

<p>Institution: City University London</p> <p>Unit of Assessment: 4 Psychology, Psychiatry and Neuroscience</p> <p>a. Overview Expansion of the Department of Psychology in this REF period has featured major investment in outstanding academic staff and infrastructure and resulted in a high quality research-focused Unit with an international reputation across a broad range of areas. The Department is now the largest in the School of Arts & Social Sciences, one of the five constituent Schools of City University London. It is structured around six internationally-recognised research groups: Cognitive Neuroscience; Counselling & Health Psychology; Organisational Psychology; Decision Making & Behavioural Economics; Developmental Psychology; and Human Memory. Each group has senior and junior members of academic staff, early career researchers (ECRs) and research students. During the current REF period, the Department has become a dynamic and durable research environment in which individuals at all levels of their careers can achieve excellence in research. This environment is sustained by our staff, our infrastructure, in-house, national and international collaborations and scientific presentations, editorial positions and grants. It allows us to contribute powerfully to the University's overarching aim of becoming a leading global university, committed to academic excellence and positioned within the top two per cent of universities in the world.</p> <p>b. Research strategy In RAE 2008, we set out a strategy for growth in research provision in terms of breadth and quality. Much of what we planned has now been achieved and for REF 2014 we are pleased to return 34 members of staff (29.9 FTE) compared to 14 (10.8 FTE) in 2008. The Department's research environment has been invigorated by the appointment of new members of staff, all with accomplished research profiles. Overall, this is a highly sustainable environment, underwritten by eleven ECRs, all potential international leaders in their areas, and by eight Professors with world-leading profiles in fields including autobiographic memory (Conway), development of memory (Howe), individual differences in emotion and motivation (Corr) and the neuroscience of aging (Robertson).</p> <p>All research groups have specialised research facilities (substantially augmented since RAE 2008) and regular laboratory meetings. The groups undertake both pure and applied research; aim for the highest standards of peer-reviewed scientific publications; make presentations across a range of national and international meetings; contribute to policy; and prioritise the communication of research findings to wider society. Under the direction of the Head of Department, the groups have made significant achievements in this assessment period and developed strategic plans up to 2018 (note that staff in boldface have been appointed in this REF period; staff who are members of multiple research groups appear in boldface in their primary one):</p> <p><u>Cognitive Neuroscience Research Unit.</u> Calvo-Merino, Conway, J Cook (ECR and University Research Fellow), R. Cook (ECR), Forster, Freeman, Haenschel, Robertson, Yarrow.</p> <p><i>Key achievements since RAE 2008:</i></p> <ul style="list-style-type: none"> • Appointment of seven new members of staff, including a senior Professor (Robertson) • Establishment of new research programmes in social cognitive neuroscience, schizophrenia and memory • Creation of two new laboratories (EEG and TMS) • Publication of over 120 peer-reviewed journal articles, including publications in <i>Journal of Neuroscience</i>, <i>Nature Reviews Neuroscience</i>, <i>Current Biology</i>, <i>PNAS</i>, <i>Journal of Cognitive Neuroscience</i>, <i>JEP: General</i>. <p><i>Strategic aims and plans to 2018:</i></p> <ul style="list-style-type: none"> • To develop current research themes (multisensory integration, social perception, perception and action) programmatically, exploiting a wider variety of neuroscientific methods including new systems of neuro-stimulation and correlational neuroanatomy • To increase the number of post-doctoral research assistants through the intense pursuit of funds
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- To establish an MSc in Cognitive Neuroscience, to act as a PhD student feeder.

Counselling & Health Psychology. **Corcoran (ECR), Jones-Nielsen (ECR), Kalsi (ECR), Filippopoulos (ECR), Sykes, Tapper, Willig.**

Key achievements since RAE 2008:

- Appointment of five new members of staff following the retirement of a senior member
- Willig's invited contribution to the prestigious American Psychological Association (APA) *Handbook of Research Methods in Psychology* (2012), which represents the latest authoritative guide to research methods in counselling psychology
- Exploration of new technologies in the adoption of healthy lifestyles. For example, a three-year ESRC grant (Tapper PI, award value ~£440,000) investigates how an internet-based intervention, based on social theory, can help people adopt healthier lifestyles.

Strategic aims and plans to 2018:

- To cross-fertilise research and ideas across two sub-groups (counselling and health psychology) and prioritise research-excellent projects that make a significant contribution to practice and policy. Currently the Head of Department is research mentor to the group.

Organisational Psychology. Flaxman, **Sealy, Silvester, Zibarras (ECR).**

Key achievements since RAE 2008:

- Appointment of two new members of staff
- External funding for research activities, including Flaxman's 18 month ESRC grant (£82,000) for research on employee wellbeing
- Silvester's involvement in establishing and directing a new interdisciplinary research centre: The Centre for Performance at Work, which has strong links with the public sector (e.g., UK Home Office) and private sector (e.g., JP Morgan).

Strategic aims and plans to 2018:

- To maintain and build on the group's proven track record of collaborative work with non-academic private and public sector bodies, including national and multinational companies, the NHS and national/local government (see impact narrative)
- To achieve meaningful societal impacts, particularly through the implementation of evidence-based recruitment systems (Zibarras, Silvester) in key public services.

Decision Making & Behavioural Economics. Ayton, **Corr, Flaxman, Plagnol (ECR), Pothos, Reimers, Tapper.**

Key achievements since RAE 2008:

- Appointment of four new members of staff
- A new research initiative in Behavioural Economics (Corr, Plagnol), promoted through a newly established Centre for Behavioural Economics. This is a collaborative venture with the Department of Economics, which converges research on human decision making with formal choice theory from economics.

Strategic aims and plans to 2018:

- To develop the scope of research to provide a multifaceted approach to decision making that spans heuristics (Ayton), decisions in lifestyle (Tapper), individual differences in decision making (Corr), simulations and games (Reimers) and formal foundations of decision making (Pothos)
- To develop a new MSc in Behavioural Economics, to act as a PhD student feeder.

Developmental Psychology. Boucher, Bowler, **Endress, Gaigg (ECR), Howe, Knott (ECR), Lind (ECR).**

Key achievements since RAE 2008:

- Appointment of three new members of staff
- The establishment of a baby laboratory (with a focus on social imitation and language development; expected completion March 2014)
- Securing significant external income, e.g., Lind and Bowler's funding from the ESRC (£281,000) and MRC (£117,000)
- Maintenance of the reputation and vitality of the highly successful Autism Research Group,

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via the recruitment of Gaigg and Lind, the editorship of the journal *Autism: the International Journal of Research and Practice* (by Bowler, until recently) and a consistent throughput of PhD students.

Strategic aims and plans to 2018:

- To develop a research programme that examines the developmental trajectory of memory difficulties in adults with Autism Spectrum Disorder (ASD), to provide evidence-based recommendations for educators on how to enhance learning in children with ASD
- To capitalise on Bowler's MRC award for the study of aging in ASD, the first instance of Research Council funding for such research
- To create a research group focused on the development of normal, rather than pathological, memory, aided by Howe's ESRC-funded research (award value ~£480,000) into false memories.

Human Memory. **Conway**, Filippopoulos, Hampton, **Howe**, **Knott** (ECR), Poirier, Reimers, Tan.

Key achievements since RAE 2008:

- Appointment of three new members of staff
- Editorship of the internationally-recognised journal *Memory* (Conway and Howe)
- Election of Hampton as Fellow of the British Psychological Society and the Association for Psychological Science and as an Academician of the Academy of Social Sciences.

Strategic aims and plans to 2018:

- To create the Centre for Memory & The Law (Conway, Howe, Knott)
- To establish and exploit the SenseCam lab (see below)
- To oversee (as editors) the publication a major new collection of state-of-the-art reviews from all areas of memory (Conway and Howe).

The Department's Research Committee supports research activity through a ring-fenced budget and the effective management of ethics. The Research Committee and the Department's Senior Management Group implement the School and University research strategies, which have as their central aim the production of world-leading research. To meet this goal, our strategy is to:

- Sustain our recruitment policy, to ensure that we maintain the high quality of our research groups and that we respond to opportunities for development (for example, the current initiative in Behavioural Economics). The appointment of staff who contribute to more than one group (for example, as with Conway and Howe) is particularly important for sustaining and optimising our research activities
- Facilitate the acquisition of external funding (see section d) and maintain current administrative support for research through the School Research Office. The Office provides administrative support and employs two experienced members of professional staff. It assists in the completion of grant applications, advises on sources of funding and informs staff of relevant internal and external funding programmes.
- Continue the formal internal grant review policy, which conforms to current Research Council directives and aims to reduce the burden of grant reviewing. Implemented by the Research Committee, the system requires written records of consultation with other members of staff during grant preparation.
- Engage with the research competitions organised by the University. There is an annual research competition with a £50,000 research grant as a top prize and personal awards of £1,000 for outstanding research. There is also a research pump-priming fund for ECRs which allocates small grants (up to £5,000) on a competitive basis. Examples of successful use of pump-priming awards include projects by Calvo-Merino ("Neurocognitive mechanisms of aesthetic perception"), Gaigg ("An fMRI study of poor emotional insight in Autism Spectrum Disorder"), Poirier ("Memory as Discrimination"), Reimers ("Taxing issues: Framing, fairness, and tax-related perceptions") and Todd ("Evaluating interventions for young refugees and immigrants: a pilot study investigating change syndrome and understanding before and after narrative therapy intervention"). Winners of the research competition have been Gaigg and Bowler (2008; funding of ~£50,000 for fMRI work on memory in autism) and Pothos (2012; personal prize for outstanding research)
- Promote collaboration through forums for discussion and presentation of research. Internally,

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we have a weekly experimental psychology workshop, a bi-weekly compulsory PhD student seminar and regular laboratory meetings. Within the institution, the exchange of ideas and collaboration are promoted via the research competitions (above) and cross-disciplinary research meetings (for example, the “Eyeball kids” journal club with the Department of Optometry and Visual Sciences; Systems and Complexity seminars with the School of Informatics; cross-University “Research speed-dating” evenings). Externally, we have a weekly external speaker seminar series and support the hosting of conferences and workshops

- Continue our generous sabbatical policy (see section c.i), which provides an excellent means of maintaining strong collaborative links with other institutions (see section e)
- Increase our engagement with new media for research dissemination (e.g., the Twitter accounts of the Cognitive Neuroscience and Autism research groups: @cnru_city & @cityarg; and of the Department, @PsychCityUni) and support the University’s commitment to public dissemination of our research through open access via City Research Online (the University repository) and marketing activities
- Continue to capitalise on our location in London and our proximity to important business centres and legal groupings. The initiative regarding the Centre for Memory & The Law and the development of our profile in Behavioural Economics provide two recent examples of engagement with these sectors.

These policies reflect the Department’s goal to improve our research position from top third (RAE 2008) to top quarter (REF 2014) and to top fifth (by 2019) and are in line with the overall University ambition to become one of the top two per cent of universities in the world. We promote a research culture of aspiration: the average impact factor of the journals in which the outputs submitted to RAE/REF are published has risen consistently, from 1.35 (RAE 2001) to 3.53 (RAE 2008) to 5.46 (current REF), a trend we plan to sustain into the future.

c. People, including:**i. Staffing strategy and staff development**

The Department staffing strategy, consistent with that of the University and the School, is to appoint staff with strong research achievement and potential who strengthen existing research groups, thus ensuring their sustainability. This has been achieved across all research groups during the current REF period. We seek to appoint individuals who can be placed in more than one research group, thereby promoting interdisciplinarity. At junior levels, we seek to appoint ECRs who have strong track records relative to their career level and whom we judge will be able to take maximum advantage of our vibrant, ambitious research environment. The appointment and nurturing of ECRs underpins sustainability of research in the Department and contributes to the broader sustainability of psychology research. At senior levels we seek to make appointments that contribute to research excellence in the Department, either through substantial extensions in the scope of research groups or through the establishment of links between groups which are of particular strategic importance to the Department. The appointment of Howe, for example, provides an important bridge between developmental psychology and human memory; Corr leads the initiative in Behavioural Economics within the decision making group; and Conway provides a link from human memory to neuroscience and expertise on the neuropsychology of memory to the latter group. These appointments form part of the University’s phased strategic investment in research excellence.

Women comprise 53% of our academic staff, a balance we aim to maintain. An in-house survey indicated variation in religion, race and sexuality among our staff and we are committed to the promotion of equality and diversity alongside our drive for research excellence.

In terms of staff development, new members of academic staff are assigned a senior mentor. For incoming Chairs this is the Head of Department, who in turn is mentored by the Dean of the School. The mentor’s role is to monitor the development of the staff member and ensure that he or she has sufficient time and resources to plan and implement a strong research programme. Initially, all new members of staff have a low teaching load, particularly those making the transition from PhD or post-doctoral positions to ECR. The mentor also provides guidance on sources of

financial and other support in the Department, the University and externally. The University provides training programmes in grant application and project management. New staff members are also provided with start-up funds to enable them to develop their research. Examples of this are the construction of our second Event-Related Potential (ERP)/Electroencefalography (EEG) laboratory (see infrastructure below) to facilitate Haenschel's work on schizophrenia; Conway's SenseCam laboratory for work on autobiographical memory and Endress's baby laboratory. Academic staff can also apply to the Department's Research Committee for financial support for conference attendance. It is typically possible to fund one overseas and one UK/European conference per member of staff per year. The Department maintains a time-management policy of allowing staff members to concentrate their lecturing duties in a single teaching term, to enable large blocks of uninterrupted time in other terms for research. The generous policy for sabbatical leave enables academic staff to apply for a full year free of teaching and administration duties after six years of service, a six month sabbatical after three years of service or one term after two years of service. All staff members are encouraged to avail themselves of this opportunity, subject to preparing a viable research plan for approval by the School Research Committee. In the current REF period, 11 members of staff took sabbatical leave, leading to 37 publications, 10 international collaborations, 4 collaborations with public and private sector organisations (e.g., NHS, Allianz Group) and approximately £200,000 in research income.

Staff development is supported and monitored through annual appraisals and through the University Annual Research Quality Monitoring process which reviews the quality of research publications." Research plans and achievements form an important part of the appraisal process. Demonstrated research achievements are weighted heavily in decisions to promote staff to senior lectureships and are usually the central criteria for promotion to a Readership or a Chair.

In addition to our academic staff, we have employed numerous research fellows and assistants in the period since RAE 2008. For example, we have benefited from three two-year University Research Fellowships (Calvo-Merino, J. Cook and Sambo), after a competitive open process. Calvo-Merino subsequently accepted an academic position within the Department, evidencing our commitment to help young researchers find careers in science. The Department is mindful of the need to promote the careers of research assistants and post-doctoral fellows. Thus, academic mentors of all such staff ensure that they participate in all aspects of the research process, from project planning to the writing up of articles for publication. All research staff are also encouraged to avail themselves of the wide range of training opportunities in research methods and broader research skills provided by the Department and the University. New terms and conditions of employment for research staff were agreed from August 2012, making continuing contracts the norm and introducing parity with academic staff on pay scale progression, annual leave and sickness entitlement and access to promotion opportunities. Appraisals for research staff consider their career development needs in addition to performance on the research project.

ii. Research students

Research students form an important part of the research life of the Department. In the REF period, an average of seven new PhD students have joined the Department each year. As of September 2013, 30 full-time and 10 part-time PhD students are registered. The Department is committed to securing funds for departmental PhD studentships and nine have been awarded in the REF period. One student who has received such a studentship is also in receipt of a Jacobs Foundation mentored fellowship administered by the Max Planck Institute, Germany. 27 PhD degrees have been awarded in the current REF period, compared to 18 awarded in RAE 2008. The growth in the number of PhD students forms an important component of our sustainability strategy. Research groups are encouraged to develop taught Masters courses, which can identify potential research students. We currently offer MSc courses in Research Methods and Psychology, Health Psychology, Organisational Psychology and Counselling Psychology. We also pursue external funds to build research links and finance our PhD students (e.g., Silvester's ESRC CASE studentships with the Home Office and with NESTA; Bowler's MRC CASE studentship with the National Autistic Society; Haenschel's award of a John Grace QC scholarship in schizophrenia; and Pothos's studentship funded by the European office of the United States Air Force research laboratory). We support international students in their efforts to seek funding outside the UK, with

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two in receipt of support from the Colombian and Saudi-Arabian governments respectively. Funded opportunities have recently been further enhanced by the expansion of the University doctoral studentship scheme, which has made six awards to Psychology students since 2008.

PhD students are assigned a second supervisor to provide additional guidance. The quality of supervision is ensured via a web-based 'Research and Progress' system to record minutes of supervision meetings and track student progress. PhD students are typically required to take four modules from our MSc in Research Methods and Psychology and they also have access to training and development opportunities coordinated by the City Graduate School. One such opportunity is the annual Researchers' Symposium for doctoral students, which is an opportunity for research presentation through posters and papers with prizes for students at each stage of their studies. Within the Department, a compulsory PhD student seminar runs fortnightly throughout the year. In addition, the annual PhD student review provides a forum where all students must present a summary of the year's work to fellow students and other members of the Department. The requirement to present at these events gives students presentation experience and allows constructive feedback and cross-fertilisation of ideas. PhD students are also encouraged to present their work through the Department policy of providing each student with full funding to attend and present their work at one international conference.

The research environment benefits from a thriving community of Professional Doctorate research students (DPsych in Counselling Psychology; Doctor of Psychology in Health; Doctor of Psychology pre and post-chartered) with 146 awards in the current REF period. These programmes include structured taught and training components (e.g., clinical leadership workshops, theory-driven experiential sessions, invited speaker seminars) along with appropriate supervision arrangements to meet the research and professional needs of the students and of professional accreditation bodies. The work of these students contributes to the research portfolio of the Department and provides further links to practising psychologists. The final assessment is by individual *viva voce* with at least two examiners, including one external to the University. Annual review arrangements are in place as for the PhD programme.

d. Income, infrastructure and facilities

Research income from external grants during the period from August 2008 to July 2013 totalled £1.032M. As the Department has expanded substantially over the last two years, the total amount of research funding awarded throughout the REF period is almost twice this amount (~£1.9M) across 31 research grants. Awards have been made from a range of sources including the ESRC (7 grants), the EPSRC, the BBSRC, the Royal Society and the Leverhulme Trust. Notable funded projects are Howe's collaboration with Ball (University of Central Lancashire) to study true and false memories (total value of the grant ~£480,000 from the ESRC; City's part is ~£324,000) and Lind and Bowler's ESRC grant (~£280,000) for research relating to autism. Currently there are 21 live applications for research funding with a total value of ~£5M,

The University has made a substantial financial investment of £165M to support the expansion of infrastructure, estate and research, which has enhanced the School's capacity for research activity. This includes £1.5M recently invested in library collections including e-journals. The Department has improved its research facilities substantially in the REF period, over and above improvements from direct grant purchases. Laboratory space (ten physically distinct dedicated laboratories plus eight additional shared testing cubicles) has been maintained with up-to-date computers (all including experimental software such as e-prime). Additional laboratory space was allocated to the Department in 2012. The Cognitive Neuroscience Research Unit has benefited from the purchase of a new transcranial magnetic stimulation (TMS) machine and supporting hardware and software for the recording of electromyography (EMG) and other physiological signals. The Department has acquired a second EEG kit to supplement the one in place in 2008 and a new EEG laboratory has been built with a Faraday cage to accommodate the new hardware. The Department has also purchased two new state-of-the-art Tobii video eye trackers, one portable for fieldwork (particularly for the testing of children in schools, e.g., Gaigg's work in Autism), the other desk-mounted for use by several staff. Additionally, numerous items of specialised equipment (e.g., LCD shutter goggles, a sound pressure meter, a portable (third) passive EEG kit, a luminance meter and

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psychophysiological recording suite) have been purchased to support our laboratory research. These investments (total ~£85,000) complement and expand the existing EEG and eye-tracking facilities.

To support non laboratory-based research, we have recently brought in specialised survey software – Qualtrics – which offers a platform for the design and implementation of online questionnaires and data collection without the need for technical support. We also continue to maintain a psychometrics library.

The Department's Research Committee has an annual budget of £30,000 which supports the purchase of new equipment. The research infrastructure is further supported by technical staff (one FTE dedicated to Psychology and two further FTEs in the School) with specialist psychology-relevant hardware and software skills.

All full-time PhD students are provided with their own desk, bookshelves and filing cabinet space in a shared office. Each student has their own networked PC with statistical, word processing and bibliographic software, email and internet access and a shared telephone. Each student also has access to £1,000 to cover incidental costs connected with their research, such as participant expenses and the purchase of equipment and test materials. If exceptional needs arise, applications can be made to the Department Research Committee for additional support.

Investment in research is evident throughout the University's policies, from which Psychology has benefited substantially. In addition to schemes funding fellowships, studentships and competitive awards described in sections b and c, University policy allows principal investigators who have obtained external funds to keep a percentage of their overheads to support their research activities ("research sustainability accounts"). This enables staff to meet unexpected expenses and bridge periods without research funding. The University Consultancy Policy also allows staff to undertake consultancy activity through the University and either receive a personal payment or arrange for the fees to be transferred to their research sustainability account to support their research once direct costs have been met.

Particular facilities for each research group are detailed below. All laboratories and testing facilities are fully equipped with computers and appropriate software. It is Department policy that all laboratory facilities are accessible to all members of staff, though they may be established and primarily used by specific individuals.

Cognitive Neuroscience Research Unit

- EEG Laboratory 1. Body perception neuroscience laboratory (Forster; expanded since RAE 2008). Supports research into body perception, attention and action. Consists of several rooms including an individual soundproofed testing room with a Faraday cage and a preparation room. Supported by two eye tracking set-ups, including a top of the range Tobii.
- EEG Laboratory 2. The neurobiological basis of psychological illnesses (Haenschel, Bowler; new since RAE 2008). (Shared with the Autism Research Group, see below). Has an active EEG system (housed in a Faraday cage) with its own acquisition and analysis software.
- TMS Laboratory. Brain stimulation and peripheral physiology laboratory (Yarrow; new since RAE 2008). A TMS, a small, passive EEG and EMG and peripheral physiology measurement equipment.
- Attention and Vision Laboratory (Freeman; new since RAE 2008). A soundproof room with luminance meter, stereoscopic shutter glasses and advanced graphics hardware.
- Social Perception Laboratory (R Cook; new since RAE 2008). An EMG amplifier and corresponding data acquisition card, housed in dedicated space.
- Learning and Individual Differences Laboratory (J Cook). This is a new laboratory in the process of being developed.

Counselling & Health Psychology

- Counselling have their own clinic (a dedicated space appropriate for practice) within the School's main building.

Organisational Psychology

- Much research takes place externally in businesses, the NHS and various NGOs. Recent collaborative work with the Cognitive Neuroscience Research Unit (Flaxman, Forster) has used the latter's laboratory facilities.

Decision Making & Behavioural Economics

- Cognitive Science Laboratory (Pothos; new since RAE 2008). Three cubicles with PCs. A laboratory supporting research on individual differences relating to decision making is being established in response to the recent arrival of Corr. This research group also employs data collection facilities over the internet, such as Amazon's Mechanical Turk (Reimers).

Developmental Psychology

- Development of Human Memory Laboratory (Howe; new since RAE 2008). A suite of four testing rooms with PCs for experimental testing..
- Autism Research Group Laboratory (Bowler, Gaigg; greatly expanded since RAE 2008). Three rooms for experimental testing, two of which have a one-way mirror between them. Two can accommodate two participants each. Equipment includes video, touch-screen laptops for the study of individuals with severe language impairment, a fully functional EEG laboratory (shared with EEG Laboratory 2, noted above), a head-mounted eye tracker and a portable Tobii (for testing offsite) and a psychophysiology recording suite (measurement of bio-electrical and bio-mechanical signals and a physiological response unit).
- Baby Laboratory. This is currently being built (expected completion March 2014) under the direction of Endress in a major conversion of office space into laboratory space, to yield 8 soundproofed testing rooms for general use, a large baby laboratory, reception room, changing facilities and a rest room.

Human Memory

- Memory Laboratory (Poirier). A soundproofed room, with PCs for testing.
- The SenseCam Laboratory (Conway; new since RAE 2008). Established in 2012. 25 SenseCam cameras and 4 powerful dedicated laptops for image storage and processing.
- Centre for Memory & The Law (Conway, Howe, Knott; new since RAE 2008). This University Interdisciplinary Centre is in the process of being established. It will include staff from The City Law School and the Department of Journalism and professional lawyers.

Facilities overview

The Department has recently taken over a nearby three-storey building that is entirely dedicated to research. It contains seven offices and fourteen sound-proofed, computer-equipped, climate-controlled testing rooms. This complements the laboratories in our main building, the development of the new baby laboratory and our bookable, shared laboratory space (eight testing rooms and a computing teaching room with fifty PCs which can also be used for research studies). The provision of physical laboratory space, testing PCs and specialised equipment ensures that the research groups are well provisioned to carry out their research at an internationally competitive level.

e. Collaboration and contribution to the discipline or research base

Most members of our academic staff engage in collaborative work, nationally and internationally (e.g., Australia, Belgium, Canada, Finland, Germany, Hungary, Israel, Italy, Netherlands, New Zealand, Sweden, Switzerland, USA). We encourage collaborations with senior academic and research staff in other institutions who can contribute non-overlapping experience, leading to joint funding efforts, notable outcomes of applied significance and publications in prestigious journals. For example, Corr has been collaborating with Nobel Laureate Heckman (University of Chicago, USA) on the relationship between personality processes and economic behaviour (e.g., Ferguson, Heckman & Corr, 2011), Endress with Potter (Massachusetts Institute of Technology, USA) and Jacques Mehler (the former editor of *Cognition*), Hampton with Murphy (New York University, USA) and Howe with Brainerd and Reyna (Cornell University, USA). Yarrow's collaboration with Solomon in City's Division of Optometry and Visual Sciences has recently led to a ~£495,000 BBSRC

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research grant, while Tapper's work with Maio, Haddock (Cardiff University) and Lewis (Swansea University) on how to induce healthier lifestyle changes has resulted in a ~£440,000 ESRC research grant. Examples of collaborative work which has led to outcome of applied significance include Bowler's collaboration with Mottron (University of Montreal, Canada), which has provided pioneering perspectives on the nature of autism (e.g., Bowler et al., 2009), and Flaxman's programme for employee well-being, in collaboration with Livheim (Karolinska Institute, Sweden; e.g., Flaxman et al., 2013). Collaborative work involving Department staff has been recognised at the highest level. For example, Endress's pioneering work on Theory of Mind with Kovacs (Central European University, Hungary) in relation to language acquisition has been reported in *Science* (Kovacs et al., 2010). Howe's work with Brainerd and Reyna (Cornell University, USA) has led to a *Psychological Review* paper (Brainerd et al., 2009). Likewise, with colleagues from the USA (Busemeyer, Trueblood) and Italy (Franco), Pothos has been studying the formal foundations of decision making, producing two *Psychological Review* papers (Busemeyer et al., 2011; Pothos & Busemeyer, 2013) and a *BBS* target article (Pothos & Busemeyer, 2013). Yarrow's neuroscience research with Kuhn (Charité Universitätsmedizin, Germany) has been reported in *Cerebral Cortex* and the *Journal of Neuroscience*.

The Department recognises the value of international collaborative work and the potential for cross-fertilisation of ideas, expertise and research approaches. Generous allowances for conference attendance, the external speaker seminar series (which includes funding for international speakers) and the sabbatical arrangements described above are some examples of the strategy we employ to promote such work.

The Department also supports staff by facilitating time for activity relating to contribution to the discipline. Members of staff review regularly for top-tier psychology journals, UK Research Councils (Corr, Hampton, Poirier, Forster and Tapper are also members of the ESRC Peer Review College) and other awarding bodies, including Wellcome, the Royal Society (UK), the Leverhulme Trust and the National Science Foundation (USA). Our refereeing work is highlighted by several editorial appointments, including main editors in *Autism: the International Journal of Research and Practice* (Bowler, until recently), *Memory* (Conway and Howe) and *Psychotherapy and Psychological Disorders* (Pires-Yfantoudas); associate/action editors in *Developmental Review* (Howe), *Frontiers in Cognitive Science* (Pothos), *Journal of Health Psychology* (Willig) and *The Quarterly Journal of Experimental Psychology* (Hampton); and editorial board membership of several journals such as *Cognition* (Hampton), *the Journal of Experimental Psychology: Learning, Memory and Cognition* (Hampton), the *Journal of Health Psychology* (Sykes) and *Frontiers in Developmental Psychology* (Gaigg). Staff have served as external examiners for 49 PhD degrees during the assessment period. Conway has recently become a Fellow of the Royal Society of Arts.

Most staff have given many invited talks during the REF period and seven colleagues have been invited for keynote addresses or prestigious talks (30 in total), both in the UK and abroad (e.g., in Canada, Denmark, France, Holland, Italy, Poland, Serbia and the USA). Academic staff including Ayton, Bowler, Hampton, Conway, Corr and Howe have been the recipients of keynote invitations. We highlight Howe's and Conway and Howe's invited talks at the Governing Board Symposiums of the Psychonomic Society in 2012 and 2013 respectively.

We are also committed to promoting the discipline through mainstream media outlets. A non-comprehensive list shows four staff either featuring directly on TV scientific programmes or having research discussed on such programmes on major television channels (BBC One, BBC Two, Channel 4), two appearing on Radio 4 and several colleagues having research covered in wide-audience scientific publications (e.g., *National Geographic*, *Nature News*, *New Scientist*, *Scientific American*).