University of BRISTOL
Elizabeth Blackwell Institute for Health Research

bristol neuroscience

Bristol Neuroscience Newsletter

2023: Issue 1

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Inside this issue:

New Bristol Neuroscience Lead

BN is delighted to announce that following an open call for expressions of interest, Dr Paul Chadderton, Associate Professor in the School of Physiology, Pharmacology & Neuroscience, has taken on the role of interim Bristol Neuroscience Lead from 1 March 2023 for one year.

Paul's research involves the application of electrophysiological and imaging techniques (including patch clamp and two-photon imaging) to study brain circuitry in the intact mammalian brain.

He completed his PhD at University College London in the lab of Michael Hausser, followed by postdoctoral research with at UCL and Rutgers University. With the support of a Medical Research Council Career Development Award, he established a research group in the Department of Bioengineering at Imperial College London. In 2018, he moved his group to Bristol.

During his tenure Paul will continue to build a coherent, multifaceted and sustainable research community across the Network. This will involve supporting major research bids and mentoring researchers in strategic areas of research development, identifying needs across the wider community, and encouraging interdisciplinary research across Bristol and with outside partners. This includes promoting and representing the interests of all neuroscience researchers and meetings with external visitors and funding agencies.

If you would like to chat with Paul or arrange a 1:1 to discuss a research idea, provide feedback or air any concerns, please contact him via email: p.chadderton@bristol.ac.uk.

In addition to his teaching, research and Lead responsibilities, Paul is also one of the University's Mental Health Champions.

EVENTS

Painpad: Monitoring patients' pain
9 March 2023, 13.00 - 14.00, Dr Daniel Gooch & Prof Blaine Price (School of Computing & Communications, The Open University), Queens Building room 1.18

Can We Improve Machine Vision Using Insights From Neuroscience?
9 March 2023, 13.00 - 14.00, S.P. Arun (Centre for Neuroscience, Indian Institute of Science, Bangalore, India), online

Neuronal sensing of microbes in barrier immunity and host defense
9 March 2023, 14.00 - 15.00, Dr Isaac Chiu (Associate Professor, Department of Immunology, Harvard Medical School), online

Data Hazards, Ethics and Reproducibility One-Day Symposium
10 March 2023, 9.30 - 17.00, Alan Turing Institute, 96 Euston Road, London NW1 2DB and online

Form and fate: How shape influences cell fate in human brain development and evolution
13 March 2023, 13.00 - 14.00, Dr Madeline Lancaster (LMB, University of Cambridge), C42 Biomedical Sciences Building

Principal Investigator (PI) Essentials
14 March 2023, 9.00 - 13.00, online

GW4 Wellcome Discovery Regional Research event
14 March 2023, 10.30 - 18.00, Apex Hotel, Bath

Trying to be a more useful epidemiologist: From heart disease to child maltreatment
15 March 2023, 12.00 - 13.00, John Lynch (University of Adelaide), OS6 Oakfield House and online

Indicators for Open Research
15 March 2023, 13.00 - 15.30, online

Challenges and Advances of Deep Learning in Digital Pathology
16 March 2023, 13.00 - 14.00, Dr Nikolay Burlutskiy (Director of Artificial Intelligence, AstraZeneca R&D), online

Approximate Analysis by Synthesis: Towards a Computational Theory of Vision
16 March 2023, 15.00 - 16.00, Alan L. Yuille (Bloomberg Distinguished Professor in Cognitive Science and Computer Science, Johns Hopkins University, USA), online

Celebrating Neurodiversity
16 March 2023, 18.00 - 20.00, Engine Shed

What happens next? How the little brain constructs the future
16 March 2023, 18.00 - 19.30, Dr Paul Chadderton (Associate Professor in Neurophysiology), Wills Memorial Building

FULL EVENTS LISTINGS ARE AVILABLE ON THE BN WEBSITE

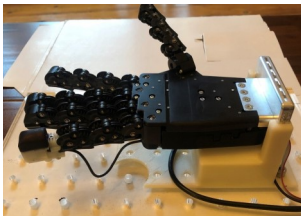
NEWS

Award for ground-breaking 3D printed fingerprint

Prof Nathan Lepora (Department of Engineering Mathematics) and his team celebrated the fact that their landmark robotic finger-tip which makes human-like 'nerve' signals was recognised at the Elektra Awards 2022.

Nathan collected the *Readers' Choice Award: University Research Project of the Year* at the 20th anniversary of the awards held at a grand ceremony in London on 30 November 2022.

Nathan and his team made the headlines earlier this year after creating the sense of touch in an artificial fingertip (pictured right). They did this by using a 3D-printed mesh of pin-like papillae on the underside of the compliant skin, which mimic the dermal papillae found between the outer epidermal and inner dermal layers of human tactile skin. The papillae are made on advanced 3D-printers that can mix together soft and hard materials to create complicated structures like those found in biology.



This highly sensitive, 3D-printed fingertip could help robots become more dexterous and improve the performance of prosthetic hands by giving them an in-built sense of touch.

Group image shows L-R: host with Prof Nathan Lepora, Research Associate Alex Church and comedian Suzi Ruffell

Reducing ethnic inequalities in mental healthcare

The experiences of people from ethnic minority groups with NHS mental healthcare are being seriously undermined by failures to consider the everyday realities of people's lives in services in the UK, reports a study led by researchers at the University of Bristol and Keele University.

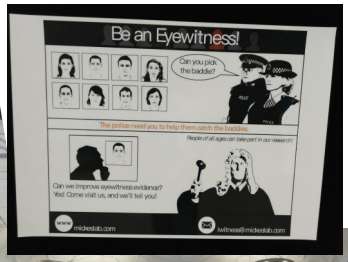
The research team carried out a comprehensive synthesis of existing evidence to explain the under-use of primary care mental health services by people in ethnic minority groups and their over-use of crisis care pathways and involuntary admissions to hospital.

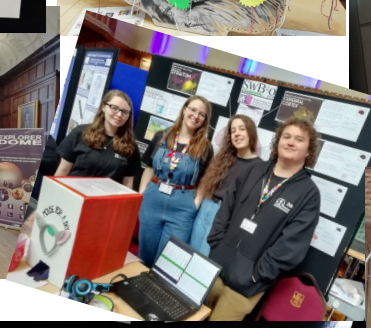
The new work is ambitious as it sets out to explain why these inequalities continue to persist despite over five decades of established evidence and government initiatives in this area.

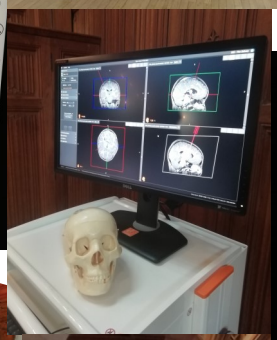
The findings show that prevailing biomedical models of healthcare which centralise a 'European' and 'white' experience, to the exclusion of alternative ideas of mental health and healthcare are major barriers to equitable care, and specifies that services must adopt anti-racist and holistic models of care to reduce ethnic inequalities in mental healthcare.

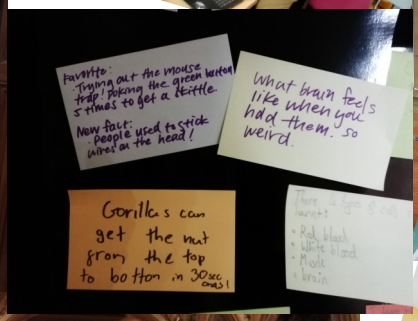
Bansal N *et al*. (2022). Understanding ethnic inequalities in mental healthcare in the UK: A meta-ethnography. *PLOS Medicine.*

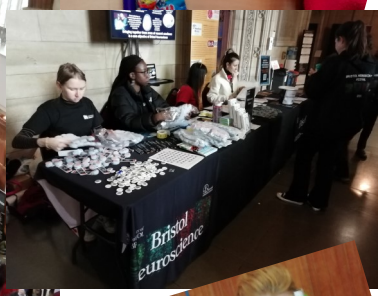
The 2023 Bristol Neuroscience Festival reviewed in images











Diet and health innovation boosted by funding partnership

The Biotechnology and Biological Sciences Research Council, with support from the Department for Environment, Food and Rural Affairs, Innovate UK and the Medical Research Council have launched 6 innovation hubs as part of a new Diet and Health Open Innovation Research Club (OIRC).

Amongst the hubs is *Consumer lab: building academic industry partnerships to ensure sustained acceptance of healthy foods*, under Lead Prof Jeffrey Brunstrom (Psychological Science). The award is for £370,000, with an additional £1.5 million in funding to distribute over the next five years.

Poor diet has a huge impact on public health. It's possible to innovate and improve the nutritional quality of food, but these efforts are wasted if new products don't appeal to consumers. While the UK has extensive expertise and research on dietary behaviour, the data is often collected in a laboratory and from unrepresentative samples. There is a clear need for better tools to understand food choice and how better food products can be accepted in real world settings. We also need to understand more about how changes to food packaging, labelling and how it is made available can influence people's preferences and behaviours.

The hub will transform opportunities for product innovation by addressing these long-standing issues and concerns.

Read the full UKRI press release for further information.

Video explores pressures of gender conformity

The pressures from expectations of gender are explored in *Complete?*, a video created by young people from the UK and Ghana.

The video brings to life the mental health impacts of not feeling accepted as yourself by society. It has been produced as part of a project to understand the impacts of gender construction on young people in these two countries. Young people from both countries were advisors on the project. *Complete?* was created and performed by these young advisors, including members of the National Institute for Health and Care Research (NIHR) Applied Research Collaboration (ARC) West's Young People's Advisory Group (YPAG).

The idea for *Complete?* came from conversations the young people from Bristol and Ghana had during focus groups for the project. The poem was written by Malizah and the video was created by Rising Arts Agency, with support from a team of academics from the Universities of Bristol and Cape Coast, Ghana.

Complete? explores the pressure from peers, parents and others on young people to conform to society's expectations of how different genders behave. Moving through different stages, from confusion and vulnerability to self-acceptance and self-respect, the poem brings young people's experiences to life.

Read the full news item and watch the video

Childhood maltreatment and mental health problems

Experiencing abuse or neglect as a child can cause multiple mental health problems, finds a new study led by UCL researchers, in collaboration with the University of Bristol and NIHR Biomedical Research Centre, University Hospitals Bristol and Weston NHS Foundation Trust (UHBW), King's College London, University of Lausanne and Yale University School of Medicine.

The research sought to examine the causal effects of childhood maltreatment on mental health by accounting for other genetic and environmental risk factors, such as a family history of mental illness and socioeconomic disadvantage.

The first-of-its-kind research analysed 34 quasi-experimental studies, involving over 54,000 people. Across the

34 studies, researchers found small effects of child maltreatment on a range of mental health problems, including internalising disorders (eg. Depression, anxiety, self-harm, and suicide attempt), externalising disorders (eg. alcohol and drug abuse, ADHD, and conduct problems), and psychosis.

These effects were consistent regardless of the method used or way in which maltreatment and mental health were measured. The findings suggest that preventing eight cases of child maltreatment would prevent one person from developing mental health problems.

Baldwin JR *et al*. (2022). Childhood maltreatment and mental health problems: A systematic review and meta-analysis of quasi-experimental studies. *American Journal of Psychiatry*.

Funding successes: Part 1

Dr Lasani Wijetunge (Physiology, Pharmacology and Neuroscience [PPN] received £22,994 for *Changes to Neuronal Communications* funded by an internal **University of Bristol** call. The project starts on 25 March 2023 for four months.

Co-designing and Broadening the Scope of Grief and Baby Loss Booklet, led by Dr Lesel Dawson (Department of English), was supported by a **Research England** Participatory Research Funding award of £5,617, starting 1 February 2023 for 7 months.

A **Research England** Policy Support Fund award of £22,204 will support Vicky Carlisle (Bristol Medical School) to pursue *Using evidence to inform local policy and practice in opioid substitution treatment*. The £22,204 project started 1 February 2023 and will complete within 7 months. The second phase of the project, supported by an additional £42,711 award will start in August 2023 for one year.

Dr Amanda Owen-Smith (Bristol Medical School) was awarded £94,925 from **Health Education England** for *Healthy weight training resources for carers of people with LD/ autism*, starting 1 September 2023 for one year.

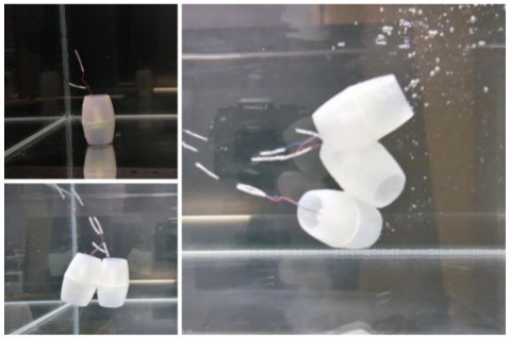
Dr Lucy Series (Policy Studies) received £21,303 from the **National Institute for Health and Care Research** for *Understanding the everyday use of restrictive practices in the care of people living with dementia during a hospital admission: reducing inappropriate use, identifying good practice and alternative approaches to reduce risk and improve care*, which started in April 2022 and completes in August 2024.

The inspiration behind marine robots

Scientists at the University of Bristol have drawn on the design and life of a mysterious zooplankton to develop underwater robots.

These robotic units, called RoboSalps after their animal namesakes, have been engineered to operate in unknown and extreme environments such as extra-terrestrial oceans.

Although salps resemble jellyfish with their semi-transparent barrel-shaped bodies, they belong to the family of Tunicata and have a complex life cycle, changing between solitary and aggregate generations where they connect to form colonies. RoboSalps have similarly light, tubular bodies and can link to each other to form 'colonies' which gives them new capabilities that can only be achieved because they work together.



Researcher Valentina Lo Gatto (Department of Aerospace Engineering) is leading the study. She is also a student at the Engineering and Physical Sciences Research Council Centre of Doctoral Training in Future Autonomous and Robotic Systems (FARSCOPE CDT).

Watch the video

Image © Valentina Lo Gatto

Misinformation shows division along party lines

A new study has shown voters are more concerned about which party a politician belongs to than their position on Brexit – and this holds more sway with their future voting intentions when they encounter misinformation.

The research, led by the Universities of Bristol and Western Australia, explored how people's views and attitudes were influenced by fact-checks of political misinformation, and whether this differed depending on whether the misinformation supported their party and also if they shared the same stance on a big issue, namely Brexit.

The participants were an adult sample of the UK population, and the politicians were chosen to balance both party (Tory vs Labour) and Brexit position (Remainer vs Leaver in each party).

The findings showed that overall, people were receptive to information they received about politicians' statements. They believed accurate statements more after being told they were true, and they reduced belief in false statements after being told they were false. This occurred regardless of whether people shared the politicians' party or their Brexit position. People also were less likely to vote for politicians who made multiple false statements, especially when they were from their preferred party.

Prike T, Reason R, Ecker UKH *et al*. (2023). Would I lie to you? Party affiliation is more important than Brexit in processing political misinformation. *Royal Society Open Science*.

Human-made noise impacts dolphins working together

Dolphins working collaboratively are less successful in the presence of sound generated by humans. The findings imply that dolphins cannot minimise the impact of human-made noise, even by adjusting their own vocal behaviour.

Along with international colleagues, the Bristol team equipped two trained and highly motivated bottlenose dolphins at the Dolphin Research Center in Florida, USA, with suction-cup attached tags, allowing them to record the dolphins' vocalisations while the dolphins participated in a cooperative task. During the task, the dolphins had to work together to both press their own underwater button within one second of each other, while exposed to increasingly louder levels of noise.

The dolphins produced louder and longer whistles to compensate for the increasing noise levels but were still less successful as the noise got louder.

Pernille M. Sørensen, Abigail Haddock, Emily Guarino *et al*. (2023). Anthropogenic noise impairs cooperation in bottlenose dolphins. *Current Biology*.

Image: Delta wearing the sound and movement recording tag © Dolphin Research Center, Florida, USA

Funding successes: Part 2

Meg Attwood and Prof Chris Jarrold (both Psychological Science) received £30,146 from the **Elizabeth Blackwell Institute Policy Support** scheme to continue their work in the mental health of teenagers and young adults, effective February 2023 for 9 months.

Facilitating conversations between mental health practitioners and young people around online behaviour and risk: project to co-create training resources was supported by a policy support award from **Research England** of £88,567. Dr Lucy Biddle (Bristol Medical School) will be overseeing the project from 1 March 2023 for 13 months.

Another **Research England** award (via PolicyBristol) was made to Dr Jasmine Khouja (Psychological Science) for *Informing evidence-based policies and interventions to responsibly reduce e-cigarette use among youth.* The £9,245 project will run between January-December 2023. The team will work closely with Bristol City Council, the Department of Health and Social Care, the Office for Health Improvement and Disparities and Action on Smoking and Health to: 1. Provide clear information to policy makers about the impact banning flavoured e-liquids/ disposable vapes could have on smokers, vapers and young people using a policy decision aid 2. Discourage young people in the Southwest from using disposable e-cigarettes by co-designing an intervention with pupils and teachers.

Dr Rui Ponte Costa (Computer Science) received £199,761 from the **Biotechnology and Biological Sciences Research Council (BBSRC)** for *AI-driven modelling for cortex-wide neuromodulated learning*. The project will run February 2023 to December 2024.

Also from the **BBSRC**, a £197,153 award for *Revealing the circuit mechanisms of altered conscious perception with neuropixels recordings and biophysically-inspired neural networks* was made to Dr Seán Froudist-Walsh (Computer Science), starting February 2023 for 19 months.

Tackling health inequalities together

A consortium-building initiative led by the University of Bristol will investigate the role of community assets such as parks, galleries and creative organisations in improving health outcomes. It was funded as part of the second phase of the £26 million, UK Research and Innovation Mobilising Community Assets to Tackle Health Inequalities investment, which aims to use existing local resources to create a fairer and healthier society.

A Weston-super-Mare consortium, led by Dr Lucy Selman, Associate Professor from the Centre for Academic Primary Care and Palliative and End of Life Care Research Group, is one of the funding recipients under the scheme.

Over nine months, the project will create a network which brings together, as equal participants, people with lived experience, health and social care providers, people providing community assets, including arts and culture initiatives, academics and public health experts. This network will work together to generate knowledge, commitment, capacity and outputs that will directly tackle inequity in end-of-life care and bereavement support and mitigate social isolation and loneliness.

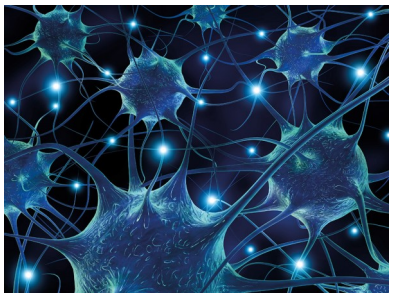
Read more

Influencing opioid agonist treatments journeys

Opioid agonist treatment (OAT) includes taking methadone or similar medication, along with additional support such as motivational interviewing.

The study, part of Dr Vicky Carlisle's (Bristol Medical School) PhD, was supported by the National Institute for Health and Care Research (NIHR). It involved interviews with 12 people using OAT, and 13 service providers. Key findings include:

- The OAT journeys were influenced by a broad range of individual, social and structural factors, with stigma a particularly important barrier to staying in treatment and recovery
- Pharmacies were a particularly strong source of stigma, both actual and perceived
- Recovery from opioid dependency is about more than simply abstinence: it is a complex, self-defined and



circuitous process

The researchers identified three themes from the interviews:

- The system is broken
- Power struggles
- Filling the void

The team concluded prioritising long-term treatment – rather than focusing on the single goal of recovery – was important to make the most of OAT's harm reduction benefits. Stigma was a systemic issue, which stopped people using OAT from leading fulfilling lives. The researchers identified an urgent need to develop targeted interventions to address stigma towards people using OAT.

Carlisle VR, Maynard OM, Bagnall D *et al*. (2023). Should I Stay or Should I Go? A Qualitative Exploration of Stigma and Other Factors Influencing Opioid Agonist Treatment Journeys. *International Journal of Environmental Research and Public Health*.

Inclusive Cross-sensory Social Play

Dr Oussama Metatla (Department of Computer Science, pictured) has been awarded a European Research Council Consolidator grant of almost two million Euros for *Inclusive Cross-sensory Social Play: Towards a new paradigm of assistive technology for early development of blind and visually impaired children (inclusiveXplay)*, an interdisciplinary project that will radically change the way experts design, engineer and evaluate assistive technologies for blind and visually impaired (BVI) children.

He is a Senior Lecturer in Human-Computer Interaction and leads the Diverse-Ability Interaction Lab within the Bristol Interaction Group. The lab investigates the design of interactive technologies inclusive of both disabled and non-disabled people in order to transform the conception of assistive technology, accessibility and inclusion in society.

He said: "It aims to move beyond a medical view of visual impairment by integrating notions of embodied and perceptual experience with social engagement and joint meaning making with peers."

"The aim is to carve new directions in technological research for inclusion by focusing on how interactions between disabled and non-disabled children can be facilitated with and through inclusive cross-sensory assistive technologies.

"Instead of viewing disability as a deviation from a biological norm, and assistive technology as a means to redress functional 'deficits', I aim to explore disability as a human experience that enriches shared meaning making and assistive technology as a vehicle for inclusive interactions between disabled and non-disabled people."

Inequalities in weight management services

Over three quarters of acute NHS trusts in England (77%) do not have a child weight management service, despite being responsible for providing specialist services for the most severely obese, according to a study led by researchers at the University of Bristol and funded by the National Institute for Health and Care Research (NIHR).

The study also found considerable variation between geographical areas, with 36% of trusts in London, and 32% in the Northeast and Yorkshire providing services, compared with just 4% of trusts in the Midlands. The data were collected through Freedom of Information requests sent to 148 acute NHS trusts in England between March 2020 and March 2021. Most trusts (139; 94%) responded. Just 32 provided a child weight management service. It is the first time that the nature of child weight management services provided by acute trusts in England has been explored.

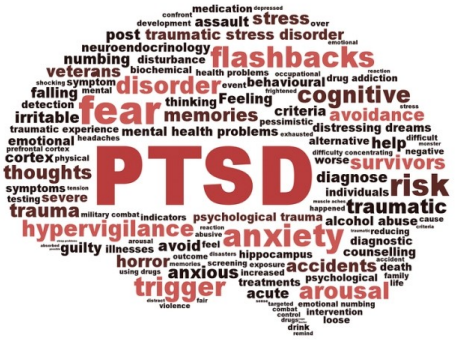
Multi-service and teaching trusts were more likely to provide a service compared to other acute NHS trusts. The study also found a lack of consistency in funding sources and eligibility criteria for children to access services.

Mears R *et al*. (2022). Cross-sectional survey of child weight management service provision by acute NHS trusts across England in 2020/2021. *BMJ Open*.

Resources for understanding PTSD

The free childhood trauma and post-traumatic stress disorder (PTSD) resources were launched 7 December 2022 by the UK Trauma Council (UKTC), which is a project of the Anna Freud Centre, alongside University College London (UCL). They are funded by National Institute for Health and Care Research (NIHR) Applied Research Collaborations (ARCs) and consist of four animated videos and a set of seven training videos for mental health professionals on delivering the best-evidenced treatment for childhood PTSD. The resources aim to improve understanding of PTSD for young people, parents, carers and professionals.

This work is funded through the child health and maternity theme, led by ARC South West Peninsula, of the ARC national priorities programme.



The animations are part of an ARC West led project looking at introducing trauma-focused cognitive behavioural therapies for children in care. It was also supported by ARC North East & North Cumbria (ARC NENC) and ARC North Thames.

Informed by the latest research on childhood trauma and PTSD, the animations show what PTSD looks like, and provide useful advice for young people on how to cope with distressing memories, the science around best treatments, and address worries they might have about getting support.

All the resources are free to access from the UK Trauma Council website, where you can also find out more about its work and its evidence-based resources to improve professionals and carers' understanding of the nature and impact of trauma.

Cerebral palsy prevention programme effective

A programme to increase the use of magnesium sulfate, a £1 injection that helps prevent cerebral palsy in premature babies, has been shown to be effective. The prevention of cerebral palsy in pre-term labour (PReCePT) programme aimed to support all maternity units in England to increase the use of magnesium sulfate in premature births. The PReCePT approach was developed in the West of England in 2014 and piloted in five NHS trusts in the region. The pilot was evaluated by the NIHR Applied Research Collaboration West (ARC West). It has since been rolled out across England via the West of England Academic Health Science Network Network as a national programme.

The evaluation of the national programme, also led by NIHR ARC West, found that PReCePT was both effective and cost-effective. The team looked at data from the UK National Neonatal Research Database for the year before and year after PReCePT was implemented. While use of magnesium sulfate had been increasing before, the study showed that PReCePT was able to accelerate uptake. It increased by 6.3% on average across all maternity units in England during the first year, over and above the increase that would be expected over time as the practice spread organically.

Edwards HB *et al*. (2023). National PReCePT Programme: a before and after evaluation… *Archives of Disease in Childhood*.

Milk restriction affects calves' ability to learn

Calves are often given much less milk than they would want to drink (approximately half) and switched to solid feed abruptly and at an early stage at weaning. Past work has shown that feeding calves restricted amounts of milk slows their development but little research has addressed what calves feel and how hungry they are when under feed restrictions.

This study assessed the effect of milk restriction on calf cognition in two experiments using a modified hole-board test. The researchers expected that the sudden reduction of milk allowance, mimicking what would happen at weaning, would be associated with calves being too hungry to focus on a learning task. Consistent with the idea that milk fed calves experience hunger when the milk supply declines, the study found that cognitive performance dropped when milk allowance was reduced by half (experiment 1). The research also showed that calves fed restricted quantities of milk are slower to learn new rules (experiment 2).

Although the results do not provide direct evidence that calves felt too hungry to focus, the effect on cognition is consistent with the negative experience of 'feeling' hunger. This type of studies can help identify farm animal care practices that when mitigated lead to improved welfare for many dairy calves.

Lecoprs B *et al*. (2023). Hunger affects cognitive performance of dairy calves. *Royal Society Biology Letters*.

Funding successes: Part 3

Dr Daniel Whitcomb (Bristol Medical School) received £67,226 from the **Defence and Security Accelerator for** *Enhancing human memory capacity through non-invasive neuromodulation*, starting January 2023 for 11 months.

Briefly mentioned in Issue 4 of 2022, now with more information; *The Sleep Detectives: Sleep stratification in young people at high risk of psychosis* will be led by Prof Matt Jones (Physiology, Pharmacology and Neuroscience) thanks to an award of £376,751 from **Wellcome**. It started in February 2023 and is expected to complete in January 2026.

Dr Rui Ponte Costa (Computer Science) was awarded £88,050 from the **Medical Research Council** to pursue *AI-driven brain modelling for neuromodulated cognitive enhancement*, starting September 2022 for five months.

Prof Jack Mellor (Physiology, Pharmacology and Neuroscience) is in receipt of a £1,956,255 award from the **Medical Research Council** for *Impairment of neural plasticity and adaptive representations by genetic risk factors for schizophrenia*. The project will run from July 2023 to June 2028.

Dr Stephen Montgomery (Biological Sciences, pictured) received £320,000 from the **Natural Environment Research Council** for *Genetic architecture of brain evolution during ecological divergence*, starting April 2023 for three years.

Speech disorders interfere with friendships

The study sought to address whether children with persistent speech disorder (who struggle to make themselves understood and may be difficult to understand or barely intelligible) also experience greater levels of social, emotional and behavioural difficulties (SEBD) and are therefore at risk of the associated negative consequences in older life.

The results showed that children with persistent speech disorder at age eight were more likely to show peer problems at age 10-11 years compared with their peers, as reported by teachers and parents. However, they appear to be no more likely than their peers to report depressive symptoms at age 10 or to become involved in antisocial and risk-taking behaviour at age 11 to 14.

Identifying the relationships between persistent speech disorder and SEBD can ultimately inform education and health services to ensure that children at risk are identified and offered appropriate support.

Wren Y *et al*. (2023). Social, emotional and behavioural difficulties associated with persistent speech disorder in children: A prospective population study. *Journal of Child Psychology and Psychiatry Advances.*

Looking at thinner counterparts

Women who are dissatisfied with their body shape spend more time looking at their thinner counterparts, finds a new University of Bristol-led study involving nearly 3,000 women. The research, aimed to understand more about risk factors for eating disorders and potential targets for new treatment interventions.

Previous studies have suggested that women with high body dissatisfaction display an attentional bias towards low-weight bodies, which is thought to exacerbate feelings of body dissatisfaction. However, until now, these findings have been inconsistent.

Researchers evaluated the results of 34 studies comprising 2,857 women who had participated in a range of attentional bias tasks including gaze tracking to see whether those who were more dissatisfied with their own bodies directed more attention to thinner body shapes.

After pooling the results, the team found evidence for this positive association in women, but only for studies using gaze tracking as a measure of attentional bias. Women with high body dissatisfaction, when compared to women with low body dissatisfaction, directed their gaze more frequently and for longer durations towards low weight female body stimuli.

House T, Graham K, Ellis B *et al*. (2023). Is body dissatisfaction related to an attentional bias towards low weight bodies in non-clinical samples of women? A systematic review and meta-analysis. *Body Image*.

True stories of self-harm may help and reduce stigma

Lived experience stories of self-harm may be helpful for those with a history of self-harm but they should reflect a range of personal journeys to encourage relatability and avoid using stigmatising language. People with recent self-harm experience were able to positively engage with lived experiences stories found online, according to a study published in JMIR Mental health.

There are already clear guidelines for publishing self-harm related content safely such as avoiding graphic details which may feel triggering for some people. However, participants in this study noted the importance of a story feeling authentic and not overly sanitised in order to relate to it. Several participants suggested that inclusion of a nonlinear recovery journey, involving challenges and setbacks, helped make a story feel human and real.

Most participants described stories of recovery from self-harm as motivating and empowering. They felt hopeful and were inspired to believe that it might also be possible for them to recover by reading about how others had sought help.

Read the full Bristol Biomedical Research Centre news item

Winstone L *et al*. (2023). Investigating How People Who Self-harm Evaluate Web-Based Lived Experience Stories: Focus Group Study. *JMIR Mental Health*.

Fish sensory organ and underwater robots

A fish sensory organ has been key to improving navigational skills of underwater robots.

The work was centred around the lateral line sensing organ in African cichlid fish, but found in almost all fish species, that enables them to sense and interpret water pressures around them with enough acuity to detect external influences such as neighbouring fish, changes in water flow, predators and obstacles. The lateral line system as a whole is distributed over the head, trunk and tail of the fish. It is comprised of mechanoreceptors (neuromasts) that are either within subdermal channels or on the surface of the skin.

The team discovered the lateral line system around the head has the most important influence on how well fish are able to swim in a shoal. Meanwhile, the presence of more lateral line sensory units, neuromasts, that are found under the skin result in fish swimming closer together, while a greater presence of neuromasts on the skin tend to result in fish swimming further apart.

In simulation, the researchers were able to show how the mechanisms behind the lateral line work are applicable at not just the tiny scales found in actual fish, but at larger scales too. This could inspire a novel type of easily-manufactured pressure sensor for underwater robotics, particularly swarm robotics, where cost is a large factor. The team now plan to develop the sensor further and integrate it into a robotic platform to help a robot navigate underwater and demonstrate its effectiveness.

Scott E *et al*. (2023). Lateral line morphology, sensory perception and collective behaviour in African cichlid fish. *Royal Society Open Science*.

Repeated cocaine use increases addictiveness

Teams from the Federal University of São Paulo and the University of Bristol Veterinary School aimed to identify the brain structures involved in behavioural responses to cocaine. Scientists believe the phenomenon underpins abusers compulsive desire for the drug by causing changes in several areas of the brain's neural pathways which mediate reward and adaptive behaviours.

Using animal models and an innovative state-of-the-art 3D quantitative image analysis (stereology), the team were able to identify the specific areas of the brain activated when these were repeatedly exposed to cocaine. They show the brain's dorsomedial prefrontal cortex, nucleus accumbens core and the basolateral amygdala participate in both the developing phase (induction) and the expression phase of behavioural responses to cocaine, while the ventral area of the mesencephalic tegument has greater participation in the induction phase only. The findings indicate repeated use of cocaine leads to associate learning, so an individual associates the euphoric effect promoted by the drug with the environment where it is consumed; as a result, a reinforcing system is established.

Longo BM *et al*. (2023). Distinctive neuroanatomic regions involved in cocaine-induced behavioral sensitization in mice. *Biomedicines.*

Remote methods and inclusivity

Researchers from Bristol's Biomedical Research Centre (BRC) wanted to explore how the first six months of the COVID-19 pandemic affected autistic people. The study team was especially interested in whether lockdown experiences would affect people's willingness to participate in research.

Between March and July 2020, the study team interviewed 31 autistic adults. They found that, during the first COVID-19 lockdown, study participants felt less anxious and were able to enjoy the quieter pace of life enforced by restrictions. However, participants also found it challenging to adjust when their daily routines had to change.

Findings from the study suggest that interviewees saw research participation and engagement as increasingly relevant during the pandemic. They welcomed efforts to conduct research using online methods of communication and valued the increasing use of technology.

The study team identified that the wider use of remote technology has the potential to make research more inclusive and participatory. Obtaining consent online or allowing remote participation in research could lead to improved access for autistic people.

Realpe AX *et al*. (2023). Lockdown Experiences and Views on Future Research Participation of Autistic Adults in the UK During the First 6 Months of the COVID-19 Pandemic. *Autism in Adulthood*.

Cost of misinformation to healthcare during the pandemic

A report has highlighted the consequences of misinformation, including loss of trust in public institutions, delayed action on pressing issues such as climate change, and the financial toll on healthcare services during the COVID-19 pandemic. The 'Fault Lines' report involved a panel of international experts, including cognitive scientist Prof Stephan Lewandowsky (Psychological Science).

As science and health misinformation become a growing part of people's lives, the findings show how these issues are having a greater influence on ideology and identity. The report, led by the Council of Canadian Academies (CCA), also indicates how these threats are contributing to social division and inequality as well as exerting financial pressure on healthcare systems.

The report set out mounting evidence revealing how misinformation has led to illness and death from unsafe interventions and products, vaccine preventable diseases, and flouting of public health measures, with the most vulnerable populations suffering more. For instance, it estimates that science and health misinformation cost the Canadian healthcare system at least CDN $300 million during the COVID-19 pandemic. This is the first time that the cost of misinformation has been estimated directly.

Tackling misinformation is a complex and long-term challenge; the report details several measures that have shown promise.

Experts have discovered how zebra stripes work

Researchers at Bristol have discovered why zebra fur is thinly striped and sharply outlined.

Their findings reveal that stark black-white distinctions and small dark patches are particularly effective in thwarting horsefly attack. These characteristics specifically eliminate the outline of large monochrome dark patches that are attractive to horseflies at close distances.

The team theorise that the thin back stripes serve to minimise the size of local features on a zebra that are appealing to the biting flies.

The research was led by Prof Tim Caro and Dr Martin How (both Biological Sciences). The team found that tabanid horseflies are attracted to large dark objects in their environment but less to dark broken patterns. All-grey coats were associated with by far the most landings, followed by coats with large black triangles placed in different positions, then small checkerboard patterns in no particular order. In another experiment, they found contrasting stripes attracted few flies whereas more homogeneous stripes were more attractive. They found little evidence for other issues that they tested, namely polarization or optical illusions confusing accurate landings such as the so-called 'wagon-wheel effect' or 'the barber-pole effect'.

Caro T, How M *et al*. (2023). Why don't horseflies land on zebras. *Journal of Experimental Biology*.

Image: Horse with black and white patterned blanket © Martin How

Empowering youth through creativity

Adolescence comes with a raft of fundamental changes - both in how young people perceive themselves and society, and how society perceives them. It's also a time when health-risk choices can start – smoking, alcohol use, risky sexual behaviours and physical inactivity, for example – and it's easy for these to become habitual. This makes adolescent health and policy an important area of research.

Researchers typically engage with young people through schools, but this comes with

challenges, as Dr Laura Tinner, from the University of Bristol's Population Health Science Institute, explained:

My research focus is on adolescent health inequality", she said. "I felt that trying to engage in a school environment only really reached a particular set of young people; those who feel comfortable discussing health – a potentially sensitive topic – among their school peers.

Trying a different approach to adolescent engagement, Laura set up the *Empowering Youth* project. The aim was to work with youth organisations and groups to explore different avenues for reaching young people, and different environments in which they may feel more comfortable.

Read the full article on the Elizabeth Blackwell Institute webpage

Eating disorders aren't a niche issue

Dr Helen Bould (Bristol Medical School) is working with the Born in Bradford (BiB) cohort study to gain a better understanding of eating disorders among adolescents. She's found that almost a quarter of pupils surveyed at three schools in Bradford are experiencing issues with eating and body image.

BiB Age of Wonder is a seven-year project looking at Bradford's adolescents as they transition into adulthood. It is part of the BiB research study, which has been tracking the health and wellbeing of over 13,000 Bradford children since birth. Researchers are now working in partnership with secondary schools and young people to capture their experiences of growing up in the city.

Consistent information about how eating disorders and disordered eating affect the public has been lacking. This is especially true when it comes to socioeconomically and ethnically diverse populations. Questions about eating disorders aren't always included in population surveys, as other areas of mental health have historically taken precedence. Researchers were surprised when they found that a relatively large number of young people had scored highly on the questionnaire. Just over 24% of pupils reported experiencing difficulties around eating and body image at a level that might be expected in a clinical population. Despite this, the study team believes this result shows eating disorder research should be expanded to address the clear needs of communities.

Dr Bould spoke to BBC Radio 4 about the project; listen to it here

Read the full Bristol Biomedical Research Centre news item

Brigstow Institute seedcorn funding awards 2022-23

The University's Brigstow Institute have announced the awardees from their latest funding scheme. The successful projects include:

The Wounds we Keep: Youth, trauma and otherness in the 21st Century This work examines the process of collaborating with non-professional actors in the creation of fictional audiovisual artworks representing forms of embodied vulnerability. Miguel Garcia Lopez (Modern Languages), Miguel Gaggiotti (Film and Television), Simon Brownhill (Education), Owain Astles (Artist) and Xenia Glen (Sleepwalker Studios Ltd).

Memory Work and Migration: Exploring the body as a living archive of intergenerational memories (£9,000)
This project aims to forge a novel way to approach 'memory work' for migrants beyond first generational cognitive-based trauma, for the benefit of memory, migration scholars, policymakers and migrants themselves. Negar Elodie Behzadi (Geographical Sciences), Nariman Massoumi (Film and Television), Ingrid Keusemann (Artist), Lizzie Minion (University of Gloucestershire), and Susanne Franco (University of Venice).

Ethical Storytelling of Psychoactive Substances and Drugs Policy in Bristol
Storytelling can shed light on the structural conditions that drive people into contact with illegal drug markets. The team aim to start a dialogue about the effectiveness of different policy responses to tackle drugs-related issues. Mary Ryder (Education), Neil Carrier (Anthropology & Archaeology), Matthew Brown (Latin American History), Jane Slater (Transform Drug Policy Foundation).

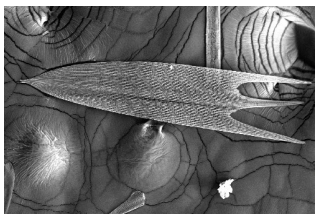
Accelerating research impact through commercialisation

Eight University of Bristol academics have received University Enterprise Fellowships, which will facilitate them to bring their research to life through enterprise development over the next 12 months.

Prof Andrew Dowsey (Bristol Veterinary School [BVS]) will translate his data science research into real-world impact in healthcare. This will be explored in the context of novel diagnostics for resistant bacterial infections.

Dr Laszlo Talas (BVS) will develop an automated tracking and behaviour classification system for horses. It is an exciting technology that could have major impact in the field of equine health, and could also be applied in many other veterinary settings to track animal health and disease and provide timely interventions.

Prof Marc Holderied (Biological Sciences) works in bio-inspired noise controlling materials. It is well established that unwanted and nuisance noise has adverse effects at an individual and societal level. Noise has been described as posing the second greatest environmental health risk in Western Europe; the European Environment Agency released a report in 2020 indicating that chronic exposure to environmental noises causes 48000 new cases of cardiovascular disease and 12000 premature deaths each year in Europe.



His innovative material - Sonic Wallpaper - is inspired by the wings of moths, and shows extraordinary sound-absorbing properties. It is more effective than commercial materials, absorbing a broader range of pitch of sound, and is also much thinner and more lightweight.

Depression linked to immune response in some people

Research suggests that low-grade inflammation could impact the development and ongoing symptoms of depression. Inflammation develops when part of the immune system is overactive. This overactivity can be measured by testing a patient's blood for certain biomarkers. Biomarkers are found in blood, other body fluids or tissues. They can be a sign of existing disease or a warning that somebody will develop a disease in the future.

It is possible that some patients with depression might benefit from immunotherapy. We need to identify biomarkers associated with how a patient responds to immunotherapy, to help predict which patients would benefit from treatment and inform how future studies are designed. To achieve this goal, a team of researchers at the Biomedical Research Centre will look at existing data and blood samples from clinical trials of immunotherapy and cohort studies.

Although many isolated studies have been conducted previously in this area of research, this is the first large-scale investigation to review and statistically combine data from all studies that have reported immune cell counts, as measured by flow cytometry in adults with and without a diagnosis of depression. By combining these studies and increasing the total number of people involved, more definitive conclusions can be drawn.

Foley EM *et al*. (2022). Peripheral blood cellular immunophenotype in depression: a systematic review and meta-analysis. *Molecular Psychiatry.*

Child body weight and behavioural disorders

Childhood body mass index is unlikely to have a big impact on children's mood or behavioural disorders, according to a study.

The results suggest that some previous studies, which have shown a strong link between childhood obesity and mental health, may not have fully accounted for family genetics and environmental factors. Children with obesity are more likely to be diagnosed with depression, anxiety, or attention-deficit hyperactivity disorder (ADHD). But the nature of the relationship between obesity and these mental health conditions is not clear. Obesity might contribute to mental health symptoms, or vice versa. Alternatively, a child's environment might contribute to both obesity and mood and behavioural disorders.

Analysis of genetic and mental health data 41,000 eight-year-old children and their parents from the Norwegian Mother, Father, and Child Cohort Study and Medical Birth Registry of Norway found a minimal effect of a child's own body mass index (BMI) on their anxiety symptoms. There was also conflicting evidence about whether a child's BMI influenced their depressive or ADHD symptoms. This suggests that policies aiming to reduce childhood obesity are unlikely to have a big impact on the prevalence of these conditions.

Hughes A *et al*. (2022). Body mass index and childhood symptoms of depression, anxiety, and attention-deficit hyperactivity disorder: A within-family Mendelian randomization study. *eLife*.

Supporting people who self-harm

A video intended for clinicians who engage with people who have self-harmed and presented to services has been created. It highlights the main statistics surrounding the association between suicide, self-harm and domestic abuse. It was produced by the Bristol Suicide and Self-harm Research Group, co-led by Dr Becky Mars, Dr Duleeka Knipe, Prof David Gunnell and Dr Lucy Biddle, and is hosted within the Centre for Academic Mental Health at the University of Bristol.

Stopping harmful misinformation online

The majority of people support robust action being taken to control the spread of harmful misinformation via social media, a study reveals.

The research suggests figures such as tech mogul Elon Musk, a self-proclaimed "free-speech absolutist", are out of step with how the public want to resolve moral dilemmas regarding misinformation on social media. Its findings showed people largely support intervention to control the spread of misinformation, especially if it is harmful and shared repeatedly.

As part of the study, more than 2,500 people in the USA took part in a survey experiment where respondents were shown information about hypothetical social media posts containing misinformation. The majority chose to take at least some action to prevent the spread of falsehoods. When asked about how to deal with the questionable post, two-thirds (66%) expressed support for deleting it across all scenarios. When asked about how to deal with the account behind it, nearly four in five (78%) would intervene, with actions ranging from temporary to indefinite account suspension to issuing a warning.

Content moderation of online speech is a moral minefield, particularly when freedom of expression and preventing harm caused by misinformation are conflicting. By understanding more about how people think these moral dilemmas should be addressed, the research aims to help shape new rules for content moderation which the public will regard as legitimate.

Kozyreva A *et al*. (2023). Resolving content moderation dilemmas between free speech and harmful misinformation. *PNAS*.

FUNDING OPPORTUNITIES

Research Professional provides access to an extensive database of funding opportunities, and can send out tailored alerts based on specific keywords input by the user. UoB staff and students have **FREE** online access to the database from any device.

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**
- **Save searches and bookmarks**
- **Sign up for higher education news bulletins**

Find out more about the platform on the RED website. Note that some calls may have an internal process; check the major bids webpage to see if such a process is in place.

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

Brain Research UK
Project grants

Closing date: 20 April 2023 Award amount: £300,000

These support translational research projects that address areas of large unmet need and demonstrate a clear pathway to clinical impact in diseases of the nervous system. Priority themes include:

- Headache and facial pain
- Neuro-oncology
- Acquired brain and spinal cord injury

International Brain Research Organization
IBRO/IBE-UNESCO science of learning fellowships

Closing date: 28 April 2023 Award amount: €20,000

These support a period of residence at IBE-UNESCO's headquarters for training on translating neuroscience research on learning and the brain to educators, policy makers and governments.

Motor Neurone Disease Scotland
Research projects

Closing date: 30 April 2023 Award amount: £225,000

These grants are for scientific, clinical, and social research into motor neuron disease (MND), and are designed to generate a strong evidence base.

Applications are welcome from all disciplines but high quality applications from researchers in allied areas such as engineering, data science and machine learning, or applications that enable collaborative use of MND datasets, biorepositories and biobanks are particularly invited.

Koninklijke Nederlandse Akademie van Wetenschappen
Art of neuroscience

Closing date: 1 May 2023 Award amount: €1,000

The Royal Netherlands Academy of Arts and Sciences (KNAW) invites applications for its art of neuroscience prize. This recognises striking artworks related to the field of neuroscience in its broadest sense. These can be in the form of art installations, drawings, digital media, renderings, movies, poems, interactive art and other forms of expression.

Simons Foundation Autism Research Initiative
Human Cognitive and Behavioral Science

Closing date: 4 May 2023 Award amount: USD $ 900,000

To better understand the cognitive and behavioral foundations of ASD, and to support basic science studies in humans with clear value for improving outcome measures and treatment options. The Human Cognitive and Behavioral Science RFA prioritizes research that produces foundational knowledge about the neurobehavioral differences associated with ASD. These projects are expected to inform or relate to the development and refinement of tools needed for translational efforts, such as biomarkers and outcome measures. Special emphasis is placed on objective, quantitative measures that may be used in conjunction with standardized clinical measures and genomic information to better characterize phenotypic and neurobiological variability within and across individuals with ASD.

BRACE
Pilot grants

Closing date: 15 May 2023 Award amount: £70,000

These support medical scientific research into the different forms of dementia. Research is supported in four main areas:

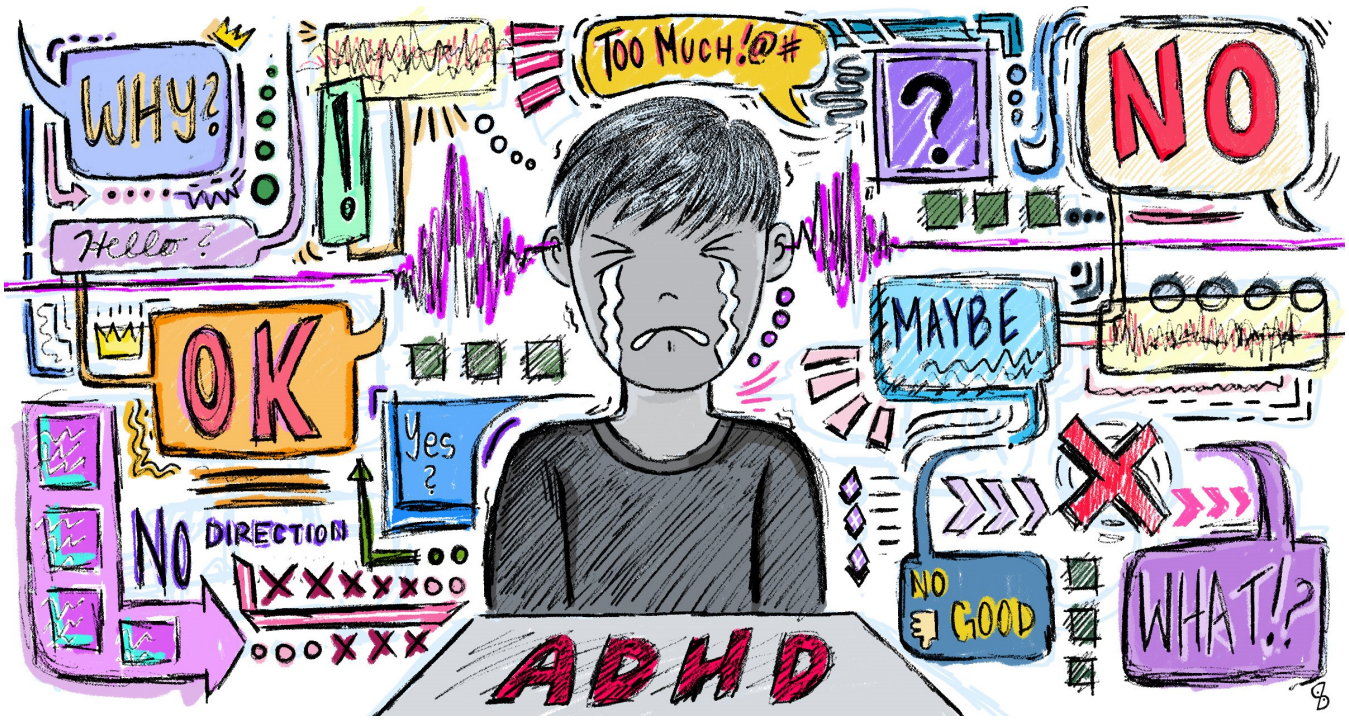
- understanding how the brain works and what has gone wrong in someone with dementia
- development of effective and accurate means of diagnosing the condition as early as possible
- finding new treatments and assessing their effectiveness in clinical trials
- investigating the potential link between certain DNA genes and the chances of developing dementia

SHOWCASED ARTICLE

Attention-deficit hyperactivity disorder traits are a more important predictor of internalising problems than autistic traits

Luca D Hargitai, Lucy A Livingston, Lucy H Waldren, Ross Robinson, Christopher Jarrold & Punit Shah.
Scientific Reports 31 (2023).

Autism Spectrum Disorder (ASD) and Attention-Deficit Hyperactivity Disorder (ADHD) are both linked to internalising problems like anxiety and depression. ASD and ADHD also often co-occur, making their individual statistical contributions to internalising disorders difficult to investigate. To address this issue, we explored the unique associations of self-reported ASD traits and ADHD traits with internalising problems using a large general population sample of adults from the United Kingdom (N = 504, 49% male). Classical regression analyses indicated that both ASD traits and ADHD traits were uniquely associated with internalising problems. Dominance and Bayesian analyses confirmed that ADHD traits were a stronger, more important predictor of internalising problems. However, brief depression and anxiety measures may not provide a comprehensive index of internalising problems. Additionally, we focused on recruiting a sample that was representative of the UK population according to age and sex,



but not ethnicity, a variable that may be linked to internalising disorders. Nevertheless, our findings indicate that while ASD and ADHD uniquely predict internalising problems, ADHD traits are a more important statistical predictor than ASD traits. We discuss potential mechanisms underlying this pattern of results and the implications for research and clinical practice concerning neurodevelopmental conditions.

CONTACTS

Bristol Neuroscience

Lead: Paul Chadderton, Associate Professor in Neurophysiology

Memory Hub Lead: Emma Cahill, Lecturer
Area of research - Physiological basis of memory and adaptive behaviour

Movement Hub Lead: Paul Chadderton, Associate Professor in Neurophysiology
Area of research - to reveal the cellular and circuit mechanisms involved in motor control and learning in the cerebellum

Neural Computation Hub Lead: Conor Houghton, Associate Professor in Computer Science
Area of research - understanding information processing and coding in the brain

Sleep Hub Lead: Matt Jones, Professorial Research Fellow in Neuroscience
Area of research - neuronal networks in cognition and disease

Mental Health Hub Lead: in progress

Network Facilitator: Joseph Butler, *Research Development Manager (interim), Faculty of Life Sciences*

Network Administrator: Catherine Brown (Elizabeth Blackwell Institute)

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