

Institution: Brunel University London
Unit of Assessment: 04 – Psychology, Psychiatry and Neuroscience
1. Unit context and structure, research and impact strategy

Context

Psychology at Brunel University London is a multi-national and culturally diverse academic community with an international outlook. It brings together complementary perspectives to conduct research on issues of fundamental importance to human health, well-being, and societies. We have undergone substantial growth and transformation in recent years with major strategic investment and recruitment, expanding from 28 academics in 2014, to 34 now.

Our vibrant research community has published over 400 peer-reviewed journal articles since 2014 and developed extensive collaborative/interdisciplinary networks. Strategic recruitment focused on developing key areas of strength has raised the quality of our research activities, with most of our academics working on externally funded projects since 2014, winning £1.2M in awards for research at Brunel and a further £3.1M in awards for collaborative research with colleagues at other institutions. Moreover, 80% of the outputs in our submission are in the 75th percentile for article citations per year in their sub-fields, and approximately 30% are in the 95th percentile demonstrating the extent to which our researchers are providing intellectual leadership and setting the research agenda.

Since 2014, there have been major improvements to the organisation of our research activities, significant infrastructure investment and our research programmes have evolved to tackle emerging challenges in psychological science and the world more generally. This includes a commitment to, and engagement with, knowledge-transfer activities that enhance the impact of our research, and Open Science practices aimed at improving the accessibility, reliability, reproducibility of our research findings. In line with this commitment, 32% of the empirical research outputs in our submission have underpinning open data available in an institutional or other repository (e.g., OSF, Brunel figshare), as supplementary material, or are based on longitudinal collaborative datasets (e.g., ALSPAC, TEDS, UK Biobank).

Psychology is one of the largest divisions in the multi-disciplinary Department of Life Sciences, sitting alongside Biosciences; Environmental Sciences; and Sport, Health & Exercise Sciences. From 2014 to 2020, the Department of Life Sciences, together with the Department of Clinical Sciences formed the College of Health & Life Sciences (CHLS). This positioning of Psychology, following a major restructuring of the University in 2014, reflects Brunel's commitment to promoting research that brings together biological, clinical, and psychological perspectives and has the potential to improve human health and well-being. With the establishment of the Brunel Medical School in August 2020, CHLS will become the College of Health, Medicine & Life Sciences (CHMLS).

Following a 2014 reorganisation of Brunel's research and teaching activities, research in Psychology has been structured around 2 College Research Centres launched in 2016: the Centre for Cognitive Neuroscience (**CCN**), Centre for Culture & Evolution (**CCE**) and a University Research Institute (Institute for Environment, Health & Societies). All staff/PGR students belong to one of these. The establishment of these Research Centres and continued strategic investment in them was informed by a 2015 strategic review of research in Life Sciences at Brunel, which identified these areas within Psychology as well-established, strong and with good potential for growth.

Within these major clusters of expertise, our research programmes employ complementary methodological approaches, and technologies, to address important questions across different levels of analysis. These range from cognitive neuroscientists and neuropsychologists investigating the neural correlates and substrates of perceptual/cognitive processes in health and disease, to

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evolutionary psychologists studying the origins/adaptive value of traits, and cultural and cross-cultural psychologists examining social behaviour.

Cutting across these areas is a commitment to understanding fundamental aspects of human psychology and behaviour, with a view to addressing some of society's most pressing challenges. This commitment aligns with Brunel's position as a leading multidisciplinary research-intensive university which aims (as articulated in Brunel's "2030 Vision") to integrate academic rigour with the needs of governments, industry, and the not-for-profit sector, delivering creative solutions to global challenges and bringing economic, social, and cultural benefits.

The multi-national and culturally diverse nature of Psychology at Brunel flows from our global approach to recruitment with approximately 70% of our academics having completed elements of their academic training at universities outside the UK. Our research culture is enriched, by complementary perspectives gained by our academics at institutions in countries including Australia, Belgium, Canada, Germany, India, Israel, Italy, Netherlands, Republic of Ireland, Turkey, and USA. This extraordinary diversity reflects our focus, during recruitment, on identifying research excellence and potential wherever it can be found and contributes to, Brunel being consistently named as one of the UK universities with the strongest "International Outlook". Moreover, the diversity among our academics complements the diversity of our student population. Overseas students comprise close to 20% of our student community (18.9% in 2018-19), and Brunel has a considerably more diverse student population than the sector average with approximately 60% of BAME ethnicity.

Structures and strategic aims.

As set out in Brunel's 2030 vision statement, the university aims to strengthen its position as a leading multidisciplinary research-intensive university delivering economic, social, and cultural benefits. This vision builds on the earlier major 2014 restructuring exercise, which led to the establishment of 3 academic Colleges and 3 University Research Institutes. The Colleges were envisaged as the major academic units combining education and discipline-led research, with College Research Centres (CRCs) established to build critical mass in priority research areas, and Institutes focused on driving large-scale challenge-led interdisciplinary research. Together these structures provide complementary research support systems, with Centres providing research "homes" for Psychology Division members, and Institutes helping large interdisciplinary groups of researchers to coalesce around challenge-led research priorities as they arise. Each research centre has an Advisory Board of external academic experts providing support and strategic guidance.

The College has continued its drive to fulfil Brunel's efforts to strengthen our capacity to deliver benefits to society, through the establishment first of the Brunel Partners Academic Centre for Health Sciences (BPACHS) and the Brunel Medical School in 2020. The BPACHS collaboration involves Brunel and 3 NHS Foundation Trusts: Hillingdon Hospitals; Central & North West London (CNWL); and Royal Brompton & Harefield. Its principal focus is the delivery of improvements in care through advances in education and research within Health Sciences in which Brunel has established expertise and plans to extend its portfolio of provision. However, it also provides a gateway to broader engagement with other disciplines in the University, particularly Psychology, facilitating links between CCN researchers and clinicians (e.g., giving access to CNWL stroke clinical data).

Centre for Cognitive Neuroscience (CCN)

CCN brings together cognitive neuroscientists, clinical neuroscientists, neuropsychologists, psychopharmacologists, and sport and exercise psychologists, to conduct cutting-edge research in several interdisciplinary areas. CCN builds on the success of the earlier Centre for Cognition & Neuroimaging, with a broader focus on understanding and restoring human brain function and health. Both RAE2008 and REF2014 identified cognition and neuroimaging as areas of strength at Brunel, and (as set out in our REF2014 submission) our continued investment in cognitive neuroscience, and its applications, has been informed by the 2011 ESRC/BPS/AHPD/EPS

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International Benchmarking Review of UK Psychology. This emphasised the importance of further developing the strong links that UK psychology has with both psychiatry and neuroscience, and identified the integration of CBT/behavioural change/experimental psychopathology with cognitive neuroscience, as one of the 'vital new directions for psychological science to pursue'.

CCN is led by Professor Veena Kumari, appointed as Director in 2018 and formerly at the Institute of Psychiatry, Psychology and Neuroscience at KCL and Chief Scientific Officer of Sovereign Health Group (USA). Professor Kumari is best known for her extensive, innovative, research on the neurobiological effects of pharmacological and psychological treatments in psychosis, neurobiology of violence in mental illness, psychobiology of addiction, and personality and brain functioning. Kumari has received various national and international awards for her research including the Young Investigator Award from the National Alliance of Research on Schizophrenia and Depression, USA (1999), a Research Fellowship from BEIT Memorial Foundation (1999-2002), the BAP Clinical Psychopharmacology Prize (2002), a Wellcome Senior Fellowship in Basic Biomedical Science (2002-2009), a prestigious Humboldt Research Award (2014) and a Bonn International Fellowship (2020).

Psychology research within CCN is strategically clustered around 4 main strands: 1) **Cognitive Neuroscience**; 2) **Clinical & Forensic Neuroscience**; 3) **Cognitive Psychopharmacology & Addiction**; 4) **Rehabilitation and Neuroplasticity**.

Cognitive Neuroscience

CCN members conduct pioneering research on fundamental and applied topics in cognitive neuroscience, with a focus on vision, visual attention, face, and language processing and both congenital and acquired deficits in these domains. Corbett and Munneke (Psychol. Sci., 2018) have advanced a new framework for using individual differences to boost signal detection in safety-critical real-world tasks (e.g., security/medical screening) while Bennetts' face processing studies with super-recognisers and prosopagnosics have shaped how researchers identify these individuals, through the development of new screening instruments, norms, and recommendations (Cogn. Res. Principles Implications, 2018; Sci. Rep., 2018).

O'Brien has shown how processing of dynamic facial information is supported by a network of visuomotor substrates (Soc. Neurosci., 2016) while Jennings has demonstrated the role of colour in high-level object recognition, both psychophysically and with EEG with research that advanced our understanding of how parvo and magnocellular inputs combine/interact sub-cortically, and critically how spatio-chromatic signals combine with luminance (J. Vision, 2014; 2015; Sci. Rep., 2016).

Wydell's research on language processing has had a major impact on screening methods for dyslexia in Japan, while Roberts (Cortex, 2015) was the first to show that, when appropriately tested, patients with pure alexia demonstrate simultaneous impairments for other visually demanding stimuli (e.g., both familiar and novel faces).

Clinical & Forensic Neuroscience

Using psychophysiological and neuropsychological methods, CCN researchers probe the basis of psychopathologies, neuropsychological disorders, and treatment approaches. Kumari's experimental studies demonstrated, for the first time in humans, that controlled sleep deprivation is a safe and effective model system for psychosis when combined with psychophysiological biomarkers of schizophrenia (J. Neurosci., 2014). Moreover, her longitudinal fMRI studies of CBT for psychosis, with colleagues, have shown how it normalizes functional connectivity for social threat in (Schizophr. Bull., 2016) and how such changes predict long-term recovery over a period of 7 years (Transl. Psychiatry, 2017).

Puzzo's recent work using diffusion-tensor imaging (DTI) has shown that adolescents with conduct disorder and high callous-unemotional traits present with specific white-matter microstructural abnormalities suggesting that this group forms a distinct and more severe subtype of conduct disorder (J. Abnorm. Child Psychol., 2017; JAACAP, 2019).

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Williams (Neuropsychologia, 2018) reported important evidence of direct parietal cortex involvement in egocentric spatial perspective aspects of episodic memory and demonstrated for the first time, specific deficits in episodic memory in patients with right parietal damage. Antonova has developed novel low-cost objective psychophysiological measures of mindfulness expertise (PLoS One, 2015; Conscious. Cogn., 2017), now widely used by other researchers to evaluate the effects of mindfulness-based interventions.

Cognitive Psychopharmacology & Addiction

CCN researchers use innovative techniques to examine the neural basis of psychotherapeutic drug action and addiction. Using fMRI, Norbury (Int. J. Neuropsychopharm., 2018) showed that anterior cingulate activation to sad/happy face stimuli predicted responses to antidepressant pharmacotherapy (SSRIs) at the individual patient level. Norbury (Transl. Psychiatry, 2016) also demonstrated that early changes in emotional processing (indexed by insula and anterior cingulate activation to emotional faces) preceded clinically significant changes in depressive symptomatology. Our focus on addiction, extends from the study of substance use to critical and timely research on gambling addiction and suicidality by Cheeta (Int. Gambl. Stud., 2016)

Rehabilitation & Neuroplasticity

Bridging basic science and clinical practice, CCN researchers, have pioneered new rehabilitation approaches. Chan has demonstrated the efficacy of mirror therapy for phantom limb pain (Scand. J. Pain, 2015), used fMRI to show improvement is associated with sensorimotor cortex changes (NeuroImage: Clinical, 2019), and was recently awarded significant US NIH funding (R01) to continue this research with collaborators in the USA. Szameitat has demonstrated different roles for corticospinal tract integrity and lesion volume in rehabilitation from hemiparesis (Neurorehab. Neural Repair, 2014) and Parton has shown how pharmacological treatment (guanfacine) can ameliorate unilateral neglect following stroke (J. Neurol. Neurosurg. Psychiatry., 2018). Moreover, CCN researchers are at the forefront of developing, and sharing, new neuropsychological methods, e.g., de Haan's research on improving the practical use (NeuroImage: Clinical, 2015) and theoretical informativeness (NeuroImage, 2017) of lesion-behaviour mapping in stroke patients, using semi-automatic and fully-automated methods.

Future Research Strategy

CCN aims to build strength in the above areas, further developing links between fundamental research and its clinical applications. Global key challenges of our time include understanding the impact of environmental factors on brain health, and the development and effective use of digital online technologies to assess cognitive/brain function robustly and reliably across the life span. For example, to monitor and optimise core cognitive skills and mental health in clinical populations, such as people with schizophrenia, depression, neurodegeneration and dementias, and/or sensory impairments. CCN is well-positioned to tackle such challenges and address core strategic priorities for our society relating to mental health, neurological impairment, and ageing.

Centre for Culture & Evolution (CCE)

CCE brings together cross-cultural, evolutionary, developmental, personality and social psychologists with relationship scientists and cultural evolution researchers to conduct research focused on revealing how our evolved human nature generates the diverse array of cultural practices and behaviours observed around the world. CCE builds on the success of the earlier Centre for Culture & Evolutionary Psychology, with a broader focus on cultural evolution and cultural variation in, and evolutionary origins of, psychology and behaviour.

Both RAE2008 and REF2014 identified cross-cultural and evolutionary psychology as areas of strength at Brunel, and (as set out in our REF2014 submission) our continued investment in evolutionary approaches to human behaviour has been informed by the 2011 ESRC/BPS/AHPD/EPS International Benchmarking Review of UK Psychology which identified Evolutionary Psychology, with its inherent interdisciplinarity, as one of the 'vital new directions for psychological science to pursue'.

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CCE is led by Professor David Schmitt, appointed as Director in 2017, currently President Elect of the Human Behavior & Evolution Society, Editor-in-Chief of the journal *Culture and Evolution* and formerly Caterpillar Professor of Psychology at Bradley University. Professor Schmitt is best known for the co-development of Sexual Strategies Theory and as the Founding Director of the International Sexuality Description Project (ISDP), an interdisciplinary global research consortium involving 100s of psychologists, biologists, and anthropologists who seek to understand how culture, gender, and personality combine to influence human sexuality. A 2013 systematic review (in *Review of General Psychology*), of scholarly publications in the 2000s identified Schmitt as the most frequently cited scholar within cross-cultural psychology.

Research in CCE strives to integrate proximate and ultimate perspectives on the causes of human psychological variation, across levels of analysis from individual biological traits and personal beliefs, through dyadic processes and group dynamics, and on to broader issues of ecology, demography, and sociohistorical context. Research in CCE is strategically organised around three main themes: **1) Personal Relationships & Sexuality; 2) Morality & Belief Systems; & 3) Cooperation, Conflict & Inequality.**

Personal Relationships & Sexuality

CCE members conduct pioneering research, incorporating cross-cultural perspectives, on interpersonal attraction and mate choice, relationship maintenance and satisfaction, infidelity and sexual jealousy, romantic attachment and mental health, intimate partner violence and sexual aggression. Our researchers are leaders in this area, e.g., with Gaines, recently elected President of the International Association for Relationship Research (IARR), and recipient of their 2018 Distinguished Book Award for his 2016 book *Personality and Close Relationship Processes*.

Through Schmitt's role as ISDP Director, CCE is at the nexus of a major global research network which has already amassed critical information about human sexuality from over 50,000 people across more than 50 nations, and future data collection waves will help culture and evolution scientists to determine, among other things, whether nation-level changes in gender equality, sex ratios, and ecological stressors precede important shifts in sexual and health-related behaviours.

Our cross-cultural focus is further demonstrated by Da Silva Nascimento's research on how cultural context (Brazil vs UK) influences relationship maintenance behaviours (J. Sex Marital Ther., 2019) and our methodological rigour by Clark's pioneering use of novel methods (the Elo rating algorithm) for assessing interpersonal attraction (PLoS One, 2018).

Morality & Belief Systems

CCE has become a world-leading, agenda setting, hub for research on religious, moral, and political beliefs, about issues such as fairness, resource distribution, gender roles, sexual behaviours, superstitions, and medical care. Building on our strategic investment in establishing CCE, in 2019 Price became co-leader (with Dominic Johnson, University of Oxford) of a major \$3M 3-year funding programme for research on the evolution of science and religion as meaning-making systems, supported by the Templeton Religion Trust and Issachar Fund. This programme seeks to utilize tools and insights from evolutionary and behavioural science to explore conflict, complementarity, and cross-cultural variation in the science-religion relationship. A portion of this award directly funds Price's research within CCE and his leadership of the project, while approximately \$2M will fund "re-grants", managed by Price and Johnson, for research related to the project theme. This scheme puts CCE firmly at the heart of a major global interdisciplinary network with the potential to advance research-based policy contributions and improve human well-being, community development and social cohesion.

Our leading role in the area of morality and belief systems is further exemplified by Willard's pioneering theory building paper (with >190 citations) on the cultural evolution of prosocial religions and their role in the expansion of human societies (Behav. Brain. Sci., 2016) which won the 2017 Wegner Theoretical Innovation Prize from the Society for Personality and Social Psychology. In a large study (>5000 participants) Price & Pound have shown how moral attitudes towards promiscuity vary predictably across the US in relation to female economic dependence on males

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(Arch. Sex. Behav., 2014). Moreover, De Barra's novel use of public online data has shown how beliefs about the efficacy of medical treatments spread (e.g., Soc. Sci. Med, 2017) and has the potential for major applications in the fields of public health and behaviour change.

Cooperation, Conflict & Inequality

Our investment in building a group with a strong cross-cultural focus places CCE in a unique position to study important social issues, in diverse populations and our researchers use innovative methods to advance our understanding of cooperation conflict, and inequality at the interpersonal, intragroup, and intergroup levels.

Cultural practices are often cooperative by nature and Wen has shown, with fieldwork in Vanuatu, how conformity to cultural conventions is socialized (JEPG, 2017; Child Dev., 2019) and how rituals facilitate social group cohesion through in-group affiliation, group displays, and group monitoring (Phil. Trans. R. Soc. B, 2020). Further demonstrating our commitment to studying psychological processes in non-Western populations, Gervais studies social relationships and community dynamics among iTaukei villagers in Yasawa, Fiji (Field Methods, 2017). Moreover, in agenda setting work to encourage interdisciplinary studies, Kline has shown how cultural evolutionary theory can be used to ground studies of developmental psychology in populations beyond relatively wealthy Western communities (Phil. Trans. R. Soc. B, 2018).

At the interpersonal level, Ferenczi has carried out timely and significant work on personality variables underlying antisocial behaviour ("trolling") online (Comput. Hum. Behav., 2018) while Adair has investigated sexual conflict in relation to the balance of power in fertility decision-making (J. Evol. Studies Consort. 2017), and interpretations of quid pro quo sexual harassment in the workplace (Pers. Individ. Differ, 2015).

Future Research Strategy

CCE aims to build strength in the above areas, addressing issues of fundamental importance to human cultures and societies during a period of rapid change. Widening levels of social inequality and large-scale migration, changes in gender roles and what it means to be a romantic partner, altered forms of religious practice and spirituality, and increasingly digital forms of social living and learning are becoming our new cultural realities. CCE is well-positioned to tackle these issues and is now building strength around "digital culture", a crucial issue for the 21st century. This is exemplified by Ferenczi's research on online behaviours, De Barra's innovative use of online data, and Acerbi's ground-breaking development of an original cultural evolutionary approach to the study of digital and online media outlined in his 2020 book "Cultural Evolution in the Digital Age".

2. People**Staffing Strategy**

Since 2014, Psychology has undergone significant strategic expansion (from 28 to 34-FTE) aimed at building sustainable critical mass in our areas of key research strength. In line with the University and College Research Strategy, within Psychology, research excellence and alignment with the focus of CCN and CCE, have been key criteria in our recruitment exercises (both for replacement and expansion posts). While key appointments have been made at the Professorial level to provide leadership and direction for our research centres, most recruitment has been at earlier career stages so that the demographic and career stage profile of the Division supports the long-term development and sustainability of our research programmes. We generally only appoint academics on long-term permanent contracts, with shorter fixed-term/part-time contracts used only occasionally to meet unanticipated teaching needs.

The educational backgrounds, and previous employers of our recent appointees, demonstrate our international outlook and provide evidence of our commitment to recruiting the highest calibre researchers from around the world. Appointments at Lecturer level since 2014 have joined us from academic, or postdoctoral research positions, at universities including Acerbi (Eindhoven); Adair (Central Arkansas); Bennetts (Queen Mary); Chan (NIMH Bethesda & Tennessee); Corbett

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(Bilkent); de Barra (Oxford Brookes); Gervais (Simon Fraser); de Haan (Tübingen); Ferenczi (Regent's); Jennings (McGill); Kline (Simon Fraser); Munneke (Bilkent); Puzzo (City); Roberts (Liverpool John Moores); Willard (Oxford); Wen (Michigan). At more senior levels, in addition to Professorial appointments, Antonova and Norbury both joined us as Senior Lecturers from the Institute of Psychiatry, Psychology & Neuroscience at KCL.

Staff Development

As set out in Brunel's Staff Development Strategy (2016-2020) we recognise that staff, whatever their role, are fundamental to our success and growth. Accordingly, we strive to cultivate and celebrate a community committed to excellence by offering a range of development programmes and activities for researchers at all career stages.

Early career support & development

To enhance support and opportunities for Early Career Researchers, in 2015 an "Academic Life Cycle" scheme was established. This sets out principles and mechanisms to support career progression at Brunel providing a framework for the linked processes of recruitment, probation, appraisal, development, promotion, performance, and career development. Through the scheme all new junior academics are given reduced teaching and administrative loads to help them establish their research programmes, along with probationary support and mentorship aimed at enabling them to achieve promotion at an early stage. Moreover, probationary academics complete an Academic Practice and Professional Excellence Framework (APEX) programme involving workshops designed to enhance not only teaching and support for student learning, but also to help ECRs develop their research profile and integrate these different strands in accordance with the importance Brunel attaches to research-led teaching.

Upon joining Psychology, academics have a "Research Induction" session. Those who conduct experimental work have access to specialist laboratory space and equipment shared with colleagues using related methodologies. Start-up funds are allocated to newly appointed Lecturers (£5K as standard since 2019) with further funding available through the competitive Brunel Research Initiative and Enterprise Fund (BRIEF) award scheme. These awards (up to £15K) are pump-priming funds for staff below Senior Lecturer level, within 3 years of their appointment, to enable them to start research projects and submit strong external funding applications. During 2014-20, 13 BRIEF awards were made to new academics in Psychology (Garrido, Imada, Launay, Munneke, De Haan, De Barra, Bennetts, Willard, Roberts, Gobel, Jennings, Chan) constituting an investment of £156K.

Brunel has recently (2020) been recognised by the Academy of Medical Sciences as an HEI eligible to host Springboard awards which provide up to £100K over two years and a personalised package of career support to help newly independent biomedical scientists to launch their research careers. Research in Psychology and Neuroscience reflecting the Academy's mission to improve human health through research is eligible for this programme.

Mid-career support & development

To sustain its research-intensive culture Brunel runs a competitive Research Sabbatical Leave scheme to allow academics to concentrate (for up to 6 months) on a programme of work leading to specific, identifiable outcomes (i.e., research outputs and/or funding applications). During 2014-20 periods of leave were awarded to 6 academics in Psychology (Clark, Marshall, Price, Sagiv, Szameitat, B. Wright) with £43K being allocated for teaching replacement.

Brunel's promotion process actively rewards research excellence with candidates able to use achievements including research outputs, research funding, supervision of PGR students, research impact and engagement with external bodies to meet criteria for promotion to Senior Lecturer and/or Reader. The promotion system is subject to an annual Equality Impact Assessment, to drive improvements in the equity of the process and regular "Success for All" workshops support and encourage applications from groups under-represented at senior levels.

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Benefiting from these mechanisms and processes, Psychology since 2014 has seen 8 promotions (7 to Senior Lecturer; 1 to Reader) and women have comprised 50% of the successful applicants.

Support & development across levels:

Following initial probationary support, a Performance and Development Review (PDR) process provides academics with opportunities for open, constructive, and positive discussions about development activities and needs. An institutional Staff Development programme provides a comprehensive range of workshops for academics at all levels, including sessions and training days covering topics including Research Ethics, PhD Supervision, Managing Research Staff, Influence & Impact for Researchers, Working with External Collaborators, and Preparing for Promotion.

In addition to the Research Sabbatical scheme, Brunel's Athena SWAN Research Award scheme, offers funds to support female academics returning from a period of maternity leave. Since 2015, 2 awards (totalling £27K) have been made to Psychology academics.

In 2019, Brunel introduced its new Mental Health & Wellbeing Strategy for Employees. This outlines its approach to, not just supporting employees with health problems or disabilities to maintain access to or regain work, but also raising greater awareness around mental wellbeing and providing opportunities to improve physical and emotional wellbeing more generally.

Within CHLS, Department & Division staff are supported through a range of formal and informal activities and events including annual College Research Days and College Staff Development Weeks with time set aside for workshops (e.g., programming with Python/R; media training; funding application strategies). Regular research coffee mornings, writing retreats and social events bring academics together in less formal settings. While in 2019, the Department of Life Sciences set up a Staff Experience and Wellbeing workstream to help develop ideas for how we can improve our work environment and practices, and support colleagues.

CCN and CCE hold regular research centre Away Days and within Psychology more generally there are research development seminars/workshops (e.g., on Open Science and data management/sharing). In addition, Brown-Bag journal club and research meetings provide an informal setting, for ECRs in particular, to discuss research ideas.

Senior Academics

Professorial/Reader pay progression depends on an annual target setting and review process linked to the PDR system and Departmental/College strategic plans. Senior academics can benefit from the Research Sabbatical and Staff Development opportunities outlined above. The Staff Development team offers a 6-month Leadership Development Programme (ASPIRE) to develop leadership competencies in emerging leaders and an Academic Leadership Programme for those appointed to management roles.

Research Staff

Brunel is a signatory to the Concordat to Support the Career Development of Researchers, and in recognition of its commitment to the Concordat's recommendations, and the career development of researchers, has held the European Commission's 'HR Excellence in Research' award since 2011. Brunel has a publicly accessible Concordat Action Plan and a Concordat Working Group, and The Graduate School offers a *Researcher Development Programme* for research staff.

Clear evidence of our strengths in developing the careers of junior researchers is provided by recent successes for our postdoctoral researchers in securing further excellent positions. E.g., Girges (Research Associate, UCL Institute of Health Informatics); Lavan (Research Fellow, Department of Speech, Hearing & Phonetic Sciences, UCL); Kuhn (Researcher, National Foundation for Educational Research); Sheehy-Skeffington (Assistant Professor of Social Psychology, London School of Economics).

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Support during COVID-19 pandemic

To mitigate disruption caused by the COVID-19 pandemic, Brunel rapidly introduced mechanisms and processes to support the sustainability of our research environment. In addition to standard remote working arrangements and technologies, the University Research Ethics Committee introduced an expedited process for switching face-to-face research with human participants, to alternative formats not requiring direct interaction (e.g., online experiments/surveys/interviews). Brunel's Research Support and Development Office (RSDO) switched its research support training events to online formats (e.g., for new academics) while our Research Centres (CCN & CCE) maintained an active schedule of online centre meetings, journal clubs and seminars to which we invited and involved colleagues from institutions around the world.

Support of PGR Students

As a research-intensive institution, Brunel provides a stimulating environment for PGR students. In 2019, following feedback from our researchers and in line with the Research Councils and best practice in the sector, a decision was taken to refer to our PGR students as "Doctoral Researchers". This naming convention reflects how they are integral to the university's research culture.

Brunel is committed to continued enhancement of its research degree provision and, in 2014, introduced a new "Code of Practice for Research Degrees" which has been reviewed and updated regularly since then. The Code sets out the duties and responsibilities of students, their supervisory teams, and Departments/Colleges. It covers standard procedures for PGR student recruitment (e.g., interviews) and induction, supervisory team requirements (composition, regularity of meetings), student progression milestones and viva preparation arrangements (e.g., mock vivas).

All PGR students are required to have a minimum of two supervisors with appropriate expertise, and a Researcher Development Advisor (RDA) who offers guidance on training opportunities and career development plans. Key supervisory meetings, progression milestones and documentation are recorded and monitored using a "Supervision Dashboard" on the University's eVision student data system enabling rapid identification of student engagement/progression issues.

Brunel's Graduate School acts as a hub for PGR students, coordinating personal, professional and career development opportunities, including workshops, online training, coaching and events, to enable students to enhance their professional profile, refine their skills, and plan next career steps. It also provides training (both online and as workshops) for PGR Supervisors, RDAs, PhD Examiners and Viva Chairs. Brunel's Library also provides a training programme to help PGR students develop their scholarship skills.

In Psychology, we currently have 25 PGR students with 26 completions during 2014-20. Our PhD programme attracts students from countries across the world including Austria, Canada, China, Germany, Italy, Netherlands, and USA. Since 2014, each year on average 55% of registered students have been from outside the UK. There is dedicated office space for PGR students, and an academic PGR lead who oversees and coordinates our provision. Many students take the career development opportunities afforded through part-time work as graduate teaching assistants and research seminar programmes in CCE and CCN provide students with opportunities for engagement with the wider research community.

In addition to receiving externally funded (e.g., Leverhulme) studentships, a vibrant PGR student community is maintained within CHLS through College funded studentships (8 awarded 2016-19 with 5 going to Psychology), There are multiple induction events each year (Oct/Jan) and personal research funds (£300/£150 p.a. for FT/PT students). Moreover, the College runs a *Researcher Development Programme* consisting of workshops and seminars to help research students develop personal and professional skills. Each year, there is a CHLS PGR Student Conference showcasing and celebrating innovative and diverse doctoral research from across the College. All 2nd year FT and 4th year PT PGR students are expected to present a poster at these events.

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There is an annual multi-disciplinary Brunel Research Student Poster Conference with Vice-Chancellor's research poster prizes awarded (with 4 Psychology winners and runners-up in recent years). Vice-Chancellor's Prizes supporting external conference attendance are available (£500 each, up to 32 per year competitively awarded, with 6 awarded to Psychology in recent years). Moreover, Brunel strongly promotes participation in the Vitae Three Minute Thesis® competition and Psychology student successes have included Otermans (University Runner-up 2016 & College Winner 2018).

PGR student successes

Evidence of the outstanding support, skill development and career preparation, provided for PGR students comes from the destinations of many awarded PhDs since 2014. Many have taken up full academic positions (e.g., lectureships) including Chavanovanich (2017) Chulalongkorn University; Ferenczi (2015) Brunel; Lefringhausen (2015) Warwick; Otermans (2018) Brunel; Pearce-Dunbar (2017) University of the West Indies. Others have taken up postdoctoral research positions including Altweck (2016) University of Greifswald; Girges (2015) UCL; Hill (2019) NatCen Social Research; Kuhn (2015) Saarland University; Saylik (2017) Oxford; Sargalo (2016) Evidera Pharmaceuticals; Tsantani (2019) Birkbeck.

Equality and Diversity

Reflecting our commitment to advancing the careers of women in STEMM subjects, Brunel and the Department of Life Sciences were awarded Athena SWAN Bronze awards in 2012 and 2017 respectively, while CHLS is taking up membership of the Women in Science and Education (WISE) Campaign.

Brunel runs "Success For All" workshops to encourage staff from diverse backgrounds to consider their potential, and build confidence in applying for promotion. In addition, it runs an Aurora Women's Development Programme, which helps women in academic, research, or professional service roles develop their careers and prepare for leadership roles. During 2014-20, 2 academics from Psychology benefited from participating in this programme (Cheeta, Garrido).

In addition to an Employee Assistance Programme and Counselling Service, Brunel has various Staff Network Groups (e.g., Access & Disability, Carers', Ethnic Minority, LGBT, Women's, Working Families) that enable staff from across the university to meet in a relaxed and confidential setting to discuss important equality issues that affect staff in the workplace.

In 2019, during its LGBT History Month celebrations, Brunel held an LGBT-themed research showcase. Moreover, reflecting our achievements and progress on LGBT equality, in January 2020 Brunel rose 131 places to become a Top 300 employer in the Stonewall Workplace Equality Index rankings.

REF2021 Submission process

Brunel, as a research-intensive university, is submitting 100% of all eligible academic staff. We followed the processes set out in our Code of Practice for the fair and transparent identification of independent researchers and to ensure that the submitted outputs provided a balanced and unbiased representation of the work of our diverse academic community, their characteristics, and contractual positions (age, disability, race, sex, part-time workers and fixed-term employees). Output selection was monitored through regular Equality Impact Assessments.

Our Equality Impact Assessment indicates that the outputs submitted for Psychology are a well-balanced representation of the protected characteristics and contractual positions of staff. Our submission has a high proportion of outputs selected for female staff (44% female staff contributing 50% of the outputs) and staff at the earlier stages of their careers (32% staff aged 30-39 contributing 38% of the outputs). This unit saw a significantly higher proportion of disclosed circumstances than our University average. The REF2021-EDAP approved discount of 9.5 publications is 11.9% of the output pool, while the University-wide declared average was estimated at 2.2%. In line with our code, we have reduced the output total by only 7, absorbing the remaining impact of these circumstances within the flexibility of the submission.

3. Income, infrastructure and facilities

Research Income

Since 2014, our academics, have won major awards, or received ongoing funding, from national and international funders including the British Academy, Experimental Psychology Society, ESRC, EU-Horizon 2020, Fundacao Bial, Issachar Fund; Leverhulme Trust, Medical Research Council, Mind & Life Europe, Royal Society, US Air Force, US National Institutes of Health (NIH), Waterloo Foundation, and Wellcome Trust. Funding success has increased progressively since 2014, with £1.2M in awards won for research at Brunel together with the \$3M Templeton Religion Trust/Issachar Fund award (2019) being managed by CCE. In addition, since 2014 our academics have secured >£3.1M in awards in collaboration with colleagues at other institutions including Chan's major (\$3.5M) National Institutes of Health (USA), R01 project grant as CI (2019-2024), and awards to Wydell from the Hong Kong Quality Education Fund, Japanese Ministry of Education & Health; and Japan Society for the Promotion of Science.

Strategies for Generating Research Income

Internal Peer Review of Funding Applications

To improve funding application quality, Brunel operates a mandatory Internal Peer Review system for proposals. All standard research grant proposals are reviewed by at least two appropriate academic colleagues during the application development process. Peer reviewers consider, not just the scientific merit of proposals, but also impact generation and dissemination plans, including the extent to which the proposed research is likely to generate knowledge of benefit to society, culture, the economy, public policy or services, health and/or quality of life.

Larger proposals (>£1M) and those subject to funder Demand Management go through a more extensive review process involving Peer Reviewers with strong research funding records, or experience as funding organisation reviewers or panel members. For some specific funding schemes (e.g., BA/Leverhulme, ESRC) we hold pitch-to-peer events where, during the application development process, applicants present their ideas to an audience of academic peers. In addition to these formal processes, CCN and CCE meetings provide informal opportunities for academics to get feedback on draft project proposals at an early stage.

Research Infrastructure & Facilities

Psychology offices and laboratories are in the Gaskell and adjacent Marie Jahoda buildings. Postdoctoral researchers, PGR students and visiting academics have dedicated office space and computing facilities and there are high quality research, technical, and computing laboratories including 10 experimental cubicles (93m²) with PCs and software (e.g., Eprime, MatLab) for participant testing and observation, a research-teaching laboratory with 24 PCs (66m²), and CCN/CCE research labs (134m²).

Technical Support

Psychology has a dedicated technician (1-FTE) providing general IT, AV, hardware/software support along with specialist support for staff and PGR student research (including specialist equipment design & construction). College computing officers (3.8-FTE) provide additional specialist IT support.

Functional magnetic resonance imaging (fMRI)

As a member of the cross-HEI Combined Universities Brain Imaging Centre (CUBIC), Brunel jointly owns and operates a **3T Siemens MAGNETOM TIM Trio MRI scanner** (with Royal Holloway, Surrey & Roehampton) in a purpose-built lab suite and run with the support of a specialist MRI technician (1-FTE). Established in 2003, through a £1.5M SRIF investment, this research-dedicated system underwent a £400K upgrade in 2012, and offers high resolution, real time fMRI, MR spectroscopy (3D Chemical Shift Imaging), and diffusion tensor imaging (DTI) for 3D white matter tractography.

Unit-level environment template (REF5b)

Electroencephalography & brain stimulation

A dedicated **EEG laboratory** (27m²) houses 32- and 64-channel (MRI-compatible) Neuroscan EEG systems. Also available are eegSports ultra-mobile EEG and EMG recording platforms, Magstim BiStim2 TMS and tDCS systems for brain stimulation/modulation research, and a new Brainbox Brainsight® TMS Navigation system for neuronavigated studies using MRI scans for target localisation.

Data processing & software

Matlab (including Psychtoolbox and Statistics & Machine Learning Toolbox) is available for analysis of fMRI, EEG, and behavioural study data. Psychology has numerous E-Prime 3.0 licences for laboratory based behavioural studies. Campus-wide licencing allows academics, researchers, and students to download key software for use on their own devices at home including SPSS, AMOS, Matlab and Adobe Creative Cloud.

High performance computer cluster

In 2019, the Department of Life Sciences installed a 360TB 24-node high performance computer cluster with a dedicated GPU node and infiniband switching to facilitate brain imaging (fMRI & EEG), genomics, and epidemiology data processing activities (£250K). Housed in the University Data Centre, local departmental IT staff provide local cluster management with additional specialist support available from core data centre staff. Governance involves an academic lead group working in collaboration with the technical team.

Laboratory facilities

Supporting CCN's focus on vision and visual perception there is a dedicated visual psychophysics laboratory equipped with display systems, Psykinematix, a VSG 2/5 stimulus generator (Cambridge Research Systems) and key tests (e.g., Farnsworth-Munsell 100 hue tests). There are multiple eye-tracking (Eye Link 1000 and EyeTribe) and virtual reality (HTC Vive) systems. For research on sensory and proprioceptive mechanisms there are mirror boxes for phantom limb therapy studies and a bariatric simulation suit.

For **response monitoring**, in addition to basic response acquisition systems (e.g., Cedrus Response box / Smart Voice Key) startle paradigms are supported by a SR-HLAB computerized human startle response monitoring system and a Joystick operated runaway task (JORT) system for behavioural measurement of threat-sensitivity.

Physiological monitoring systems are available to assess changes associated with psychological processes and behavioural events including Empatica E4 wristbands for real-time data acquisition (heart rate, galvanic skin response, motion), piCO Smokerlyzer CO monitors, blood glucose monitors and a thermal imaging system (FLIR A655sc) for assessing localised skin temperature changes (e.g., associated with emotional states). The Department has a temperature/humidity-controlled room to standardise climatic influences on skin temperature in such studies and biomechanics facilities for exercise studies.

Online research with human participants (e.g., questionnaire studies and behavioural experiments) is facilitated by a Department-wide subscription to the Qualtrics online survey platform (allowing rapid deployment of questionnaire studies and psychometric tests) and Psychology's subscription to Testable, a powerful system for administering behavioural experiments online.

Other departmental facilities include an extensive collection of AV, laboratory and computing hardware resources, psychometric test library, specialist equipment and laboratories for participant photography/video, and infant research. An undergraduate research participation pool (pedagogically integrated with the curriculum) aids study recruitment.

Central Resources

Brunel's Research Support and Development Office (RSDO) provides a range of services to support our research community, from promoting funding opportunities and help with application

Unit-level environment template (REF5b)

development, to negotiating research contracts, business development and administering awards. RSDO also supports Impact and Commercialisation activities and its Research Development Fund provides specialist support for research proposal development and pump-priming funds for innovative projects. Public engagement and dissemination activities are further supported by a Media Relations team, which promotes Brunel and its research in print and online.

Within CHLS a College Research Office (3.5-FTE) supports research centres and activities including coordinating events (seminars, workshops, away days) and local ethics review procedures. The Professional Development Centre (PDC) and/or JobShop assist in the recruitment of students to be employed as research assistants (e.g., for work placements).

Research data management, sharing and open data practices are supported by a Scholarly Communications Office (SCO) who oversee administration of our research publications database (BRAD), research output repository (BURA), digital data repository (Brunel figshare) and our Open Access publication fund. The SCO helps with data management plans, and guidance on data storage, management, and publication.

Research Management & Governance

Research strategy and development is overseen by a College Research Strategy Group and a Department of Life Sciences Research and PGR Advisory Group. Reporting to the University Research Ethics Committee the CHLS Research Ethics Committee (with Lay and External Partnership members) oversees ethics governance. In 2015, the university introduced the Brunel Research Ethics Online (BREO) review system to better manage review processes. Brunel is a signatory to the San Francisco Declaration on Research Assessment (DORA), has adopted the Universities UK Concordat to support research integrity and is committed to upholding the essential elements of the concordat in an effective and transparent manner. All research-related staff and students are asked to complete a Research Integrity online module.

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

Collaborative Research

Our academics have leading and/or active roles in a range of international collaborative networks that are at the forefront of advancing their research areas. Our commitment to building and maintaining strong external research collaborations is further reflected in the range of visiting, adjunct, and associate positions held by our researchers at other institutions.

Within **CCN** through BPACHS, de Haan and Roberts have Honorary Contracts with CNWL NHS Foundation Trust and Roberts is an Honorary Research Fellow at The Walton Centre NHS Foundation Trust, Department of Neurosurgery and Visiting Research Fellow at Bangor University. Chan is an Adjunct Assistant Professor at University of Tennessee Health Science Center and a US NIMH Laboratory of Brain and Cognition member. Cheeta is an Associate Member of the Substance Use and Addictive Behaviour (SUAB) Research Group at Manchester Metropolitan University and collaborates closely with the National Programme of Substance Abuse Deaths (NPSAD) team at St George's University of London.

Kumari is Visiting Professor and Antonova a Visiting Researcher at the Institute of Psychiatry, Psychology & Neuroscience, KCL. Antonova was a co-founder of the Mind and Life Europe Initiative: European Neurophenomenology, Contemplative and Embodied Cognition Network (ENCECON). Antonova is also a Senior Visiting Research Fellow at the Adaptive Systems Research Group and Royal Society Wolfson Biocomputation Research Laboratory, University of Hertfordshire. Dovey is an active member of the British Feeding and Drinking Group (BFDG), an interdisciplinary grouping of scientists dedicated to studying human eating behaviour. Wydell is a Visiting Professor at University of Tsukuba (Japan) and an Honorary Research Fellow, ICN-UCL.

Within **CCE**, Schmitt is Director of the major International Sexuality Description Project, and Senior Advisory Board member for PsychTable.org, an Open Science research database. Ferenczi is a

Unit-level environment template (REF5b)

member of the Wellbeing in Context Research Interdisciplinary Stream (Goldsmiths) and Gaines is an Associate Research Fellow, University of Bath. Willard is a Research Affiliate with the School of Anthropology & Museum Ethnography at University of Oxford, and remains affiliated with the Centre for Human Evolution, Cognition, & Culture at University of British Columbia.

Reproducibility & Open Science

Brunel has a well-developed Research Data Management policy and actively supports the collection, storage, retention and cataloguing of all its research data and promotes its re-use by other researchers, e.g., through the Brunel Figshare digital data repository. Within the department we regularly hold workshops and seminars on Open Science practices including pre-registration and data sharing and as noted earlier, 32% of the empirical research outputs in our submission have underpinning open data available in an institutional or other repository (e.g., OSF, Brunel figshare), as supplementary material, or are based on longitudinal collaborative datasets (e.g., ALSPAC, TEDS, UK Biobank). In 2020, in collaboration with colleagues in Clinical Sciences, we joined the UK Reproducibility Network setting up an Open Research Working Group which meets monthly to discuss how to further increase adoption of open research practices at Brunel and build open research principles into our PGR training provision.

In addition to sharing primary data, many of our key publications are based on major open data sources. For example, Dovey's research on the role of alexithymia in obesity with the Northern Finnish Birth Cohort (PLoS ONE, 2018), Norbury's examination of diurnal preference and grey matter volume with a large sample of older adults from the UK Biobank (J. Circadian Rhythms, 2020) and Pound's work on facial markers of childhood health with ALSPAC (Proc. Roy. Soc., 2014). Moreover, Psychology academics are actively involved in projects aimed at improving reproducibility in Psychology. For example, de Haan and O'Brien ([10.31234/osf.io/349pk](https://doi.org/10.31234/osf.io/349pk)) have contributed to a major multi-lab direct replication as part of the Collaborative Replications and Education Project (CREP) while others have participated in the Psychological Science Accelerator.

Our academics contribute to the development of the discipline through open sharing of cutting-edge methods and analysis tools. For example, from **CCN** de Haan co-organises biennial lesion analysis workshops at University of Tübingen and has developed a freely available "Clusterize" SPM toolbox for lesion demarcation (downloaded >500 times). In **CCE**, Acerbi has published an open guide to coding individual-based models of cultural evolution in R (<https://acerbialberto.com/IBM-cultevo/>), while Clark has spearheaded a project on using the Elo rating algorithm developed for chess rankings as a tool for evaluating perceived stimulus characteristics, publishing an R package, "EloChoice", for this purpose (PLoS One, 2018).

Conferences, Symposia & Seminar Series

Academics have played major roles in planning and organising a range of important international conferences and symposia including: Antonova (Planning Committee Chair: 2019 ENCECON Workshop), Imada (Scientific Committee: 2016 International Congress, International Association for Cross-Cultural Psychology), Kumari (Program Committee: 2019 International Conference on Cognitive & Behavioral Psychology; Co-organiser, International Conference on Air Pollution and Health in India, 2020). Wydell chaired special symposia sessions at conferences including the British Dyslexia Association (2014/2016); Society for the Scientific Study of Reading (2014); International Association for Cross-Cultural Psychology (2016) and the International Dyslexia Association (2018, Mashantucket, CT). Gaines was due to be local co-chair with CCE sponsoring a session at the International Association for Relationship Research (IARR) conference (Imperial College) in July 2020 although this was postponed to 2021 due to COVID-19.

In addition, academics have hosted key meetings at Brunel. In 2019, Imada (**CCE**) co-organised the 5th UK Culture & Psychology mini-conference and Kumari (**CCN**) organised the annual meeting of the British Society for the Psychology of Individual Differences.

During 2014-20, the University has made 8 seminar series awards to Psychology (£17.9K). These have included stimulating presentations by eminent speakers from around the world, well-attended by academics from across Brunel and regional universities. Series included **CCN**: Contemporary

Unit-level environment template (REF5b)

issues in Perception & Performance: From Neural Networks to Clinical Applications (2016-17); Perception & Action: Novel Approaches in Cognitive Neuroscience (2017-18); Cognition & Emotion: Novel Approaches and Insights into Clinical Neuroscience (2018-19); Recent Advances in Cognitive and Clinical Neuroscience (2019-20) and **CCE**: Building a More Functional Society: Evolution, Culture and Wellbeing (2016-17); Cultural Evolution, Global Change, and the Future of Human Societies (2019-20).

Editorial & Peer-Review Activities

Academics are encouraged to contribute to the discipline through editorial and peer-review activities. Journal Editorships and Associate Editorships include Cortex; Culture & Evolution; Current Developmental Disorders Reports (Dyslexia); Current Psychopharmacology; Frontiers in Psychology (Evolutionary Psychology); Frontiers in Psychiatry (Psychological Therapies); Journal of Personality & Social Psychology (Interpersonal Relations & Group Processes); Schizophrenia Research & Treatment. Special issue Guest Editorships have included Journal of Social Issues; Journal of Personality Disorders; and Journal of Cross-Cultural Psychology. Editorial Board Memberships include Archives of Sexual Behavior; Australian & New Zealand Journal of Psychiatry; European Psychiatry; Evolutionary Behavioral Sciences; Evolutionary Psychological Science; Evolutionary Psychology; Journal of Social Psychology; Personality Neuroscience; Psychiatry Research (Neuroimaging); Journal of Social & Personal Relationships; Personality & Individual Differences; Personal Relationships and Personality Neuroscience.

Society, Grant & Publication Committees

In 2019, Schmitt became President Elect of the Human Behavior & Evolution Society and in 2020 Gaines was elected President of the International Association for Relationship Research (IARR). Other academics hold key positions on funding, society and publication committees including Acerbi (Head: Cultural Evolution Society Publication Committee); Antonova (Chair: European Varela Award Review Panel); Kline and Wen (Cultural Evolution Society Executive Committee); Kumari (Research Council of Norway, Panel Member, 2017-2019); and Price (Advisory Board Member: International Network for the Study of Science and Beliefs in Society). Wydell is a Board Member for the Association for Reading & Writing in Asia and Cognitive Neuropsychological Society of Japan.

Fellowships & Awards

Kumari has received a Humboldt Research Award (2014) and a Bonn International Fellowship (2020). In 2017, Antonova was elected a Research Fellow of the Mind & Life Institute. In 2016, Schmitt was awarded the Ira and Harriet Reiss Theory Award from the Foundation for the Scientific Study of Sexuality for making important theoretical advances in sexology with his work, "*The Evolution of Culturally-Variable Sex Differences*". Gaines won the 2018 International Association for Relationship Research (IARR) Distinguished Book Award for his 2016 book *Personality and Close Relationship Processes*.

Keynote and Plenary Lectures

Since 2014, our academics have delivered a range of prestigious invited keynote and plenary lectures, and organised symposia, at major international conferences. From **CCN**, Kumari has delivered important keynote (Bonn Humboldt Award Winners' Forum, 2015), plenary (Indian Academy of Health, 2015), and invited (British Indian Psychiatric Association, 2018) lectures on her schizophrenia research. Wydell delivered keynote addresses to conferences including the Taiwan Academy for Learning Disability (2015), Japan Association for Learning Difficulties (2016), and Japan Dyslexia Research Association (2016). From **CCE**, Price gave a keynote at the Evolution, Development & Complexity satellite meeting at the Conference on Complex Systems (Mexico, 2017) while Schmitt has delivered invited plenaries at the Society for the Scientific Study of Sexuality (2017), Social and Community Psychology (Norwegian University of Science and Technology, 2018) and International Society for Human Ethology (2019) conferences.

Unit-level environment template (REF5b)

Knowledge Transfer & User Engagement

Brunel is committed to engaging with the public, and working to build strong, mutually beneficial partnerships with external organisations, groups and individuals at a local, national and international level. In Psychology, we are committed to public and user engagement as a two-way process, to both enhance the quality and relevance of our research, and to facilitate its dissemination for the benefit of society. Our academics participate regularly in CHLS “pitch-to-peers” events to get feedback on knowledge transfer and research impact development plans. Moreover, RSDO Business Development Managers help facilitate links with commercial and clinical partners; and CHLS Staff Development week training sessions help build media/public engagement skills.

Collaborations and engagement with clinicians, practitioners, policy makers and research users

Our academics engage actively and directly with diverse communities and beneficiaries of our research, and many have developed strong relationships with key research users including clinicians, practitioners, charities, and commercial partners. Within **CCE**, as set out in our Impact Case Studies, Gaines through his ESRC-funded research has worked closely with a major NGO (Traidcraft) to develop a new approach to measuring subjective well-being in developing countries, an approach now adopted as part of their international intervention monitoring and evaluation procedures in Africa and Asia. Marshall’s research was instrumental in Facebook introducing changes to their user interface and Ferenczi was a panel member at the All-Party Parliamentary Group meeting on Internet “Trolling” at the House of Commons (May 2018) and has written for the Centre for Research and Evidence on Security Threats (CREST).

Within **CCN**, flexibility to travel has allowed Wydell to work closely with schools and educational authorities in Japan and, since 2015, as a Research Consultant with the Education University of Hong Kong. There, in 2019, she helped run a workshop on “Effective Evidence-based Intervention Programmes” for dyslexia for English language teachers representing 48 Hong Kong primary and junior-high schools.

Kumari has ongoing collaborative links with Elysium Healthcare, West London Forensic Service, and South London & Maudsley NHS Foundation Trust while Puzzo works closely with West London NHS Trust. Dovey has a research partnership with Midlands Psychology who offer specialist treatment services for Avoidant Restrictive Feeding Disorders (ARFID). In 2014, he co-authored an important textbook “Paediatric Gastrointestinal Disorders: A Psychosocial Perspective”, part of a series aimed at raising awareness among health professionals and practitioners of psychosocial aspects of child ill health and chronic illness.

Examples of direct engagement with patient and “user” groups include Dovey’s work with the “Parenting Science Gang”, a ground-breaking, user-led citizen science project to explain the latest research on eating disorders to parents; Bennetts’ work with groups of self-referred prosopagnosics and super-recognisers; and Cheeta’s membership of the Co-Production Addictive Behaviour Research Network, University of Oxford.

Public & Media Engagement

In Psychology at Brunel, we recognise that as part of a public body it is our responsibility to communicate with the wider world about our work.

Public lectures and engagement events

Our academics are committed to public engagement and deliver public lectures/seminars/events to a wide range of audiences. From **CCN**, in 2020 Kumari gave a Public Engagement Keynote on “Mental Health Consequences of Childhood Labour and Maltreatment in India” at Banaras Hindu University, while Wydell has given a range of open public lectures in Japan. These include at Tsuda University (2019) on “Dyslexia and Inclusive Education” (funder: Nomura Research); University of Gunma (2018) on “Learning English as ESL in Japan & Developmental Dyslexia in English & Japanese”; and at the 2018 Japan Dyslexia Research Association Conference (Tokyo)

Unit-level environment template (REF5b)

on “Developmental Dyslexia & Research-based Intervention Programmes” (funder: Japanese Ministry of Education & Science).

From **CCE**, Acerbi delivered a live experiment on misinformation online in 2019 at Rijksmuseum Boerhaave, Leiden, Netherlands; Pound participated in a London Evolutionary Research Network (LERN) 2017 public debate on “Big Data” at the Linnean Society of London; while Price has given lectures to meetings of Humanists UK and The Sunday Assembly (2019), Dorset Humanists, Worthing Skeptics (2015) and Bath Royal Literary and Scientific Institution (2016). Moreover, we continue to recruit academics with a commitment to public engagement. Adair was a panellist at a University of Central Arkansas community engagement “Science Wednesday” event (2018) while in 2016 de Barra gave a Café Scientific Public Lecture. “Poisoned by Doctors! The History and Psychology of Dangerous Medicine”, Tarland, Scotland.

Engaging schools / young people

Our commitment to engaging young people is reflected in CCN members’ regular involvement (2014-2019) in organising *Brain Awareness Week* events at Brunel (a *Dana Foundation* initiative to increase the public profile of brain research). The week’s activities include short talks and demonstrations for secondary school children, designed to raise interest in brain research and showcase Brunel’s own contributions in this area.

Social media, blogs, and popular science publications

Many Psychology academics use blogs and social media to communicate with other scientists and the wider world; e.g., O’Brien’s YouTube channel with short tutorial videos on neuroimaging analysis (e.g., SPM) currently has >122,000 video views and >7000 hours of watch time, in more than 70 countries from the US, Germany, and Japan to Turkey, India and South Korea. Chan runs the LEGO Brain Imaging Centre Twitter (@LEGO_BRIC) feed, using LEGO and mini-figures to engage the public with neuroimaging in an innovative way. Others provide informed commentary and debate through contributions to widely read popular science outlets including *The Conversation* (Clark, Ferenczi, Price, Szameitat), *Huffington Post* (Dovey), and *Psychology Today* (Gaines, Kumari, Price, Schmitt).

Media appearances

Our experts are called on frequently by major broadcasters to engage with audiences around the world. Television appearances include: Dovey interviewed for *Loose Women* (ITV) about ARFID; Price on *Daily Politics* (BBC1, 2017); *The Big Questions* (BBC2, 2017); *Sunday Morning Live* (BBC1, 2015) and *Meaning of Life TV* (Nonzero Foundation, 2015). Radio appearances include Wydell’s major contribution to a 2020 BBC World Service documentary series on Dyslexia, Norbury on *All in the Mind* (Radio 4, 2020), Szameitat on *The Why Factor* (BBC World Service, 2019) and Price on *Matt Townsend Show* (BYU Radio, 2015); *The Moncrieff Show* (Newstalk National Radio, Ireland, 2017) and *The Why Factor* (BBC World Service, 2018).