

Introduction:

Research is central to the identity of Psychology at Westminster. Since 2001 our international reputation has grown considerably, and is evidenced by the award of four personal Chairs and one new Readership to researchers submitted in the 2001 RAE, and by the quality and volume of new outputs. In terms of metrics, those entered in this RAE produced over 130 full-length peer-reviewed articles in the assessment period and the average journal impact factor of selected outputs is 3.7. This achievement for a relatively small research grouping, including several early career researchers, is evidence of a strong research culture with sound support structures.

Research structure:

Psychology research is largely focused within the Psychology Department, itself part of the School of Social Sciences, Humanities and Languages (SSHL). The School is the administrative unit for the management and coordination of research activity, responsible for local policy and practice within the University's overarching strategy. School research strategy is led by the Dean of School and overseen by a School Research Director. In 2003 the School established seven Research Clusters (of which Psychology is one). Psychology is enriched by individuals from outside the Psychology Department (**Hucklebridge** from Biosciences and **Edginton** from Computer Science). Each Cluster Manager sits on the School Research Strategy Committee, along with the Dean and School Research Director. Both the School Research Director (**Evans**) and Psychology Cluster Manager (**Clow**) are entered in this submission.

Research Groups:

Westminster has internationally recognized research excellence in areas of spatial disorientation and motion sickness (**Golding**), psychophysiology (**Evans, Clow and Hucklebridge**), health psychology (**Towell, Golding, Edginton, Evans, Clow, Hucklebridge**), cognitive neuroscience (**Towell, Morgan, Edginton, Eardley**), and personality and social psychology (**Buchanan, Swami**). Research is characterized by large-scale, often interdisciplinary ventures, addressing real-world issues, linking with stakeholders and collaborators across the University, London, the UK and the world. These collaborations are enthusiastically promoted and supported from within Psychology and by the University (detail can be seen in links from <http://www.wmin.ac.uk/sshl/page-370>).

The Psychophysiology and Stress Research Group (PSRG) was founded in 1991 by **Evans, Clow and Hucklebridge**. The main achievements of the PSRG are in the area of salivary measures in relation to psychosocial variables and health. The PSRG was the first research group in the UK to undertake systematic studies in the newly emerging discipline of Psychoneuroimmunology. In collaboration with the MRC Social and Public Health Sciences Unit, a salivary immune measure was included in the Twenty-07 survey of health in west-central Scotland. This collaboration has

continued to produce important outputs since 2001. Much of the group's current work is in Psychoneuroendocrinology, building on landmark 2001 papers which were the first to explore the complete diurnal pattern of cortisol secretion synchronized to waking time. PSRG methodology has been widely adopted internationally as 'best practice'. The PSRG is at the forefront of research into psychosocial correlates of the 'awakening cortisol response'. In this area, in terms of number of publications in leading peer-reviewed journals, PSRG is ranked second in the world.

The Health Psychology Research Group is broader than, and inclusive of PSRG (**Towell, Golding, Clow, Evans, Hucklebridge, Edginton**). Activity involves loose associations reflecting mutual interests and strong links with external institutions (e.g. Institute of Child Health at Great Ormond Street Hospital (GOSH), Addenbrookes Hospital, Cambridge, and St George's Hospital, London). Major achievements include investigation of the meaning and measurement of well-being in active seniors compared to students, exploration of cognitive side effects of chemotherapy for prostate cancer and development and measurement of quality-of-life measures in children with stroke and those who have undergone gender reassignment surgery.

Other submitted staff have external collaborations. This is exemplified by our international expert in the area of spatial disorientation and motion sickness (**Golding**). Following his election to a MRC Honorary Research Fellowship at The National Hospital for Neurology and Neurosurgery (2000) he was appointed as Honorary Senior Research Fellow, Division of Neurosciences, Imperial College Medical School (2004). In 2005 he was appointed Visiting Scientist at the American Naval Aerospace Medical Research Laboratory (NAMRL) Pensacola, USA, and he continues to advise the latter on their current motion sickness and spatial disorientation program.

Buchanan is a widely consulted expert on the use of psychological tests on the Internet. In an ESRC commissioned study **Buchanan** was among those peer-nominated as a 'key player' in the social shaping of science and e-science. His work on the use of the Internet for psychological research has been described by journal referees as groundbreaking and seminal: he was among the first to publish on this increasingly important topic. A recently established UK website ([http:// www.onlinepsychresearch.co.uk/](http://www.onlinepsychresearch.co.uk/)) for online researchers describes him as 'one of the lead researchers in Internet-mediated research'.

Swami (early career researcher) has employed creative methodology in studying evolutionary and social pathways influencing interpersonal behaviour. His versatile, interdisciplinary and cross-cultural approach has led to collaborations with leading psychologists (Furnham, Frederick, Tovee, Chamorro-Premuzic). He completed his PhD in 2005 and has also co-authored several articles, some attracting international media coverage. He has recently published a well-reviewed single authored book integrating historical, cultural and economic dimensions of the science of attractiveness.

Morgan, also an early career entrant, joined us following PhD and post-doctoral studies with the AESOP team at the Department of Psychological Medicine and Psychiatry, Institute of Psychiatry (IoP). **Morgan** maintains a strong collaboration with this group which undertakes structural brain imaging in first-diagnosis schizophrenic patients. His research is technically facilitated via remote access to the MRI brain scan images generated from studies undertaken at the IoP. Main achievements of this work include demonstration of neuroanatomical changes in patients with first-onset affective psychosis, suggesting that brain changes are probably associated with disease-onset rather than drug treatment. **Morgan** was also instrumental in demonstrating that enlargement of the pituitary gland in first-onset psychosis occurs independently of medication which suggests that hyperactivity of the hypothalamic pituitary adrenal axis may also be associated with disease-onset.

Eardley, researches sensory processes in mental-representation. Her unique work with congenitally blind participants has attracted world-wide attention. Her personal contribution to the field has been recognised by invitations to speak at two international conferences and being PI on a £76,000 ESRC grant. These are significant achievements in an early career researcher (PhD completed 2004).

Significance of Research/ Impact on Practice

Golding has developed both questionnaire and laboratory motion simulation methods to assess motion-sickness susceptibility, improving assessment reliability and overcoming problems of carrying out research in uncontrolled working environments. This methodology is also useful for testing anti-emetic drugs. American and European military and space organisations use these strategies for personnel screening and motion counter-measure assessments. The methodology has been adapted for use within medical settings concerned with nausea induced by chemotherapy and general anaesthetics. In collaboration with Imperial College, **Golding** has pioneered investigation of the effects of spatial disorientation on cognitive function in pilots, with the aim of improving pilot training and aircraft instrument design.

Towell, in collaboration with GOSH, has developed electrophysiological markers of sensory and cognitive processing which do not require the active participation of the child. These have been applied to clinical populations where deficits have been identified in the absence of behavioural abnormality, thus potentially facilitating early detection and diagnosis of nervous system dysfunction (e.g. in children with benign epilepsy or suspected central auditory processing disorder). The work of **Eardley** has informed arts and museums about issues related to visual impairment.

The work of **Buchanan** in relation to exploring the use of the internet for psychology research has had far reaching impact upon practice, his advocacy having been influential in opening up this line of research. **Buchanan** was an invited member of a BPS working party producing ethical guidelines for psychological research on the Internet.

At the fore-front of expanding scientific knowledge in key areas of psychophysiology, **PSRG** has also influenced the international research community by establishing 'best practice' (in terms of timing of saliva sampling and compliance with protocols) when examining the diurnal pattern of cortisol secretion in relation to psychosocial variables and health. PSRG has also disseminated its research to a wider public through a high media profile (e.g. a BBC1 prime-time series 'The Stress Test', entirely based upon research generated from the group. PSRG members have frequently given radio (e.g. All in the Mind, Science Now, Women's Hour) and newspaper interviews (e.g. Telegraph, Guardian) and talks at public events (e.g. at Edinburgh Festival of Science and the Royal Institution).

Research infrastructure and equipment

The PSRG has its own laboratory in Biosciences containing all equipment necessary for storing and handling saliva samples and determination of cortisol, DHEA, testosterone and S-IgA by ELISA. The Psychology Department on the Regent campus is significantly better resourced since the last RAE. In addition to several research cubicles (also used by students) there are 4 psychology research laboratories dedicated to staff research.

The Psychophysiology Laboratory houses a 64 channel Neuroscan system for the measurement of EEG data. This equipment, in conjunction with STIM 2 and E-Prime software (see below), is used to explore pre-attentive visual and auditory processing. A T-Bar vibrotactile stimulator is used for somatosensory studies. Specialist software allows co-location of EEG data with MRI data (which we have access to from external collaborators).

The Cognitive Psychology Laboratory is equipped to support a range of testing and data processing activities. Experiment generator software (E-Prime) is used to investigate cognitive processes via mental chronometry. A bespoke programme delivers memory tasks designed to investigate retrieval induced forgetting. This laboratory also houses dedicated computer equipment and software used for the processing and analysis of MRI brain scan images originally acquired at the Institute of Psychiatry. This laboratory has recently been fitted with software and projection equipment to present wide field-of-view moving images capable of eliciting thevection illusion and inducing spatial disorientation.

The Health Research Laboratory houses ADInstrument's Powerlab equipment for measuring electrodermal activity, heart and respiration rate, and heart rate variability within the laboratory. The laboratory also houses ambulatory recording equipment: 7 wrist-worn 'Actiscore' units which record physical activity and self-reported scores on any potential variable and 6 sets of 'Actiheart' ambulatory heart rate variability recorders for use in combination with salivary cortisol measurement within domestic settings. The rotating chair, used to explore threshold to motion sickness, is also housed in this laboratory.

The Qualitative Research Laboratory contains video, DVD recording and state-of-the-art audio digital-recording facilities, including a number of microphones around the room which make it ideal for recording group interviews. The room is also fitted with a 2-way mirror, allowing observation from an adjoining room. ATLAS.ti v5.0 software is used for analysis of qualitative data.

Other software available for research includes the E-Fit system plus Micrografx Picture Publisher; the business psychology software Catalyze Equity 3.3; and the Verbal Imagery Cognitive Styles Test and the Extended Cognitive Style Analysis Holistic Analytic Test.

A dedicated Research Technician, 2 other departmental technicians and one Research Associate are located in a large central resource room within the Department. This resource is the co-ordination centre for activities such as requisitioning, laboratory bookings, as well as technical requests and also houses a large library of questionnaires, software and additional communal equipment such as scanners, fax machine, VCR to DVD recorder, specialised printers, fridge and large freezer.

Psychology research students, a Research Associate and one post-doctoral researcher are based in a departmentally-located large communal room. Each has a fully equipped work-station and computing facilities, with access to all required laboratory space whether within the Department or the Biosciences-based facilities.

Arrangements for supporting interdisciplinary or collaborative research work:

Psychology research at Westminster is characterized by collaborative and interdisciplinary work. The interdisciplinary PSRG is provided with cross-campus research space and administrative support. Other interdisciplinary research is encouraged through the new Institute for Health and Well-being and through HEIF-funded research with partner universities (see below).

Relationships with research users:

Psychologists (**Evans, Clow**) secured a consultancy contract (2007) from the Department of Health (Inequalities Unit) to deliver item content for the midlife 'Lifecheck' This self-assessment tool, designed to gauge health risk in midlife, is a major deliverable from the 'Your Health, Your Care, Your Say' White Paper published in 2006. Research projects within the HEIF-funded program of work have been co-created with community partners such as University of the 3rd Age and Age Concern. The central theme to the related set of activities is the promotion and measurement of well-being. **Golding** has been invited to provide a scholarly contribution to a number of Government committees e.g. to provide specialist advice on possible weaponisation of antiemetic drugs, requested by the Foreign Office's Weapons of Mass Destruction initiative; also to be an expert consultant to the Department of Trade and Industry Human Factors National Advisory Committee, on motion

sickness aspects of personal protection and survival in military and civilian situations.

Research Strategy:

Significant changes since the last assessment period:

Since the last RAE, Departmental and University-wide research strategy has been substantially revised and structures reorganized. Psychology has formed an elected research committee chaired by the Psychology Research Co-ordinator (**Clow**), who is responsible for managing an annual research budget allocated by the University on the basis of periodic strategic review. Expenditure is monitored annually by School and University against strategic plans and research-relevant targets. The Psychology Research Committee is thus mandated but also empowered to address continuously the development of its research strategy.

Psychology is committed to a broad and inclusive research strategy, with full and frequent consultation with staff, and transparent and equitable research management processes. Maintenance of openness is itself a strategy designed to ensure a wide and shared research culture extending to all staff. In this regard, attention is given to supporting and developing the research profile of those who presently combine strong commitment to teaching with evidence of research and scholarly output which can be built-on and developed further. This aim is strategically vital in ensuring that present research excellence is sustainable in the future. This aim is supported not only by targeted funding but also, especially in the case of new staff, by encouraging associations with established research groups and groupings. In this and other ways, less experienced researchers can be 'mentored' by those with more experience. The strategic aim of breadth and inclusivity is married to a belief that a wide base of research-related activity also enriches the quality of teaching and the learning experience for our students.

Since 2001 our strategic approach has been to promote collaborations cross-University and with external institutions, to capitalize upon availability of third stream income (HEIF), and to undertake applied research that tackles real-world problems in response to stakeholder-needs. This approach has built capacity, credibility, and positioned a relatively young department to move confidently forward, supported by explicit University strategy to fund and promote Psychology research.

The next 5 years:

During the next 5 years we will continue to build our collaborative and third stream activities, expand research council and major charity research grant income and gain ESRC research student recognition. To this end, plans are already in place to build on successful collaborative projects which have produced significant outputs and to apply for external funding of these. With regard to ESRC recognition, the readiness of Psychology to take this forward has been facilitated by the university recently giving priority to ensuring

delivery of an integrated training programme for all its research students with appropriate input at all levels of the institution.

During 2006/7 Psychology took a lead role in taking forward an initiative for a University-wide Institute for Health and Well-being, to provide a catalyst for research and knowledge-transfer over the next five years. £260,000 has been allocated to the project for 2007/8. The aim is to expand interdisciplinary biopsychosocial approaches to the promotion and measurement of well-being by collaboration across Psychology and the Schools of Biosciences, Integrated Health, Media Art and Design, and Informatics, whose achievements are recorded in UoAs 8 and 12. The Institute will seek further research and development contracts from the DOH, and similar agencies. The Institute will facilitate participation in large multi-centre bids (e.g. a recent application to Wellcome for £671,000 with the University of East London, the Institute of Health and Human Development, the MRC Social and Public Health Sciences Unit and the Institute for Research in Child Development – decision due in late 2007.) In 2007-8 a major programme of interdisciplinary PhD scholarships is planned, with several expected to be based in Psychology.

Since 2005, **Clow, Evans, Towell, Hucklebridge** have been key participants in HEIF2/3 funded activities, which have produced significant outcomes in terms of furthering the measurement of well-being for use in community intervention studies. Psychology will seek HEIF4 funding and continue to collaborate with colleagues from 'partner' universities involved in HEIF 2/3 projects (including Royal Holloway, St. George's, Kingston, and Brunel), with involved researchers already well placed to lead on related applications to research councils and charities.

Beyond the area of health and well-being research, the full range of research activity will continue to be supported in line with our stated strategy in regard to breadth. In this regard the Department will continue to operate vigorously a University-wide policy that research profiles should have a high priority in all academic appointments and that all major taught courses should be informed by good research activity.

Collaboration with external centers of excellence will continue to be facilitated. Over 5 years we anticipate sufficient expansion to allow the appointment of new research active staff to complement and grow existing areas of activity. The next 5 years will see as a priority the successful completion of current and new PhD students and gaining ESRC recognition for our research student programme.

Research students:

Postgraduate research in Psychology is overseen and annually monitored by a School Research Degrees Committee (RDC) which is ultimately responsible for research students' progress and achievement. The University and School provide research training modules to meet general needs of research students, Psychology has a dedicated post-graduate tutor who organises and

co-ordinates the provision of additional discipline-specific training sessions (e.g., advanced statistical techniques). PhD students attend the Psychology research seminar series and become part of our research community. Research students also present their work at an annual Psychology Research Forum where academic staff and postgraduate students attend poster and oral presentation sessions.

Growth in research student activity since 2001 is evident. Entered staff currently supervise 12 PhD students. There have been six PhD completions and 3 Quintin Hogg PhD scholarships awarded. These are highly competitive university-wide awards to sponsor excellent research students working in a productive research environment. Other PhD students have been supported from HEIF 2/3 income, internally allocated funds, or were self-funding.

Research Income

Research income (by source) per research active staff

Since 2001, Psychology has received on average £100,000 per year from University central research funds, which funds a dedicated research technician as well as broad project support and equipment bids from staff. Additional funding (£250K) has been derived from HEIF2/3 since 2005. It principally covers costs of 1 Research Associate, 1 PSRG-based PhD student and some laboratory consumables. A Fellowship from the Bial Foundation in Portugal (50,000 euros) pays the salary of a postdoctoral Research Associate.

Members of Psychology have been collaborators on successful grant applications with external institutions: £1.8 million from the MRC Grant (with Imperial College Medical School); £90k from the ESRC (with the Open University); £39,000 from Cancer Research UK (with St Georges Hospital); £6,000 from the British Academy (with Nottingham Trent University).

In fulfilment of the University's strategic emphasis on engagement with end-users, Psychology has been involved in consultancy work, including £50,000 from the DoH that has paid the salary costs of a Research Associate and media work (e.g. BBC and Channel 4). Additionally, Psychology has been in receipt of a DTI-funded Knowledge Transfer Partnership value £156,000 (to develop a new assessment psychometric) which pays the salary and costs of a PhD student. We have recently been in receipt of £8,000 from the London Development Agency as part of their Secondment into Knowledge Programme.

Many small research and travel awards have been received by Psychology staff, funding short term projects, consumables and travel. For examples 2 small awards have been received from the Nuffield Foundation: £2,200 and £1,400; £15,000 and another £750 from the HEA; £1,000 from the ESRC for a Methods Training bursary; £5,285 from HEFCE's Innovations Fund; \$8,500 from the United States Navy, Visiting Scientist Travel grant scheme.

Staffing policy:

Research growth in Psychology since 2001 has taken place against a background of a stable staff complement and low turnover. Nevertheless, we have attracted 4 top-rate early career researchers. These researchers are provided with a mentor, and financial and technical support to enable them to grow their research at Westminster. Since 2001 we have strongly supported existing staff in the development of their research profile, encouraging them to share ideas, form collaborative alliances, and pool resources. To this end we hold regular research seminars with prominent invited speakers, internal 'work in progress' seminars and an annual Research Forum (see above).

Esteem indicators

Buchanan T

- Editorial board (International Journal of Internet Science) 2005+ .
- Guest-editor: special issue of *Interpersona* on matchmaking methods in the 21st Century, 2007.
- Invited member of BPS working-party producing ethical guidelines for psychological research on the Internet 2005-2007.
- Invited workshop presenter on psychology and the Internet at the BPS Annual Conference, Cardiff 2006

Clow A

- Editorial board (*Psychoneuroendocrinology* [impact factor 4.8]), 2005+ .
- BPS committees (e.g. Chair of the Psychobiology Section, 2002-2005; Chair of Standing Conference Committee (2004-2006); Member of Research Board (2003-6) and Executive Committee of Research Board, (2004-2006).
- Media appearances including presenter of six-part prime time BBC 1 series ("The Stress Test", 2004).
- Keynote Speaker (e.g. Royal Institution, 2001, 2003, 2005; Royal Society of Arts, 2002; Edinburgh Festival of Science, 2006; launch of the South East Branch of the BPS, 2006; Institute Cultural Research, 2006; London Health Commission, 2007.

Evans P

- Elected Fellow (International Organization of Psychophysiology); Action editor and editorial board member of IOP journal (International Journal of Psychophysiology [impact factor 2.584])
- Invited presentations: Key-note opening address (2004 Annual Conference of the Hong Kong Psychological Society); BPS sponsored seminar series on Psychoneuroimmunology, 3rd Meeting, University of Birmingham, 2006; London Health Commission seminar: The Time is Now, 2007.
- Wider contributions: Expert Advisory Group, Sidney De Haan Research Centre for Arts and Health; Invited speaker at opening event

of Wellcome Trust / Science Museum exhibition on 'Pain' – London, Spring 2004; contributions to major Science Feature article "Stress....can kill" (The Guardian 12/04/2004).

- Overseas: (January –April 2002) Leave from University of Westminster to take up full-time salaried post of Visiting Professor at the City University of Hong Kong. Elected (2006-present) Honorary Research Fellow of the University of Hong Kong

Golding J

- Appointed Visiting Scientist: US Navy Navy Aerospace Medical Research Laboratory (NAMRL) Pensacola, FL, USA. 2005.
- Honorary Senior Research Fellow, Division of Neurosciences, Imperial College Medical School 2004 onwards.
- Invited participation in Parabolic Zero-G flights for research with the University of Caen France and the European Space Agency at Novespace Bordeaux, 2002, 2005.
- Contributor to Government committees, providing advice on possible weaponisation of antiemetic drugs for the Foreign Office's Weapons of Mass Destruction initiative (prevention of); also to Department of Trade and Industry HFNAC, on personal protection and survival (2005).

Hucklebridge F

- Visiting Professor, Department of Psychology, Universidade Lusofona, Lisbon and Keynote Speaker at the international STAR conference, Lisbon, 2004
- Invited speaker at the BPS sponsored seminar series on Psychoneuroimmunology, 2nd Meeting, University of Birmingham, 2006.
- External PhD Examiner (Universities of Bristol and Plymouth).
- Keynote speaker (International Conference: Emotion Evolution and Rationality. Kings College, London, 2004)

Towell T

- Honorary Senior Research Fellow in the Dept of Clinical Neurophysiology, Great Ormond Street Hospital and collaborator with the Visual Electrophysiology Unit at GOSH.
- Chief Supervisor, BPS, Division of Health Psychology and Chair, BPS, Board of Examiners in Health Psychology
- Organizer and Chair of a series training workshops for chartered health psychologists.
- External examiner (PhD) Imperial College, London

Early career submissions

Edginton T

- Honorary research associate, University of Cambridge.
- Collaborator with: School of Psychology, UEL; Addenbrookes Hospital, Cambridge; Hurstwood Park Hospital, Haywards Heath; School of Psychology, University of Exeter.
- Invited talk: University of Hull on doctoral research.
- University of Westminster Teaching Fellowship for Excellence in Teaching and Learning accompanied by participation in the University Teaching and Learning Fellowship forum.

Eardley A

- Organiser and Chair of the international Tactile Research Group Meeting, Toronto, 2005.
- Invited Speaker: Second Iberian Conference on Perception, Madrid, 2007.
- Invited Speaker: In Touch with Art: An International Conference on Art, Museums and Visual Impairment, London, 2007
- Grant reviewer for the National Science Foundation, USA.

Morgan K

- Honorary Attachment (for Academic collaboration) to Division of Psychological Medicine, Institute of Psychiatry.
- Lead Conference Organizer '*Cognition & Schizophrenia: Improving Real Life Function*' at the Institute of Psychiatry 2004. Edited the proceedings as book published by Cambridge Medical Press, 2006.
- Invited Speaker: World Congress of Psychiatry, Cairo, 2005.
- Invited Speaker: International Congress on Schizophrenia Research, Colorado, 2007.

Swami V

- Editorial board Evolutionary Psychology.
- Media: All in the Mind, Secret of the Sexes, History of Art, The Spectator, Independent on Sunday, The Times.
- Scholarship award: Himalayan International Institute of Philosophy and Science (2003-5).
- Reviewer: Body Image, Evolution and Human behavior, J Applied Social Psychology, International J of Psychology. Plus 11 others.