

<b>Institution: University of Central Lancashire</b>
<b>Unit of Assessment: UoA4 – Psychology, Psychiatry and Neuroscience</b>
<b>1. Unit context and structure, research and impact strategy</b>

### Unit Structure and Achievements

The UoA4 submission at the University of Central Lancashire (UCLan) is comprised primarily from the members of the *School of Psychology*. Psychology has been a subject area at UCLan since the 1970s, initially with 6.0 FTE returnees in 1986, increasing linearly to the present 26.0 FTE, representing 58% of the School's staffing base of 44.7 FTE. Psychology has over 60 postgraduate research (PGR) students. Six Professors (5.2 FTE) and two Readers (1.6 FTE) provide research leadership. During the REF evaluation period we see the following as the primary achievements of UoA4: increased numbers and quality of published outputs; increased research income; demonstrable societal impact; increased PGR numbers; and success in our staff recruitment strategy. We detail and evidence our achievements throughout the remainder of this document.

Three research groups encompass most UoA4 activity:

- Forensic Psychology (FP) Group
- Quality of Life (QoL) Group
- Perception, Cognition and Neuroscience (PCN) Group

These groups have been actively established to provide balance between research investigating important societal issues driving forward theoretical development to evidence-based interventions and fundamental theoretical and experimental research that is core to the disciplines of psychology and neuroscience. The groups have fluidity, with cross-group membership and collaboration encouraged. Expertise is combined to enrich research (e.g., **J. Ireland**, FP, **Liversedge**, PCN, attention and psychopathy; **Graham-Kevan**, QoL, **Khan**, FP, crime-victim support), and each group also includes subgroups centred around core specialisms. The groups are central to strong national and international academic collaborations, and hold tight and unique relationships with NHS Trusts, medical practitioners, police and prison services, LEAs, schools and charitable institutions.

#### **Forensic Psychology (FP) Group**

This group was established in the 1970s with the appointment of **Archer** (now Emeritus Professor), who remains an authority in aggression research. Professor **J. Ireland**, mentored by **Archer**, now leads the group's research, directing studies on aggression and violence. A significant transition point for the group occurred when the *Ashworth Research Centre* (ARC; Ashworth Hospital, MerseyCare NHS Trust) was established in 2010. The ARC is internationally recognised as a world-leading research facility with a unique participant group, high secure psychiatric patients, to facilitate development of evidence-based interventions. Ashworth is the only high-secure facility in the UK to have an associated Research Centre. Research activity within the FP Group was accelerated during this REF period through the strategic appointment of **Lewis** (expertise in clinical psychopathy) to a Lectureship in 2017. The FP Group engages in wide-reaching collaborations built around five thematic lines relating to victims and/or those in contact with the criminal or community justice system:

- *Sexual Abuse and Exploitation* – **Bryce, C. Ireland, Khan**
- *Forensic Mental Health and Disorder* – **J. Ireland, C. Ireland, Gardner, Chu, Lewis, Eslea**
- *Interpersonal Violence* – **Khan, Eslea, C. Ireland, J. Ireland**
- *Treatment Evaluation and Development* – **J. Ireland, C. Ireland, Lewis, Chu**
- *Applications to Criminal and Community Justice* – **Frowd, Bryce, Richardson, Jones**

## Unit-level environment template (REF5b)

The FP Group activities continue to expand, forging lines of work into important new areas (e.g., **Khan's** research on honour-based violence and **C. Ireland's** research on child sexual-exploitation behaviours).

### Quality of Life (QoL) Group

Professor **Abbott** leads this internationally renowned group investigating patient-related coping and treatment with respect to disease progression. The QoL Group's research is a strategic priority, as reflected in key promotions and appointments (e.g., **Graham-Kevan**, promoted to Chair; **Chronaki**, promoted to Senior Lecturer; **Harrison**, appointed as Lecturer). The QoL Group focuses on four themes:

- *Scale Development and Evaluation* – **Abbott, Graham-Kevan**
- *Screening, Diagnosis and Management of Mental and Physical Health* – **Graham-Kevan, Bryce, Qualter, Abbott**
- *Resilience and Psychosocial Wellbeing* – **Graham-Kevan, Robinson, Qualter, Chronaki, Abbott, Harrison**
- *Psychobiological and Cognitive Processes in Disease Progression and Survival* – **Abbott, Harrison**

The QoL Group leads multiple, cross-University interdisciplinary collaborations, with **Chronaki** and **Harrison** holding membership of the *UCLan Research Institute for Global Health and Wellbeing*, and Professor **Graham-Kevan** (another former mentee of **Archer**) co-directing the *UCLan Criminal Justice Partnership* (CJP), undertaking interdisciplinary, policy-focused research relating to the criminal justice system.

### Perception, Cognition and Neuroscience (PCN) Group

The PCN Group is jointly led by Professors **Liversedge** and **Ball** and is the largest UoA4 group, having been developed strategically since REF 2014 through targeted appointments. Principal of these was **Liversedge**, providing leadership and expertise in the field of eye movements, reading and visual cognition. Associated appointments (**Zang**, ESRC-funded Senior Researcher; **Degno**, Postdoctoral Research Fellow; **Benson**, Senior Lecturer), consolidate this area, complementing significant existing expertise in reasoning (**Ball**) and attention/distraction (**Marsh**). These strategic appointments have added methodological expertise (eye-tracking, electroencephalography [EEG] and concurrent co-registration of eye movements and EEG) in relation to data acquisition and advanced analytical techniques (Linear Mixed Modelling, Bayesian analyses, Permutation Analyses, Structural Equation Modelling, Generalised Estimating Equations, Matlab and R programming). PCN Group developments have resulted in a significantly increased international profile and network (China, Sweden, Finland, Denmark, Canada) and major growth in the breadth of theoretical understanding (e.g., cognition and reading, cross-cultural issues and atypical cognitive development). Direct support for the PCN Group derives from 2.0 FTE permanent, University-funded Research Fellows (**Degno**, co-registration and reading; **Threadgold**, reasoning and attention). During the REF period the PCN Group has spearheaded internationally leading research around five themes:

- *Vision, Perception, Visual Cognition and Reading* – **Liversedge, Benson, Zang, Degno, Marsh, Denhovska, Judge**
- *Attention, Distraction and Awareness* – **Marsh, Ball, Judge, Massey, Richardson, Threadgold, Liversedge**
- *Reasoning, Decision Making and Memory* – **Ball, Marsh, Richardson, Threadgold, Jones, Robinson, Judge**
- *Developmental Cognitive Neuroscience* – **Chronaki, Benson, Furman, White, Denhovska, Liversedge**
- *Social Cognitive and Affective Neuroscience* – **Richardson, Clark, Chronaki, Robinson, Threadgold, Ball, Jones**

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All PCN Group staff are also members of the *UCLan Research Centre for Brain and Behaviour, CBB*, which funds and facilitates extensive cross-University collaboration.

Additional UoA4 submission members conduct related and complementary research on molecular neuroscience and neurobiology in the *School of Pharmacy and Biomedical Sciences (Bambini-Junior, Beglopoulos and More)* and research in educational psychology in the *Centre for Collaborative Learning (Dacre Pool)*.

## Research Objectives During the Assessment Period and Over the Next Five Years

In 2014, the School of Psychology committed to the strategic development of its reputation for evidence-based research of real-world issues informed by cutting-edge, theoretically founded scientific knowledge. The three central research groups have strengthened and re-focused as new staff have joined the UoA, but their broader thematic orientation toward forensic psychology, health psychology and cognition has remained. Likewise, all three groups deliver increasingly on productive and sustainable lines of research, benefitting from effective leadership and mentorship by professorial colleagues. Five core objectives underpinned the REF period research-development strategy: to build momentum to enable research; to form sustainable external partnerships and collaborations; to increase public engagement with research; to strengthen the research environment and support and nurture early-career researchers (ECRs) and PGR students; and to develop research infrastructure and implement mechanisms for knowledge transfer and intellectual property management. These objectives were acted upon and driven forward by **Ball** providing leadership in his role as Dean of Psychology. Additionally, UoA4 research leaders have cultivated and supported an “enabling” research culture, setting standards and expectations for effective mentorship by group leads and other senior colleagues.

UoA4’s structure and adherence to its stated objectives have borne fruit and facilitated the attainment of increased research productivity (in both quantity and quality). Based on data (normalised over the REF period), the number of submissible outputs has increased severalfold, and based on external assessment, quality has improved substantially. There have also been marked increases in Ph.D. completions (Section 2) and research income (Section 3). Similarly, the number of postdoctoral researchers has increased, reflecting investment and support in our ECR community, with two permanent Research Fellows (**Degno** and **Threadgold**) being funded since 2019. UoA4’s internationalisation activities have also increased significantly, strengthening Psychology’s world profile and standing (Section 4).

Throughout the REF period we have continually monitored and refined our objectives to reflect developments in our research culture and our maturing ambitions, which is an approach that will continue into the future. Progressing toward current objectives will deliver research practice and expertise of increased quality and rigour that will directly translate into quantifiably improved outputs and impacts downstream. Current objectives are:

- To improve published research outputs, with an emphasis on quality over quantity; to increase the number and quality of grant applications; to increase PGR and ECR numbers; and to sustain support for impact and public engagement activities.
- To complement applied, translational research (a strength of the FP and QoL Groups), with an increase in advanced theoretical developments, through the research of the PCN Group to be achieved via strategic appointments and investment in experimental facilities.
- To encourage and foster best open science practices, delivering high levels of accessibility to data, protocols and outputs through training and recruitment, particularly with respect to ECR colleagues.
- To ensure a maximally developed and sustained resident skill set in respect of advanced statistical techniques, alongside cutting edge experimental methods for data acquisition and analysis, again, attained through training and recruitment.

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- To strengthen and broaden our international, national and regional influence through increased visibility for our expertise in core areas via our research group leads to ensure we are regularly the collaborator of choice.
- To invest strategically in and expand our internationalisation activities, building outwards from established connections to develop new and broader collaborations (cf. **Marsh's** multi-institution collaborations across Sweden: Honorary Professor, Luleå University of Technology; Research Affiliate, Department of Psychology, Umeå University; Visiting Researcher, University of Gävle. See Section 4 for **Liversedge's** China collaborations, spanning multiple institutions).

## Enabling and Facilitating the Achievement of Impact

UoA4 is committed to principles of excellence in the development of a cutting-edge theoretical understanding in psychology and neuroscience and in the delivery of real and meaningful impact to society. UoA4 has always adopted a highly strategic approach to the attainment of impact, with Professors leading on impact delivery, alongside key collaborators in relevant research groups. Delivery of high-quality impact is facilitated through careful workload allocation to provide staff with the time and flexibility to deliver on their impact agenda as an appraisal target. Professors mentor junior colleagues in impact delivery to ensure pipeline continuity of societal benefits from UoA4 research.

As part of Psychology's flexible workload-allocation model, UoA4 supports key individuals in impact-related research, for example, through sabbaticals (**Abbott**, one year, 2013/14; **Khan**, one semester, 2015, as an impact mentee to establish the Honour Abuse Research Matrix, HARM). Financial support for impact activities derives internally from several sources, including negotiated funds from the School and bids directed at internal initiatives, including ones supported by HEIF, QR-SPF and QR-GCRF (Section 3). In addition, expansion and consolidation of the ARC impact activities results from continuity of MerseyCare NHS Trust funding, in recognition of the Centre's exceptional achievements.

Our managed approach to impact, involving allocated time, earned autonomy and financial support (driven by expectations of achievement) has been highly effective, with deliverables of a standard exceeding expectations. UoA4's overarching approach to translational research has been a lynchpin of its research strategy for over 20 years, reflecting clear understanding that societal benefits deriving from theoretically-based research have long trajectories that require careful nurturing. Further, UoA4 is providing foundations for increased impact diversity into the future. For example, **Khan** (HARM), **C. Ireland** (child exploitation) and **Bryce** (online sexual harassment among young people) are pursuing research that will deliver societal impact and positive change over coming decades.

The School's principled approach to fostering and supporting research impact is evidenced by significant achievements in four areas of activity (with three selected as impact case studies):

- **J. Ireland's** world-leading work with the ARC team developing evidence-based procedures for management and intervention in secure and high-risk settings.
- **Frowd's** engagement with national and international police forces to deliver EvoFIT technology for successful identification of offenders via facial composite images.
- **Abbot's** internationally recognised work to develop and evaluate patient-reported outcome measures for individuals with cystic fibrosis.
- **Graham-Kevan's** ground-breaking research delivering multiple programmes of behaviour change for the treatment needs of a wide range of diverse populations.

## Supporting Interdisciplinary Research

UoA4 benefits from staff membership of 13 UCLan Research Centres and two UCLan Research Institutes, all having a multidisciplinary focus (e.g., *Centre for Brain and Behaviour; CBB*) and receiving internal funding (e.g., for seminars, networking and pump-priming). UCLan Centres and

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Institutes, established in 2018, were created as a top-down response to address the bottom-up drive for increased multidisciplinary collaboration and attendant resourcing. The Centres are mechanisms to facilitate interdisciplinary collaboration, create visible research presence and infrastructure, and critically, distribute central research investment. Most researchers in the FP and PCN Groups are members of the CBB (with 49 full members and 12 associate members). The CBB is directed by Professor Davidson (School of Pharmacy and Biomedical Sciences), with **Ball** as Deputy Director and **Liversedge** as *Cognitive Neuroscience* lead. UoA4 staff contribute to the other CBB themes: *Neurodegeneration*; *Neuroscience Drug Design*; and *Psychiatric Illnesses*. The CBB also enjoys membership from the Schools of Medicine, Dentistry and Sport and Health Sciences. The Centre is living up to its promise as a catalyst for new and exciting interdisciplinary collaborations, with one example being a joint research project involving **Clark** (School of Psychology) and **More** (School of Pharmacy and Biomedical Sciences) investigating how inducing alterations in animal behaviour that are consistent with depressive-like states may alter functional connectivity of the ventral striatum, a brain region associated with reward behaviour.

## Progress Towards an Open Research Environment

UoA4 is committed to open science and compliance with the *Concordat on Open Research Data*. UoA4 staff have Editor-in-Chief roles at six international journals, including *Quarterly Journal of Experimental Psychology (QJEP; Liversedge)* and *Journal of Cognitive Psychology (JCP; Ball)*, which both embrace open science practices. In their editorial roles, both **Ball** and **Liversedge** have instantiated a formal registered-report route to publication and strongly recommend data, stimuli and protocol sharing, with a mandatory requirement at *JCP* from January 2020. UoA4 also advances best scientific practice through staff representation on the University's *Open Research Steering Group*, which has a broad remit (e.g., renewal of University Open Access [OA] policies; provision of support for OA compliance; promotion of OA awareness and funder requirements; monitoring, advising and reporting on policy development for open research).

## Implementing Standards Relating to Research Ethics and Research Integrity

Researchers in UoA4 conform to principles of strict ethical integrity, adhering to, and ensuring compliance with, the highest national and international ethical standards. This is a minimum requirement and aligns with UCLan's commitment to the *Global Code of Conduct for Research in Resource-Poor Settings* that guides international collaborations similarly (UCLan was the first European university to sign up to the Code of Conduct). Within UoA4 all PGR and staff research projects must gain ethical approval via the University's *Science Ethics Review Panel*, which has delegated responsibility from the University's *Ethics and Integrity Committee*. UoA4 staff review for this panel, which has rotating Chair and Vice-Chair positions (**Judge** is Chair; **Threadgold** is Vice-Chair). All ethics submissions are evaluated by a reviewer and Chair/Vice-Chair to ensure ethical and GDPR compliance (e.g., regarding data storage), and risk mitigation (risk assessments for participants are mandatory). Additional external ethical approval is obtained wherever appropriate (e.g., NHS, Prison Service, etc).

All behavioural research involving animals is conducted in line with the Animals (Scientific Procedures) Act (1986) and EU Directive 2010/63/EU under the guidance of the University's *Animal Welfare and Ethical Review Board (AWERB)*. All researchers involved in animal research are fully trained and have appropriate Home Office licenses for their studies. Animals are housed in a purpose-built facility and there is a dedicated team with Home Office recognised qualifications that provides day-to-day care. A veterinary surgeon is on call at all times and carries out both pre-planned and unannounced inspections. The facility is also open to inspection by the Home Office at any time. UCLan is a signatory to the *Concordat on Openness on Animal Research*, which further underscores an institutional commitment to undertaking animal research in an ethical and responsible manner. UCLan is also committed to the promotion of the 3Rs (reduction, refinement and replacement), such that alternatives to animal research are used whenever possible and when animal research is deemed essential then experimental techniques are refined so as to use the minimum number of animals to still allow for valid results.

Training in research integrity is central to UoA4 staff and PGRs and is a core element of research

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away-days, workshops, “Research Matters” meetings (Section 2) and Graduate School support for PGRs and supervisors. Regular training for staff and PGRs is focused on the pitfalls of questionable research practices (e.g., small-sample studies, p-hacking, p-value rounding). The virtues of good scientific practices are extolled in these fora, with senior UoA4 staff leading by example and collaborating with ECRs and PGRs in publishing replication studies, submitting registered reports, engaging in pre-registration, pursuing data-sharing and implementing Bayesian analysis/meta-analysis. Over half the staff in the UoA4 submission have published an open access paper or have lodged stimuli, data sets or analysis scripts in a publicly accessible repository during the current REF period.

## 2. People

### Staffing Strategy and Staff Development

UoA4 recognises that effective recruitment, support, development and progression are critical for staff retention. Our aim is to attract high-calibre researchers and provide the facilities and environment to allow them to thrive and attain maximum potential. UoA4’s staff recruitment and retention policy has been strategic throughout the REF period, and will remain so into the future, involving active “search” for new appointees with cutting-edge skills and experience in areas of existing strength to ensure sustenance of world-leading research teams. Posts are largely full-time, permanent positions to ensure maximal appeal. Nineteen staff in the UoA4 submission were appointed in the current REF period, all making significant contributions to the current submission.

**J. Ireland** and **Abbott** have been supported in advancing from Level 1 to Level 2 Professor positions (UCLan implements three professorial-progression levels). **J. Ireland** continues as Director of the FP Group and ARC Clinical Lead and **Abbott** continues as Director of the QoL Group. During the assessment period **Frowd** and **Graham-Kevan** were mentored by **Ball** to gain progression from Reader to Level 1 Professor, with **Graham-Kevan** becoming CJP Co-Director. **C. Ireland** (formerly Senior Lecturer) and **Marsh** (formerly Senior Research Fellow) were mentored by **Ball** to successful promotion to Readerships, with **C. Ireland** continuing as ARC Senior Research Lead. To ensure succession planning for future leadership, **Marsh** and **C. Ireland** are being mentored toward Professorship.

The promotion of **Ball** in 2018 to Faculty Director of Research (0.6 FTE) alongside his Dean of School post (0.4 FTE) increased the representation, visibility and recognition of UoA4’s research at Faculty and University levels. **Liversedge**’s recruitment in 2018 (Level 3 Professor) marks the next phase of UoA4 development, whereby research group leaders deliver mentorship, vision and direction to support efforts to attract significant external research funding. Since 2018, UoA4 has seen major successes in this regard.

There has also been targeted investment in existing staff to facilitate promotion from Lecturer to Senior Lecturer, in part to reward excellence in research and ensure succession for future leadership. All staff who have significant responsibility for research (SRfR) have specific, measurable, achievable, realistic and time-bound (“SMART”) research objectives that are negotiated and reviewed in bi-annual appraisals. Such staff also receive financial support (e.g., for consumables and participant payment) to achieve research outcomes and development opportunities to establish research-focused career trajectories. Equipment requests are channeled toward appropriate funding sources at School, Faculty or University levels. Conference attendance requests up to £3,000 per individual per year are considered by the School Executive Team (almost all requests are supported), and a substantial reserve budget is kept back for ad hoc research requests that arise during the year.

All staff with SRfR have carefully managed workloads that provide time to attain research objectives, with core research time equating to 20% of a standard workload (i.e., one day per week for a full-time individual). Extra research time can be negotiated to enable attainment of agreed objectives (e.g., developing a research proposal or pursuing research impact). Some long-serving colleagues in Psychology have chosen to pursue teaching-focused trajectories, which is respected

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and supported. These staff retain the option of returning to SRfR status via the appraisal process. This flexibility regarding roles, responsibilities and career trajectories engenders a well-functioning UoA founded on principles of mutual respect (staff “play to their strengths”).

To attract, recruit, develop and retain excellent colleagues, it is essential to offer an environment that is characteristically equal, diverse and inclusive. UoA4 ensures that it reflects gender and ethnic diversity in its recruitment documentation and the School of Psychology is committed to improving its culture of equality, diversity and inclusion (EDI). For the UoA4 staff return, 72% are female, with 50% female at Professor/Reader level. Action plans are in place to ensure increased female progression to Professor and Reader positions to align with UoA4’s overall gender profile. 50% of submitted staff are 25-44 years old and 50% are 45-60 years old – a balanced age distribution ensuring effective research leadership, succession planning and ECR investment.

The success of UoA4’s recruitment approach is evidenced by high-profile appointments of world-leading researchers (ECR to Professor) to strengthen research groups. These appointments have brought immediate successes at all levels. For example, at professorial level, **Liversedge**’s ESRC and Leverhulme Trust awards; at Senior Lecturer level, both **Benson** and **More** contribute five high-quality outputs and **Chronaki** contributes four; at Lecturer level **Bambini-Junior** delivers three excellent outputs and **Field** delivers two; and at ECR level **Zang** and **Degno** delivered excellent first-author OA publications in *Journal of Experimental Psychology: Human Perception & Performance* and in *Journal of Experimental Psychology: General*. Strategic appointments have been instrumental in consolidating and broadening research areas that include developmental cognitive neuroscience (led by **Chronaki**), attention and distraction (led by **Marsh**), thinking and reasoning (led by **Ball**), social cognition (led by **Richardson**) and visual cognition and reading (led by **Liversedge**). UoA4 maintains a pluralistic and international staffing base and provides a welcoming and supportive environment. We consider our international staff composition to be a strength of our research community. UoA4 remains committed to continued strategic staff recruitment around existing research areas.

As would be expected, all academic staff in the School of Psychology at Lecturer level or above have Ph.D.s or professional doctorates (a shortlisting prerequisite). Most new staff are appointed at Lecturer level as ECRs, aligning with UCLan’s recruitment policy to build and nurture expertise bottom-up, supported by mentorship. The exception to this policy-led approach relates to like-for-like replacements for departing individuals at Reader or Professor level, for continuity in research leadership (e.g., **Liversedge**). Newly appointed staff have a one-year probation period, during which “SMART” research objectives (e.g., publication, bid preparation, conference dissemination) are set. Newly appointed Lecturers have a funded probationary objective to visit a national or international laboratory to advance collaborative research (e.g., **Furman** to Max Planck Institute for Psycholinguistics, Nijmegen; **Field** to Psychology, Warwick University). Key research training and development needs are also identified for appointees (e.g., methodological, programming and statistical skill development). New appointees receive start-up funds (c. £5,000 p.a. for three years) and are encouraged to submit cases for high-cost equipment to UCLan funding schemes. New Lecturers are appointed a research mentor from the professoriate and join Ph.D. supervision teams to allow for supervision support. All new Lecturers have research-time allocations that exceed the 20% core allocation (i.e., an additional 10% in Year 1, reducing to an additional 5% in Year 2). Extra development time (a further 20% p.a. for two years) is allocated to those taking the University’s Academic Professional Apprenticeship Programme.

UoA4’s staff recruitment over the REF period has gone well with tangible success at all levels (see examples above). The next phase will involve focused appointments that align with research strengths and priorities. The strategic goal is to increase productivity within and between research groups and attain an enhanced research culture. Steps in this direction are well advanced. In May 2019, weekly, two-hour “Research Matters” meetings were launched, offering a functional and pragmatic forum for discussion of any research-related matters. This well-attended discussion group (15-30 attendees) has no formal agenda but delivers “high-end” engagement with all matters of research. Discussion topics include research income generation, open science and best current practice, analytical methods, meta-analyses, ethics and research integrity, and career structure

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and planning. These meetings form a core part of UoA4's research schedule and are highly conducive to the maintenance and centrality of research within UoA4's culture. In addition to these events, there are multiple smaller meetings amongst clusters of researchers with common interests to discuss articles, methodological issues and grant applications. The weekly Seminar Speaker Series is another well-attended activity central to the integrity and cohesion of UoA4's research culture. A mixed schedule of UCLan "home grown" speakers alongside leading international speakers is provided (online during the COVID-19 pandemic). A high-point in the Series is the prestigious annual Darwin-Day Celebratory Lecture (commemorating Darwin's birthday, after whom the Psychology building is named). A formal presentation is delivered to 300+ University staff and members of the general public by an esteemed psychologist (e.g., Prof. Dorothy Bishop, Oxford, 2020; Prof. Susan Gathercole OBE, Cambridge, 2019; Prof. Sophie Scott, UCL, 2018; Dr Hannah Critchlow, Cambridge, 2017; Prof. Sarah-Jayne Blakemore, UCL, 2016).

## Research Students

Postgraduate Research Students (PGRs) are an engine of UoA4's research. We are committed to ensuring that they receive excellent support and training to be creative, competent and scientifically rigorous researchers with capabilities that allow for success in world-leading academic and non-academic careers. UoA4 maintains a buoyant community of PGRs, with c. 50 students registered for Ph.D.s in each of the two most recent years. PGRs are predominantly self-funded and part-time, but School and University support meets the costs for five full-time funded studentships (a funding regime set to continue). PGRs are always appointed so that they align with UoA4's core research groups and the associated strategic research priorities that underpin the research of staff in these groups. UoA4 also funds a rolling programme of Graduate Teaching Assistant (GTA) appointments (5 years duration; currently six GTAs in post – three new appointments imminent), with individuals undertaking part-time Ph.D.s and Senior Demonstrator Responsibilities (funded at 0.7 FTE). During the REF period, a total of 29.75 FTE Ph.D. students graduated from UoA4, with a significant increase in completions over the past three years (21.5) compared to the previous four years (8.25; Table 1).

Table 1. Successful Ph.D. completions from 2013/14 to 2019/20.

UO44	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	TOTAL
4	2.00	3.00	3.00	0.25	5.00	4.25	12.25	29.75

All PGR appointments are advertised internationally and align with EDI requirements. Applicants must be qualified to 2:1 or first-class UK degree standard (or equivalent) and non-native English speakers must hold an IELTS score of 6.5 or above where necessary. All applicants with a declared disability who meet the person specification are invited to interview.

UoA4 adheres to UCLan's Research Degree Regulations for monitoring and support of Ph.D. students to ensure timely and successful completion. Newly registered PGRs are housed in shared PGR offices and provided with a personal computer and desk space. Throughout their Ph.D., PGRs request conference budget funds to present their work at international conferences and are encouraged to undertake advanced research methods and statistical analysis courses that run annually within Psychology. PGRs submit a formal "Research Programme Approval" (RPA) document stipulating an original research programme and timeline alongside training and development needs. The RPA document is peer reviewed by an internal (non-supervisory team) expert and revisions are required as necessary. *Science Ethics Committee* approval is also necessary prior to initiation of the research. Full-time Ph.D. students have a minimum of 12 annual supervision meetings with their full team (at least six meetings for part-time Ph.D. students). Meeting records are maintained that summarise discussion points and actions.

We consider that training in teaching is important for our PGRs and paid opportunities for them to support staff in teaching sessions are available and encouraged (e.g., PGRs are able to assist with laboratory sessions and research methods classes). The time commitment of PGRs to teaching is



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closely monitored by Research Degree Tutors to ensure the effective continuity of their research programmes. Through UCLan's Graduate Research School, Psychology is engaged with the UKCGE Research Supervision Recognition Programme to ensure national recognition and maintenance of best PGR supervisory practice. The School of Psychology has two Research Degree Tutors (**Judge** and **Threadgold**). These Research Degree Tutors implement a robust annual monitoring process, meeting with PGRs to assess progress against targets, review team-meeting records and assess development and support needs. The MPhil/Ph.D. transfer process is similarly robust requiring completion of a transfer document and a meeting of the student, a Research Degree Tutor and the original RPA reviewer. PGRs attend the Seminar Speaker Series, also featuring strongly as speakers. PGRs participate in UCLan's annual Three Minute thesis (3MT) competition (UoA4 has an excellent record of representation and success), and the annual Postgraduate Conference, delivering spoken and poster presentations. PGR attendance at Research Matters is strongly encouraged. PGRs also typically submit peer-reviewed publications prior to completion.

## Equality and Diversity

A focus on EDI is central to UCLan's strategic vision to strengthen its culture and ensure everyone feels safe, valued and supported. UCLan obtained an Athena SWAN bronze award in 2019 and is working towards a Race Equality Charter bronze award. The University is part of the Stonewall Diversity Champions Programme and participates in Stonewall's Workplace Equality Index (WEI). UCLan is a Level 1 Disability Confident employer and has a Mindful Employer Charter Mark. EDI training ("Diversity in the Workplace") is mandatory for UCLan staff. Appointing managers undertake mandatory training on "Recruitment and Selection" and staff with REF responsibilities undertake mandatory training on "Unconscious Bias".

UoA4 implements transparent and effective EDI policies in relation to staff recruitment, support, training, development and progression. Staff have flexible working options and can vary employment contracts to reduce or increase work commitments (e.g., to manage caring or parenting responsibilities). Staff returning from leave after sustained periods of absence have return-to-work meetings to discuss workload, reasonable adjustments and phased-return options. Staff wellbeing is vital for UoA4 to function effectively, and online information is provided on dealing with work-related stress, mental health and issues of physical health and discomfort. UoA4 managers are effective in making Occupational Health referrals and are adept at implementing Stress Risk Assessments, making workload adjustments where necessary and modifying working environments (e.g., to ensure good working conditions for women experiencing the menopause and for individuals with disabilities).

The School of Psychology has an EDI Champion (**Bryce**) and an Athena SWAN Team (led by **Robinson**), with a Bronze award submission targeted for November 2021. **Ball** takes a leadership role in promoting EDI across UoA4, chairing the Faculty's EDI Group and supporting UCLan's Institutional Athena SWAN Steering Group, where he focuses on key career transition points and career development. The School of Psychology was the first at UCLan to create a parenting room, which provides a high-quality environment for breastfeeding mothers. Staff benefit from "Keeping in Touch" days during parental leave (maternity, paternity, adoption) and staff with SRfR status returning from parental leave or long-term sickness receive research-time allocations beyond the standard 20% to regain momentum. Temporary replacement for parental/sickness leave ensures that cover does not default to existing staff, which could differentially impact female colleagues given the 65:35 ratio of females to males. Female staff in UoA4 have been supported to participate in Advance HE's leadership development initiative for women (Aurora). **Khan**, **Robinson** and **Gardner** have gained significant leadership inspiration from their Aurora experience, facilitating career-progression (e.g., **Robinson** appointed Deputy Head of School, 2020; **Khan** now leads HARM and, along with **Gardner**, is being mentored toward a Readership).

### 3. Income, infrastructure and facilities

#### Research Income

UoA4 receives significant external research income from competitive awards (£2.5 million over the REF period), with 93% coming from four funding sources: (i) MerseyCare NHS Trust (67%); (ii) UKRI (10%); (iii) the Police Service (9%) and the EU (7%). Significant awards include: NHS funding (£1.42 million) to **J. Ireland** to support ARC's research; an ESRC award (£678,000) to **Liversedge** to investigate Chinese reading; Police Service awards (£192,000) to **Graham-Kevan** to support research associated with the CJP; and a major EU Award to **Bryce** that ended early in the REF period for research into online victimisation. A further award of note is a Leverhulme Trust Visiting Professor Award (£64,451) to **Liversedge** to bring Dr. Castelhana (Queen's University Kingston, Ontario) to UCLan over two years. The general level of research income reflects stability over the early REF period (average income £345,000 p.a.) However, in the final two years of the period there has been an increase to an average of £410,000 p.a. (Table 2). This improved performance demonstrates success in efforts by senior UoA4 colleagues and the University's Grants and Funding Unit to provide support and guidance for staff in income-generation endeavours. Ideas for applications and sources of funding are regularly discussed in Research Matters meetings. Guidance, support and feedback is provided by senior colleagues to junior colleagues and the Psychology *Research and Innovation Committee* (Chair: **Liversedge**) is developing a peer-review system to enhance the quality of grant applications. The recent upturn also validates UoA4's strategic approach to staffing, with high-quality appointments contributing to increased income. Through the REF period there has been a shift away from a small number of substantial awards to a more distributed pattern of funding success across individuals and teams, reflecting an attitude of shared responsibility for income generation, ensuring stability for future planning.

Within UoA4, we undertake world-leading, theoretically motivated research ranging from fundamental topics through to translational issues that are relevant and impactful, publishing findings in internationally-recognised, peer-reviewed journals. Through these activities we aim to attain greater international standing, enhance our research profile in areas of expertise and improve our research environment and infrastructure. A key component of UoA4's ambitions is to grow research income to support priority research. Significant emphasis is, therefore, placed upon writing grant applications to bid for external and internal funds, with the latter deriving from five primary sources:

- QR budget is released from the University, forming a significant element of the School's annual research budget (c. £200,000 p.a.) to support a component of the salary costs of Professors and Readers and to cover fees, stipends and consumables for Ph.D. students.
- Devolved non-pay funding (c. £180,000 p.a.) and staff development funding (c. £30,000 p.a.) is used to purchase consumables, equipment and software and to fund conference attendance, research assistance, participant payments and the training and development needs of staff and PGRs. These devolved funds allow for direct control over expenditure, enabling strategic planning and investment in priority areas.
- Competitive research grants are available via the Centre for Brain and Behaviour (e.g., £42,000 in 2019/20) and other University Research Centres, enabling purchase of consumables and equipment, conference attendance, networking events and bursary support for PGRs.
- The University funds the acquisition of significant capital items and UoA4 has been a recipient of several substantial awards in the current REF period, two to support the establishment of EEG laboratories (£180,000 for adult EEG research; £120,000 for developmental EEG studies). A third award enabled the purchase of eye-tracking and related data-analysis equipment (£110,000).

Table 2. External research income by funder category and year from 2013/14 to 2019/20, shown as within-year expenditure.

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	TOTAL
BEIS Research Councils, The Royal Society, British Academy and The Royal Society c	3,375	34,802	43,180	138,367	13,126	127,565	84,662	445,077
UK-based charities (open competitive process)	10,537	2,280	12,535	1,254	1,527	21,667	4,837	54,637
UK central government bodies/local authorities, health and hospital authorities	291,522	248,886	196,564	261,405	271,381	330,194	237,220	1,837,173
R&D Tax Credits	-	-	606	-	-	-	-	606
UK industry, commerce and public corporations	-	2,296	-	6,667	4,040	850	-	13,853
EU government bodies	64,860	70,627	-	639	5,697	7,980	2,630	159,979
Non-EU other	-	358	24,326	7,181	-	796	-	31,939
<b>Grand Total</b>	<b>369,936</b>	<b>383,217</b>	<b>259,426</b>	<b>413,383</b>	<b>298,054</b>	<b>489,895</b>	<b>329,350</b>	<b>2,543,262</b>

- Centralised funding is made available from HEIF, QR-SPF and QR-GCRF sources to support impact activity (£150,000+ over the last three years). **Frowd** received two HEIF awards for EvoFIT research on facial composites (£32,000), **Richardson** obtained HEIF support for research on deception detection (£47,000), **Jones** received a HEIF award for work on email phishing (£18,000), **J. Ireland** obtained two QR-GCRF awards and a QR-SPF award for research on trauma experiences and interventions in the Sri Lankan military (£40,000) and **Khan** obtained a QR-SPF award to develop best-practice policy guidance on harmful traditional practices in the workplace (£12,000).

UoA4 staff have institutional roles that inform the deployment of competitive research funds. **Ball's** appointment to Director of Research for the Faculty of Science and Technology in 2018 enables representation of UoA4's research ambitions, agenda and achievements in relevant fora (e.g., *PVC Research Strategy Group*, *University Research and Innovation Committee*, *University QR-GCRF Monitoring Panel* and *Institutes and Centres Monitoring Panel*). UoA4's efforts to support staff in external funding applications have been beneficial, being reflected in an increased number of grant applications (104 in REF2014 vs. 281 in REF2021) and an upward trajectory in applications (36 p.a. 2014-2017, 57 p.a. 2018-2021 – a 58% increase).

### Research Infrastructure and Facilities

UoA4's research environment is high quality in relation to laboratory space, equipment and general experimental facilities. Psychology staff and PGRs are housed in the purpose-built Darwin Building (opened 2006), which offers a modern, open and pleasant environment with a large amount of office, teaching and laboratory space. **Frowd** has additional, dedicated laboratory space in the *Engineering Innovation Centre*. Ten colleagues work extensively in the ARC in specialist office and research space. PGRs occupy two communal research areas and benefit from personal desk-space, whether full-time or part-time (30 desks with PCs in one room; eight desks with PCs in the other). UCLan also offers PGRs designated space in the Library.

UoA4's laboratories are extremely well furnished with state-of-the-art experimental equipment to permit high-quality research involving human and non-human testing. Laboratory activities are supported by a dedicated Technician as well as centralised technical support providing extensive hardware, software and networking expertise. There is a vibrant research atmosphere within the Darwin Building. Visiting researchers are inter-mixed in open-plan offices with PGRs and other researchers. The communal kitchen and other social spaces offer locations where colleagues meet, engage and discuss research. National and international guest speakers who are hosted weekly for the Speaker Seminar series are shown around the laboratories; most stay overnight and are taken to dinner allowing discussion and networking time.

There are ten major laboratories for human experimental testing. Two laboratories are dedicated to the acquisition of high-quality EEG data and house Faraday cages, high-calibre recording and signal-amplification equipment. One EEG laboratory is for adult data acquisition and co-registration research (concurrent acquisition of EEG and eye-movement data, a technically sophisticated specialism of the PCN group; **Degno, Liversedge, Zang**). The second EEG laboratory is for the acquisition of developmental data, with an emphasis on atypical populations (**Chronaki, Field, Furman**). Three laboratories are dedicated to eye-tracking experimentation and are equipped with state-of-the-art Eyelink 1000 eye trackers and a Dikablis eye tracker used to investigate reading (**Liversedge, Judge, Zang, Degno**), spoken language processing (visual world paradigm, **Denhovska**), scene perception and visuo-cognitive processing (**Benson, Furman, Liversedge**).

The remaining laboratories house BIOPAC systems with modules for electrocardiography (ECG), electromyography (EMG) and electrodermal activity (EDA; **Marsh, Ball, Massey, Richardson**). The BIOPAC systems are interfaced with a Tobii Pro TX300 screen-based eye tracker and a Nexus biofeedback system. These laboratories are also equipped with facilities permitting experimentation using functional near-infrared spectroscopy, transcranial magnetic stimulation and transcranial direct current stimulation. Other equipment includes an audiometer to assess hearing

## Unit-level environment template (REF5b)

acuity, ActiGraph monitors for objective monitoring of sleep and Oculus Rift virtual-reality facilities for immersive stimulus presentation. Finally, there is a dedicated data-analysis suite with three high-powered PCs installed with R, Neuroscan and other data-analysis software. Staff also have access to UCLan's Hydra Minerva Suite, an immersive, simulated environment for studying real-time, team-based decision-making in dynamic scenarios (e.g., responses to terrorist incidents).

Much of the UoA4 research that delivers benefit to society necessarily involves settings beyond the University in the ARC, regional prisons, police-training establishments and other community contexts. UoA4's impact strategy is, therefore, focused on ensuring: (i) funding to support the travel, subsistence and accommodation costs of staff engaging in stakeholder engagement and the pursuit of intervention studies to inform policy and real-world change; (ii) adequate and sustained time to facilitate development of pathways to impact and its ultimate realisation; and (iii) support for collaborative research groups such as HARM, CJP and ARC. UoA4's strategic approach to impact also involves succession planning through nurturing, mentoring and supporting researchers to develop their potential to deliver future impact. This approach is exemplified by UoA4's support for **Khan's** honour-based violence research and **C. Ireland** and **Bryce's** victimisation research (both anticipated to deliver very significant impact). **Frowd's** EvoFIT developments are also supported by laboratory-based, proof-of-concept studies undertaken by University-funded PGRs.

Beyond the three primary UoA4 research groups, colleagues in neuroscience undertake research with invertebrates in the refurbished "Circuits Lab", which provides high-quality facilities for studies exploring models of anxiety with *drosophila melanogaster* (two high-specification incubators, ten dissection microscopes and a Leica DM2500 microscope delivering excellent optical performance for immunofluorescence research). **Clark** manages a laboratory equipped with a multi-electrode array to investigate neural responses in living brain slices from mice to inform understanding of atypical development in reward mechanisms. UoA4 staff benefit from access to excellent animal husbandry facilities in the Darwin Building. These facilities are an example of how UoA4 benefits directly from central investment from the Centre for Brain and Behaviour.

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

### Journal Editorship and Reviewing

UoA4 staff make major contributions to editorial and publication processes. Editor-in-Chief roles are held by **Ball** (*Journal of Cognitive Psychology*), **Liversedge** (*Quarterly Journal of Experimental Psychology, QJEP*), **J. Ireland** (*Journal of Criminological Policy & Practice; Journal of Aggression, Conflict & Peace Research; Abuse: An International Impact Journal*). From 2013-2018 **Archer** was Editor-in-Chief for *Aggressive Behaviour*. Associate Editor roles are held by **Marsh**, **J. Ireland**, **C. Ireland**, **Liversedge** and **Ball**, and many staff have taken on Guest Editorships to deliver more than 15 Special Issues (SIs), including **Liversedge**, with Klein, Dalhousie University, SI of *Vision* on "Eye Movements and Visual Cognition" (2020), and **Ball**, with Gilhooly, Hertfordshire University, and Macchi, University of Milano-Bicocca, SI of *Thinking & Reasoning* on "Creativity and Insight Problem Solving" (2015). All staff review for journals, research councils, charities and other funders, contributing substantially to the research community.

### Fellowships and Prizes

In 2015, **J. Ireland** was awarded an Emerald Literati Network Award for Excellence in recognition of her paper published in *Journal of Forensic Practice* on admitting scientific expert evidence in the UK. She is also an elected Academician of the Academy of Social Sciences. In 2016, **Archer** won the Scott Award from the International Society for Research on Aggression (ISRA) for his lifetime contribution to aggression research. In 2019, **Abbott** received the Rich and Carolyn Mattingly Award from the US Cystic Fibrosis Foundation, which recognises research and leadership in mental-health care and a commitment to the mental health and wellbeing of patients with cystic fibrosis (the first award outside the US). In 2017, **Marsh** won the Preregistered Challenge for his *Experimental Psychology* article on cognitive control and auditory distraction. In 2016, **Zang** received an Outstanding Presentation Award from the Chinese Psychological Society for her paper

## Unit-level environment template (REF5b)

on skipping structural particles in Chinese reading, subsequently published in *QJEP*. In 2017, **Liversedge** was awarded an Honorary Credential by the Municipal People's Government of Tianjin, P.R. China, and the Tianjin Haihe Friendship Award, recognising his contribution to social and economic developments, foreign exchange and cooperation with Tianjin City. In 2019, **Liversedge** and **Benson** were selected to attend the 70<sup>th</sup> Anniversary Governmental Dinner for Foreign Experts held at the People's Hall, Tiananmen Square, Beijing, recognising collaborative research with Tianjin Normal University.

## Participation on Grants Committees and Other National and International Committees

**Abbott** is Co-Lead, European Cystic Fibrosis (CF) Society Mental Health Working Group and the European representative on the US CF Foundation's Mental Health Advisory Committee. She is also a member of the Vertex Pharmaceuticals International Steering Committee, generating evidence of the impact of new life-changing therapies in CF. **Graham-Kevan** is President of the International Family Aggression Society, Patron of The Janus Project, Sheffield (working with aggressive men and women) and Patron of the charity "STOP". As *QJEP* Editor-in-Chief, **Liversedge** was a member of the Experimental Psychology Society Committee (2016-2020). Until September 2014, **Ball** was Chair of the Cognitive Psychology Section Committee of the British Psychological Society (BPS). **Robinson** is a Committee Member of the BPS's Crisis, Disaster and Trauma Section and Psychobiology Section, and **Jones** is a Committee Member of the BPS's Cyberpsychology Section. **Marsh** is Co-Chair of the International Commission on Biological Effects of Noise, Team 4 (Cognitive Section). **J. Ireland** and **Liversedge** are UoA4 sub-panel members of the 2021 REF Assessment Committee.

## Invited Keynote Lectures

**Archer** delivered his Scott Award keynote at the 22<sup>nd</sup> Biennial World Meeting of ISRA, Macquarie University, Sydney (2016) and **Abbott** presented her Mattingly Award keynote to an audience of 5000+ delegates at the annual US CF Foundation Conference, Nashville (2019). **Graham-Kevan** delivered keynote lectures at the What Works in Offender Rehabilitation Conference, University of Birmingham (2014) and the Children First Conference on Family Violence, Edinburgh (2015). **Liversedge** delivered invited keynote lectures at the 31<sup>st</sup> BPS Cognitive Psychology Section Annual Conference, Nottingham Trent University (2014) and the 7<sup>th</sup> SWAET, Scandinavian Workshop on Applied Eye Tracking, University of Turku, Finland (2016). **Benson** and **Liversedge** each delivered plenary talks at the 1<sup>st</sup> Australian Eye Tracking Conference, Macquarie University, Sydney (2018) and the 6<sup>th</sup> Beijing, 7<sup>th</sup> Changchun, and 8<sup>th</sup> Nanjing, China International Conference on Eye Movements.

## Conference Chairing and Organisation

**J. Ireland** organised three invited symposia for the International Academy of Law and Mental Health and worked on the Scientific Committee for the World Meeting of ISRA (2015). **Frowd** co-chaired the International Conference on Emerging Security Technologies, University of Kent (2017), University of Edinburgh (2018). **Ball** was co-chair of the 11<sup>th</sup> Design Thinking Research Conference, Copenhagen Business School (2016). **Liversedge** was lead organiser of the 6<sup>th</sup> (Beijing, 2014), 7<sup>th</sup> (2016, Changchun) and 8<sup>th</sup> (2018, Nanjing) China International Conference on Eye Movements. He also co-organised the UK/China Researcher Links Workshop (2016): "Improving literacy: Understanding reading development and reading difficulties across the lifespan", funded by the British Council/Newton Fund/NSFC (£39,000). **Liversedge** is a member of the Advisory Committee of the biennial European Conference on Eye Movements (2019, Alicante; 2017, Wuppertal; 2015, Vienna).

## Public Engagement with Research

UoA4 pursues extensive, research-related public engagement, delivering carefully pitched, scientifically grounded, cutting-edge science to general-public audiences. This is exemplified by **Robinson's** activities as UoA4's Public Engagement Lead, involving deployment of novel methods (e.g., speculative fiction and adventure games) to communicate psychological research at numerous science fiction conventions and Bushcraft festivals. **Robinson** additionally uses

## Unit-level environment template (REF5b)

research to help the public understand psychological aspects of current news stories, acting as an expert in survival psychology in over ten TV programmes, including “The Great Fire” (2017; Channel 5, Lion TV). In 2018, **Robinson** was interviewed by international media regarding the Thai schoolboys trapped in a cave, completing 42 interviews with broadcast outlets. During the COVID-19 pandemic, **Robinson** has so far appeared in 300+ media items, including in *The Guardian* and *The Independent*, also reaching over 500,000 readers with her piece in *The Conversation* (April 2020) titled “Here is why you might be feeling tired while on lockdown.” Other public-engagement examples abound. **Khan** undertakes significant TV, radio and written-media activity relating to HARM (e.g., “Domestic abuse during lockdown”, *The Conversation*, June 2020; “Coercive control conviction and Asian justice”, *Eastern Eye*, September 2019). **Chronaki** provides excellent Psychology representation at science festivals (e.g., Lancashire Science Festival, 2016-2020, annual visitors c. 13,000; “Hard feelings: The science of emotion”, ESRC Festival of Social Sciences, Museum of Science and Industry, 2015). **Threadgold’s** (2019) article “Background music stunts creativity” (*Applied Cognitive Psychology*) elicited significant international media attention including TV appearances. **Massey** participated in a BBC Horizon documentary (2018) titled, “The placebo experiment: Can my brain cure my body?”, presenting a small-scale experiment featuring in the programme along with an interview. The documentary led to several national radio interviews.

## Regional, National and International Research Links and Contributions to the Research Base, Economy and Society

UoA4 has excellent regional, national and international collaborative research links. The examples we provide below from each of the UoA4 primary research groups highlight collaborations and contributions to the research base, economy and society more widely. Collaborative links with international researchers have been supported through UCLan’s Distinguished Visitor Programme, which funds overseas colleagues to visit UCLan for workshops, symposia and project planning. UoA4 has benefited from nine such visitors since 2014 (e.g., Prof. Bushman, Ohio State University; Prof. Eckhardt, Purdue University; Prof. Felson, Pennsylvania State University; Dr Lenggenhager, University of Zürich).

### FP Group: Ashworth Research Centre (ARC)

ARC has grown to encompass both research and training units, the latter comprising 17 research interns supervised by **J. Ireland**, **C. Ireland**, **Chu** and **Lewis**. The team works with Maastricht University’s Postgraduate Scheme, training international research interns who work full-time in ARC for up to 10 months. Training has recently incorporated Charles Sturt University, Australia, as a partner, where **J. Ireland** is Visiting Professor. **J. Ireland** also leads the research component of NHS Commission Quality Improvement (CQUIN) projects within ARC. Since 2014, ARC has funded three full-time and eight part-time Ph.D. scholarships. Based on its success, MerseyCare NHS Trust now provides funds to support ARC in its entirety; these funds are fully committed to UCLan, which manages staff contributions to ARC. ARC delivers research-informed training to HM Prison Service, Private Prison Services (e.g., SERCO), Secure Children’s Services, NHS Trusts and private mental-health providers in the areas of risk assessment, protective risk factors, expert witness, forensic mental health, personality disorder and psychopathy. **J. Ireland** is also lead trainer for Ann Arbor for psychopathy assessment and personality disorder (IPDE) training and, prior to this, for Pearson Publishing, training 400+ professionals a year. The expertise within ARC has been internationally recognised through its work in the US with the NetSCID team (TeleSage company) for training and dissemination of the digital SCID (Structured Clinical Interview for DSM diagnosis), the most widely used mental-health and personality-disorder assessment for the Diagnostic and Statistical Manual for Mental Disorders (DSM) and International Classification of Diseases (ICD). This is fully licensed by the American Psychiatric Association. **J. Ireland** was invited to be NetSCID’s UK consultant in 2017 and is a field reviewer for the new classification codes in ICD-11. External leadership is evidenced by **J. Ireland** being Chair for MerseyCare NHS Trust Research and Innovation for Secure Services, with responsibility for all closed sites. In 2016, **J. Ireland** and **C. Ireland** established an EMDR (Eye Movement Desensitisation and Re-Processing) Trauma Service with a local GP provider, which has completed over 200 assessments and provided therapy to over 150 clients. This service is part of ARC’s public engagement and

## Unit-level environment template (REF5b)

community re-investment agenda, with the GP provider reporting a marked decrease in returning “hard-to-treat” clients. In response to the COVID-19 pandemic, **J. Ireland** established a Psychological Support Hub to provide free, online assistance for frontline NHS workers, care home staff, uniformed service workers and military personnel involved in the effort against the pandemic. The Hub operates using live audio/video conferencing, where workers speak confidentially to a clinical lead assigned to each end-user group, with EMDR therapy available for those having experienced acutely distressing events. The Hub was developed with regional NHS Trusts and other North West healthcare providers. Within ARC, **C. Ireland** also provides leadership at MerseyCare NHS Trust in developing “Critical Incident” interventions for managing hostage taking and barricades. She authored the Trust’s Crisis Negotiation (Critical Communication) Training Manual and provides research-informed training to enable forensic services staff to become critical incident negotiators.

### **FP Group: Critical Incident and Child Exploitation Research**

**C. Ireland** delivers societal contributions through her Child Sexual Exploitation (CSE) research. Her 2015 article in *Journal of Aggression* was instrumental in policy development as it evidenced that up to 47% of the general population has been approached by an adult in a sexual manner when under the age of 16. These findings have influenced the CSE policy of the Coastal Child and Adult Therapeutic Services (CCATS, Lancashire), also contributing to Cumbrian Police policy. Collaborative community-based work with CCATS has informed therapeutic approaches with children at risk of exploitation, supporting 60+ professionals from four residential care providers. The research has been utilised in 30+ psychological child assessments across five Local Authorities in the last two years.

### **QoL Group: Criminal Justice Partnership (CJP) Research**

**Graham-Kevan** is CJP Co-Director and has formed collaborations with the Police Service, HMP, the Probation Service, Victim Support and all regional Offices of the Police and Crime Commissioners. Since 2017, there have been 40+ CJP public-engagement events held at various locations (e.g., HMP Kirkham, with which the CJP has a Prison Learning Partnership), attended by representatives from 200+ partner organisations across the justice sector (e.g., police, prisons, youth offending teams, local government, health and education services and third sector organisations). Examples of CJP work include collaborative engagement with Clinks, which supports the voluntary sector working with people in the criminal justice system and their families. **Graham-Kevan** also works on projects around trauma-informed practice with Lancashire Violence Reduction Network, Healthy Lancashire and South Cumbria, South West Burnley Together and Public Health Lancashire. **Graham-Kevan** is additionally Honorary Professor of Clinical Psychology, Department of Social Sciences, Mittuniversitetet, Sweden.

### **QoL Group: Honour Abuse Research Matrix (HARM)**

In 2018, **Khan** launched HARM within the context of the CJP as an international, multiagency, multi-disciplinary network to develop research, policy and practice to combat domestic abuse in ethnic minorities in the UK as well as “honour” abuse, forced/child marriage and female genital mutilation worldwide. HARM now involves 150+ researchers, practitioners, human rights lawyers, policymakers, support/emergency services, charity CEOs and influential lobbyists. In response to national and international priorities during the COVID-19 pandemic, **Khan** co-chaired five online domestic abuse conferences focusing on BAME victims, each with 100+ delegates and high-profile presenters (David Lammy, Shadow Secretary of State for Justice and Shadow Lord Chancellor; Jess Phillips, Shadow Minister for Domestic Violence and Safeguarding; Nicole Jacobs, Domestic Abuse Commissioner for England/Wales; Professor Aisha Gill CBE; and Dame Sandip Verma, UN Women UK). **Khan** delivers service to society as Chair of the independent Expert Advisory Committee on Harmful Practices. Under **Khan**’s leadership, the Committee has informed policy and practice by producing the first national workplace guidelines: “Harmful Traditional Practices in the Workplace: Guidance for Best Practice” (2020).



## Unit-level environment template (REF5b)

### QoL Group: Quality of Life Research

Research on childhood obesity by **Abbott** (with NHS North Lancashire and Lancashire County Council) demonstrated that implementing the “Healthy Heroes” educational resource deterred excess weight gain in pre-school children from poor socioeconomic areas. Lancashire County Council has rolled out the Healthy Heroes programme across Lancashire, which has been awarded a Personal, Social, Health and Economic Education (PSHE) Association Quality Mark. **Abbott’s** leadership in the European Cystic Fibrosis Society Mental Health Working Group and US Cystic Fibrosis Foundation Mental Health Advisory Committee has supported the implementation of international mental-health guidelines advocating annual screening for people with CF and their caregivers. This work is progressing in CF Centres worldwide, with longitudinal tracking of mental-health screening and treatment outcomes in place. These established screening programmes facilitate a substantial longitudinal study to evaluate COVID-19 effects in an extremely vulnerable population. In 2014, **Abbott’s** impact case study reported the development and impact of two patient-reported, health-related quality of life (HRQoL) instruments for use in systemic lupus erythematosus (LupusQoL) and CF (CFQoL), highlighting the importance of HRQoL measurement and allowing service users a voice in their healthcare. A portfolio of sustained research activity facilitated formation of relationships with regulatory bodies, professional societies, health professions, patients, caregivers and industry. LupusQoL (used in 51 countries in 77 languages) has attracted global interest from the pharmaceutical sector. The inclusion of a patient reported HRQoL instrument in clinical trials is essential, enabling pharmaceutical companies to gain approval to market drugs and make licensing claims regarding their effectiveness from a patient perspective. Since REF2014, **Abbott’s** longitudinal, multidisciplinary research has provided published evidence as to the sensitivity of LupusQoL to aid data interpretation in clinical trials. The continued administration of LupusQoL in numerous international pharmaceutical trials has resulted in new medicines being approved. Income generation has continued for UCLan, East Lancashire NHS Trust and RWS Life Sciences, who host the LupusQoL website and liaise with the pharmaceutical industry.

### PCN Group: Reading and Visual Cognition Research

A major international collaboration exists between **Liversedge** and **Benson** (including **Zang**, **Degno** and **Marsh**) and researchers at the Academy of Psychology and Behavior, Tianjin Normal University (TNU), China, including two leading international figures in experimental psychology in China (Prof. Xuejun Bai, former president of the Chinese Psychological Society and Prof. Guoli Yan). This collaboration is longstanding (15+ years), reflecting shared interests in eye movements, reading and visual cognition, especially focused on reading in Chinese (a language with a different orthographic form to alphabetic languages). This research has contributed major insights to understanding word segmentation, saccadic targeting and multi-constituent unit processing in Chinese reading. The group comprises 40+ researchers between the two institutions. Since its inception, this collaboration has involved multiple staff, postdoctoral researcher and PGR exchanges (e.g., in 2020 there were two TNU Ph.D. students, one former TNU Ph.D. student and a visiting Associate Professor from TNU spending a year at UCLan). During the REF period, **Liversedge** and **Benson** have hosted 16 Chinese Visiting Researchers, each with competitive external funding and working in the UK 12+ months. Additionally, there have been multiple visits by the UCLan team to work at TNU. Exchange visits are funded primarily through China Scholarship Council (CSC) grants (£174,000 since 2014). The collaboration has been extremely productive (30+ peer-reviewed journal articles) and has led to several collaborative funding successes in the UK (ESRC, Newton Fund/British Council) and China (CSC, Natural Science Foundation of China) totalling £1.09 million since 2014.