2016), and on the role of AI for future educational practice to the *All Parliamentary Group on Artificial Intelligence* (March 2020). Thomas and the CEN were commissioned by the *World Bank* to write a report (published in January 2020) on the neuroscience of adult learning, focused on improving adult literacy programmes, which now feeds into World Bank advice on new programmes in the developing world. Another CEN initiative led by **Mareschal** developed a computer-game-based learning intervention designed to improve maths and science academic performance in primary schools. An evaluation in a randomised control trial (completed in collaboration with *Learnus*, a think-tank linking basic science with classroom practice, the *Wellcome Trust* and the *Education Endowment Foundation*) across 89 primary schools in England involving 6,700 children found significant performance improvements in maths and science tests, at a cost of less than £6 per child. A larger-scale efficiency trial is currently in the planning stages with the Education Endowment Foundation. This award was also used as an exemplar of the College's approach to knowledge exchange in its recent KEF return.
- The **Integrative Centre for Building Resilience in Breast Cancer (BRiC)**, led by **Derakhshan**, currently has just under 2000 active women members with breast cancer (in the UK), and combines neuroscience and clinical science to facilitate the practice of resilience in breast cancer. The Centre is developing neurocognitive training aimed to produce sustained reductions in anxiety and depression in women with breast cancer. It has collaborated with the popular mindfulness app *Headspace* to assess the efficacy of combining this training with mindfulness meditation. It also provides networked support for women with breast cancer through face-to-face meetings, emotion regulation exercises, and online interactive discussions. In collaboration with the biggest charity for research and care in breast cancer, *Breast Cancer Now*, it also offers popular blog posts on Post Traumatic Stress Disorder (8000 listeners) and anxiety and depression in breast cancer (26,000 listeners), as well as a psychoeducational blog (*Panning for Gold*; 89,000 followers) that was *rated amongst the top 10 best breast cancer blogs* by @healthline in 2020.

A critical dimension of these impact activities is the close coupling of rigorous basic research with clear end-user input to identify practical needs. While this has already resulted in significant impact, many of these projects are in their early stages, and are likely to produce even more

impact-related outcomes in the coming years.

1.5 Promoting best practice in research and impact development

Collaboration and integration within and across research clusters: We place strong emphasis on coherence and communication not only within research clusters, but across the entire department. This is ensured by regular seminars, specialist reading and discussion groups, and training workshops for staff and postgraduate students. The CBCD organises a weekly seminar series, frequent social events, and a variety of short courses, several under the auspices of our numerous EC funded international Innovative Training Networks (ITN). The Centre for Educational Neuroscience organises a cross institutional weekly seminar series involving external academics, practitioners, and policymakers. The Department holds a weekly lunchtime seminar series with national and international speakers. MERLiN runs a weekly journal club and regular external seminars. The GEL lab holds a fortnightly genetics journal club and organizes regular training events. **Ronald** co-founded the London Genetics Network, which hosts an annual meeting and training events for over 300 human geneticists in London from over 30 institutions. The department publishes its own newsletter each term, which highlights awards and prizes, successful grant applications, major publications, successful impact and dissemination activities, and media coverage of research. Together these mechanisms create real synergies that have led to exploration of cross-cutting innovative initiatives. For example, our burgeoning groupings in **experiential neuroscience** and **applied epistemology** bring together researchers from all four research clusters, with the explicit aim of exploiting our strengths in cognition, development, and neuroscience on the one hand, and social/experiential and health-related research on the other, thereby generating genuine synergies between fields of psychological research that still too often exist in splendid isolation.

Open Science and Reproducibility: The department is committed to *Open Science*. Wherever possible, we encourage staff to publish open-access under the terms of the [Creative Commons Attribution License \(CC BY\)](#). With the support of the College, the department regularly includes a budget line for open access publication to supplement the funds made available by the College. Distribution of these funds is made on request via the departmental Research Committee. In line with the *Concordat to Support Research Integrity*, the department hosts the Birkbeck Reproducibility Network (**M Smith**, Chair). **M Smith** is also the College lead for the UK-wide *Reproducibility in Science* network. All staff are required to deposit all accepted manuscripts in open access format (Gold or Green) in the Birkbeck Repository (**BiRON**). Researchers are also encouraged to deposit their data in openly accessible repositories as, for example, provided by the Open Science Foundation (OFS), or the Birkbeck Data Repository (**BiRD**).

2. People

2.1 Staffing strategy and staff development

Over the census period, we have made 6 new academic appointments: 2 at the Professorial level; 2 at the Reader level, 1 at the SL level (now Reader), and 1 at Lecturer level (now Reader). These appointments were targeted to consolidate our staffing position consistent with our research strategy and to complement our existing areas of research excellence against the backdrop of leavers retirements and bereavements. 2 senior appointments were formerly on research fellowships or funded via grants. Our strategy for research-related staff support and development has four key elements: we provide of state-of-the-art research facilities and other research support, offer multiple structures for career development and mentoring, prioritise research over other academic roles, and support and incentivise external research funding.

- (a) To ensure that newly recruited staff member (as well as existing staff) have access to all facilities required to successfully conduct their research, new laboratories have been adapted to provide qualitative research space, and a new Faraday-insulated lab for high frequency brain recordings has been made available. Further infrastructure support is

provided by our research support, technical and IT staff. All newly appointed staff receive substantial start-up funds to set up their own labs. Internal research funding is available from the School of Science and the Department. In addition to the initial start-up funds participant panel (approx. £20K per year), which is essential in a College with part-time students and evening classes, where an unpaid undergraduate participant panel based totally on course credit is not feasible.

- (b) Mechanisms are in place to facilitate career and research development of individual staff members, and in particular early-career staff. All staff members have an Annual Academic Review (AAR) meeting with the HoD, where career progress is discussed, resource and training requirements are identified, and milestones for the attainment of specific research and career goals (e.g., external grant funding, publications, academic promotion) are agreed. In addition to the AAR, all researchers (and especially early-career researchers) are assigned a Mentor in a cognate research area. Mentors are senior staff members who arrange regular one-to-one mentoring meetings, where research-related strategies and goals are discussed and agreed, and problems and obstacles for successful career development are identified. Senior Professorial staff are mentored by another Professor with cognate interests. Whenever appropriate the mentor acts in coordination with the HoD to resolve any problems.
- (c) In line with our status as one of the UK's leading research-intensive psychology departments, academic roles and commitments among staff are positively balanced in favour of research-related activities. Teaching loads are equally distributed among all members of staff, with reduced loads for new appointees. Our advanced student teaching is research-driven, with final year research projects and options as well as our MSc courses directly reflecting active areas of research. We have strengthened our postgraduate demonstrator system for time-intensive courses such as practical research methods classes. This minimises the day-to-day demands of these courses on staff and frees up time for research. Administrative duties are efficiently structured and widely distributed, to engage all staff in college and departmental activities. A workload model is used to monitor the allocation of teaching and administration. A research sabbatical system is in place (one year for every seven served), with all staff members equally entitled to sabbatical leave.
- (d) Mechanisms are in place to support and incentivise the acquisition of external grant funding. Internal research funds (described above) are preferentially allocated as "seed funding" to projects aimed at obtaining pilot data for grant applications and impact generation. The discussion of external funding sources and the procedures involved in obtaining funding are a central part of all AAR and mentoring meetings. We have installed a grant support network (coordinated by the departmental Research Committee), where experienced senior staff provide advice and support in all practical aspects of grant writing by early-career researchers. To reward successful applications, a proportion of the grant overheads allocated to the department is directly allocated to the award holder and is freely available to fund research-related expenses. The successful acquisition of external grant funding is also incentivised through the College's promotion and contribution-related pay award procedures.

Research staff are an integral part of the department's long-term staffing strategy. Birkbeck has received the **HR Excellence in Research Award (HRER)**, which reflects the fact that we fully implement the *Concordat to Support the Career Development of Researchers*. **Senju** chairs the College-level Academic Advisory Board for HRER Award, further illustrating the department's full commitment to the support and career development of the researchers that play such a critical role in our highly successful research output. Long-term commitment and long-term stability are integral parts of our research staffing strategy for fixed term contract researchers.

2.2 Training and Supervision of Research Students

Our PhD programme has continued to thrive, with 89 PhD completions during the assessment period, *an increase of 41%* on the REF2014 figure. Fifty-one new external studentships were awarded to the department during the census period, including 29 from the *ESRC*, 4 awards of studentships for collaborative projects with industry (*CASE* awards through the *ESRC*, and the

MRC), 2 BBSRC awards, 6 awards from the *Leverhulme Trust* and other scholarly organisations or patrons of the College, and 10 through *European Commission* funded schemes. These were complemented by 5 studentships from a joint scheme with other central London Colleges. In 2016, the department was awarded **ESRC Doctoral Training Partnership DTP** status, together with University College London, University of East London, and other Bloomsbury colleges (Institute of Education, School of Oriental and African Studies, London School of Hygiene & Tropical Medicine). Birkbeck hosts the Psychology Pathway of the DTP, and now receives studentships for experimental psychology, developmental science, educational neuroscience, health and well-being, and computational modelling. The department is also part of the **BBSRC London Interdisciplinary Doctoral Programme (LiDo) DTP** as well as the **UCL-Birkbeck MRC DTP**, ensuring a steady stream of research council funded studentships. In addition, the department has maintained its Graduate Teaching Assistant programme during the assessment period, which allows students to complete a PhD over four years while contributing to the teaching in the department (and enhancing transferable skills), with 7 students funded through this programme in the census period. Finally, the department has received a further 4 studentships directly from the College through an internal competition process – including *Birkbeck Diversity 100 Studentships* targeting BAME applicants.

The international quality of the department's research training was recognised when the Centre for Brain and Cognitive Development was awarded a **European Industrial Doctorate (EID)** programme by the European Commission, building on its previous status as *Doctoral Training Centre of Excellence* in 2004 and 2010 (an award scheme now discontinued by the EC). The EID award provides 5 fully funded postgraduate studentships. A unique feature of this training programme is the extensive participation of private sector partners from the technology, manufacturing, and services industry (e.g., Procter & Gamble, Tobii, Artinis, EGI). These collaborations bridge the gap between basic developmental neuroscience research and private sector applications. For example, all PhD students in this programme receive in-house training at Procter & Gamble's global research centre in Germany on how to translate basic science into marketable products. In addition, the CBCD has been a participating member of a further 4 European Commission ITN training networks (ACT, MOTION, BRAINVIEW, SAPIENS) attracting and supporting further doctoral students from across the EU.

We have restructured and expanded our programmes for postgraduate research students in response to changes in student demand, staff expertise, and advances in research. Since 2014, the department has introduced further taught Masters courses, reflecting its core areas of research excellence, most recently the *MSc Health and Clinical Psychological Sciences* – designed to complement our existing programmes in *Computational Modelling*, *Developmental Sciences*, *Psychological Research Methods* and *Educational Neuroscience*. These programmes serve the dual strategic purposes of disseminating our internationally recognised expertise in specialist domains and as a means of recruiting top calibre doctoral students in our areas of research excellence. A structured PhD training programme is provided for all doctoral students in line with UKRI supervision guidelines. This programme includes training in neuroscientific, quantitative, and qualitative methods used in our research, as well as generic skills training (including impact-related topics such as interacting with the media, collaborating with non-academic beneficiaries, and conducting translational research), contemporary issues (replicability of research; open science initiative; impact creation), specialist seminars, and funds for complementary skills training (e.g., MatLab, EEG/ERP, neural network modelling, brain imaging, eye-tracking). The department provides funding for research students to travel to international and national conferences, for participants in PhD student research, and for specialist research training costs. Finally, as a reflection of the international reach of our innovative research, several members of the department have been invited, during the census period, to provide advanced research methods training courses for professionals and postgraduate students abroad in Educational Neuroscience methods (**Thomas, Mareschal, Dumontheil**), the use of fNIRS with infants (CBCD members), and IPA (**J Smith**) in the United Arab Emirates, Singapore, the USA, and several European countries.

The quality and international impact of our doctoral training programme is further demonstrated

by **international prizes** awarded to individuals who completed their doctorates during the census period (e.g., **Robert Glushko Dissertation Award, Cognitive Science Society, USA; American Psychological Association Division 7 Dissertation Prize; Society for Research in Child Development Dissertation Award**). Since 2014, our former PhD students have also been awarded **postdoctoral fellowships** (Leverhulme Fellowship, Junior Fellowship at the University of Cambridge, and a **URKI Future Leaders Fellowship** at Cambridge), and have obtained numerous **faculty positions** (e.g., Queen's University Belfast, UCL, Essex, Bath, Swansea, Goldsmith's College, University of California Riverside) or other **research positions** (e.g., postdoctoral posts at University of New South Wales, University of Arizona, Brown University USA, McMaster University Canada, Newcastle University, University of York, University of Cardiff, Royal Holloway, University of Oxford, University of Cambridge, University College London, University of Bath). In their first post after completing their PhD, 50% of our students entered postdoctoral fellowships or faculty positions, and a further 20% entered government or commercial positions (e.g., in data analytics, artificial intelligence, machine learning, genomics). Other destinations include positions in the NHS, clinical training, and counselling/therapy.

2.3 Promotion of Equality and Diversity

During the census period, **Forrester** has served as the *Assistant Dean for Equalities and Diversity* in the School of Science, ensuring that best practice was implemented in the department. As an example, the department published a clear statement of its diversity activities on its web pages in response to the Black Lives Matter protests:

(<http://www.bbk.ac.uk/departments/psychology/supporting-black-and-ethnic-minority-students-and-staff>). These pages outline both the department's positions and concrete mechanisms in place to redress the inequalities that have existed in research and research institutions for decades. Birkbeck's core mission of *broadening participation* in higher education naturally permeates through to the research students and research topics that the department supports. The department is making full use of the College's newly introduced *Diversity 100 Studentships* and engages with young people with little or no experience of the research world to promote the realisation that research can be a career choice for minority groups (e.g., in collaboration with *IntoUniversity* and *Cardboard Citizens*).

In 2015, we successfully applied for a *Bronze Departmental Athena SWAN Award*, which was successfully renewed in 2018. We are also a member of the Athena SWAN Psychology National Forum (ASPoN), a UK-wide organisation of Psychology departments working together to share best-practice and work collectively to address sector-wide equalities issues. Supported by a Wellcome Trust Institutional Strategic Support Fund (ISSF), Birkbeck offers 6-month fellowships for finishing PhD students to write-up their results and complete ongoing projects. Since 2015, 27 of our students (21 women, 6 men) have received these fellowships. In 2018 the Department created an early career group for PhD students and postdoctoral researchers (**SLICE**: Science, Life and Career Evenings), including a range of internal and external speakers, which provides a supportive and friendly environment for early stage researchers to discuss various aspects of career development. Other initiatives have been targeted at more established researchers and members of staff. In 2015 Birkbeck implemented a new *Shared Parental Leave policy*, allowing fathers to share paid parental leave. Since then, three men in the Department have taken extended periods of paid parental leave (one twice), something that had not previously occurred in the department. In recognition of the non-traditional career paths of women with caring responsibilities the Department has co-funded two **Daphne Jackson Fellowships** aimed at providing a part-time route back into academic work for women with PhDs who have taken extended career breaks. In 2016, we started a regular *Women in Psychological Science* (WiPS) lecture series. In 2017 we renamed this series in honour of Prof Annette Karmiloff-Smith, an internationally renowned developmental psychologist in our department, who passed away in 2016. The aim of this series was to provide a highly visible, prestigious, and influential forum for talks by inspiring female psychologists. We have now held four WiPS lectures, featuring talks by Prof Virginia Valian, Prof Dorothy Bishop, Prof Dame Uta Frith, and Prof Clare Elwell. Our recent staff survey showed wide agreement that our efforts to promote

equality has been successful, for example, 95% of respondents agreed that the department is a women-friendly place to work.

Recruitment and selection are guided by the College's official recruitment and selection policy. Selection of new staff is based on excellence in one of our core research areas, and the selection process involves all existing staff members. Selection panels are all balanced by gender (as are all departmental committees). Once recruited, we place a high premium on retention by proactively proposing excellent staff members for promotion and/or contribution-related pay awards. In line with our key Athena SWAN objectives, we actively encourage women to apply for promotion. Birkbeck is committed to maintaining its status as a world class research institution and is therefore responsive to requests for resources to retain outstanding research staff. Diversity and equality of treatment is a key feature of all procedures in the department and College. We are a diverse department in terms of nationality, with a balanced gender mix: 49% of staff in this census period are women. All staff with responsibility for recruitment receive diversity and equality training to ensure that all relevant principles are upheld. At the College level, the HR department and the Research Committee review these procedures and monitor the department's commitment to good practice.

3. Income, infrastructure and facilities

3.1 Research Income

The department has maintained its excellent track record in obtaining external grant funding since 2014. Since 2014, the department has earned new grants totalling £20.8M, and it currently houses 21.7 FTE grant-supported postdocs and research assistants. Total research expenditure has remained steady (from £2.18M pa vs. £2.11M pa in RAE2014 and £1.16M pa in RAE 2008). Funders include the *European Commission, MRC, ESRC, BBSRC, EPSRC, Wellcome Trust, Royal Society, British Academy, Leverhulme Trust, Nuffield Foundation, Waterloo Foundation, Simons Foundation, Autistica, US National Institutes of Health, US National Science Foundation, National Institute of Health Research, The Swedish Foundation for Humanities and Social Sciences, the Education Endowment Foundation, the Department for Children, Schools, and Families, and the Department of Health*, as well as donations to support research students and infrastructure projects (such as the ToddlerLab) from private benefactors. While income from UK central government has fallen relative to the previous census period (primarily due to the end of the Sure Start project), external research grant income from other sources have either remained stable (BIS Research Councils: down 11% from £922K pa to £815K pa) or increased remarkably: EU sources: 169% (from £341K pa to £918K pa); UK charities: 33% (from £423K pa to £563K pa); Other international charities: 189% (from £57k pa to £165k pa).

3.2 Infrastructure and Facilities

Our *MERLiN lab (Mace Experimental Research Laboratory in Neuroscience) in the Malet St. Building* has 6 acoustic booths for electrophysiological, optical and psychophysiological research and 8 sound-attenuated booths for eye-tracking and behavioural research, as well as office space for 33 postgraduate and postdoctoral researchers. There are further 12 testing booths on the 5th Floor. Equipment in MERLiN includes two 64 channel EEG systems, an EyeLink eye tracker, a BIOPAC system, fEMG modules, state-of-the-art equipment for auditory and tactile stimulation, and a device for measuring macular pigment density. The **GEL and BRIDGE** labs include wet lab facilities for on-site bio-banking of samples, molecular genetic experimentation and postgraduate training in cutting-edge statistical genetic methods. Further state-of-the-art facilities for EEG/ERP testing of adults, children, and infants, eye tracking, optical imaging, EMG, Kinematics and motion capture, and patient testing are available in the **Henry Wellcome Building**, which is shared by the CBCD and the Brain and Behaviour Lab.

In this census period, recently refurbished office space (41 desk spaces for staff, researchers and PhD students) and new research labs for CBCD are located at 32-33 Torrington Square. With considerable funding from the Wohl and Wolfson Foundations (£3.2M) and the College, these facilities include a new £8.5m building to house the state-of-the-art **ToddlerLab**,

(additional 436 m² high quality research lab space) - the first of its kind in the world focusing on using wearable and wireless technology in naturalistic settings. The ToddlerLab includes specially designed home and preschool environments equipped with motion tracking, wearable eye-tracking, and combined wearable EEG and fNIRS systems (including cutting-edge cytochrome oxygenation measurement capacity –providing direct measures of cellular function) for monitoring children's behaviour when engaged in natural interactions embedded in normal environments, a Nap lab for completing sleep studies and an intervention lab for developing family-based behavioural interventions. Further major equipment funding from the Wellcome Trust (£0.85m) means that this ground-breaking facility has been fitted out with Cave Automatic Virtual Environment (CAVE) enabling us to transport children into any environment using the latest interactive audio-visual technologies. In collaboration with ARTINIS, we have also developed technologies for co-registering fNIRS with EEG in freely mobile toddlers and pre-schoolers. The ToddlerLab provides continuity to the existing Babylab and enable us to now track development seamlessly over the first 5 years of life (instead of focusing exclusively on the first 2 years).

The Birkbeck/UCL Centre for NeuroImaging (**BUCNI**), located in the ground floor of 26 Bedford Way, just across from the other department labs, is a highly collaborative, inter-institutional initiative with UCL. Led by director **Dick** and an associate director at UCL, BUCNI's capacities have been considerably expanded with the purchase and installation of a Siemens 3 Tesla Prisma scanner, made possible through considerable ring-fenced recharge fees from BUCNI PIs, and capital funds investment from Birkbeck and UCL. This state-of-the-art MR scanner has exceptionally stable high-performance gradient coils and RF chain, facilitating faster high-resolution imaging in all modalities with considerably less artefact. BUCNI has also completely retooled its electronics and machine workshops and expanded behavioural testing and reception facilities. It has also retained the existing Siemens 1.5T Avanto - a vital tool for scanning young children, participants with medical implants, for demanding applications such as simultaneous TMS/fMRI, real-time supralaryngeal vocal tract imaging, and for translation of MR protocols and approaches from high- and ultra-high magnetic fields to standard clinical settings.

During the census period, we have also established a *Qualitative Research suite* to support in-depth interviews underlying IPA and other qualitative method approaches in the **Health and Lived Experience** cluster. This facility provides a safe, confidential and supportive environment for participant to come into the department and engage in interview-based research projects.

A vital component of the department's research infrastructure, which ensures maximum usability of the research infrastructure, is its **investment in professional research support teams**. For example, the department funds a senior research support leader at CBCD with over 25 years of research support experience, who leads a team of up to 4 research assistants and 3 administrative staff at the Centre. The Brain and Behaviour Lab is also supported by a full-time lab manager. The Toddler Lab CAVE environment is serviced by a full-time Senior Research Technician (Res3) coordinating technologies and creating scenarios for easy usability of the facility. Similarly, our technical and computing support team is led by an experienced senior specialist in charge of IT support. The department funds a further 3 general technical and IT staff, a 0.5 FTE administrator, and a 0.5 FTE MRI physicist at BUCNI, and also has an Assistant School Manager focusing on research and the postgraduate provision with a team of two administrators.

All research within the department falls under the BPS codes of conduct, including the **BPS Code of Human Research Ethics** and the **BPS Guidelines for the Conduct of Psychological Research within the NHS**. Research governance is an individual and a collective responsibility. Training is regularly provided to make all research staff aware of these codes. These are monitored by the **Departmental Research Ethics Committee**. All research proposals must be submitted to this committee, which can refer specialist proposals to internal or external experts. The departmental ethics committee reports to the **College Research Ethics Committee**, which oversees its operations and provides a further level of scrutiny. There are tailored ethics forms for our key research areas of particular sensitivity such as genetic research and research with minors. Patient-based research with NHS partners is submitted to the relevant NHS local or multi-centre research ethics committees and must conform to the appropriate NHS

guidelines. EC funded projects go through full EC ethical review. All BUCNI-related MRI projects with healthy adults are reviewed by the BUCNI ethics committee, with developmental or clinical populations reviewed by the appropriate UCL Bioethics or NHS bodies. All research given ethical approval from NHS partners and other boards/institutions is reviewed by the departmental ethics committee, and records are maintained. A five-yearly internal audit of research governance and ethics procedures is carried out, and procedures are regularly reviewed and updated by the research ethics committee, to ensure best practice

4. Collaboration and contribution to the research base, economy and society

The excellence of our contributions to psychological science, our focus on interdisciplinary and collaborative work, and our strong emphasis on impact-related research has been widely acknowledged at the national and international level. For example, 3 members of staff have been invited to write authoritative articles for the very prestigious by-invitation-only **Annual Review of Psychology** (Csibra, 2015; Kirkham, 2018; Oaksford, 2020). During the census period, 3 of our staff were sitting **Fellows of the British Academy** (Eimer, Johnson, Karmiloff-Smith) and Mareschal held a **Royal-Society Wolfson Research Merit Award**. Since 2014, both senior and early-career members of the department have received many national and international awards for research excellence, including: 9 **Fellowships of the APS** (Ronald 2014; Dick, 2014; Hahn, 2015; Derakhshan, Richards, Thomas, Dumontheill, all 2016; Melhuish, 2018; Cooper, 2020); **BPS Developmental Section Distinguished Contribution Award** (Karmiloff-Smith, 2016); **BPS Honorary Fellowship** (J Smith, 2020); **Fellowship of the British Academy** (Eimer, 2016); **EPS Midcareer Award** (Eimer, 2014); **Fellowship of the German National Academy of Science - Leopoldina** (Hahn, 2015); **Order of the British Empire (OBE) for Services to Social Science** (Melhuish, 2016); **Doctorate Honoris Causa, University of Lundt** (Hahn, 2017); **US Academy of Sciences Foreign Associate** (Csibra, 2017; Johnson, 2019); **Associate Member of the British Academy** (Csibra, 2018); 2 **Spearman Medals** (Dumontheil, 2017; Cook, 2020); 2 **EPS Early Career Prizes** (Longo, 2014; Cook, 2017); 2 **Elizabeth Warrington BPS Neuropsychology Society Prizes** (Dumontheil, 2015; Cook, 2018); **Nakayama Award (Shorei-sho)** (Senju, 2015); **Humboldt Foundation's 2014 Anneliese Maier Research Award** (Hahn, 2014); **APS Mentor Award** (Johnson, 2018); **Huttenlocher Prize FLUX Society** (Johnson, 2015); **European Association of Developmental Psychology William Thierry Preyer Award** (Johnson & Karmiloff-Smith, 2017); **APS Janet Taylor Spence Award** (Ronald, 2014); **APS Rising Star Award** (Cook, 2015); **Margaret Donaldson BPS Developmental Section Prize** (Senju, 2015); **British Academy Rising Star Engagement Award** (Gliga, 2016); **Fellow of the Academy of Social Sciences** (Barnes, 2016).

The department is a major hub for national and international research networks and collaborations, placed in the top 5 worldwide for 'Psychiatry/Psychology' by the **Best Global Universities Ranking (2016)**. Using the strategic advantage of our multi-national faculty and our central London location, we have further strengthened these links since 2014. In London, we are full partners in inter-institution facilities such as **BUCNI** and the Centre for Educational Neuroscience. Nationally, we are the co-ordinating hub for large-scale research networks such as the British Autism Study of Infant Siblings, and the national evaluation of the Effective Pre-school, Primary, and Secondary Education programme. CBCD is also a key partner in the large-scale EU-Aims project "European Autism Interventions" and participates in four other EU-wide research networks. The department is also recognised as the worldwide centre of Interpretative Phenomenological Analysis (IPA) research and training. The GEL lab co-founded the Genetics Society-funded London Genetics Network in 2020 which involves over 30 nearby institutions.

During this census period, members of the department have served (or are serving) as Editors or on the Editorial Boards of many leading international journals, examples include but are not limited to: **Psychological Review** (Hahn, Mareschal, Oaksford), **Cognition** (Oaksford), **Cognitive Psychology** (Hahn), **Developmental Science** (Mareschal, Dumontheil), **Neuropsychologia** (Eimer), **Cognition and Emotion** (Derakhshan, Richards), **Anxiety, Stress and Coping** (Derakhshan, Richards), **Cognitive Science** (Cooper), **Emotion** (Richards), **Child and Adolescent Mental Health** (Barnes), **Journal of Child Psychology and Child Psychiatry** (Ronald), **JEP: General** (Davelaar). Members of the department have organised many

international conferences at Birkbeck and elsewhere, including the 39th *International Conference of Cognitive Science Society*, London, 2017 (Davelaar); the *International Congress on Infant Studies*, 2014, *Berlin* (Mareschal, Johnson) and 2020, *Glasgow* (Kirkham); and the 11th *International Conference on Thinking* 2016, Providence USA (Oaksford).

Our strong focus on interdisciplinary research and collaboration reflects our long-term strategy to develop specific areas of interdisciplinary research excellence in fields where we are internationally leading. Two of our core research areas, **developmental cognitive neuroscience** and **computational modelling**, were already identified as world leading in the UK by the RCUK/AHPD/EPS/BPS Benchmarking Review of Psychology (2011), and we have continued to build on these strengths during the current census period. We have now emerged as the world centre for IPA-based basic and applied qualitative research (as documented in one of our Impact case studies), and are constantly exploring novel interdisciplinary avenues of research such as *Experiential Neuroscience*. Another important aspect of our emphasis on collaborative and interdisciplinary research is our strong involvement in translational, applied and impact-related initiatives. These have resulted in connecting with the numerous national and international networks described throughout that have underpinned our research for decades. The policies and structures put in place since 2014, and our focus on recruiting and nurturing the very best early career faculty, will ensure that the department will continually assess, improve, and sharpen its research profile and impact in the long-term. We are optimistic that our reputation for international quality research will continue to grow.