University of BRISTOL

Elizabeth Blackwell Institute for Health Research

Bristol Neuroscience Newsletter

January - February 2019

bristol neuroscience

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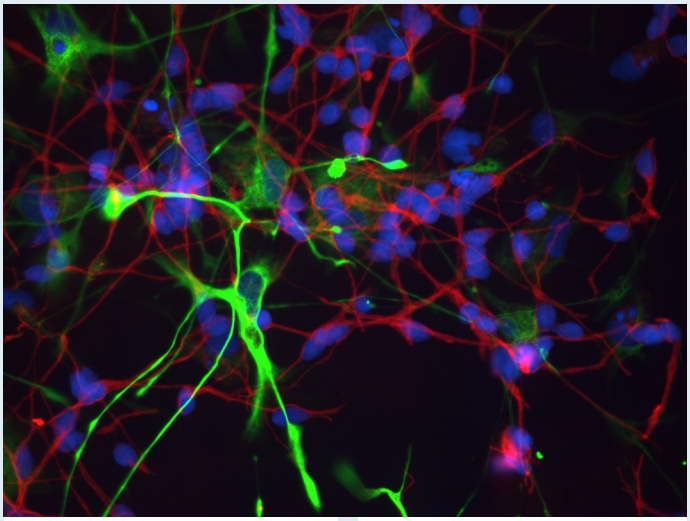
Treatment options for infant brain injury

Dr Robert Spaull (Translational Health Sciences) investigates whether the cerebrospinal fluid (CSF) from premature babies might yield clues for brain injury treatment, by looking at how the CSF might change the way that cells in the infant brain develop.

Premature infants, born before 32 weeks of gestation, are extremely vulnerable to bleeds into the brain's ventricular system, where cerebrospinal fluid is produced. The resultant brain injury can have lifelong medical and developmental consequences. When very premature infants experience intraventricular bleeding, they are also susceptible to damage to the lining of the ventricles, and the layer just below (the subependymal germinal matrix); home to neuronal progenitor cells (NPCs) which play a critical role in how the brain develops. Forty percent of infants with this condition go on to develop post-hæmmorhagic hydrocephalus which is treated with a shunt to drain off the excess CSF. Dr Spaull is attempting to identify, isolate and culture neural progenitor cells from within this CSF, and has established a CSF bank which will assist in determining further treatment options for infants with brain injuries.



Robert has developed and validated an antibody panel for fluorescent activated cell sorting which can investigate the CSF for growth factors and markers of inflammation.

Read more

Neurons (red) and astrocytes (green) differentiated from foetal neural progenitor cells (Spaull, 2017).

EVENTS

Using virtual reality to explore animal perception and behaviour
25 January 2019, 16.00 - 17.00, Dr Tom Pike (School of Life Sciences, University of Lincoln). Merchant Venturers Building, Room 1.11

Diverse changes in synaptic plasticity at distinct inhibitory synapses within the hippocampus
28 January 2019, 13.00 - 14.00, Matt Udakis (Lab: Prof Jack Mellor) and Yong Li (Lab: Prof Alastair Poole), C42 Biomedical Sciences Building

Knowledge Exchange drop-in session
30 January 2019, 12.00 - 16.00, D23 Biomedical Sciences Building

Engagement Bites: Evidencing & Evaluating Impact
30 January 2019, 13.00 - 14.00, Dr Kirsty Sedgman (Lecturer in Theatre, University of Bristol), Room 4.10, School of Education, 35 Berkeley Square

South West Fly meeting
30 January 2019, 13.30 - 17.00, AIMS seminar Centre rooms 2A/B, University of Bristol

Ethical governance is essential to building trust in robotics and AI systems
30 January 2019, 18.00 - 20.00, Prof Alan Winfield (UWE). Pell Lecture Theatre, University Road, BS8 1SS

Hearing loss, older men and loneliness: a workshop exploring how men with hearing loss experience and combat loneliness and isolation
31 January 2019, 10.00 - 13.00, The Vassall Centre, Gill Avenue, Bristol, BS16 2QQ

Understanding the Dynamics of Analogy-Making: New Analytical Techniques from Eye-Tracking
31 January 2019, 13.00 - 14.00, Robert M. French (CNRS, Université de Bourgogne). Senior Common Room, Level 2 (2D17), Priory Road Complex.

Above & Beyond (A&B) and Research Capability Funding (RCF) grant writing workshop
5 February 2019, 12.30 - 13.30, Interview Room, Level 3, Education & Research Centre, Upper Maudlin Street, BS2 8AE

NC3Rs Experimental Design Workshop
5 February 2019, 13.00 - 15.00, Bristol, exact location to be provided

NIHR Bristol BRC's Qualitative Research Network: creating innovation, insight and impact
6 February 2019, 11.30 - 14.00, room OS6, Oakfield House, Oakfield Grove, BS8 2BN

Being BME in STEM half Day Conference
6 February 2019, 13.00 - 16.00, Coffee lounge, Chemistry building

FULL EVENTS LISTINGS ARE AVILABLE ON THE BN WEBSITE

Pure drop-in session
6 February 2019, 13.00 - 15.00, Life Sciences foyer

Designing digital interventions to support physical activity for people with long-term conditions
6 February 2019, 13.00 - 14.00, Prof Lucy Yardley (University of Bristol), Room 7G1, 7 Priory Road, BS8 1TZ

Statistics Clinic
6 February 2019, 14.00 - 15.30, SM4 Mathematics Building

An introduction to Open Research
6 February 2019, 14.00 - 16.00, room 3.13, 35 Berkeley Square BS8 1JA

HEE/NIHR Pre-doctoral Clinical Academic Fellowships workshop
6 February 2019, 16.30 - 18.00, Room OSC014, UWE, Glenside Campus, Blackberry Hill, Bristol, BS16 1DD

A fine-grained perspective onto object interactions from first-person views
8 February 2019, 16.00 - 17.00, Dima Damen (Associate Professor, University of Bristol). Merchant Venturers Building, Room 1.11

In vivo electrophysiological recording of hippocampal cells in head fixed but freely exploring mice
11 February 2019, 13.00 - 14.00, Jon Palacios (Lab: Professor Jack Mellor, UoB) and Sam Moore (Lab: Professor Inge Hers, UoB), C42 Biomedical Sciences Building

Above & Beyond (A&B) and Research Capability Funding (RCF) grant writing workshop
12 February 2019, 12.30 - 13.30, Interview Room, Level 3, Education & Research Centre, Upper Maudlin Street, BS2 8AE

Biomedical Sciences Film club
12 February 2019, 18.15 - 20.00, E29 Biomedical Sciences Building

Above & Beyond and Research Capability Funding grant writing workshop
13 February 2019, 8.00 - 9.00, Interview Room, Level 3, Education & Research Centre

Knowledge Exchange drop-in session
13 February 2019, 12.00 - 16.00, Sky Lounge, Life Sciences Building

Generalisation in Mind and Machine seminar
14 February 2019, 13.00 - 14.00, Ryan Blything (University of Bristol). Senior Common Room, Level 2 (2D17), Priory Road Complex

The Dynamics of Live Audiences
15 February 2019, 16.00 - 17.00, Prof Pat Healey (Professor of Human Interaction, Queen Mary, University of London), Merchant Venturers Building, Room 1.11

Pumps and Pipes UK Conference, 19 February 2019, 8.00 - 18.00, SPE Aberdeen

FULL EVENTS LISTINGS ARE AVILABLE ON THE BN WEBSITE

NEWS

A living laboratory for livestock

A groundbreaking 'living laboratory' for livestock will be established at the Bristol Veterinary School thanks to a £1 million donation from the John Oldacre Foundation. The John Oldacre Centre for Sustainability and Welfare in Dairy Production will tackle the global challenge of ethical food security and train the next generation of vets and agriculturalists to help address the major issues facing agriculture.

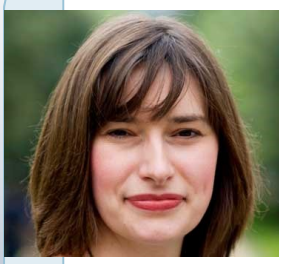
Based within Wyndhurst Farm, the University of Bristol's commercially run dairy unit at Langford, the Centre will be equipped with the latest data collection devices (e.g. motion detection, GPS tracking, thermographic sensors) to gather data that will identify and support changes in agricultural practices.

The Centre will bring together colleagues from engineering, data and behavioural sciences to use technology to identify small behavioural and physiological changes at the beginning of a disease, such as mastitis. The Vet School is already working with colleagues in Life Sciences, using thermography as a novel way of predicting disease, which can reveal which cow is ill.

As well as being a research resource, the Centre will teach undergraduate and postgraduate students in animal production and livestock research, understanding and communicating data, and engagement with the wider farming community.

John Oldacre Foundation

Philip Leverhulme Prize



Dr Claire Haworth has been awarded a Philip Leverhulme Prize for her research; the Prize is awarded for 'achieve-ment of outstanding researchers whose work has already attracted international recognition and whose future career is exceptionally promising'. Based in the School of Psychological Science, Dr Haworth uses approaches from psychology, behavioural genetics and data science to understand mental health and wellbeing. The prize primarily recognises her work on the dynamic nature of genetic and environmental influences on human behaviour. She has contributed to theory and evidence about how genetic and environmental influences on behaviour are dynamic, showing that the importance of these influences can change with age, environmental conditions and behavioural interventions. She then developed a novel method for combining the best genetic approaches with high-quality intervention methods to test her theory. She is currently using innovative computational social science methods to test her theory of dynamic genetics at high-resolution time scales and in response to real-world life events.

Turing Fellows announced

Thirty academics from the University of Bristol have been awarded Turing Fellowships and 10 projects have received funding on the first call launched in August 2018. The Fellows are drawn from a wide range of expertise across all six Faculties. The purpose of the Turing Fellowship is to allow University academic staff to develop collaborations with Turing partners, initiate new research projects and help set the research agenda for the Alan Turing Institute, the national institute for data science and artificial intelligence.

Fellows include Dr Conor Houghton, Reader in Computational Neuroscience (Dept of Engineering Mathematics) and Dr Ivan Palomares Carrascosa, Lecturer in Data Science and AI (Dept of Computer Science). Examples of the ten funded projects include Dr Oliver Davis (Population Health Sciences) and Dr Claire Haworth (Psychological Science) for *UK birth cohorts as a platform for ground truth in mental health data science*; and Prof Peter Flach (Dept of Computer Science) for *Towards a Measurement Theory for Data Science and Artificial Intelligence.*

A full list of Fellows and projects can be found on the Jean Golding Institute for Data Science website.

The Alan Turing Institute

Funding successes: Part 1

To Jonathan Witton (Physiology, Pharmacology & Neuroscience), from the **Elizabeth Blackwell Institute**, Bridging Funds for Research Fellows of £24,282 (matched by the school) for the 12 month project, starting 1 Jan 2019, *Synaptic and neuronal circuit dysfunction in a mouse model of tauopathy-associated dementia*.

From the **Wellcome Trust** via the Elizabeth Blackwell Institute, a Translational Acceleration and Knowledge Transfer (TRACK) award to Dr Andrew

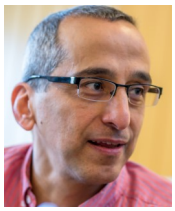
Conn (Mechanical Engineering) (Co-PIs Jonathan Rossiter & Marcus Drake) for £24,669 for the 7 month project, starting 3 Dec 2018, *Active implant to treat stress urinary incontinence*.

Also in receipt of TRACK funds were:
Dr Ela Chakkarapani (Translational Health Sciences);

£22,513 for the 12 month project, starting 1 Oct 2018, *Foetal brain monitoring during intrapartum period: interface development, signal processing and feasibility study*; &

Dr Catherine Morgan (Translational Health Sciences); £24,883 for the 12 month project, starting 1 Oct 2019, *PD SENSORS: Parkinson's disease Symptom Evaluation in a Naturalistic Setting producing Outcome measures using SPHERE*.

To Prof Majid Mirmehdi (Computer Science) from the **North Bristol NHS Trust**, £50,00 for *Quality of Movement Monitoring on Parkinson's Patients*, starting 1 Oct 2018 for 13 months.



To Prof Patrick Kehoe (Translational Health Sciences) from the **Alzheimer's Society**, £264,343 for *The role of the brain renin-angiotensin system in cerebrovascular dysfunction and vascular cognitive impairment*.

Filming in Physiology, Pharmacology and Neuroscience

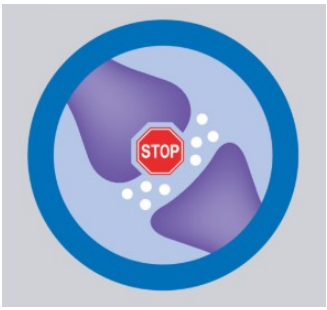
The British Neuroscience Association (BNA) spent a day filming at their headquarters and labs based in the Biomedical Sciences building on 29 October 2018. Contributors included mental health campaigner Ruby Wax OBE, Prof Paul Howard-Jones (School of Education), and G Haze (U-RHYTHM market researcher-iCURE and neuroendocrinologist).

Drug combination for treatment-resistant depression

Psychiatrists and GPs increasingly combine mirtazapine with an SSRI (selective serotonin reuptake inhibitor) or SNRI (serotonin-noradenaline reuptake inhibitor) antidepressant for patients whose depression does not respond to a single antidepressant. A large clinical trial led by researchers at the Universities of Bristol, Exeter, Keele, Manchester and Hull York Medical School looked at the effectiveness of adding mirtazapine to an SSRI or SNRI in patients who remain depressed after at least six weeks of conventional (SSRI or SNRI) antidepressant treatment. They found that this combination was no more effective in improving depression than placebo and call on doctors to rethink its use.

The study also found that patients taking mirtazapine in combination with another antidepressant had more adverse effects and were more likely to stop treatment than those who took an antidepressant and placebo.

Depression is one of the top five contributors to the global burden of disease and by 2030 is predicted to be the leading cause of disability in high income countries. People with depression are usually managed in primary care in the UK and antidepressants are often the first line of treatment. However, many patients do not respond to antidepressants.



Read more

Kessler DS *et al*. (2018). MIRtazapine added to SSRIs or SNRIs for Treatment Resistant Depression in Primary Care: a placebo controlled randomised trial (MIR). *British Medical Journal*. 363. Published 31 October 2018.

Funding successes: Part 2

To Prof Emma Robinson (Physiology, Pharmacology & Neuroscience) from **Small Pharma**, £36,543 for *Evaluation of novel antidepressant in preclinical model* starting 1 Sep 2018 for one year.

To Prof Emma Raven (Chemistry) from the **Biotechnology and Biological Sciences Research Council** £114,837 for *The regulatory role of heme in circadian control* , starting 1 Aug 2018 for 5 months.

To Prof Gene Feder (Population Health Sciences) from the **Medical Research Council (MRC)**, £560,069 for *Determinants and health sequelae of intimate partner violence and abuse in young adult relationships: a mixed methods study*, starting 1 Sep 2018 for three years.

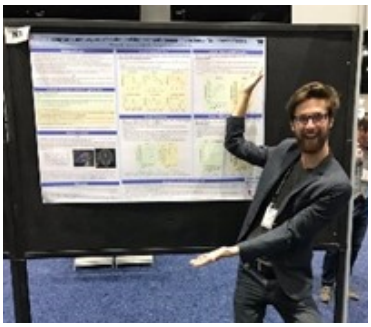
To Dr Jon Heron (Population Health Sciences) from the **MRC,** £5,612 for *Early-onset depression: Characterising development and identifying risk*, starting 21 Nov 2018 for two years.

From the **MRC** via the Elizabeth Blackwell Institute, a Confidence in Concept (CiC) award to Angela Attwood (with Co-Investigators Chris Jarrold, Sarah Griffiths, Ian Penton-Voak & Marcus Munafò) (Psychological Science) for *AboutFace: testing an application to improve emotional face processing in Autism Spectrum Disorder*.

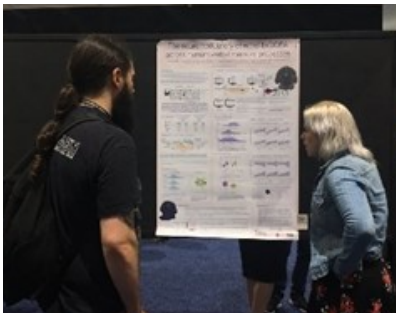
Society for Neuroscience 2018 conference

There were a number of University of Bristol PhD students displaying posters at the 2018 Society for Neuroscience conference, held 3-7 November 2018 in San Diego, USA:

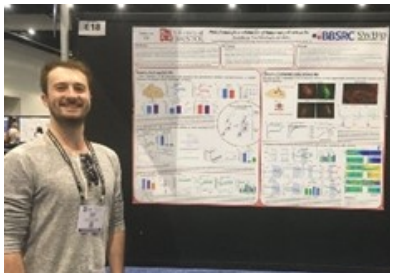
Alfie Wearn (Translational Health Sciences) on hippocampal subfields, dementia and memory



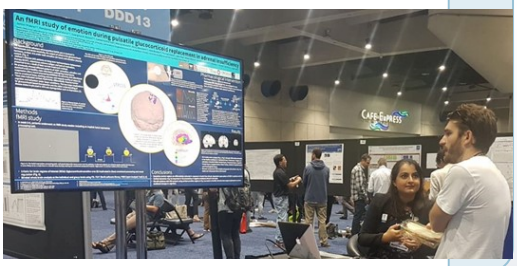
Hanna Isotalus (Translational Health Sciences) on neuroimaging of memory, healthy ageing and dementia.



Travis Bacon (Centre for Synaptic Plasticity) on hippocampal noradrenergic neuromodulation, optogenetics and STDP.



Jamie Thakrar (Translational Health Sciences) on cortisol, emotional processing and functional connectivity of the brain.



Also present at the event and displaying a poster was Dr Cian O'Donnell (Dept of Computer Science); he and his team built a computational of a single synapse to ask if we can explain variability of plasticity with molecular noise. They think that the rules of brain learning are stochastic. View his abstract online.

NC3Rs Regional Programme Manager

Dr Jessica Eddy (pictured) has recently been appointed as the NC3Rs Regional Programme Manager for universities under the GW4 alliance. Her role is to help us more closely implement 3Rs policies across our research and education agenda. Jess will be working with colleagues across the four universities to provide advice and support for ongoing 3Rs initiatives, to assist in identifying new opportunities and to coordinate the sharing of best practice.

Jess is happy to answer any NC3Rs or 3Rs queries you might have and can also provide advice on PPL applications and NC3Rs grant applications as well as help with the NC3Rs Experimental Design Assistant tool, a web based application to guide animal researchers through the design of their experiments. Do get in touch with her with any questions you might have (jessica.eddy@nc3rs.org.uk) and please visit the NC3Rs page for more information on the organisation and the resources they provide.

Slides presented by Jessica on NC3R can be viewed in OneDrive.

Future technology for contactless medical procedures

Advancements in acoustic tweezers from Prof Bruce Drinkwater (Department of Mechanical Engineering) and his colleague Dr Asier Marzo (Universidad Publica De Navarra, Spain) are driving the technology towards this futuristic-sounding reality.

Sound exerts a small acoustic force and by turning up the volume of ultrasonic waves, too high pitched for humans to hear, scientists create a sound field strong enough to move small objects. The team have enabled the efficient generation of sound fields complex enough to trap multiple objects at the target locations by applying a novel algorithm that controls an array of 256 small loudspeakers, which will allow the creation of intricate, tweezer-like, acoustic fields. Ultrasound is routinely used in pregnancy scans and kidney stone treatment as it can safely and non-invasively penetrate biological tissue.

Marzo A and Drinkwater BW (2018). Holographic Acoustic Tweezers. *Proceedings of the National Academy of Sciences* . Published online 17 December 2018.

Meet the 2018-19 Vice-Chancellor's Fellows

Benjamin Ward-Cherrier
An intelligent neuromorphic tactile prosthetic hand
Benjamin's research aims to address the current lack of sensory feedback in upper limb prosthetics; an essential component to regain full functionality of the missing limb. This fits within a research vision aiming to develop biologically-inspired hardware and perception algorithms to facilitate the integration of robotic devices with the human body.

Duleeka Knipe
Parental migration from low and middle-income countries: what are the mental health consequences for left-behind children?
An emerging global challenge in LMIC is that of migration. There are 244 million international migrants worldwide; 71% are from LMIC. Many migrants are young mothers working on short-term contracts without their families, leaving millions of children behind in the care of other relatives. Little is known about the long-term impact of this migration on children's mental health but there are concerns of greatly elevated risk.

Rebecca Richmond
From clustered behaviours to molecular mechanisms in chronic disease epidemiology
Rebecca has been awarded the de Pass Vice-Chancellor's Fellowship for future leaders in translational population-based genetic epidemiology. Her proposed research aims to highlight the relative importance and inter-relationships of several health behaviours for prioritisation in disease prevention strategies and to identify molecular pathways which could serve as therapeutic targets for intervention.

For the full list of Vice Chancellor's Fellows, go to the University's Fellowship pages.

Tackling loneliness in older men

Specially-designed beermats have been created to highlight the important role traditional pubs have to play in tackling loneliness in older men. As traditional pubs decline, and face-to-face socialising is replaced by social media, researchers have examined the role pubs play in the lives of men over 65. They found that older men still see the pub as a central point in the community, although the rising cost of drinks means more people are drinking at home in isolation.

Featuring trivia questions and games, the new beermats – called Beermat(es) – have been devised with games designer Mufti Games and will appear in pubs across Bristol soon. Their design is based on feedback from pub-goers and are aimed specifically at men, who are more likely to experience social isolation in older age than women (Independent Age research).

As the UK population ages, the number of older people at risk of social isolation and loneliness is on the rise, which can have a detrimental impact on physical and mental health outcomes for older adults.
Dr Paul Willis, research lead (School for Policy Studies)

Read more

Postnatal depression and fatherhood

Fathers may play a key role in supporting mothers and children in families affected by post-natal depression; but what is the nature of father involvement? Dr Iryna Culpin, an Elizabeth Blackwell Institute Early Careers Fellow, looked into the relationship between the father and the child developed in families where mothers suffered post-natal depression, and the role it played in helping children to adapt successfully to their mothers' mental health difficulties. She used her fellowship to analyse UK-wide datasets and initiate a pilot study which looked at father-mother-child relationships and child development in a context of maternal depression at sociological, behavioural and population levels.

Initial analyses suggest that higher levels of paternal involvement during the early postnatal period reduce the risk of emotional disorders in children of postnatally depressed mothers. This finding is supported by preliminary qualitative data suggesting more involved, compensatory fathering and support of the partner, as well as nurturing of an exclusive father – child relationship and intimate bond.

The collaborations which Dr Culpin has fostered with experts in early child development, sociology and psychiatric epidemiology have resulted in several on-going projects looking at the effects of father child interactions in a variety of contexts and different cultures.

Read more

Psychological intervention in domestic abuse cases

Training domestic violence and abuse (DVA) advocates to deliver psychological support to women experiencing DVA could significantly improve the health of those affected. In a randomised controlled trial, women who received the intervention showed reduced symptoms of psychological distress, depression and post-traumatic stress compared to those who received just advocacy. Women who experience DVA are under huge psychological stress. They are three times more likely to suffer from depression and four times more likely to suffer from anxiety than women in the general population. However, psychological interventions that are not adapted to their specific needs, often fail.

The study compared mental health outcomes for women receiving the intervention with those receiving usual advocacy. The intervention, Psychological Advocacy Towards Healing (PATH), is specifically tailored to the patient's needs. Those receiving the intervention had up to eight one-to-one sessions of trauma-informed psychological support with a trained advocate with two booster follow-up sessions, on top of the usual support that advocates provide. After 12 months, the women in the intervention group had a greater improvement in mental health than the usual advocacy alone group, with reduced symptoms of psychological distress, depression and post-traumatic stress.

Evans M *et al*. (2018). Women's experiences of a randomized controlled trial of a specialist psychological advocacy intervention following domestic violence: a nested qualitative study. *PLOS ONE*. Published 27 November 2018.
Read more

Psychotic experiences - trauma in childhood?

Recent research has established greater evidence for a causal link between trauma in childhood and psychotic experiences at 18 years old. The findings are the first to comprehensively examine the association between different types of trauma, and their timing in childhood with later psychotic experiences using a large population study. Psychotic experiences include abnormal experiences such as hearing voices or feelings of paranoia.

The team used Bristol's Children of the 90s data to examine 4,433 participants who had clinical interviews and attended clinics at the age of 18. The study concludes that between 25 and 60% of the young people who reported psychotic experiences (five per cent of the sample) would not have developed these if they had not been exposed to trauma such as bullying, domestic violence or emotional neglect as a child.

The results were consistent regardless of socio-economic status or genetic risk of mental health difficulties, which could inform future research and the development of interventions.

Croft J *et al*. (2019). Association of Trauma Type, Age of Exposure, and Frequency in Childhood and Adolescence with Psychotic Experiences in Early Adulthood. *JAMA Psychiatry*. 76(1), pp79-80.

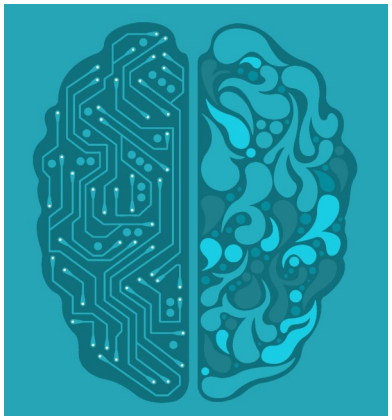
Briefing – AI in health care

On 27 November 2018 Bristol Health Partners published a briefing on *AI in health and care*; the publication was supported by a discussion event hosted the following day.

Written by Sophie Taysom and John Kellas, the briefing provides a definition of Artificial Intelligence (AI), outlines the national context, discusses key questions and describes local initiatives and resources for action on AI in health and care.

About the authors

Dr Sophie Taysom is an independent policy analyst at Keyah Consulting. She has a keen interest in bringing innovation and policy to life, and is passionate about AI in health and care, and the opportunities and challenges it brings. She is a regular writer at Medium.



John Kellas has been working with the Bristol Health Partners as an innovation and community engagement consultant over the last four years. He is inspired by permaculture, and committed to improving community informatics, digital civics, data modelling and visualisation.

Download the full briefing (PDF)

Staffing updates

Dr **Kyla Thomas**, a Consultant Senior Lecturer in Public Health Medicine, has been appointed as the **Clinical Director of the National Institute of Health Research (NIHR) West of England Clinical Research Network (CRN)**. She takes over the role from Dr Stephen Falk. Her main research interests are around examining the effectiveness, cost-effectiveness and safety of smoking cessation medicines (and e-cigarettes) and the development of complex interventions to prevent and reduce opioid painkiller dependence in patients with chronic non-cancer pain.
You can read more on the NIHR news pages.

The new **Dean for the Faculty of Health Sciences** from 1 August 2019 will be **Prof Jane Norman** MB ChB, MD, FRCOG, FMedSci, FRCP Edin, FRSE, currently Professor of Maternal and Foetal Health at the University of Edinburgh. Her research focusses on the pregnancy "stressors" of obesity, maternal depression/stress, inflammation and hypoxia.

Best Doctoral Research Theses 2017/18

Six Bristol postgraduates have been awarded £500 prizes for the exceptional quality of their PhD theses. Annual prizes are made for the thesis considered to be the best within each faculty.

The successful prize winners this year include:

Faculty of Biomedical Sciences: Kerrie McNally
Identification and characterisation of retriever, a multi-protein complex required for retromer-independent endosomal retrieval of cargo
(Primary Supervisor: Prof Pete Cullen).
Transmembrane proteins at the cell surface allow the cell to sense and respond to its environment. The levels of specific transmembrane proteins, or cargo, can be regulated by endosomes. Cargo in endosomes can be either sorted for removal, or recycled back to the cell surface. Defects in the process of cargo recycling are becoming increasingly associated with human neurodegenerative diseases such as Parkinson's. This thesis describes the discovery of an ancient and evolutionary conserved multi-protein complex required for the recycling of over 200 cargo. Importantly this complex acts independently of other established endosomal complexes, providing an insight into a new recycling pathway.

Faculty of Engineering: Francesco Alderisio
Co-ordination and leadership in complex multi-agent systems: analysis, control and application to human ensembles
(Primary Supervisor: Prof Mario Di Bernardo).
Francesco developed a theory-driven approach for designing virtual agents that interact with groups of humans as followers or leaders which allows a much greater understanding of co-ordination and leadership with arrays of humans or machines carrying out identical tasks. The PhD research has already led to seven papers in high-impact journals. Impressively, the work included aspects of computer simulation, mathematical proof, software creation, human experiments, and practical control theory and data analysis.

Read more

Partnership with Max Planck Society

The University of Bristol has partnered with the Max Planck Society in Germany to establish an innovative new Max Planck Centre for Minimal Biology in Bristol. The Centre will pursue game-changing research in the emerging field of minimal biology to address some of the most complex challenges in fundamental science. This could lead to transformative applications in biotechnology and medicine.

As an emerging field of science, the applications in minimal biology are wide-ranging and pave the way for new therapies that could see artificial cells programmed with specific properties to rescue diseased cells and tissue, and the engineering of bacterial and mammalian cells to improve the production of pharmaceuticals.

Training the next generation of scientists to work between the physical and life sciences will be a core mission of the new Centre, which is expected to become fully operational in 2019. The Centre will focus on several key areas, including: synthetic nanoscale biology, implementing custom-designed functionalities in proto- and living cells, tissues and ultimately organisms; protein design in living cells, whereby completely new proteins will be designed from scratch to operate alongside natural proteins; and biomedical genome intervention by engineering synthetic, virus-derived, programmable nano-devices.

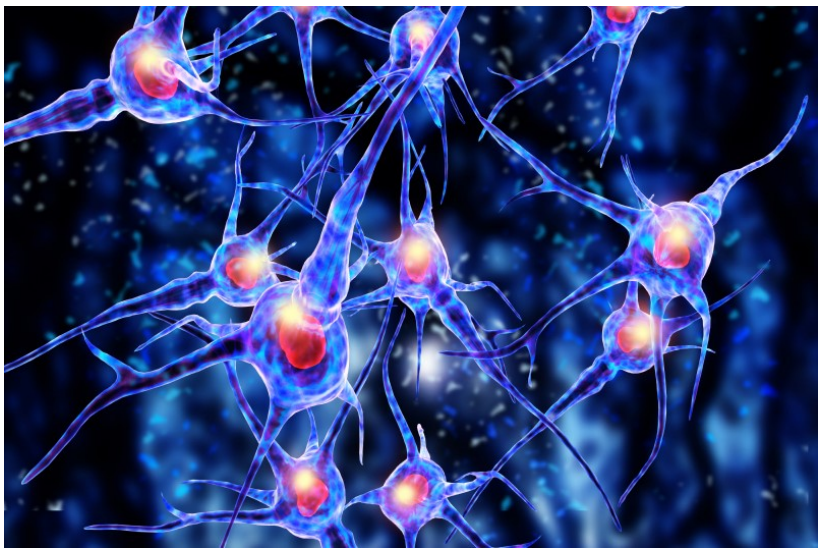
Read more

Life Sciences Sector Deal

Life sciences is a sector that operates at the cutting-edge of technological developments and on December 7th 2018 the second Life Sciences Sector Deal was announced. The Great West region, including the University of Bristol, was recognised in the report for its flourishing life science industry, due to its collaboration between more established technology and digital businesses.

The deal announced a £1.3bn industry-government investment in the UK economy and a new partnership driving early disease detection, with global biopharmaceutical company UCB investing around £1bn in research and development, including in a new state-of-the-art facility.

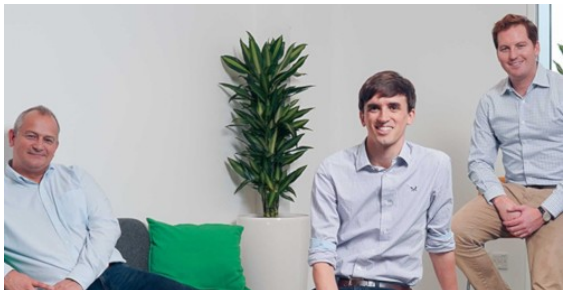
This builds on the government's Life Sciences Industrial Strategy published in December 2017, which recognised the importance of regional clusters and followed intense collaboration between life sciences organisations and the GW4 Alliance, and GW4's regional strengths such as convergence with AI, high performance computing, quantum technologies and world-leading academic expertise. Places continues to be one of five key commitments within the deal, which this time round has a strong focus on technology and digital innovation.



Read more

Spin-out Ultrahaptics raises £35 million

The world leader in mid-air touch technology, Ultrahaptics has fundraised £35 million in an oversubscribed Series C round of investment. Ultrahaptics was founded by Dr Tom Carter based on the ultrasound technology that he developed during his PhD studies at the University of Bristol. Now CTO of the company and named one of MIT Technology Review's Innovator's Under 35, Dr Carter launched the start-up out of the Bristol SETsquared Centre, the University's award-winning business incubator, in 2013. The new funding led by Mayfair Equity Partners, the buyout and growth investor, will enable Ultrahaptics to further develop and commercialise its revolutionary tactile response technology in next generation user interfaces and experiences.



L-R: Steve Cliffe, CEO & President; Dr. Tom Carter, CTO; Christopher *Olds, CFO*

The complex suite of algorithms and supporting hardware that Dr Carter developed to manipulate ultrasound waves, enables users to feel and interact with virtual buttons, switches and dials, as well as 3D shapes and virtual force fields, in mid-air - revolutionising the way people interact with machines.

Read more

Conditions caused by drinking in pregnancy

Up to 17& of children could have symptoms consistent with foetal alcohol spectrum disorder (FASD). The UK has the fourth highest level of prenatal alcohol use in the world, but no estimates existed from a population-based study on how many people may have FASD. FASD is a group of lifelong conditions caused by exposure to alcohol in pregnancy that affect learning and behaviour and can cause physical abnormalities. FASD is considered to be a relatively hidden disability because most individuals with it do not show physical features. It is thought to be underdiagnosed with only one specialist clinic in England.

Researchers from Bristol and Cardiff worked with clinicians to assess a wide range of information on mothers' drinking in pregnancy and studied the development of 13,495 children from Bristol's Children of the 90s study. They applied a screening tool and found that up to 79% of children in the sample were exposed to alcohol in pregnancy and that to up to 17% screened positive for symptoms of FASD. A positive FASD screen was defined as problems with at least three different areas of learning or behaviour, with or without physical anomalies (growth deficiency and distinctive facial features, which include a smooth philtrum, thin upper lip and small eye openings).

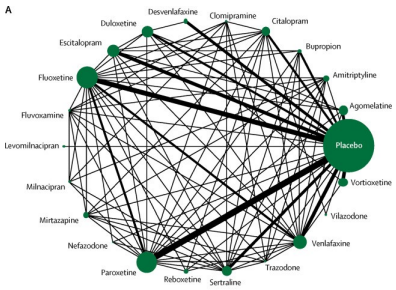
The next steps should include follow-up studies to further clarify the current number of people in the UK with FASD. Some countries, such as the USA, Canada and Italy have used in-school screening and have concluded that up to 10% of children in the general population are affected, with rates as high as 30% among children in care.

Read more

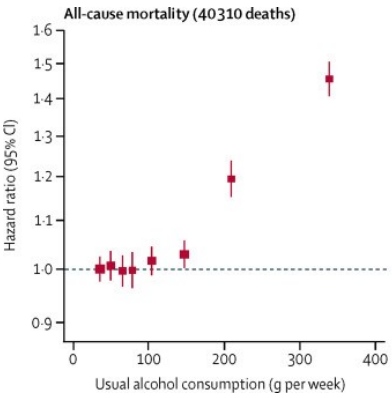
Altmetric Top 100 papers

Every year data science company, Altmetric, release an annual ranking of the research articles that generate the most international online attention and discussion. This provides a picture of the influence and reach of academic work.
Research co-authored by Bristol academics hit as high as number 12 in the '2018 Altmetric Top 100' released on 11 December 2018. Ranked articles included three health studies and one on atmospheric pollutants.

Papers include:
#12 - Cipriani A *et al*. (2018). Comparative efficacy and acceptability of 21 antidepressant drugs for the acute treatment of adults with major depressive disorder: a systematic review and network meta-analysis. *The Lancet*. 391(10128), pp.1333-1334.



#15 - Wood AM *et al*. (2018). Risk thresholds for alcohol consumption: combined analysis of individual-participant data for 599 912 current drinkers in 83 prospective studies. *The Lancet*. 391 (10129), pp.1513-1523.



Altmetric use an algorithm to collate online, mainstream (e.g. newspapers), social media and blog comments, as well as more scholarly forums to weight reach and impact.

Partnerships and strategic relationships

As part of the University's commitment to increase support for collaborative working, partnerships and engagement, the Research and Enterprise Development (RED) division is bringing together Partnerships and Programmes into a single team.

This team will combine the current Programme Management group with the recently formed Partnerships and Alliances team to provide integrated support for the University's major Research and Enterprise programmes and partnerships. The single team is part of a continuous improvement activity led by the Pro Vice-Chancellor for Research and Enterprise and the Director of Strategic Alliances. In addition to providing greater visibility within the institution the team will provide more comprehensive support for opportunities such as the Industrial Strategy Challenge Fund (ISCF) and Temple Quarter Enterprise Campus (TQEC) which necessarily involve many of the University's strategic partners. The revised team will continue to provide support for all major research and innovation-related programmes at Bristol as well as partner relationship management in support of these. It will also provide support for all forms of external engager/ business enquiry, support for the development and scaling up of major partnerships, and key account management for the University's portfolio of strategic relationships.

Alliances and partnerships portal (sign-in required)

The Secret Life of 4 and 5 Year Olds

The award-winning documentary series, featuring Prof Paul Howard-Jones, returned to our screens on 10 January 2019. The Secret Life of 4 and 5 Year Olds, which has won plaudits for its insights into what goes on when parents drop their little ones at the nursery gates, returned with a four-part series on Channel 4. Technology takes over the Secret Life nursery this series, as the four-year-olds get to grips with the classroom of the future.

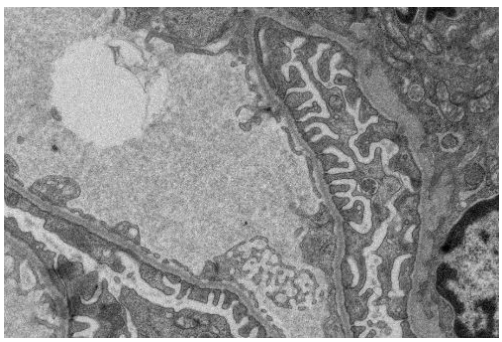
He, along with fellow experts, will analyse the children's behaviour and development, looking at how tablets, robots and other gadgets impact on the way children play, discussing what tech is doing to the bodies and brains of this generation of digital natives.

You can catch up with the series on All 4.

Harms of certain drugs

A global research team led by the University of Bristol studied how the activity of enzyme GSK3 (Glycogen Synthase Kinase 3) affects the function of podocyte cells, which are crucial in enabling the kidneys to filter blood. In the podocyte, the GSK3 enzyme (which exists in two related forms in humans, a and b) stops the body from leaking protein into the urine and so prevents the development of kidney failure. However, when both GSK3 forms are excessively suppressed, GSK3 is not present in sufficient quantities and this is highly detrimental both during development of the kidney and in the fully mature kidney, increasing the likelihood of renal failure.

One of the drugs currently on the market that is known to suppress GSK3 is lithium. This is commonly used as a psychiatric medication and for conditions including bipolar disease. Some patients taking this medicine for a long time, or at high doses, have been shown to leak large amounts of protein into their urine and develop kidney failure needing dialysis or a kidney transplant. There has also been a drive from the pharmacological industry in the past to develop GSK3 inhibitors for treating diabetes, cancer and Alzheimer's. This has prompted the authors of the paper to urge pharma companies to ensure that when developing these drugs, they ensure that the drugs do not over-suppress both forms of GSK3.



Hurcomb JA *et al*. (2019). Podocyte GSK3 is an evolutionarily conserved critical regulator of kidney function. *Nature Communications*. 10, 403.

Transmission electron microscopic picture of the filtration barrier of the kidney- foot processes of podocytes shown throughout

Dog's emotional attachment to toys

A team of researchers are interested in a dog's emotional attachment to specific toys, like the behaviour seen in young children who form strong attachments to blankets and soft toys.

Attachment objects provide a sense of comfort and security for children for whom these objects are irreplaceable. Children often treat their attachment object as if it has thoughts and feelings.
Bruce Hood, Professor of Developmental Psychology in Society

Past published research estimates the number of Western children who form emotional attachments to soft toys and blankets are around 60%. Interestingly, childhood attachment objects are not typically seen in the Far East, where studies have reported much lower levels. Research has also found that not all children form emotional attachments to soft toys. A recent twin study found that attachment toy ownership is half to do with genes and the other is to do with the environment - especially for those children who spent longer time away from their mothers.

Read more

Levels of stress hormone linked to housing

A new study examining UK housing data and health outcomes has indicated a link between people living in the private rental sector having higher levels of a stress hormone. Although there is extensive evidence for the links between housing and health outcomes, most draw on subjective measures of health. The team wanted to look at a more objective and reproducible measure of health, so opted for C-reactive protein (CRP), a chemical in the body that is associated with stress and inflammation. The study examined data from the UK Household Longitudinal Study (UKHLS), an annual survey covering around 40,000 households in the UK that includes extensive information from individuals and households.

After taking account of potentially influential factors, certain housing types and tenure were associated with raised CRP. The link between damp and cold indoor temperature is well known. But attention is now being paid to the potential role of 'soft' factors, such as housing affordability. Around one in five of participants had a raised CRP level above 3 mg/l–a threshold associated with cardiovascular disease. Renters in the private sector had significantly higher CRP levels than home owners with a mortgage. And those living in semi-detached and terraced houses and flats had higher CRP than those living in detached properties. Surprisingly, those with below average incomes who spent more than a third of it on housing had lower CRP.

Clair A and Hughes A (2019). Housing and health: new evidence using biomarker data. *Journal of Epidemiology and Community Health*. Accessed online 24 January 2019.

ELIZABETH BLACKWELL FUNDING

Daphne Jackson Fellowship

The Fellowship is intended to support individuals who want to return to research in their careers as scientists, engineers, technologists and mathematicians, following a break of two years or more taken for family, caring or health reasons, and who will be conducting health-related research.

Closing date: 09:00 18 February 2019

EBI Identifying Candidates for Wellcome Trust Investigator Awards

This scheme is designed to support a small number of permanent academic staff at UoB within the first five years of their appointment, who are planning to apply for an Investigator Award from the Wellcome Trust. Applications will be accepted on a rolling basis.

Heads of School are asked to nominate members of staff who can be eligible for this scheme by emailing ebi-health@bristol.ac.uk

EBI Workshop Support

Support interdisciplinary workshops in health research at new or emerging interface between two or more disciplines. Applications reviewed all year.

Returning Carers Scheme

To support academic staff across all faculties in re-establishing their independent research careers on return from extended leave (16 weeks or more) for reasons connected to caring (e.g. maternity leave, adoption leave, additional paternity leave, leave to care for a dependant.).

The deadline for applications is 30 April and 31 October each year.

EBI Bridging Funds for Research Fellows

This scheme is designed to support a small number of academic staff at the University of Bristol who currently hold an externally funded research fellowship. Applications accepted on a **rolling** basis.

The Elizabeth Blackwell Institute for Health Research is officially a member of Equality, Diversity and Inclusion in Science and Health, or EDIS, an initiative set up by the Wellcome Trust, the Crick Institute and GSK.

Rachael Gooberman-Hill, Director of the EBI, attended the interim Board meeting on 12 December 2018 as a University of Bristol representative.

Find out more about EDIS

FUNDING OPPORTUNITIES

Would you like to receive timely, tailored funding opps information?
Do you want to know what funding opportunities come up in your research area?
Get tailored funding alerts?

Research Professional provides access to an extensive database of funding opportunities, and can send out tailored alerts based on keywords that you input, ensuring that the funding alerts you receive are the ones you want to hear about. UoB staff and students have **FREE** online access to the database from any device – once you've registered then you can view upcoming funding opportunities from home or away, not just while on the University network.

You can search for funding information by discipline, sponsor, database searches, by recent calls or by upcoming deadlines. If you register for the site and log in, you'll be able to:

- **Set up automated funding opportunity email alerts** - **tailored according to your discipline and research interests**, an easy process that will take just a few minutes to set up through the use of keywords
- **Save searches and bookmarks** - store items of interest for future reference, download and email to colleagues
- **Sign up for higher education news bulletins** – want to hear about what is going on in the broader HE environment? Latest news on the REF, setting up of UKRI etc? Sign up for the 8am playbook or the Research Fortnight news publications and stay up to date with the latest news.

Alternatively, a full calendar of funding opportunities for neuroscience research has already been set up and is available online. Subscribing to the calendar will place the entries in your own calendar, which will automatically update according to pre-specified search criteria. Find out more about **Research Professional** on the RED website. Note that some calls may have an internal process; do always remember to check the major bids webpage here to see if there is an internal process.

The following listings represent a *brief selection* of available funding for the Bristol Neuroscience community. **Full listings of opportunities** are sent out via Faculty Research Directors and/or School Research Directors, and **are available on the Research Development website**.

Research Professional

BNA Local Group funding
https://www.bna.org.uk/members/lg-funding/

Annual deadlines: 31-May-18 and 31-Oct-18 Award amount: £500 pa per individual

The aims of the funding scheme are to enable Local Groups (LGs) to benefit current members of the BNA and recruit new members of the Association. Creative ideas for activities that fulfil

the Objects of the BNA and engage with as many people as possible are looked on favourably. Such activities can include but are not restricted to:

- training or career opportunities in the field of neuroscience for BNA members
- opportunities to foster translational neuroscience
- public engagement projects
- an individual or a series of seminars*
- initiatives that support neuroscientists relating to wider issues of neuroscience e.g. using animals in research, neuroethics, working with the media
  initiatives to recruit new members to the BNA

British Neuropathological Society
Small grant scheme

Deadline: 01-Mar-19 Award amount: £5,000

This aims to advance neuropathology by supporting both substantive and pilot projects, and projects related to education and training in the field of neuropathology. Applicants must be members of the society.

British Medical Association
Medical research grants for members

Deadline: 01-Mar-19 Award amount: £65,000

Vera Down grant, for research into neurological disorders

National Institute on Aging
Research on current topics in Alzheimer's disease and its related dementias

Deadline: 01-Mar-19 Award amount: USD unspecified

The number of awards is contingent upon NIH appropriations and the submission of a sufficient number of meritorious applications. Application budgets are not limited but need to reflect the actual needs of the proposed project. The maximum project period is five years.

EU Joint Programme for Neurodegenerative Disease Research
Multinational research projects on personalised medicine for neurodegenerative diseases

Deadline: 12-Mar-19 Award amount: € unspecified

This supports collaborative research projects on the use of personalised medicine in the diagnosis, prevention and care of neurodegenerative diseases. The following neurodegenerative diseases may be addressed: Alzheimer's disease and other dementias; Parkinson's disease and related disorders; prion diseases; motor neuron diseases; Huntington's disease; spinocerebellar ataxia; spinal muscular atrophy. The total budget is worth up to €30 million. Projects may last up to three years.

Alzheimer's Research UK
Pilot project grants

Deadline: 20-Mar-19 Award amount: £65,000

These support small, innovative research projects and pilot studies that would lead to a major project or programme application to ARUK or other funding body.

Department of Health and Social Care
Health technology assessment programme – commissioned workstreams

Deadline: 21-Mar-19 Award amount: unspecified

These encourage Australian participation and collaboration in leading international collaborative research relating to the effectiveness, costs and broader impact of healthcare treatments and tests. Eligible studies include both primary research and evidence synthesis. Proposals are invited for the following topics:

- antipsychotics for anorexia nervosa
- combination treatment for dementia with Lewy bodies and Parkinson's disease dementia
- care planning intervention for people with dementia who do not have regular contact with an informal carer
- vagus nerve stimulation for highly treatment-resistant depression
- extended treatment in early intervention in psychosis services
- de-prescribing strategies for long-term use of benzodiazepines and z-drugs

Applications that include a research collaboration between UK and Australian institutions are encouraged. Applications from UK institutions without an Australian collaborative element are also welcome for consideration.

National Institute of Neurological Disorders and Stroke
Blueprint neurotherapeutics network – small molecule drug discovery and development for disorders of the nervous system: AIDS-related

Deadline: 21-Mar-19 Award amount: USD unspecified

This supports neuroscience investigators seeking to advance their small molecule drug discovery and development projects into the clinic. Participants in the BPN receive funding for activities to be conducted in their own laboratories and the opportunity to collaborate with NIH-funded consultants and contract research organisations that specialise in medicinal chemistry, pharmacokinetics, toxicology, formulations development, chemical synthesis under good manufacturing practices, and phase I clinical testing.

SHOWCASED ARTICLE

Is screen time associated with anxiety or depression in young people? Results from a UK birth cohort

Khouja JN, Munafò MR, Tilling K, Wiles NJ, Joinson C, Etchells PJ, John A, Hayes FM, Gage SM and Cornish RP. *BMC Public Health*. 19, 82.

Background: There is limited and conflicting evidence for associations between use of screen-based technology and anxiety and depression in young people. We examined associations between screen time measured at 16 years and anxiety and depression at 18.

Methods: Participants (n= 14,665; complete cases n=1869) were from the Avon Longitudinal Study of Parents and Children, a UK-based prospective cohort study. We assessed associations between various types of screen time (watching television, using a computer, and texting, all measured via questionnaire at 16y), both on weekdays and at weekends, and anxiety and depression (measured via the Revised Clinical Interview Schedule at 18y). Using ordinal logistic regression, we adjusted for multiple confounders, particularly focussing on activities that might have been replaced by screen time (for example exercising or playing outdoors).

Results: More time spent using a computer on weekdays was associated with a small increased risk of anxiety (OR for 1 – 2 h = 1.17, 95% CI: 1.01 to 1.35; OR for 3+ hours = 1.30, 95% CI: 1.10 to 1.55, both compared to < 1 h, p for linear trend = 0.003). We found a similar association between computer use at weekends and anxiety (OR for 1 – 2h = 1.17, 95% CI: 0.94 to 1.46; OR for 3+ hours = 1.28, 95% CI: 1.03 to 1.48, p for linear trend = 0.03). Greater time spent using a computer on weekend days only was associated with a small increased risk in depression (OR for 1 – 2h=1. 12, 95% CI: 0.93 to 1.35; OR for 3+ hours = 1.35, 95% CI: 1.10 to 1.65, p for linear trend = 0.003). Adjusting for time spent alone attenuated effects for anxiety but not depression. There was little evidence for associations with texting or watching television.

Conclusions: We found associations between increased screen time, particularly computer use, and a small increased risk of anxiety and depression. Time spent alone was found to attenuate some associations, and further research should explore this.

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