International Benchmarking Review of UK Psychology
Commissioned by the British Psychological Society, the Experimental Psychology Society, the Association of Heads of Psychology Departments, and the Economic and Social Research Council in consultation with the Biotechnology and Biological Sciences Research Council, the Engineering and Physical Sciences Research Council, and the Medical Research Council
## CONTENTS

**FOREWORD**  
**EXECUTIVE SUMMARY**  
**1. REVIEW PURPOSE**  
**2. INTRODUCTION AND SUMMARY OF REVIEW PROCESS**  
  2.1 Briefing Documents  
  2.2 Face-to-face meetings  
**3. RESEARCH ISSUES**  
  3.1 Overview of strengths and weaknesses in UK psychology from an international perspective  
  3.2 Emerging areas and future developments of the discipline  
  3.3 Overview of quality in the psychology sub-disciplines  
    3.3.1 Biological Psychology  
    3.3.2 Clinical Psychology  
    3.3.3 Cognitive and Perceptual Psychology  
    3.3.4 Developmental Psychology  
    3.3.5 Educational Psychology  
    3.3.6 Mathematical and Computational Psychology  
    3.3.7 Social Psychology  
    3.3.8 Work, Organisational and Occupational Psychology  
    3.3.9 Other areas of Applied Psychology  
  3.4 Research organisation in the University context  
**4. RESEARCH CAPACITY ISSUES**  
  4.1 Research training  
  4.2 Demographic profile of UK psychology  
  4.3 Provision of research infrastructure and resources  
  4.4 Research funding issues  
**5. RESEARCH IMPACT**  
  5.1 Dissemination practices  
  5.2 Use and value of psychology research to policymakers and practitioners  
**6. CONCLUSIONS AND RECOMMENDATIONS**  
  6.1 Conclusions  
  6.2 Recommendations  
**ANNEX A: Departmental submissions to the benchmarking review**  
**ANNEX B: Panel Visit Schedule**  
**ANNEX C: Review Steering Group**  
**ANNEX D: Response of the Steering Group to the International Panel’s Report**
The UK's Economic and Social Research Council (ESRC), British Psychological Society (BPS), the Experimental Psychology Society (EPS) and the Association of Heads of Psychology Departments (AHPD) agreed in 2009 to work in partnership to benchmark the quality and impact of research in the UK against international standards. This is the fifth in a series of ESRC sponsored assessments covering major social science disciplines in the UK. In recognition of the breadth of the psychology discipline, the ESRC consulted with BBSRC, EPSRC and MRC.

A Steering Group, chaired by Professor Judi Ellis, and comprising of prominent UK academics, research users and funders, was appointed to commission and oversee the review. The Group appointed an academically distinguished International Panel, chaired by Professor Max Coltheart (Macquarie University, Australia), to make an independent qualitative assessment of the UK's performance in psychology research and to report on its findings. Steering Group members are listed in Annex C, and International Panel Members on page 4.

On behalf of the partnership we very much welcome this detailed, robust and positive assessment of the state of psychology in the UK, and believe that the review will be highly beneficial, and will have significant impact.

The report’s recommendations will be considered fully, with an Action Plan agreed and published later in the year that sets out how the Panel's findings will be taken forward. We hope that the report will be debated by all those with an interest in the development of psychology in the UK, and that it will provide a focus for developing the enormous contribution described by the International Panel.

We wish to extend our sincere thanks to Professor Coltheart and all of the Panel Members for their hard work in producing such an illuminating and insightful report. We would also like to thank all those who discussed their work with the Panel or contributed in any way to the review.

Professor Paul Boyle, Economic and Social Research Council  
Professor Judi Ellis, British Psychological Society

April 2011
Executive Summary

The ESRC established the International Benchmarking Review of UK psychology in partnership with the British Psychological Society (BPS), the Experimental Psychology Society (EPS), and the Association of Heads of Psychology Departments (AHPD). Recognising the breadth of psychology as a discipline, the ESRC consulted with BBSRC, EPSRC and MRC in delivering the review.

The review aims to benchmark the current position of UK psychology with the best done world-wide, highlighting strengths and weaknesses as appropriate. The review has been carried out by a Panel of leading international psychology academics, chaired by Professor Max Coltheart, Macquarie University, Australia. The review has utilised a range of data sources including bibliometric analysis, statistical information on the UK discipline, a survey of non-academic users, submissions from Research Councils and UK psychology departments, as well as a series of meetings with a range of stakeholders from UK psychology.

The Panel's headline finding is that, overall, the quality of UK psychology research is very high, bettered only by psychology research from the USA. In a substantial number of areas, UK psychology research is unsurpassed anywhere in the world. The Panel's view is corroborated both by the outcome of the 2008 Research Assessment Exercise and bibliometric analysis.

The Panel has undertaken a detailed analysis of the many sub-disciplines that make up the diverse discipline of psychology. Many examples of research excellence have been identified in areas such as: animal learning and cognition, social psychology, clinical psychology and psychopathology, biological psychology, developmental psychology, and cognitive psychology.

Psychology in the UK continues to be an extremely popular university subject, with both undergraduate and postgraduate student numbers expanding in recent years. In addition the discipline attracts considerable Funding Council research funding, as well as significant Research Council funds.

Research training is noted by the Panel as performing strongly, although concern is expressed at potential bottlenecks that occur at two locations: (i) in attracting PhD funding – the majority of PhD students are not funded by the Research Councils, and; (ii) the lack of opportunities for postdoctoral funding. This latter point may be affecting the competitiveness of early career researchers in securing faculty positions. Recently, faculty appointments at lower age bands appear to be increasingly awarded to non-UK nationals. Concern is also expressed at the depth of research training in the UK, with an improved grounding in core psychology research skills felt to be desirable in ensuring international competitiveness.

Provision of infrastructure is generally considered to be adequate, although two issues were frequently brought to the Panel's attention. Firstly, the cost of animal facilities has increased and the consolidation of facilities across disciplinary areas means they are not always designed optimally for research on psychological topics. Secondly, the cost of establishing and maintaining neuroimaging equipment was considered by many to be such that it risks the support of other types of psychology research being compromised.

Concern was raised by many witnesses that because of the breadth of psychology, many sub-disciplines straddle two or more Research Councils, and thus risk falling between funders’ remits. The Panel found no evidence to support these fears, but feel that Research Councils need to more effectively communicate the areas that they support.

UK psychology research is well disseminated to both the practitioner and policy-making community, and the BPS’s role in promoting psychology research is commended. UK psychology research has a considerable impact on policy and practice. Examples of impact were identified in many psychology sub-disciplines, including: biological psychology, clinical psychology, cognitive and perceptual psychology, developmental psychology, educational psychology, social psychology, organisational psychology and applied psychology.
The Panel has made a number of recommendations aimed primarily to eliminate threats that may potentially impact on the currently strong research reputation in UK psychology that is identified above. These recommendations are mainly centred on the following issues:

- Ensuring suitable animal facilities exist to maintain non-human psychology research;
- Collecting additional data to confirm that no psychology sub-discipline falls between remits of research funders;
- Making sure that expenditure on brain imaging equipment does not impact on the support of other areas of psychological research;
- Collecting additional data to establish whether current PhD studentship support is adequate in psychology;
- Development of discipline-appropriate postgraduate research training for psychology PhD students, and considering an alternative PhD format (thesis written in the format of journal articles);
- Ensuring availability of postdoctoral training and the competitiveness of early-career psychology researchers in the UK;
- Increasing research co-operation of educational psychology with cognitive psychology and educational psychology.
1. REVIEW PURPOSE

The review was established by the Economic and Social Research Council (ESRC) in partnership with the professional bodies for psychology in the UK: the British Psychological Society (BPS), the Experimental Psychology Society (EPS) and the Association of Heads of Psychology Departments (AHPD). In recognition of the breadth of psychology as a discipline, a cross-Council approach involving Engineering and Physical Sciences Research Council (EPSRC), Medical Research Council (MRC) and Biotechnology and Biological Sciences Research Council (BBSRC) has been adopted by ESRC in managing and delivering the Review.

The object is to benchmark the current position of UK psychology research against the best done world-wide, highlighting strengths and weaknesses as appropriate. The review will also focus on the health of UK psychology (training and capacity issues). In addition it will examine resource provision, non-academic impact, and any other issue that is important in terms of the future development of the discipline.

The review is overseen by a Steering Group chaired by Professor Judi Ellis (BPS, University of Reading) and comprises academic and user stakeholders. The Steering Group agreed the broad framework for the review, and appointed an International Panel to undertake the review. The Steering Group will receive the International Panel’s final report. It will then agree how to take forward the International Panel’s conclusions and recommendations.
2. INTRODUCTION AND SUMMARY OF REVIEW PROCESS

Psychology is a very diverse discipline. There is much work in psychology that is pure science, and there is much that is highly applied science; and research in psychology ranges from the sociological to the neurophysiological. For the purposes of this review, therefore, the discipline was divided into nine sub-disciplines (one being applied psychology), and each of these was evaluated separately, in order to see how strong UK psychology is in these various parts of the discipline, and to be able to make specific comments about each of these. It is important to appreciate that, despite this diversity, all of these sub-disciplines represent integral aspects of the subject of psychology: for example, the British Psychological Society requires that all or nearly all of these areas of psychology be taught at undergraduate level for the accreditation of undergraduate degrees in psychology. Psychology is a unified and coherent subject.

The Panel members were:
Professor Max Coltheart (Chair), Macquarie University, Australia
Professor Mark Bouton, University of Vermont, USA
Professor Felix Brodbeck, Ludwig-Maximilians-Universität, Germany
Professor Morton Ann Gernsbacher, University of Wisconsin-Madison, USA
Professor Michael Hogg, Claremont Graduate University, USA
Professor Rachel Keen, University of Virginia, USA
Professor Marcel van den Hout, Utrecht University, The Netherlands

The Panel has based its report on a set of briefing documents and a set of face-to-face meetings held on London in October 2010.

2.1 Briefing Documents
Prior to convening in London for the face-to-face meetings described below, the Panel was provided with a comprehensive set of Briefing Documents. These 11 documents were:

D1. Purpose and Overview of the Review. This two-page document specifies what the Review is for, how it will be conducted, and how the Review Panel’s report will be used (namely, to strengthen the funding case for psychology and to assist in the further development of the discipline).

D2. Sub-disciplinary Overviews of UK Psychology. The nine sub-disciplines of psychology overviewed were:

- Biological Psychology
- Clinical Psychology
- Cognitive and Perceptual Psychology
- Developmental Psychology
- Educational Psychology
- Mathematical Psychology
- Social Psychology
- Organisational Psychology
- Other areas of Applied Psychology

Each overview was commissioned from a senior UK researcher in the relevant sub-discipline. Authors were specifically asked to provide an overview of the sub-discipline in the UK, commenting on the strengths and weaknesses of UK research, teaching and training in the sub-discipline, and providing examples of key academic outputs and non-academic outputs from the sub-discipline.

D3. Overview of UK Research Funding Environment. This was an eight-page document written by Dr David Mills (Department of Education, Oxford University) which explains the “Block Grants” and “Dual Support” research funding system, the Research Assessment Exercise (with details of the five such exercises that have been carried out) plus the planned Research Excellence Framework, and the concept of Full Economic Costing of research as introduced in the UK in 2005.
D4. Statistical briefing of UK psychology. This was a 63-page document written by Dr Paul Wakeling (Department of Education, University of York) providing a statistical overview of UK psychology research funding, staffing in psychology departments, undergraduate and postgraduate numbers, and career prospects for psychology graduates.

D5. Research Council Submissions to Review Panel. This was a 34-page document in which each of the four relevant Research Councils provided a short submission that describes the nature of the psychology research that it funds plus some context on how that sits with the rest of the Councils’ portfolios.

D6. A Bibliometric Analysis of UK psychology. This was a 15-page document commissioned from Thomson Reuters by the ESRC. It provided an analysis of citation rates and highly-cited papers for UK psychology research publications compared with psychology research publications from five other countries where there is considerable psychology research (Australia, Canada, Germany, The Netherlands and the USA).

D7. 2008 RAE Outcomes. This was the 8-page RAE 2008 psychology panel subject overview report.

D8. Non-academic User Survey. This was a 19-page document commissioned from People, Science & Policy. This report is based on data from 80 questionnaire submissions and ten in-depth follow-up telephone interviews with non-academic users of psychology.

D9. Policy and practice impact case study of ESRC grants and fellowships in psychology. This was a 39-page document commissioned in 2007 by the ESRC from Technology Development Group. It analyses the ways in which results from ESRC funded research have influenced policy formation and professional practice.

D10. Departmental Submissions to the Review Panel (these were submitted in response to a general invitation to all UK psychology departments to make individual submissions). Copies of the questions asked and a list of respondents is included at Annex A. A 2-page overview of these submissions was also provided to the Panel.

D11. A survey of postdoctoral researchers and final-year PhD students in psychology: Research funding, career needs and working conditions. This survey was commissioned by the British Psychological Society; it was undertaken in 2004 and published in 2006. The report of this survey is available at http://www.bps.org.uk/downloadfile.cfm?file_uuid=F20CE935-1143-DFD0-7ECA-28F465E911B1&ext=pdf

We refer to these documents as D1, D2 etc. in the rest of this Report.

2.2 Face-to-face meetings
Members of the Panel had 14 meetings with various parties from the UK over the week beginning 4 October 2010; the schedule of meetings and assignment of Panel members to meetings is at Annex B. Nine of these meetings were sub-disciplinary meetings (these nine sub-disciplinary areas are listed above) where a subset of Panel members with particular expertise in the sub-discipline met senior UK researchers working in that sub-discipline. Four other meetings were with a selection of 11 Heads of UK Psychology Departments, with a group of PhD students (one from each of these departments), a group of early career researchers in psychology, and a group of psychology end-users. The week concluded with a meeting between the whole Panel, the Steering Group for the benchmarking exercise, and some key stakeholders.
3. RESEARCH ISSUES

3.1 Overview of strengths and weaknesses in UK psychology from an international perspective

The Panel was strongly and unanimously of the view that, overall, the quality of UK research in psychology was internationally bettered only by psychology research from the USA, and that in a substantial number of research areas UK psychology research is unsurpassed in the world. The same view of UK psychology was shared by the senior psychology researchers interviewed by the Panel. It was also the view of UK psychology that was reached in the 2008 Research Assessment Exercise (RAE). And it was also the view expressed in Document D10’s Overview of Departmental Submissions.

This verdict is easily corroborated using a variety of objective indices, as clearly demonstrated by the bibliometric data in the report commissioned for this review from Thomson’s Reuters (D6). For example:

- UK psychology papers published during the period 2000-2009 had average citation rates that were 23% greater than the world average for psychology. On this measure, UK psychology outperforms UK economics and UK sociology by considerable margins.

- UK Psychology’s citation impact places it annually first, second or third amongst the nations of the world over the period 2000-2009 (first in 2009). Averaged across the whole period, the UK ranks first in the world.

Table 1: Papers, share of world papers and relative impact by country and subject (2000-2009)

<table>
<thead>
<tr>
<th>Country</th>
<th>Psychology (A)</th>
<th>Psychology (B)</th>
<th>Economics</th>
<th>Sociology</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>82610</td>
<td>11.2</td>
<td>1.23</td>
<td>38225</td>
</tr>
<tr>
<td>Australia</td>
<td>30431</td>
<td>4.1</td>
<td>0.99</td>
<td>14537</td>
</tr>
<tr>
<td>Canada</td>
<td>50586</td>
<td>6.8</td>
<td>1.11</td>
<td>24201</td>
</tr>
<tr>
<td>Germany</td>
<td>64738</td>
<td>8.7</td>
<td>1.02</td>
<td>22721</td>
</tr>
<tr>
<td>Netherlands</td>
<td>28128</td>
<td>3.8</td>
<td>1.15</td>
<td>13644</td>
</tr>
<tr>
<td>USA</td>
<td>344467</td>
<td>46.5</td>
<td>1.23</td>
<td>163753</td>
</tr>
</tbody>
</table>

Source: Evidence, Reuters Thomson (2010), Bibliometric data for the ESRC benchmarking review of psychology, Table 1

Note: Over half of psychology papers from the Thomson Reuters database were classified as neuroscience or psychiatry papers – subject areas which, while having a significant psychology component, also cover fields which do not relate to psychology. Therefore the Evidence, Reuters Thomson report provides data for psychology research papers as a whole (referred to as psychology (A)) and for psychology papers excluding neuroscience and psychiatry publications (referred to as psychology (B)).

- Comparative analyses of highly-cited articles (citation rates in top 1%, top 5% or top 10%) shows that at all three thresholds the UK well exceeds the world average of percentage of articles that qualify as highly-cited. Here again UK psychology outperforms UK economics and UK sociology over the past decade.
### Table 2: UK papers in world top 1%, 5% and 10% highly-cited

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
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<th>2004</th>
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<tbody>
<tr>
<td></td>
<td>1%</td>
<td>5%</td>
<td>10%</td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td>Psychology (A)</td>
<td>1.9</td>
<td>8.6</td>
<td>15.4</td>
<td>1.6</td>
<td>8.2</td>
</tr>
<tr>
<td>Psychology (B)</td>
<td>1.6</td>
<td>8.8</td>
<td>15.5</td>
<td>1.9</td>
<td>9.0</td>
</tr>
<tr>
<td>Economics</td>
<td>0.6</td>
<td>2.8</td>
<td>6.2</td>
<td>1.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Sociology</td>
<td>0.0</td>
<td>3.2</td>
<td>8.8</td>
<td>0.8</td>
<td>5.4</td>
</tr>
</tbody>
</table>

Source: Evidence, Reuters Thomson (2010), Bibliometric data for the ESRC benchmarking review of psychology, Tables 4, 5 & 6

Some bibliometric analyses were also reported in the sub-discipline report on Social Psychology (D10)\(^1\) – in particular

- Using the H-index as a measure of citation impact, UK psychology ranked second to USA psychology in each of the three general areas of cognitive/experimental psychology, social psychology, and developmental psychology.

- When the mean number of total citations per document is calculated, UK cognitive/experimental psychology and UK developmental psychology do not differ from their counterparts in the USA, and UK social psychology clearly outstrips USA social psychology.

Specific research areas in UK psychology that were identified by the Panel as of particular international excellence were:

**Animal learning and cognition**

- Associative learning theory

  Example: The UK has had a long tradition of theoretical work in this area, involving both humans and non-human animals: associative learning theory is now so sophisticated a branch of psychology that it is successfully being used to help us understand various psychiatric conditions including addiction and delusion

**Social Psychology**

- Aspects of social cognition
- Behavioural change research
- Family functioning
- Intergroup relations
- Prejudice
- Social identity

Examples: (a) Social identity theory was initially developed in the UK in the 1970s and early-1980s as a radical new explanation of prejudice, discrimination and conflict and co-operation between groups. Its focus on social

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\(^1\) Dominic Abrams (2010), Sub-disciplinary Overview of Social Psychology
cognitive processes and the role of identity was revolutionary – an early finding that the mere fact of being categorised can be sufficient to produce group identification and embryonic discrimination has transformed how we think about groups and identity. Social identity theory is now the dominant and most heavily cited perspective in social psychology around the world on group processes and intergroup relations. (b) UK research on behavioural change has focused on how attitudes and norms can translate into action, particularly in health related areas – this research has made a huge impact around the world.

Clinical psychology and psychopathology
- Autism
- Cognitive behavioural therapy
- Experimental psychopathology

Examples: (a) Central to autism is a disordered Theory of Mind: UK researchers were largely responsible for establishing this crucial finding which has revolutionized our understanding of the condition. (b) UK clinical psychologists, with input from UK cognitive psychologists, made many important contributions to the development of Cognitive Behavioural Therapy, now used all over the world for the treatment of many forms of psychiatric disorder.

Biological psychology
- Chemical communication in the brain
- Motivational and reward systems in the brain
- Neuroscience of cognition

Examples: (a) UK neuroimaging work on the brain bases of Theory of Mind and on the brain bases of the sense of agency over one’s own actions has shown that even such high-level aspects of cognition as these are amenable to neuroscientific investigation. (b) The study of motivational and reward systems in the brain (rodent and monkey studies) has significantly advanced our understanding of human addictions and how they can be treated.

Developmental psychology
- Cognitive developmental neuroscience
- Infant development
- Language development and its impairments

Examples: (a) Current UK work on Specific Language Impairment in children is world-leading, providing insights into how language development normally proceeds and into how and why it goes awry in this condition. (b) Revolutionary techniques for recording brain activity in infants and its developmental change have recently been pioneered in the UK.

Cognitive psychology
- Cognitive neuropsychology
- Cognitive neuropsychiatry
- Emotion
- Face perception and recognition
- Memory

Examples: (a) Cognitive neuropsychology and cognitive neuropsychiatry are branches of cognitive psychology which were invented in the UK via collaborations between cognitive psychologists and clinicians; each now has its own proprietary journal, and both are providing new insights into the nature of neuropsychological and neuropsychiatric impairments, with implications for treatment. (b) An extensive ESRC-supported programme of research on face perception revolutionised the field, and led to the development of a model of face processing which still dominates research in this field.
As for weaknesses, the Panel did not consider that there was any major aspect of UK psychology where international competitiveness was lacking. Minor weaknesses were:

- UK educational, applied and organisational psychology is not well-integrated with mainstream psychology, especially cognitive psychology; but that is true in most countries;

- UK mathematical psychology is not a stand-alone sub-discipline; most UK mathematical psychologists work within one of the other sub-disciplines of psychology;

- PhD students in some psychology sub-disciplines may not have sufficiently extensive training in methodology and statistics - this is discussed further in section 4.1.

3.2 Emerging areas and future developments of the discipline

UK psychology is keeping up very well with emerging developments in the discipline. One of these is behavioural economics, which is beginning to be studied in the UK: a number of BSc and MSc degrees in this subject have recently been established in the UK. This should foster links with economics in the near future. Another is the integration of CBT/behavioural change/experimental psychopathology with cognitive neuroscience: an example is research on the neurocognitive understanding of the memory aberrations that occur in Post-Traumatic Stress Disorder. Such work is strengthening already strong links that UK psychology has with both psychiatry and neuroscience. A third is evolutionary psychology, referred to in the RAE 2008 subject overview report as an area of rapid growth in UK psychology; this work links psychology with biology. All three areas are seen internationally as vital new directions for psychological science to pursue, and so it is heartening to see work figuring in UK psychology. The interdisciplinarity inherent in all three areas is also important. The research infrastructure needed to support such work appears to be adequate at present; for more on this see Section 4.3.

3.3 Overview of quality in the psychology sub-disciplines

3.3.1 Biological Psychology

Research in the sub-discipline of biological psychology in the UK holds its own with the best in the world. Indeed, UK biological psychologists are making world-leading contributions in several areas, including chemical communication in the brain, motivational and reward systems in the brain, animal learning and cognition, and cognitive neuroscience.

Although the sub-discipline has had a notable international impact, especially given its relatively small size, its impact in the future is currently threatened by the high costs of maintaining animal research facilities and neuroimaging equipment. Witnesses reported that such facilities and equipment are often maintained piecemeal by short-term project grants instead of longer-term institutional support or infrastructure grants. The cost of animal research facilities often now requires that the facilities be consolidated across academic units, with the result that the facilities are not always designed optimally for behavioural research. This is discussed further in Section 4.3.

 Witnesses expressed concerns that the contemporary emphasis among Research Councils on funding interdisciplinary research projects may be resulting in research on the basic cognitive and behavioural processes that inform such interdisciplinary work falling into a gap. Precisely this concern was also expressed in the RAE UOA44 subject report, which stated: “One concern is that the significant shift in emphasis towards cognitive neuroscience in many departments means that less research is being carried out in some classic areas of psychology. For example, there appears to be relatively less research now (compared with 2001) in classic psychobiology. Given that scientific developments in cognitive neuroscience often depend on prior scientific developments in psychology, it is important that there is on-going strong work on basic psychological processes and that there is external funding available to support this”. Section 4.4 has more to say on this point in relation to psychology in general rather than just biological psychology.
There is a good pipeline of new students at the undergraduate and graduate levels. However, training at the graduate level is challenged by the small number of available studentships, which often also carry insufficient funding for research expenses, and by research requirements (e.g. enforced by the Home Office or medical ethical committees) that may increase the length of time it takes students to complete their dissertation projects, which may reduce the long-term attractiveness of the field. A number of very prominent senior investigators will be retiring in the next few years. Despite these challenges, biological psychology remains a success story within UK psychology, and has had enormous impact, not the least of which is its intellectual impact on psychology in general and the neurosciences at large.

3.3.2 Clinical Psychology
The quality of UK clinical psychology research is excellent and is, in numerous areas, world leading. Its great strength is the integration of experimental analysis of psychological mechanisms that are involved in the origin and maintenance of mental disorders and treatment studies. The experimental studies are driven mainly from insights from cognitive psychology. The interaction between laboratory studies and clinical work ensures that the experimental studies are clinically informed and highly relevant while the clinical interventions that are developed and tested are rooted in the knowledge base of general psychology. Major breakthroughs have been the understanding and cognitive behavioural treatment of the most prevalent mental disorders - foremost here are the anxiety disorders, but also, if to a lesser extent, depression. The theoretical understanding and therapeutic interventions that have resulted from this research are being taught worldwide to students and clinicians as state-of-the-art clinical psychology.

Compared to the USA, there is a relatively strong emphasis on trans-diagnostic processes, that is, on phenomena that cut across various mental disorders – for example, the biased processing of affective information. This has allowed rich innovation in treatment development. Further, such basic processing insights mean that clinical psychology will continue to be critical for other areas of science (such as neuroscience, genetics, cognitive psychology and so forth).

In combination with insights gained hitherto, longitudinal work may foster early detection and prevention. Still, despite the successes driven by the experimental work, witnesses felt that the future of this bedrock science is threatened by a lack of funding and a possible shortage of new blood into the area. Document D10 (Overview of Departmental Submissions) identified training capacity in clinical psychology as "a real bottleneck for the future health of the discipline".

At some universities clinical psychology is associated with medical schools while in other universities, it is associated with Departments of Psychology. There are clear advantages and disadvantages of both options. Association with a medical school helps to foster links between clinical psychology and psychiatry. Positioning of clinical psychology within a psychology department fosters interactions with other sub-disciplines of psychology that are important for clinical psychology, such as cognitive psychology and social psychology. Thus clinical psychology researchers are positioned in a range of disciplines: clinical psychology, experimental psychology, neuroscience, psychiatry etc.

Witnesses felt that it is getting exceedingly difficult for clinical psychologists, especially those working in experimental psychopathology, to obtain grants, though senior figures continue to be funded for larger scale clinical trials. However, the new generation of researchers, especially for the further advancement of fundamental ‘experimental psychopathology’ is under threat. Research is getting more and more restricted to small scale applied studies (e.g. those carried out by clinical psychology trainees), and other more applied studies funded by the National Health Service (NHS). No real theoretical and clinical advancement can be reasonably be expected from such studies and if the lack of funding for more fundamental research continues this will threaten the intellectual integrity and international prominence of clinical psychology in the UK.

Witnesses also felt that clinical psychology faces a serious age gap in the near future. Witnesses stated that the number of PhD positions is quickly declining, while even for gifted and successful PhD students there are hardly any appropriate clinical-research postdoctoral positions available. Most PhD funding in clinical psychology is via
professional doctorates and to the extent to which such doctorates are a preparation for a clinical rather than a research/academic career there may be concerns here about adequate research training for people undertaking a PhD in clinical psychology. Furthermore, many of the leading clinical psychology researchers will become emeritus within 10 to 15 years; the resulting age gap, if left unaddressed, will leave UK clinical psychology without the critical mass to continue its international leadership. Evidence that could allow these concerns to be evaluated needs to be collected.

3.3.3 Cognitive and Perceptual Psychology

The UK has been very strong in these areas since the rebirth of cognitive psychology in the late 1950s when UK cognitive psychologists of the time such as Donald Broadbent, Anne Treisman and John Morton made outstanding contributions to that rebirth. This strength remains undiminished: overall the UK is currently second only to the USA in terms of the quality of its scientific work in cognition and perception, and in many sub-areas it is the best in the world – for example, in the study of memory, in the study of the mechanisms of face processing, and in cognitive neuropsychology and cognitive neuropsychiatry, both of which originated in the UK (it is important to understand that both of these areas of research are branches of cognitive psychology rather than being directly concerned with the neural bases of cognition). Outstanding work is also being done on vision and visual attention, on memory, on the computational modelling of cognition, and on reasoning and decision-making. The world’s leading psychology journals in the areas of cognitive and perceptual psychology include many UK psychologists on their editorial boards, a number being Chief Editors. Consistent with all of this, the 2008 RAE psychology report affirmed that “Traditional cognitive psychology is still very strong, with particular critical mass focussed in areas such as memory, attention, perception, and thinking”.

Research in cognitive and perceptual psychology is widespread in the UK, with research activity in these areas present for 60 of the 73 institutions reporting to the RAE 2008 psychology panel.

Witnesses considered that the academic age profile for this sub-discipline was well balanced: good research is happening at all levels of seniority.

In a number of the meetings of other sub-disciplines, witnesses emphasised that effective multidisciplinary research in these other sub-disciplines depends upon the presence in the multidisciplinary team of people trained in basic cognitive or perceptual psychology. This is especially true for much work in biological psychology (especially cognitive neuroscience), clinical psychology, social psychology, educational psychology, and work/organisational/occupational psychology.

3.3.4 Developmental Psychology

Developmental psychology in the UK can be described as a first class enterprise, using cutting-edge methodologies and leading the world in some sub-topics like developmental cognitive neuroscience. Its output in the form of books, journals, and journal articles all attest to this.

The areas of strength include infant development, language development (including impairments), family functioning, and cognitive developmental neuroscience. Several universities have well-established large and distinguished research groups in developmental psychology, and smaller but significant pockets of excellence also exist in several other universities, studying a wide range of topics, including language, infant perception, behaviour problems, cognitive and motor development, and various developmental disorders. Particular areas in developmental psychology where the UK is currently very strong internationally include the study of developmental disorders (especially autism, dyslexia, Williams Syndrome, and Specific Language Impairment), the study of the development of Theory of Mind in typically developing children, and developmental cognitive genetics.

Increasingly, faculty and graduate students in the USA see the UK as a destination for sabbaticals, for postdoctoral experience, and for faculty positions. UK researchers regularly attend and present their research at key national and international meetings for developmental psychologists, such as the Society for Research in Child Development
One weakness in developmental psychology mentioned both in the commissioned sub-discipline report and in discussions with sub-discipline witnesses was the need for more training for junior developmental psychologists in advanced statistical techniques. Specialist training in statistics could be accomplished through summer workshops with fellowships for postgraduates and early career researchers; this would enhance their knowledge and expertise in the use of advanced statistics that are needed to model change over time. These workshops would be fairly inexpensive for various Research Councils to fund jointly, and the payoff would be large. Current activities in this area (such as those supported via the ESRC National Centre for Research Methods) could help here, provided that they meet the need of developmental psychologists for specific training in advanced statistical methods for modelling change over time.

3.3.5 Educational Psychology

It is difficult to benchmark the quality of the UK's sub-discipline of educational psychology in the context of international psychology, because in many countries educational psychology is not considered a sub-discipline of psychology but rather a sub-discipline of education, and also in many countries, including the UK, the sub-discipline of educational psychology is most commonly housed in Departments of Education rather than in Departments of Psychology. Relatively few members of UK Departments of Education have received research training in psychology.

The location of educational psychology within Departments of Education rather than Departments of Psychology can be problematic. For example, senior researchers in educational psychology whose research training has been in psychology but who are not located in Departments of Psychology can become isolated from their home discipline of psychology, and therefore may not stay abreast of current theories and methods in psychology.

This physical siting also aligns with what we perceive to be the sub-discipline's strength, namely a high potential for societal impact. But that strength is coupled with a lower quality of research rigor in UK research in educational psychology, and a notably lower quality of research training provided to educational-psychology students at all levels, in comparison with other sub-disciplinary areas of psychology.

That being said, internationally UK educational psychology research is second to the USA, and leads the world in one or two areas. Particular areas of research strength in UK educational psychology include well-being research, reading and literacy, longitudinal investigations, and intervention research, and, more generally, research on knowledge acquisition (how to read, how to do mathematics). There is some developing international strength in collaborative-learning and social-interaction aspects of education (e.g., bullying and friendship patterns). There is also strength in research on disability.

However, UK educational psychology is internationally weak in other areas, largely due to small scale (critical mass in very few places - mainly Oxford, Cambridge and London) and to the structural isolation from the parent discipline of psychology, as mentioned above.
Perceived difficulties concerning research funding for educational psychology in the UK were consistent with those for other psychology sub-disciplines. Particular issues are (a) diminishing funding for graduate students and postdoctoral fellows and (b) the impact of expected major government budget cuts. Another concern is that much of the previous funding has been government department funding, which is expected to diminish greatly in the near future given the UK government’s budgetary situation.

A weakness of much UK educational psychology research arises from traditional opposition to and unfamiliarity with team science within this sub-discipline; therefore, resources that are typically granted to teams are not as accessible in this sub-discipline as in sub-disciplines that more heartily embrace team science.

Witnesses were of the opinion that the staff profile of researchers in UK educational psychology appears somewhat greying. Document D4 confirms this: less than 10% of FTE staff in Education are 34 years of age or younger (for psychology and behavioural science the figure is over 30%), and more than 35% of FTE staff in Education are 56 years of age or older (for psychology and behavioural science the figure is slightly more than 10%). It is not clear that there is a sufficient supply of early career researchers in this sub-discipline. According to the sub-disciplinary report on Educational Psychology commissioned by the ESRC “A new generation of educational psychology researchers who can bridge the gap between fundamental research, classroom practice and key ‘wider’ explanatory variables of performance is needed”. The Panel felt strong concern that new researchers in educational psychology in the UK lack core training in basic research methodology. A further concern is that many academic members of UK university Departments of Education have qualifications in the teaching profession and so are not trained in, and do not carry out, research; such people are isolated from the psychology research tradition.

3.3.6 Mathematical and Computational Psychology

UK mathematical psychology is doing very well internationally in some specific areas, e.g. computational modelling in neuroscience.

In the UK in the sub-discipline of mathematical psychology there are scattered mathematical psychology researchers each embedded in particular content areas of psychology. There are few or no chairs/Units solely dedicated to methodological/mathematical psychology. There appears to be more of a community of mathematical psychology researchers who are embedded in different content areas (computational modelling, economics, decision sciences, cognitive neuroimaging) rather than there being centres dedicated to mathematical psychology research in general. Hence in the UK mathematical psychology is a field of low coherence. Document D11 from the British Psychological Society reports on the distribution of PhD students and postdoctoral researchers across 33 different sub-areas of psychology: mathematical psychology is not mentioned as a subarea of psychology here. In the UK, the advancement of ordinary and advanced statistical methods usable within psychology (e.g. multi-level modelling, structural equation modelling) appears to be coming from statisticians rather than from mathematical psychologists.

Witnesses considered the UK’s strengths in mathematical psychology to be strongly linked to psychological content areas rather than being purely mathematical/methodological in nature. One example is computational modelling (as in e.g. cognitive neuroscience, visual psychophysics, economic decision sciences, and computer sciences). The UK community of pure mathematical psychologists with no dedicated content domain is very small, as compared to a strong pure mathematical-psychology community in the USA. Of some significance is the bibliometric finding in the review of British mathematical psychology that UK mathematical psychology research figures quite prominently in top psychology journals (Psychological Review). A weakness in statistics developments driven by mathematical

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2 Paul Wakeling (2010), Statistical Overview of UK Psychology; and HESA Staff Record 2008/09
3 Julie Dockrell (2010), Sub-disciplinary Overview of Educational Psychology
4 Sarah Norgate & Jane Ginsborg (2006), A survey of postdoctoral researchers and final-year PhD students in psychology: Research funding, career needs and working conditions. A BPS commissioned report
psychology is corroborated by practitioners comments - that is, psychometrics is not so well developed in UK as compared to the USA, and undergraduate statistics education within psychology departments remains rather basic and is not fully up to scale with elsewhere.

Funding e.g. from ESRC and other sources, as well as technological equipment and infrastructure for mathematical psychology is perceived to be overall adequate, although there appears to be an ESRC funding focus on statistics-oriented subjects rather than on mathematical psychology for computational modelling (relevant for the high impact field of neuroscience) or decision sciences (relevant for the rapidly-growing and potentially future high-impact field of ‘behavioural economics’ or ‘psychological economics’).

UK student uptake in mathematical psychology is rather low. Junior researchers often lack sufficient skills in methods for mathematical psychology and other methods-intensive fields. University teaching is not particularly well equipped to provide broad and good mathematical psychology. And even MSc-level advanced statistics courses in university psychology departments appear unable to fully deliver the necessary breadth and depth of training for the research fields named. What could perhaps help here are (a) specialised summer schools and (b) joint supervision from different departments. For example, joint degree programmes are on the rise, e.g. ‘mathematics and psychology’, ‘computer science and psychology’; such joint degree programmes provide the skills young researchers need in respective interdisciplinary fields.

As for research impact outside academia, this is substantial for mathematical psychology. Examples include psychometric testing (although this has low prominence in UK-based mathematical psychology research except for the Cambridge Centre), meta-analysis (not invented in UK, but well mastered among UK researchers and policy makers), quality of life measurement (policy issues), exploitation of unique data sets, and data mining (underused in UK). New developments driven by mathematical psychology are: biological-psychological testing, test development and application (REE), decision making technologies, psychophysics with high bandwidth (auditory, speech recognition, iris recognition), and more generally ‘diagnostic information processing’.

3.3.7 Social Psychology
Much of UK social psychology is extremely strong. The UK is a well-established and recognised world leader in several areas of this sub-discipline, such as aspects of social cognition, emotions, group processes, intergroup relations, prejudice, and social identity, and UK social psychologists are over-represented in editorial roles in leading international journals, and in international social psychology societies. At least 25% of UK social psychologists have well recognised international profiles, and UK social psychology has the same H-index relative to the USA as do other sub-disciplines of psychology that are particularly strong in the UK, and UK social psychology has a strong citation per document (see the sub-disciplinary report on UK Social Psychology for documentation of this; for example, objective impact measures which show that whereas citation rates per document in UK cognitive/experimental and in developmental psychology are marginally below the USA average, those in UK social psychology are 46% higher than the US average – an exceptionally strong performance sustained over a 15 year period).

According to the sub-disciplinary report on UK Social Psychology, twelve per cent of UK psychology staff are social psychologists – roughly the same proportion as are developmental psychologists. However, there is only minimal social psychology presence in the UK’s most prestigious universities, and in other UK universities social psychologists feel they are a minority with little voice. This contrasts with the USA, where social psychology tends to be better distributed among and represented in most major universities.

Only a few UK psychology departments possess a critical mass of social psychologists. So the substantial research advantages of critical mass possessed by large USA social psychology groups, and by large groups in other areas of psychology in UK departments, are largely out of reach for UK social psychology. Because of the enormous

5 Dominic Abrams (2010), Sub-disciplinary Overview of Social Psychology
popularity of social psychology, and because (according to witnesses) social psychologists often do much of the methodology/statistics teaching in UK psychology departments, UK social psychologists feel that often they are hired primarily to teach; the Social Psychology sub-disciplinary report commented that one of the main threats to UK social psychology was “excessive pressure on social psychologists to shoulder disproportionate teaching burdens (as their research is regarded as being of lower status or value by their departments)”.

Approximately half of UK social psychologists conduct mainstream experimental/quantitative research whereas the other half (and this is relatively unique to the UK) conduct qualitative/critical/discourse analysis research. Some UK social psychologists have been relatively successful at integrating these two broad approaches. However, pure qualitative/critical/discourse analysis approaches are not a significant feature of social psychology’s major benchmark nations like the USA, Canada, Netherlands, Germany and Australia. UK social psychology’s international impact is almost exclusively attributable to its mainstream experimental/quantitative work.

The commissioned sub-disciplinary report also remarked that UK social psychologists feel that they have access only to ESRC funds whereas other branches of psychology have access to the much wider range of Research Councils (MRC, BBSRC, and EPSRC).

3.3.8 Work, Organisational and Occupational Psychology

This is an applied psychological sub-discipline focussing on humans at work and in organisations. Its theory and methodology, which is ultimately judged against scientific and practical criteria, draws on social psychology (e.g. for leadership, groups & organisation studies), differential psychology (e.g. for personnel selection), educational psychology (e.g. for personnel development, training), general psychology including cognition, motivation and emotion (e.g. for human factors, work motivation, well-being) and mathematical psychology/psychological methods (e.g. for individual diagnostics, work & organisational assessment, intervention evaluation). This sub-discipline has strong links with business and management sciences (e.g. organisational behaviour, human resource management, leadership studies) and it often draws on or collaborates with other disciplines, such as medicine and human biology (e.g. health & stress research), sociology (e.g. organisation studies), anthropology and culture studies (e.g. cross cultural leadership and teamwork), economics (e.g. decision-making in economic contexts), computer sciences and engineering (e.g. ergonomics, human computer interaction) - to name just a few, depending on the peculiarities of the applied domains studied.

In RAE/REF metric terms, UK research in this sub-discipline is “very healthy” and produces “a substantial amount of very high standard research” (RAE 2008, Business and Management Studies panel6), with several 4* papers, several programmatic grants won, and several researchers having earned an international reputation. Areas of particular current strength are health and safety, stress and well-being, human resources and productivity, and team based working such as in health care. Vibrant and ambitious agendas appear to be evidence-based management, innovative research methods (incl. qualitative, longitudinal and multi-level methods), occupational health, psychological contracts, decision-making, and the management of change.

As documented in Annex 1 of the commissioned report on this sub-discipline7 most influential UK research groups in the sub-discipline are now based in business schools or management departments rather than in psychology departments or in thematically dedicated institutes. This trend is much more marked in the UK than in other countries. It appears that the infrastructure given within psychology departments to the sub-discipline is in decline. Market forces such as RAE/REF, evaluation criteria based on ‘hard science impact’, higher salaries in business schools, and low degree of appreciation within psychology departments compared to high degree of appreciation in business schools (cf. also due to publishing in high impact management journals) drive relevant staff towards business schools and management departments.

7 Rob Briner (2010), Sub-disciplinary Overview of Organisational Psychology
The trend towards moving research groups in this sub-discipline into business schools not only moves such research away from basic psychological theory and research but also undermines the strong natural link between this sub-discipline and the sub-discipline of social psychology, which is to the disadvantage of both sub-disciplines.

In the UK, this sub-discipline relies on a mix of research-funding opportunities from public (e.g. Department of Health, Leverhulme, British Academy) and private (commercial) sources depending on the domain of focus and the income generated by host institutions (which tends to be higher in business schools). Research in this sub-discipline often falls in between the core criteria of funding for basic psychology related (it is too applied) and business related (it is too academic) funding schemes.

MSc students in this sub-discipline typically graduate with an industry or public sector position in mind. Many PhD students in the sub-discipline study part-time while simultaneously working in industry, which compromises or prolongs qualification as well as reducing opportunities for high impact publication. There are similar distracting effects from having part time jobs within academia (such as work involving teaching or research assistance) and from occasional consulting in industry. Such effects can ultimately drive PhD students away from academic activities towards work in industry, as can the higher salaries available in industry compared to academia. Supply of adequately trained Bachelor Degree-qualified Psychologists in the sub-discipline has been unproblematic in the past. Recently, however, modules in work, organisational or occupational psychology are no longer required by the British Psychological Society for Bachelor degrees, which from the sub-discipline’s perspective puts pressure on MSc level educators to catch up with what has been missed out in undergraduate teaching.

3.3.9 Other areas of Applied Psychology

Most or all of the other eight sub-disciplinary areas we consider here include research which is applied: clinical psychology and educational psychology are obvious examples. Nevertheless, within psychology applied psychology is also seen as a distinct sub-discipline, with its own proprietary journals. Smaller areas of psychology that we considered within applied psychology include health psychology, sport and exercise psychology, counselling psychology, environmental psychology, forensic psychology and traffic psychology. As can be seen from this list, applied psychology is a particularly diverse sub-discipline. More often than not applied psychologists are located outside psychology departments. Witnesses reported that applied psychologists who are located in psychology departments sometimes feel under-valued, when the subject is seen as unscientific, and as unlikely to contribute favourably to the RAE/REF.

Nevertheless, there are some parts of applied psychology where the UK is internationally strong. The most prominent of these is health psychology, where there is good UK representation on editorial boards of leading international journals; the 2008 RAE report said “In general there seems to have been an increase in the quality rather than the quantity of research in the area of health psychology since the 2001 assessment exercise”. UK behavioural change research is also strong (also strong in Australia, but less strong in the USA). The study of ethnicity and health is a potential growth area in which UK is well positioned to take a lead (provided funding and institutional support is available).

Sport and exercise psychology is only in its early stages in the UK, well behind USA and Australia; closer links with health psychology will benefit it.

UK health psychology people compare themselves less with the USA and more with NW Europe and Australia, and consider themselves doing well in comparison with this group. Forensic psychologists also identified their peers as being in Europe not the USA.

There is some good applied UK research in the field of psycho-neuro-immunology, but in the UK this field is currently too small to have critical mass, and yet is a growth area in the rest of the world. In UK forensic psychology there is at present too little work with a neuroscience or neuropsychology focus.

There is a general concern that in the UK it is difficult to attract and retain research faculty in the area of applied psychology because in some areas of this sub-discipline especially forensic psychology and applied clinical psychology professional careers are more lucrative than academic or research careers. Concerns were also expressed that new faculty in applied psychology are increasingly less well grounded and versed in core/basic psychological knowledge and methodology.

The UK applied psychologists who were interviewed believed that the British Psychological Society does a good public-relations job for UK applied psychology.

3.4 Research organisation in the University context
Psychology is an extremely popular university subject; document D4 reports that there has been steady growth in undergraduate and postgraduate enrolments over the period 2004-2008. Document D4 also provides data showing that the number of postgraduate students in psychology has risen sharply over the period 2002-2008, and now exceeds the number of postgraduate students in each of the disciplines of medicine, economics, education, biology, sociology and anthropology. This rise includes a 40% increase over the past four years in the number of full-time higher degree research students in psychology (from 2055 in 2004/05 to 2880 in 2008/09).

Figure 1: FPE full-time postgraduate students, 2002/03 – 2008/09, selected subjects

Source: Paul Wakeling (2010), Statistical Overview of UK Psychology, Figure 6.7; and HESA Student Record 2004/05 – 2008/09

9 Paul Wakeling (2010), Statistical Overview of UK Psychology; and HESA Student Record 2004/05 – 2008/09
As Figure 2 shows, doctorates awarded in psychology have also increased substantially (from under 800 in 2002/03 to almost 1000 in 2008/09); in contrast, the numbers of doctorates awarded in biology, education, economics, sociology or anthropology have not shown any increases over this period.

**Figure 2: Doctorates awarded in selected social science disciplines, 2002/03 -2008/09**

Source: Paul Wakeling (2010), Statistical Overview of UK Psychology, Figure 6.10; and HESA Student Record 2002/03 – 2008/09. Note: Biology excludes doctorates in botany, zoology, genetics, microbiology, molecular biology, biophysics and biochemistry.

A consequence of the popularity of psychology amongst undergraduate and postgraduate students is that the subject is taught in a very high proportion of British universities. Many of these institutions have only recently (i.e. since 1992) been accorded university status. On the whole, these post-1992 universities are not high research performers. This fact, combined with the attractiveness of psychology to students, inevitably means that, as far as research is concerned, although there are numerous high-performing psychology departments in the UK, there is a long tail of departments that perform less strongly in research. A number of these departments, however, are working to enhance their research portfolios.

Document D4 describes the current situation re research funding in UK psychology departments. Psychology received more quality-related funding council in 2010/2011 (£49.1 million) than social-science disciplines such as anthropology, economics, education and sociology, and indeed more than the discipline of preclinical and human biological sciences or the discipline of psychiatry, neuroscience and clinical psychology (see Figure 3). However, this funding is very unevenly distributed across psychology departments. For example, 25% of the funding went to just five of the 76 institutions which have a psychology presence, and 50% of such funding went to just 14 of these 76.

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10 Paul Wakeling (2010), Statistical Overview of UK Psychology; and Higher Education Funding Council (HEFCE), Scottish Funding Council (SFC), Higher Education Funding Council for Wales (HEFCW), Department for Employment And Learning in Northern Ireland (DELINI)
Psychology also receives substantial non-QR research income: over £334 million in the period 2004/05 to 2008/09 (see Figure 4). This income shows the same kind of skew: more than half of this sum was accounted for by just 10 of the 101 institutions which received non-QR research income.

**Figure 3: Quality-related funding council research income for selected disciplines by home nation, 2010/11**

**Figure 4: Sources of research income for Psychology and Behavioural Science 2004/05 – 2008/09 (£000s)**

Source: Paul Wakeling (2010) Statistical Overview of Psychology, Figure 3.2; and HEFCE, SFC, HEFCW, DELINI

Source: Paul Wakeling (2010) Statistical Overview of Psychology, Figure 3.6; and HESA Finance Record 2004/05 – 2008/09
Of course, research funding for UK universities and therefore UK psychology departments is currently in a state of flux, for at least four reasons. The first reason is that the REF, if it occurs, may have different consequences for the funding of research in Universities than the RAE scheme had. The second reason is the impact of the change from the dual-support system to the Full Economic Cost scheme. The third reason is that ESRC, alongside all other Research Councils, is currently considering measures to manage more effectively an increasing volume of research applications. The main reason for actively seeking to manage demand is to reduce the amount of wasted effort spent across the social science community in preparing and assessing applications at a time when success rates are low. The Council intends to announce its demand management strategy in Spring 2011. The fourth reason is a change in priorities decided upon this year by BBSRC which deprioritises research in some areas of human psychology currently funded by BBSRC.

So the current ways in which research is organised and funded in the university context may well be quite different in the near future. In the Panel’s interviews with the sub-disciplinary groups and with the Heads of Department, there was much unease expressed about these uncertainties.
4. RESEARCH CAPACITY ISSUES

4.1 Research training

The 11 PhD students that the Panel met were highly enthusiastic about carrying out research in psychology. They were somewhat apprehensive about obtaining post-PhD employment (but also not very well-informed about postdoctoral opportunities outside the UK).

The Panel felt that these apprehensions were well-justified, since there seems extremely limited funding in the UK for postdoctoral positions, as compared, for example, to the USA or Australia; Document D11 reports that in a sample of 73 psychology postdoctoral researchers only about a third were funded by one of the four Research Councils. It appears that there is a bottleneck at this level for research careers in the UK, and this particularly affects psychology, since that subject is a popular choice amongst PhD students – as noted in section 3.4, there has been a 40% increase over the last four years in the number of full-time higher degree research students in psychology and the number of Doctorates awarded in psychology have also increased substantially. In contrast, biology, education, economics, sociology and anthropology have not shown any such increases over this period.

The Panel was struck by the fact that only one of the 11 members of this group of PhD students was funded by a Research Council PhD studentship. In one of the meetings with senior researchers the UK group estimated that these days perhaps only 10% - 20% of psychology PhD students were funded by Research Council scholarships. In fact the 2008 RAE report stated that less than 20% of psychology PhD students were funded by OST/Research Councils, with just over 30% being funded by institutions themselves. The RAE report went on to add “It was noted in the 2001 subject overview report that psychology receives less support for studentships from OST/Research Councils than other areas of biological and medical science, and this is an ongoing concern. Given the needs of a growing and diverse discipline, it is important that we are able to keep replenishing the stock of researchers with the right skills, and we look to the Research Councils to play a stronger role here”. Document D11 reports a survey of the funding sources for a sample of 80 final-year psychology PhD students. Of these, 25% were funded by the ESRC and a further 16.4% funded by BBSRC, EPSRC or MRC (somewhat higher figures than those reported in the RAE psychology report). It would seem that the burden of funding PhD students in psychology rests substantially on Universities and Departments rather than the Research Councils. Hence there is here a second potential bottleneck as far as research training in psychology is concerned. The 2001 RAE Psychology Report also noted this, remarking that “the shortage of externally funded studentships in psychology makes it extremely difficult for the next generation of researchers to be trained – the onus is falling disparately on HE Funding Council or research overheads income, via institutional studentships, drawing resource away from other research infrastructure needs for the discipline”.

Amongst both PhD students, early career researchers and senior staff, there was much agreement that generic (that is, non-discipline-specific) research training courses for doctoral students were of very little value, because for any student only a very small part of any such generic course would be of relevance to the student’s current or future research. Even courses specific to psychology can be too broad. Postgraduate research training courses can be valuable but only if they can be sufficiently focused that they provide relevant and valuable training to each individual student.

Such courses can also be difficult to combine with a PhD that has to be finished in 3½ or 4 years. A PhD written in journal-article format (i.e. as a set of papers, without requiring that these be published or even submitted) will assist timely PhD completion and will also assist publication of PhD work. This thesis format has become popular in other countries but appears to be little-used in the UK.

11 Sarah Norgate & Jane Ginsborg (2006), A survey of postdoctoral researchers and final-year PhD students in psychology: Research funding, career needs and working conditions. A BPS commissioned report
These views were generally shared by the members of the Early Career Researchers group, except that the latter people were much more aware of the various possibilities for postdoctoral positions in countries outside the UK. They also felt that they were under intense pressure to apply for grants, being "encouraged" to submit two or more grant applications every year. This of course interfered with their research and hence their publication rates.

Early career researchers were also concerned about the paucity of postdoctoral opportunities in the UK, and how this disadvantaged them in seeking future faculty positions.

Another important point with reference to research training in psychology concerns transdisciplinary research, which is being more and more emphasised. To be effective, a transdisciplinary research team must include persons specifically trained in each of the basic disciplines involved. Several of the sub-disciplinary panels were worried about the supply of psychology researchers with such basic training, especially basic research training in cognitive psychology. This point came up frequently (e.g. in discussions with the applied psychology, clinical psychology and biological psychology sub-disciplinary groups).

4.2 Demographic profile of UK psychology (including supply of younger researchers and retention of senior staff)

In the discussions with the sub-disciplinary groups, many of those groups felt that there is currently a sufficient presence of younger, mid-career and senior researchers in UK psychology. This is confirmed by data reported in D4: that document commented that “The age profile of staff in the psychology cost centre is relatively young” (see Figure 5). There’s a clear exception here – educational psychology, where the proportion of young staff is very low – and potential difficulties in the future with clinical psychology and biological psychology, where there are suggestions of impending potential shortages at junior levels.

Figure 5: Age profile of FTE staff in selected disciplines, 2008/09

Source: Paul Wakeling (2010), Statistical Overview of UK Psychology, Figure 5.3; and HESA Staff Record 2008/09
However, if the pre-doctoral and postdoctoral bottlenecks mentioned above are not dealt with, the availability of UK-trained younger researchers will progressively decline across all areas of psychology. In discussions with senior staff and Heads of Departments, the Panel gained the impression that in recent years appointments in the UK to postdoctoral or junior academic positions have been going to non-UK trained psychologists to a considerable degree. This impression is supported by a comment on page 2 of document D4: “UK nationals form a large majority of staff in the psychology cost centre, but there is evidence of more international recruitment among younger staff”. It is also supported by data obtained from the HESA Staff Record 2008/2009 showing the age and nationality of academic staff in the psychology and behavioural science cost centre and presented in the Figure 6 below, which shows that the percentage of non-UK psychology staff steadily increases as age decreases.

Figure 6: Age and nationality of academic staff in the Psychology and Behavioural Science cost centre 2008/2009

Source: HESA Staff Record 2008/09

This could be a sign that there is already a shortage of young UK-trained psychologists; or it could be a sign that such UK-trained psychology personnel are not competitive with recent PhDs trained outside the UK and applying for positions within the UK. The International Panel had no data that allowed it to distinguish between these two possibilities. But we note the following comment from the 2008 RAE Psychology panel report: “there is a concern that in some sub-areas of the discipline, the high level of recruitment of staff from other countries is partly a result of insufficient numbers of appropriately skilled UK research students being trained”.

4.3 Provision of research infrastructure and resources

In the briefing documents and in the witness sessions, only two problems to do with research infrastructure provision and resources were raised (though both were raised a number of times). From this the Panel infers that, apart from these two problems, there are at present appropriate infrastructure provisions and resources for to support UK psychology research.

12 Paul Wakeling (2010), Statistical Overview of UK Psychology; and HESA Staff Record 2008/09.
The most serious problem here noted in 3.3 under the heading Biological Psychology. UK psychology has led the world in the study of animal learning and cognition, and also in some areas of biological psychology involving work with animals. Work in this area cannot be pursued unless departments of psychology have adequate animal-house facilities; but few UK psychology departments are now able to afford such facilities, and even where this kind of facility is present the cost often now requires that the facilities be consolidated across very disparate disciplines, with the result that the facilities are not always designed optimally for research on psychological topics. An animal house designed to hold birds may be quite unsuitable for housing rodents, let alone primates. Witnesses reported examples where animal houses designed for use by multiple disciplines lacked separate observation rooms, making some research in biological psychology impossible. The Research Councils may take the view that consolidation is good for animal facilities as it improves efficiency, quality and welfare; but the biological psychology witnesses did not believe that such consolidation across very different disciplines was working well in practice, a view also expressed in the sub-disciplinary report on this area. And the Summary of Departmental Submissions document D10 included the observation that “Home Office regulations, together with full economic costing, have led to a reduction in animal research, an area where the UK was traditionally strong”.

Concern was also expressed by some witnesses about funding for the establishment and maintenance of neuroimaging equipment, the worry being that, since the resources of the Research Councils and Universities are so constrained and the costs of supporting neuroimaging research so high, there was the risk that support for other forms of research in psychology could be compromised. This concern echoes a statement made in the RAE 2008 UOA44 subject overview report: “in several cases the benefits from investment in fMRI scanners and other related advanced technology are still to be realised, with relatively few users of, and publications arising from, use of the facilities. It will be a significant question in the coming years whether all the Universities who have moved in this direction can achieve the research income and technical expertise necessary to sustain it.” Similarly, the sub-disciplinary report on Social Psychology commissioned by the ESRC referred to “a vortext effect of social neuroscience research which has little to do with social processes but absorbs a high proportion of available resources and funding”. The Panel members unanimously shared these concerns about the potential detrimental financial impacts of neuroimaging funding on funding for the rest of psychological research. The Panel endorsed the following view (originating from the German psychologist Fritz Stack) about the relationship between neuroimaging and psychology: “Without psychology, neuroimaging remains the study of neuronal phenomena; without neuroimaging, Psychology still remains the study of human behaviour and cognition”. Greater collaboration between universities over the provision and support of scientific facilities, as recommended by the review of Financial Sustainability and Efficiency in FEC of Research in UK HEIs (chaired by Sir William Wakeham and published in June 2010), might be needed if this problem is to be resolved.

4.4 Research funding issues

Several groups interviewed by the Panel, and several of the sub-disciplinary reviews, expressed concerns about psychology’s access to funding from the various Research Councils. Three types of concern were expressed.

The first was that some sub-disciplines of psychology – social psychology, for example – could seek funding from only one Council (ESRC) whereas other sub-disciplines had access to a wider range of research councils; and there was a general belief that BBSRC does not fund research with human subjects.

13 Dominic Abrams (2010), Sub-disciplinary Overview of Social Psychology
The second concern was that some sub-disciplines of psychology “fall between the cracks” re the existing Research Councils – for example, “cognition” is listed as appropriate on the MRC’s website as appropriate to its Neurosciences and Mental Health Board, but presumably the ESRC would also see itself as an appropriate funder of research in cognition? This concern echoes a possibility expressed in the RAE 2008 UOA44 report: “Psychology has not benefited as much as some disciplines from funding for larger centres or units, or larger themed programmes, possibly because psychology tends to fall at the boundaries of each of the [Research] Councils’ remits . . .”. Exactly this issue was voiced in Briefing Document D4: “As psychology spans these conventional categories however, there is a danger that, as Mills et al note in their Demographic Review of the Social Sciences\textsuperscript{14}, the discipline ‘falls between two stools’. In fact when it comes to Research Council funding, we might say that it risks falling between \textit{four} stools, as research with a psychological aspect is funded by ESRC, MRC, BBSRC and EPSRC.” And again: Document D11, a survey of doctoral and postdoctoral researchers commissioned by the BPS, observed (p. 19) that “the very adaptiveness of psychology as a discipline may also increase the tendency for it to fall between the funding priorities of different Research Councils”.

The third concern was that that witnesses had the impression that the MRC now focuses on research that promises to yield high social and economic benefits – “translational research” – and that such an emphasis might compromise the more pure-science applications.

Investigations by the Panel suggested that these three putative difficulties were not serious ones. Document D4\textsuperscript{15} is directly relevant here. It provides data suggesting that all four Councils do provide substantial support for psychology, and concludes (p.2) that: “The ESRC funds active research projects in psychology totalling £43.6 million\textsuperscript{16}. Psychology was responsible for the highest numbers of both applications and funded projects. The MRC supports research directly relating to psychology amounting to £46.3 million, in addition the MRC supports further research related to psychology amounting to £36.9 million.\textsuperscript{17} BBSRC adds another £28.3 million (although differences in funding classifications between Research Councils makes comparing funding levels between Councils problematic). There are also some psychological projects funded by EPSRC.” Appendices 1-4 of Document D4 would be of use here. It lists full details of current ESRC-funded, BBSRC-funded, MRC-projects and EPSRC-funded projects in psychology. If one classified these projects in terms of the nine sub-discipline areas, our guess is that this would show that all nine sub-disciplines of psychology are receiving funding from at least one Research Council, and perhaps most of these sub-disciplines are receiving funding from more than one Council. Briefing Document D5 “Submissions from Research Councils” also contains data showing that each Council funds a number of the psychology sub-disciplines.\textsuperscript{19}

\textsuperscript{14} David Mills et al (2006), Demographic Review of UK Social Sciences

\textsuperscript{15} Paul Wakeling (2010), Statistical Overview of UK Psychology; and Research Councils (BBSRC, EPSRC, ESRC, MRC)

\textsuperscript{16} Research classed as psychology by applicant. Figure refers to research grants live during April 2010.

\textsuperscript{17} Research grants and fellowships were identified as “psychology” or “psychology-related” using HRCS coding for Mental Health, Neurology, Generic Health Research and Other categories, followed by subjective assessment against the 2008 RAE definition for psychology. The figure represents the whole life value of the MRC grant as at 01 April 2010. Figure refers to grants live during April 2010. As such, this figure is representative of MRC funding rather than absolute.

\textsuperscript{18} Research grants with ‘psychology’ in project title or abstract, or held within a psychology department. Figure refers to grants live during April 2010.

\textsuperscript{19} Available online in Paul Wakeling’s Statistical Overview of UK Psychology at \url{http://www.esrc.ac.uk}
Other research funding issues mentioned at various points elsewhere in this Report include:

- Funding for PhD places in psychology is very limited, with few studentships being provided by the Research Councils.

- Funding for junior postdoctoral researchers in psychology appears to be extremely limited.

- There seems to be a serious threat to the future of UK research in animal behaviour and animal cognition because of the high cost of animal houses.

- It is possible that the distribution of research funds for psychology is being distorted by the high costs of neuroimaging research.
5. RESEARCH IMPACT

5.1 Dissemination practices
The bibliometric survey commissioned from Thomson Reuters indicates an extremely good publication and citation record by UK psychologists. UK psychology papers are cited at a rate 23% above world average, putting UK psychology well ahead of other UK social sciences such as economics or sociology and consistently placing UK psychology in the top three compared to psychology in other countries. Hence there is evidence of very effective dissemination of UK psychology research to the worldwide psychology research community.

The Panel’s view is that the British Psychological Society does an excellent job of disseminating the results of research in psychology to the non-scientific community. Practitioner psychologists are reached via the Society’s general periodical, The Psychologist, and the Society’s media office keeps the results of psychological research very much in the attention of the general public. Also important here are the Research Councils’ public engagement programmes, when they deal with psychology.

Dissemination practices with respect to making the results of UK psychology research known to policymakers and practitioners have also been very effective, evidence of this being the fact that many examples of the use of these results in policy-making and practice can be cited: see section 5.2.

Document D9\(^{20}\), surveying the policy and practice impact of ESRC grants and fellowships in 2007, commented: “Policy-making users cited by award holders include: the Home Office, Downing Street, Department for Education and Skills, Department of Environment and Transport and the Regions, Department of Health, the Scottish Executive, the Welsh Assembly, European Commission, Organisation for Economic Co-operation and Development, local health authorities and local education authorities. Practitioners cited include: educators, speech and language therapists, social workers, child welfare practitioners, special needs coordinators, employment recruiters, police officers, nurses and clinicians. Researchers also cited representative or lobbying groups as benefiting from their research, including the False Memory Society, Afasic, the UK Addicts Forum and the British Dyslexia Society”.

5.2 Use and value of psychology research to policymakers and practitioners
There are many examples that could be offered; a far from exhaustive list follows.

- The aim of the Foresight Programme [www.foresight.gov.uk](http://www.foresight.gov.uk) is to improve how the UK government uses scientific and technological information in policy formulation. There have been a number of contributions from biological psychologists to the Foresight Programme: for example, position papers on Cognitive Enhancers, on Ethical aspects of developments in Neuroscience and Addiction, on Experimental Psychology and research into brain science and drugs, and on Neuroscience of Drugs and Addiction.

- There have been critical contributions from clinical psychologists to the work of the UK Government’s National Treatment Agency – for example, the provision of psychotherapy for long-term prisoners – and to the work of the charity known as [beat](http://www.beat.org.uk) which provides help for people with eating disorders.

- The report by People Science & Policy commissioned for the benchmarking review concluded: “The evidence presented through this study suggests that there is a set of expert non-academic users of psychology who rely on academic psychology research to fulfill their professional roles. They are found in a wide range of organisations, occupying clinical, research and managerial roles.”

\(^{19}\) Available online in Paul Wakeling’s Statistical Overview of UK Psychology at [http://www.esrc.ac.uk](http://www.esrc.ac.uk)

\(^{20}\) Technology Development Group (2007), Policy and practice impact case study of ESRC grants and fellowships in psychology
The integrated experimental/clinical research characteristic of British clinical psychology has had very important societal pay offs in the form of evidence based treatment manuals and guidelines. Based on critical analysis of the literature, the UK National Institute for Health and Clinical Excellence (NICE) recommends the use of such guidelines in the treatment of e.g. anxiety disorders, including Post Traumatic Stress Disorder and Obsessive Compulsive Disorder, depression, borderline personality disorder, schizophrenia, and dementia. Considering the cost-effectiveness of evidence based psychological treatments, the Treasury funded a nation wide large scale programme “increased Access to Psychological Therapies” (IAPT) that includes the most prevalent disorders in mental health care: anxiety disorders and depression.

Cognitive behavioural therapies that were developed in the UK are being trained and recommended by clinical agencies in a wide range of other countries including Australia, the USA and various European countries on the continent.

Clinical and cognitive psychology research is widely used in industrial settings (e.g. pharmaceutical industry), education (e.g. remedial teaching) and in the legal profession.

Research by UK cognitive psychologists on face recognition and face memory has led to new and more effective police practices for person identification from photographs or line-ups.

The BPS Report from the Research Board: Guidelines on Memory and the Law: Recommendations from the Scientific Study of Human Memory - Revised April 2010 is a document which uses what’s known about the cognitive psychology of memory to demonstrate what can go wrong with eyewitness testimony procedures in the courtroom if these are improperly used, and how to improve the reliability of such procedures.

Developmental psychology promotes evidence-based research conducted with scientific rigour to study complex problems. Effective treatments for dyslexia, autism and family dysfunctioning, and the evaluation of Sure Start are just samples of tough societal problems that UK developmental psychologists has tackled. It is notable that developmental psychology was featured in four of the six case studies selected by the Policy and Practice Impact Case Report commissioned by ESRC.

The reports on dyslexia and on the National Curriculum which the UK Government commissioned Sir Jim Rose to compile relied extensively on consultations with UK educational psychologists.

The sub-discipline report on Social Psychology documents numerous contributions by UK social psychologists to the development of Government policy in such areas as Equality, Social Inclusion and Intergroup Relations. These include work in the Cabinet Office, contributions to Equality via research in ESRC’s Future of Work Programme and Research Strategist work at the DTI Women and Equality Unit and the development of the national Age Attitudes surveys for Age UK, the European Social Survey, and the ONS Ombinbus, together with substantial reports to DWP (also highlighted by the Academy of Social Science/ESRC publication on Making the Case for the Social Sciences).

There has been a 10-year collaboration the Centre for Socio-Technical Systems Design (CSTSD, 2010) at Leeds University and Rolls Royce plc, where ideas around socio-technical thinking have been incorporated into a number of projects.

A large systematic review of the evidence linking job conditions to psychological health and organisational outcomes was completed and this review and the summaries of available evidence led to the development of HSE’s Management Standards for Stress (HSE Standards, 2010).
The UK Government often consults applied psychology researchers, and the sub-discipline report on Applied Psychology lists examples and results of such consultations, including:


- Since 1989 the Department of Transport (under its various names) has funded an annual three-day Behavioural Research in Road Safety Seminar where some two to three dozen applied-psychology researchers from UK universities, plus psychologists from TRL Ltd (was Transport Research Laboratory) and European guests have convened and given presentations on their recent research to officials from DfT Road Safety Division. This close relationship has had influence both on UK road safety policy and on future research directions.

The record of interaction between UK psychological science and users of that science (policymakers and practitioners) is highly satisfactory. The Panel’s view is that the evidence is clear that UK psychology is highly competitive internationally with respect to such interaction.
6.1 Conclusions

UK psychology research when compared with the world’s best psychology research is very strong: overall, second only to the USA and in many areas clearly the best in the world. This verdict is supported not only by expert opinion but also by the results of various bibliometric analyses. There are no major research areas within psychology in which the UK is not internationally competitive, and UK psychology is also up-to-date in that emerging important new research topics in the discipline are being actively pursued in the UK. There is also very good dissemination of UK psychology research findings to policymakers and practitioners in all the major areas of psychology.

But it is far from certain that this success story will continue, as there now exist a number of threats to the current very satisfactory state of affairs. There are nine clear threats to the continuing strong international competitiveness of UK psychology. These are:

(i) Many believe that doctoral training in UK psychology is too narrow compared to other countries where psychology is strong.

(ii) Funding for PhD places in psychology is very limited, with few studentships being provided by the Research Councils.

(iii) In some areas of psychology, PhD students may not be sufficiently well-trained in advanced statistical techniques.

(iv) Funding for junior postdoctoral researchers in psychology appears to be extremely limited.

(v) There is evidence of an increasing trend for junior academic and postdoctoral positions in psychology in the UK to be awarded to non-UK-trained applicants.

(vi) Interdisciplinary research is valuable, but is at risk unless there is adequate research training in the basic disciplines.

(vii) The high cost of animal housing threatens the future of two of the strongest fields in UK psychology: the study of animal behaviour and cognition, and biological-psychology work using animals.

(viii) It is possible that the distribution of research funds for psychology is being distorted by the high costs of neuroimaging research.

(ix) Educational psychology in the UK is not well-linked to its parent discipline (psychology), and so does not sufficiently exploit other sub-areas of psychology that are relevant to educational research (cognitive psychology, developmental psychology). The same is true for occupational psychology.

Our recommendations, therefore, are not about what strategies might be employed to strengthen UK research in psychology in areas where the research needs strengthening because it is not internationally competitive. Our recommendations are instead about strategies for ensuring that the status quo for UK psychology research can be maintained in the future in the face of these threats.

These recommendations need to be considered within the context that UK research funding practices are currently in a state of flux and may change considerably in the near future, because the REF, if it occurs, may have different consequences for the funding of research in Universities than the RAE scheme had, because of the ongoing transition from the dual-support system to the Full Economic Cost scheme and because of the prospect of the Research Councils imposing limits of some kind on the grant application procedures, such as researcher sanctions, institutional sanctions, or institutional quotas.
6.2 Recommendations

RECOMMENDATION 1: Initiatives should be established to increase research co-operation of (a) educational psychology with cognitive psychology and developmental psychology and (b) occupational psychology with cognitive psychology. Cognitive psychology and developmental psychology are both very strong in the UK, and are also both relevant to educational research; yet in the UK there is not much collaboration between educational psychology and these other two cognate disciplines. The quality of research in educational psychology in the UK would be greatly improved by such collaboration; so steps should be taken to bring this about. This could be achieved if the ESRC and the BPS were to arrange a meeting with representatives of the cognitive psychology, developmental psychology and educational psychology sections of the Society, with the aim of promoting such collaboration. This might help raise the international profile of UK research in educational psychology. A similar meeting involving the cognitive-psychology and occupational-psychology sections of the BPS with the aim of fostering collaborations between these two sub-disciplines might help to raise the international profile of UK research in occupational psychology.

RECOMMENDATION 2: Steps need to be taken to establish whether the international competitiveness of UK psychology research involving nonhuman animals is under threat because of difficulties with establishing and funding animal houses. Data are needed here e.g. on how many psychology departments currently have access to animal houses for research versus how many did a decade ago (anecdotal evidence suggests that this number has declined considerably). A meeting between senior researchers doing animal work in psychology and representatives of the Research Councils is also needed, at which these researchers could express their concerns about current and future arrangements about animal houses that support research in psychology. If serious concerns are in fact identified, discussion is needed concerning whether the problem might be dealt with adequately by greater collaboration between universities re infrastructure provision along lines recommended by the Wakeham review (2010). It is important to note here that animal houses designed to support animal research across many disciplines run a severe risk of being designed inappropriately for the needs of specific disciplines.

RECOMMENDATION 3: Data on the proportion of psychology funding that has gone to the funding of brain imaging research should be collected and analysed. Data on the proportion of psychology funding from the various Research Councils and Universities that has gone to support research in neuroimaging annually over the past decade should be collected and analysed, so as to provide a picture re the impact on psychology research support of this very expensive form of research. Is this funding impact as great as many UK psychology researchers believe? If so, is this what the Universities and Research Councils, as a matter of targeted research-funding policy, want to be the case?

RECOMMENDATION 4: Past and current funding provisions for full-time PhD students in psychology should be surveyed. There needs to be a review of funding provisions for PhD students in psychology which compares how this currently happens in the UK with how it happens in Australia (where there are schemes of Federally-funded doctoral fellowships that are much more extensive than is the case in the UK), the USA, Canada, Germany and The Netherlands. How has the proportion of full-time PhD students in psychology funded by the Research Councils changed over the past decade?

RECOMMENDATION 5: Discipline-appropriate postgraduate research training courses for psychology PhD students should be established. Postgraduate research training courses for psychology PhD students will enhance the research training of such students and make it less narrow, but only if:

- Such courses are directed specifically at the discipline of psychology (e.g. “Advanced statistical techniques for psychology”) rather than being generic (e.g. “Advanced research techniques”), and
- Any requirement to attend such courses does not conflict with the requirement that students must submit their theses in a fixed and short period of candidature. Using brief intensive summer-school formats for such courses might help address this problem.
Heads of Psychology Departments could be surveyed asking them to name specific research skills which such are lacking at the doctoral level and could be the subject of such training courses.

**RECOMMENDATION 6:** Consideration should be given to establishing a second format for PhD theses in psychology: the journal-article format. Consideration needs to be given to making it possible for psychology PhD students to submit their theses in the form of a set of papers (which are not required to have been published, though they may have been, or even required to have been submitted, though they may have been; they just need to be in the format of submittable journal articles). Amongst the many reasons why this would be beneficial to UK Psychology are:

- It would increase the likelihood of PhD students actually publishing prior to graduation (making them more competitive for post-PhD positions).
- It would provide them with on-the-job training in how to write a journal article. Writing a PhD thesis in traditional format does not do this; it is a skill which the student will never need to use again.
- It would free up more time during the PhD candidature for students to engage in activities not specific to their theses: attending postgraduate research training courses, for example, or visiting other labs.

This would make UK research training in psychology less narrow than it currently is. Here cognisance would need to be taken of outcomes of any actions taken in relation to Recommendation 8 concerning whether UK-trained PhDs are under-represented in recent appointment of junior postdoctoral researchers to positions in UK psychology departments.

A Working Party involving representatives from the BPS, EPS and UK Heads of Psychology Departments should be established to work on this proposal re the format of psychology PhD theses.

**RECOMMENDATION 7:** A survey documenting the availability and funding sources of junior postdoctoral fellowships in psychology should be conducted. There needs to be a review of the funding of junior postdoctoral fellowships in psychology which compares how this currently happens in the UK with how it happens in Australia (where the Research Councils fund extensive schemes of applicant-based postdoctoral fellowships), the USA, Canada, Germany and The Netherlands.

**RECOMMENDATION 8:** Data comparing rates of appointment of UK-trained and non-UK-trained appointees to junior research positions in psychology need to be collected. It needs to be definitively determined whether junior research positions in psychology are more and more going to people who were trained outside the UK: and, if this is so (as it seems to be), it needs to be definitively determined whether this is because people trained outside the UK are more competitive for such positions or because there is a shortage of UK-trained junior psychology researchers. Either alternative has policy implications. So an appropriate survey designed to determine which alternative is the case (perhaps both are) needs to be carried out.

Also valuable in relation to this issue would be the collection of data tracking the immediate postdoctoral career paths of UK students graduating with PhDs in psychology.
ANNEX A: Departmental submissions to the benchmarking review

All UK Heads of Psychology Departments were invited to make a submission to the review using the following headings:

- UK Psychology in an International Context – your impressions of the strengths and weaknesses of the UK psychology research area set within an international context;

- Health of the Discipline – your views of the health of the discipline, including training and capacity issues;

- Future challenges for the Discipline – your thoughts on issues that need to be addressed (both within your own institution and nationally) to ensure UK psychology continues to grow and develop;

- Other Issues – any other issues that you would like the Panel to be aware of.

Out of the 127 institutions invited, submissions were received from:

- Birkbeck College, University of London
- British Academy
- University of Cambridge
- Cardiff University
- University of Derby
- University of East Anglia
- University of Gloucestershire
- Keele University
- University of Kent
- Loughborough University
- Manchester Metropolitan University
- Northumbria University
- University of Nottingham
- Open University
- Oxford Brookes University
- University of Portsmouth
- University of Sheffield
- University of Stirling
- Swansea University
- University College London, University of London
- University of Warwick
## ANNEX B: Panel Visit Schedule Monday 04 October to Friday 08 October 2010

### Monday 04 October 2010

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
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</thead>
<tbody>
<tr>
<td>10.00 to 11.15</td>
<td>Initial Panel Meeting – Key conclusions of data gathered to date</td>
</tr>
<tr>
<td>11.15 to 11.30</td>
<td>Coffee</td>
</tr>
<tr>
<td>11.30 to 12.45</td>
<td>Panel Meeting – Finalisation of questions and issues to be addressed during the week</td>
</tr>
<tr>
<td>12.45 to 13.30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13.30 to 16.45</td>
<td>Heads of Department meeting</td>
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<tr>
<td>19.30 to 21.00</td>
<td>Dinner</td>
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### Tuesday 05 October 2010

<table>
<thead>
<tr>
<th>Time</th>
<th>Sub Panel 1</th>
<th>Sub-Panel 2</th>
<th>Sub-Panel 3</th>
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<tbody>
<tr>
<td>9.30 to 13.00</td>
<td>Sub-disciplinary meeting (Applied Psychology)</td>
<td>Sub-disciplinary meeting (Biological Psychology)</td>
<td>Sub-disciplinary meeting (Developmental Psychology)</td>
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<tr>
<td>13.00 to 13.45</td>
<td>Lunch</td>
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<tr>
<td>13.45 to 17.15</td>
<td>Sub-disciplinary meeting (Educational Psychology)</td>
<td>Sub-disciplinary meeting (Clinical Psychology)</td>
<td>Sub-disciplinary meeting (Organisational Psychology)</td>
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<tr>
<td>17.30 to 18.00</td>
<td>Summary of discussions to date</td>
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<tr>
<td>19.30 to 21.00</td>
<td>Dinner</td>
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### Wednesday 06 October 2010

<table>
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<tr>
<th>Time</th>
<th>Sub Panel 1</th>
<th>Sub-Panel 2</th>
<th>Sub-Panel 3</th>
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<tbody>
<tr>
<td>9.30 to 13.00</td>
<td>Sub-disciplinary meeting (Social Psychology)</td>
<td>Sub-disciplinary meeting (Cognition and Perception)</td>
<td>Sub-disciplinary meeting (Mathematical Psychology)</td>
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<tr>
<td>13.00 to 13.45</td>
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### Sub-Panel A

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<tr>
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<tr>
<td>14.00 to 16.00</td>
<td>PhD Student meeting</td>
</tr>
<tr>
<td>16.00 to 16.15</td>
<td>Coffee</td>
</tr>
<tr>
<td>16.15 to 17.00</td>
<td>Summary of discussion to date</td>
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<td>19.30 to 21.00</td>
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### Sub-Panel B

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<tr>
<th>Time</th>
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<tr>
<td>14.00 to 16.00</td>
<td>Early Career Researchers meeting</td>
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<tr>
<td>16.00 to 16.15</td>
<td>Coffee</td>
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<tr>
<td>16.15 to 17.00</td>
<td>Summary of discussion to date</td>
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<td>Dinner</td>
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### Thursday 07 October 2010

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<tr>
<th>Time</th>
<th>Sub-Panel A</th>
<th>Sub-Panel B</th>
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<tbody>
<tr>
<td>9.30 to 13.00</td>
<td>Users Event (applied use of research)</td>
<td>Users Event (experts outside of universities)</td>
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<tr>
<td>13.15 to 14.00</td>
<td>Lunch</td>
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<tr>
<td>14.00 to 16.30</td>
<td>Panel discussion to agree the key report conclusions and headlines</td>
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<td>19.30 to 21.00</td>
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### Friday 08 October 2010

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<td>9.30 to 11.00</td>
<td>Panel discussion to agree the key report conclusions and headlines</td>
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<tr>
<td>11.00 to 13.00</td>
<td>Closing Session with Steering Group and key stakeholders to discuss Panel’s initial conclusions</td>
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<tr>
<td>13.00 to 14.00</td>
<td>Lunch</td>
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<tr>
<td>14.00</td>
<td>Panel departs</td>
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### Panel Groups for Witness Meetings

**Sub-disciplinary Meetings**

**Sub-Panel 1 – Applied, Educational and Social Psychology**
- Professor Morton Ann Gernsbacher (*Applied Psychology Chair and Educational Psychology Chair*)
- Professor Michael Hogg (*Social Psychology Chair*)

**Sub Panel 2 – Biological, Clinical and Cognition and Perception Psychology**
- Professor Marcel van den Hout (*Clinical Psychology Chair*)
- Professor Max Coltheart (*Cognition and Perception Chair*)
- Professor Mark Bouton (*Biological Psychology Chair*)

**Sub-Panel 3 – Developmental, Organisational and Mathematical Psychology**
- Professor Felix Brodbeck (*Organisational Psychology Chair and Mathematical Psychology Chair*)
- Professor Rachel Keen (*Developmental Psychology Chair*)

**Other Meetings**

**Sub-Panel A – PhD Students and applied use of research**
- Professor Marcel van den Hout (*PhD Students Session Chair*)
- Professor Max Coltheart
- Professor Mark Bouton (*Applied Use of Research Session Chair*)

**Sub-Panel B – Early Career Researchers and non-university based psychology researchers**
- Professor Morton Ann Gernsbacher
- Professor Michael Hogg (*Non-University Based Researcher Session Chair*)
- Professor Felix Brodbeck
- Professor Rachel Keen (*Early Career Researchers Session Chair*)
## ANNEX C: Review Steering Group

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
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<tbody>
<tr>
<td>Professor Anne Anderson</td>
<td>University of Dundee</td>
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<tr>
<td>Professor Gavin Bremner</td>
<td>Lancaster University</td>
</tr>
<tr>
<td>Professor Verity Brown</td>
<td>University of St Andrews, Chair of Association of Heads of Psychology Departments (AHPD)</td>
</tr>
<tr>
<td>Professor Vicki Bruce</td>
<td>Newcastle University, President of the Experimental Psychology Society (EPS)</td>
</tr>
<tr>
<td>Mr David Carew</td>
<td>Department for Work and Pensions</td>
</tr>
<tr>
<td>Professor Richard Crisp</td>
<td>University of Kent</td>
</tr>
<tr>
<td>Professor Judi Ellis (Chair)</td>
<td>University of Reading; Chair of the Research Board, British Psychological Society (BPS)</td>
</tr>
<tr>
<td>Professor Eric Farmer</td>
<td>Qinetiq</td>
</tr>
<tr>
<td>Professor Sue Gathercole</td>
<td>University of York</td>
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<tr>
<td>Professor Glyn Humphreys</td>
<td>University of Birmingham</td>
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<tr>
<td>Professor David Nutt</td>
<td>Imperial College London</td>
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<tr>
<td>Professor John Pearce</td>
<td>Cardiff University</td>
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<tr>
<td>Professor Graham Towl</td>
<td>Durham University</td>
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</table>
The Review Steering Group would like to thank the members of the International Panel for all the hard work that has gone into the review, and for producing such a thorough and high quality report.

The Steering Group is conscious that the review has been conducted at a time of enormous change in the research funding environment, including uncertainty regarding the final shape of the Research Excellence Framework and concern about future support for research and teaching following the Government's Comprehensive Spending Review. This is a worrying time for researchers in the psychology discipline (and of course beyond).

Nevertheless, the Group is very encouraged by the International Panel's conclusion that the quality of UK psychology is in the main second only to the US, and in many areas is unsurpassed anywhere in the world. Indeed, the detailed analysis of the key psychology sub-disciplines emphasise (with only a few exceptions) that this research excellence cuts right across the breadth of the discipline.

The Steering Group also wishes to reiterate the International Panels' observation that “pure qualitative/critical/discursive analysis approaches are not a significant feature of...[the] benchmark nations” (p. 15). Nevertheless, as highlighted in the peer review evidence detailed the Sub-disciplinary Review of Social Psychology, by Professor Dominic Abrams, for the International Panel, it wishes to draw attention to the significant contributions and impact of qualitative social psychology research both nationally and internationally. “Discursive and qualitative social psychology are unique strengths in the UK” (Abrams, p.3, 2010). Moreover, as also outlined in Professor Abrams’ Review, the Group acknowledges the broader contributions of qualitative social psychology to the other UK social sciences (such as linguistics and gender studies), not just UK psychology.

A further point the Group wishes to make is that the concerns reported by the International Panel regarding the high cost of establishing and maintaining neuroimaging equipment (and the associated potential detrimental impact of funding for the rest of psychology research) may not be shared by all psychologists.

The International Panel's recommendations are both timely and relevant in their focus and will be very helpful in ensuring that UK psychology remains in good health in the coming years. The ESRC and learned societies will now work together to consider the Panel's recommendations and will publish an action plan later this year, in consultation with the other funders of UK psychology. This will set out in more detail how the Panel’s suggestions will be taken forward.
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The British Psychological Society is the representative body for psychology and psychologists in the UK. It was formed in 1901 and has more than 45,000 members. Through its Royal Charter, the Society is charged with overseeing psychology and psychologists. It has responsibility for the development, promotion and application of pure and applied psychology for the public good.

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The Association of Heads of Psychology Departments (AHPD) is a forum for Heads of psychology departments in UK Higher Education Institutions, to discuss and initiate action on issues of common interest, particularly those affecting teaching, research and management. The aim of the association is to support Heads in their leadership roles, to enhance the standing of the discipline of psychology.

Website: http://www.psrc.leeds.ac.uk/ahpd/

The Experimental Psychology Society (EPS) was founded in 1946. Its role is to facilitate research in experimental psychology, and scientific communication among experimental psychologists and those working in cognate fields.

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