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BEHAVIOURAL ACTIVATION THERAPY FOR ADOLESCENTS

This trial is being led by Professor Bernadka Dubicka (Hull York Medical School) and the York Trials Unit, Department of Health Sciences (Emma Standley, Rachel Ellison and Camila Piccolo-Lawrance). The trial is funded by the National Institute of Health Research.

Child and adolescent mental health issues in the UK are surging, with 3,758 urgent referrals to CAMHS in January 2024. Services are under pressure and under-resourced. **The BAY Trial**, the UK's largest of its kind, focuses on using blended behavioural activation to treat severely depressed young people in CAMHS settings.

Severely depressed youths at high risk of self-harm or suicide are referred to CAMHS, where there is a shortage of therapy training for less experienced staff. Behavioural activation is a type of therapy that encourages young people to monitor their daily activities, identify values and goals, and schedule activities and tasks that they find meaningful and enjoyable. This aims to break the cycle of depression and encourage activity, even when the young person lacks the motivation.

The trial is recruiting 528 participants aged 11-17 from five NHS Trusts across the UK. It uses a randomised controlled design, comparing behavioural activation plus standard treatment with standard treatment alone, to assess clinical effectiveness and cost-efficiency. Led by **Professor Bernadka Dubicka (Hull York Medical School)** and the **York Trials Unit, Department of Health Sciences** (Emma Standley, Rachel Ellison & Camila Piccolo-Lawrance), the trial is funded by the National Institute of Health Research.

Please contact **bay-project@york.ac.uk** if you have any questions.

SLEEP AND MENTAL HEALTH: REGULATING EMOTIONS IN A VIRTUAL REALITY ENVIRONMENT

Emma Sullivan Postdoctoral Research Associate, University of York

Emma Sullivan's PhD research in Cognitive Neuroscience explored the relationship between sleep and state anxiety, a temporary emotional state marked by nervousness and physiological arousal. Previous studies suggest that sleep loss raises next-day anxiety, but its impact during uncertain threats is less understood.

The study involved 54 under-graduates, split into sleep-rested and sleep-deprived groups. The next morning, they experienced a virtual reality (VR) environment with alternating threatening and non-threatening parts, while their physiological arousal was measured via skin sweat response.

Results showed that sleep-deprived participants had higher anxiety the next morning and struggled to reduce stress in the threatening VR parts compared to rested participants, whose anxiety lessened over time. These findings suggest that sufficient sleep helps manage anxiety in stressful situations whereas a lack of sleep makes it harder for people to calm down in a stressful situation. Therefore, getting enough sleep might help people manage their anxiety levels better, which is important for both everyday life and high-pressure situations like work or emergencies.

In terms of supporting the wider community, these findings highlight sleep as a modifiable risk factor that can be targeted for intervention in individuals experiencing both clinical and subclinical anxiety. This research also highlights the importance of sleep as a tool for managing the threats and uncertainties

encountered in daily life, thereby offering practical guidance for improved mental well-being.

Find out more about Emma's research.

CLEAN AND GREEN: RETHINKING CHEMISTRY

Dr Krishna Sharma, Postdoctoral Research Associate, Green Chemistry Centre of Excellence, Department of Chemistry

Dr Krishna Sharma's research journey began with an MSc(Res) at the University of Oxford, followed by a PhD at the University of Cambridge focusing on synthesising pharmaceutically relevant molecules. During his PhD, he attended a workshop on "Green Chemistry for Societal Needs" in New Delhi, which highlighted the environmental harm caused by toxic petroleum solvents like dichloromethane—solvents he had also used during his MSc and PhD research.

Inspired later in his PhD by Nobel Laureate Prof. Frances Arnold's talk emphasising that 'Nature is the best chemist,' Krishna transitioned to Green Chemistry, aiming to replace harmful solvents with safer alternatives.

During his postdoc at the University of Leeds, Krishna was a STEM for Britain finalist and presented his work on replacing toxic solvents with water to the UK Parliament, supporting the UK's climate goals. Now a postdoctoral researcher at the Green Chemistry Centre of Excellence at the University of York, he is developing sustainable methods for pharmaceutical synthesis, including using Cyrene, a non-toxic, biodegradable solvent.

Interaction with children in Baddi, Himachal Pradesh, India, one of the largest pharmaceutical hubs in Asia, on 10 September 2024. Hosted by Baddi Superintendent of Police Ilma Afroz.

Picture from the Popular **Science Lecture on 'Green Chemistry for a Sustainable Future**,*' on 20 September 2024, at the Nehru Science Centre in Mumbai, India, the country's largest interactive science centre where over 300 school students attended.*

Krishna is passionate about public engagement and has participated in outreach events on Green Chemistry. He was recently selected to attend the prestigious **ACS LEADS** Conference in Washington, D.C., where he'll engage with Nobel Laureates. In June, he also presented at the University of York's Celebrating Spaces event, sharing his work with fellow researchers.