

<b>Institution: University of St Andrews</b>	
<b>Unit of Assessment: A4 – Psychology, Psychiatry and Neuroscience</b>	
<p><b>a. Context</b></p> <p>The beneficiaries and users of our research include the <b>pharmaceutical industry, NHS and dementia care practitioners, national and international police services, educators</b> and the <b>general public</b>. The School's approach has been successful in promoting impact across our four research domains: <i>Developmental and Cellular Neuroscience; Perception, Cognition and Action; Social and Group Processes; and Origins of Mind</i>. For example, several <b>pharmaceutical companies</b> and <b>medical charities</b> have benefitted from our research into neurodegeneration and cognitive deficits; our cognitive psychologists advise <b>Scottish Government groups</b> on how to provide care for adults with learning disabilities; <b>UK and European police forces</b> and the <b>US Justice Department</b> have consulted our social psychologists on new policies and training programmes; <b>NHS and local council health educators</b> use our perception research to illustrate the appearance benefits of healthy living; and our <i>Living Links to Human Evolution</i> research centre at Edinburgh zoo showcases <b>research-led public engagement with science</b>.</p>	
<p><b>b. Approach to impact</b></p> <p>Our approach to achieving impact consists of <b>early, mid- and late phase engagement</b> with users, comprising of both <b>research-led activities</b> that reach out to user audiences and <b>demand-driven activities</b>, where users and beneficiaries seek out our research expertise.</p> <p><b>i) Early phase: engagement with users and beneficiaries</b> By communicating with potential users and beneficiaries during the early stages of research, we have engaged with issues where research might have impact, ensured that user groups are involved in the development of projects, and gained inspiration for research from user audiences. This early phase has been facilitated by: <b>a) research fellowships and funding</b> that has brought our researchers into direct contact with user groups (e.g., <i>Royal Society Industry Fellowship, 2007-12; EPSRC pathways to impact funding, 2011</i>); <b>b) membership of boards and bodies of user groups</b> (e.g., members of <i>Scottish Institute of Policing Research, 2009-13; European Policing College, 2009-13; Alzheimer's Research UK, 2004-13; Scientific Director, Budongo Conservation Field Station, 2005-13</i>); <b>c) attendance at workshops and events</b> that bring together researchers and potential users (e.g., networking events for people with dementia and their carers, 2010; workshop for people with age-related macular degeneration, clinicians and technologists, 2013); and <b>d) talks given to users and beneficiaries</b> (e.g., <i>British Association for Oral &amp; Maxillofacial Surgeons conference, 2012; Royal Photographic Society meeting, 2011; Parkinson's Scotland, 2009</i>).</p> <p><b>ii) Mid-phase: collaborative activities and projects</b> We have engaged in collaborative activities and projects that exploit the potential for impact. More specifically, <b>a) we have conducted research in collaboration with users and beneficiaries</b> that is driven by perceived user needs, and <b>b) this research has frequently been financially supported by user groups</b>. For example, Brown received 6 CASE PhD studentships for collaborative research with <i>several pharmaceutical companies</i> (Lundbeck, Schering-Plough, Organon, Merck, TPP Global) to test drugs with potential cognitive enhancement properties (1999 onwards); Perrett's research on visual cues of health in faces has received long-term project research support and 4 CASE PhD studentships from <i>Unilever</i> (1993-2011); Doherty received fellowships from the <i>Age Research UK</i> (2003-08) and <i>Alzheimer's Society</i> (2008-13) to conduct research on the cellular and molecular ageing processes; Astell received funding from the <i>Technology Strategy Board</i> to collaborate with older people and health care staff in developing assisted living technology (2011-13); Miles received PhD studentship funding from the <i>Motor Neuron Disease Association</i> for research on stem cell models of the disease (2013); Miles is developing human sensory neurons for use in pain research</p>	

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via an NC3Rs CRACK-IT consortium (2013); Reicher and Blackwood's research on airport security received repeated funding from the *Scottish Institute of Policing Research* (2008-12).

**iii) Late phase: implementation and outcomes** This phase involves implementation of research into actual impact. **Our researchers have:**

**a) been involved in spin-out companies and product design:** for example, Astell and Ellis are board members of *CIRCA Connect* (2010 onwards), which supplies a novel computer-based system for promoting communication in people with dementia to care homes; Perrett produced face-morphing software that has been used for anti-smoking and healthy ageing campaigns in schools (*NHS Tayside*, 2008; *Directorate of Public Health*, 2008; *Moray Community Health and Social Care Partnership*, 2011-2013; touring exhibits in Portugal and Germany 2008-2009);

**b) taken up consultancies and positions on policy boards and decision-making panels:** for example, Blackwood presented a Congressional Briefing in Washington and participated in an experts meeting about her research on Muslim experiences in airports with the US Justice Department (2013); Reicher regularly advises UK/international police forces and the Scottish and UK Governments on public order policing (2003 onwards); Campbell is a member of the Scottish Government's *Psychological Therapies Health Improvement, Efficiency, Access, Treatment Group* (2010-13) and a member of the *Scottish Government Joint Improvement Team* (2006-13), which has produced an online toolkit for NHS practitioners;

**c) designed training programmes for practitioners:** Reicher has contributed to the *College of Policing 'National Public Order' training curriculum* (2011 onwards); Astell and Ellis devised the '*Dementia Gold*' training courses for dementia care staff (2012); Campbell runs postgraduate training courses for professionals working with adults with learning disabilities (1992 onwards); and

**d) disseminated their research to broad user groups and audiences** through participation in science festivals (e.g., *Royal Society Summer Science Exhibition*, >49,000 attendees, 2010; Wellcome-funded *Wonder Street Fair*, >5,000 attendees, 2013; *National Science Week*, approx. 600 people per year; *World Science Festival*, New York, 2010; 'Best of Scottish Science' exhibit at *Edinburgh International Science Festival*, 2012), talks to general audiences (e.g., *Engaged Anthropology*, community conservation education program in Uganda, 2013; *Alzheimers Research UK*, 2008; *Edinburgh Fringe*, 2013; *Brain Awareness Week*, 2006; *Science Museum 'Lates'*, London, 2010) talks at local schools and teacher events (e.g., *European Federation of Teachers' Associations*, 2009; *Highlands & Islands Enterprise*, school careers events), and permanent resources (e.g., BBC Prison Study website, >10k hits per day; *Living Links to Human Evolution Research Centre*, Edinburgh, >250k visitors per year; *Dundee and Glasgow Science Centres*; *Camera Obscura*, Edinburgh; *Landmark Visitor Centre*, Inverness; *Medical Museum*, Copenhagen; *Granada Science Museum*, Spain; *Bad Hersfeld Museum*, Germany).

### c. Strategy and plans

The School fosters impact using a three-stage process: **i) we build impact into every stage of the research process; ii) we are proactive in bringing researchers together with actual and potential users, and iii) we provide financial support and incentivise impact activities.**

**i) Building impact into the research process** We aim to overcome the notion that impact is a separate activity from research and ensure that the two are integral to each other, and impact is built into our postgraduate and undergraduate curricula. The School's **Director of Research** is responsible for facilitating impactful research within the unit; our dedicated **Business Development Manager** runs monthly 'research clinics' and helps researchers to identify funding opportunities and liaise with user groups; and a **Contracts Manager** assists with drawing up business contracts. All grant applications are read by a staff member with a specific remit to provide feedback and make suggestions on impact. Once grants are awarded, researchers are given a contact in the University's **Knowledge Transfer Centre** for assistance with developing industry and user contacts. The University is a member of **Interface**, an independent knowledge intermediary that links national and international businesses with Scottish academics, and the

## Impact template (REF3a)

School's Director of Research filters Interface enquiries from users to the relevant researchers. Our **Professional Skills course for postgraduate students** includes impact-related sessions, such as commercialisation of research, and our **undergraduates** are assessed on their ability to evaluate examples of research impact. School training for researchers is complemented by courses provided the University's *Centre for Academic, Professional and Organisational Development* (e.g., intellectual property rights), and the *Careers Centre* has an *Enterprise Advisor*.

**ii) Bringing researchers and users together** The School is also proactive in bringing researchers and users together in order to create impact opportunities. For example, we run regular **user discussion forums** (e.g. 'Psychology means business'); we include **practitioners** as speakers in our flagship weekly seminar program; we host user group events (e.g., NANA workshops); we provide **honorary positions** for research users; and we have **yearly open days** about our research to which users and the public are invited. The University runs '**Meet the Dragons**' and '**Provost Pit**' events at which researchers meet local entrepreneurs, pitch business ideas and compete for funding, with all participants receiving support and guidance from the KT centre.

**iii) Financial support and incentives** The School makes it clear that impact activities are valued. More specifically, impact is built into the **School workload model**, and is thus offset against teaching and administration duties, and is included as a factor in supporting candidates for promotion. Both postgraduates and staff are actively encouraged to take up **fellowships and placements with users** (e.g., *Royal Society Industry Fellowship*, Brown). The School and University support user links through **pathways to impact funding** (e.g. £10k EPSRC funding to demonstrate face-morphing software to NHS executives and policy makers, 2011), **funding for public engagement activities** (e.g., *Wellcome ISSF funding*, Cross, 2012), **vacation scholarships** and **matched funding for impact-related fellowships and CASE studentships**. Our **future goals** are to build on **current strategic partnerships** with key stakeholders, e.g., the pharmaceutical industry, and to build **relationships with new partners**. We are well placed to contribute to the lifelong health and wellbeing theme outlined in the 2011 *RCUK Impact Report*, and our activities are aligned with the *RCUK Concordat for Engaging the Public with Research*.

**d. Relationship to case studies**

**Case study 1: Rodent attentional set-shifting task and the pharmaceutical industry** *Early phase*: Brown was supported by a *Royal Society Industry Fellowship*. *Mid-phase*: Brown was provided with funding for 6 CASE PhD studentships from several pharmaceutical industries for collaborative projects. *Late phase*: The case study documents impact on the processes used by the pharmaceutical industry to test potential cognitive-enhancing properties of putative compounds.

**Case study 2: CIRCA – a novel technology to support people with dementia** *Early phase*: Astell and Ellis' research into the communicative problems of people with dementia involved early engagement with practitioners. *Mid-phase*: research funds were provided by a leading care home organisation, *Sanctuary Care*. *Late phase*: *CIRCA* was commercialized in 2009, and the researchers have developed a research-led training course for health care practitioners.

**Case study 3: Crowd psychology and public order policing** *Early phase*: Reicher interacted with the police from early in the research process and was involved in setting up the *Scottish Institute of Policing Research* (SIPR). *Mid-phase*: Reicher was funded by both the Home Office and SIPR to examine interactions between police and crowds. *Late phase*: Reicher's research has impacted upon public order policing, for example via inclusion in reports and police training.

**Case study 4: 'Living Links to Human Evolution' Research Centre** *Early phase*: Whiten/Seed are on the Board of *Living Links*, which is housed at Edinburgh Zoo and contains large volumes of research-led public engagement activities. *Mid-phase*: Development of the public engagement activities and exhibits was funded by the *Wellcome Trust*. *Late phase*: Success of public engagement and impact on school teaching has been documented in the case study.