



Programme

KEYNOTE SPEAKERS:

Prof Veena Kumari:

“Personality Pathology: A Dimensional Perspective”

Director of Centre for Cognitive Neuroscience, Brunel University London, UK

Prof Felice Jacka

“Nutritional Psychiatry: translating new knowledge into population health benefits” Director Food and Mood Centre, IMPACT, Deakin University, Australia

Prof Saeid Sanei:

“Deeper into the brain via signal processing and machine learning”

School of Science & Technology, Nottingham Trent University, UK



Day 1. Affect, Personality and Psychopathology (23.09.2020)

9:00 – 9:30	<p>Committee Introduction & Opening talk:</p> <p>Prof Sara Owen - Executive Dean of the School of Social Sciences, Nottingham Trent University, Nottingham, UK</p>
9:30 – 10:30	<p>Opening Keynote</p> <p>Prof Veena Kumari “<i>Personality Pathology: A Dimensional Perspective</i>” Centre for Cognitive Neuroscience, Brunel University London, UK</p>
10:30 - 11:30	<p><u>Workshop</u></p> <p><i>Using Generalisability Theory to Examine Sources of Error and Distinction Between State and Trait in Psychological Measurement</i> Dr Oleg Medvedev, University of Waikato, NZ</p>
11:30 - 12.00	<p>Coffee break & <u>Poster Rooms</u></p>
12:00 – 13:00	<p>Symposium 1: <i>Adverse Childhood Experiences and psychopathology</i> Convener: Dr Nadja Heym</p> <ul style="list-style-type: none"> ▪ <i>Psychopathology risk in children from domestic violence background</i> (Heym, N.*, Fleet, A., Sumich, A., & Arnall, E.) ▪ <i>Adverse childhood experiences and psychopathology among Indian adolescents: Clarifying the role of child work</i> (Pandey, R.*, Gupta, S., Upadhyay, A., Gupta, R.P., Niraula, S., Lau, J., & Kumari, V.) ▪ <i>Violence in the Family: Exploring the Role and Place of Sexual Violence</i> (Arnall, E.*, Ryder, J., & Mather, B.) ▪ <i>Stages of trauma recovery formulation pyramid: Mapping risk and needs to intervention</i> (Roche, A., Fleet, A.*, Palmer, F.*, Sumich, A., & Heym, N.)
13:00 – 14:00	<p>Break (European lunch time)</p>
14:00 - 15:00	<p>Presentation Session 1</p> <ul style="list-style-type: none"> ▪ <i>The influence of dimensional schizotypy on lexical decision process</i> (Vanova, M.*, Aldridge-Waddon, L., Jennings, B., & Kumari, V.) ▪ <i>The roles of victim sex and celebrity status in judgements of Deepfake Pornography</i> (Rao, J., Fido, D.*, & Harper, C.) ▪ <i>Differential Morbid Curiosity Pathways in Individuals with Subclinical Sadistic and Psychopathic Traits</i> (Penford, E.*, & Heym, N.) ▪ <i>The Neurophysiological Underpinnings of Reinforcement Sensitivity (RST): A Systematic Review of Frontal Alpha Asymmetry</i> (Firth, J.*, Standen, B., Sumich, A., & Heym, N.)
15:00 – 15:30	<p>Coffee break and <u>Poster Rooms</u></p>



<p>15:30 - 16:00</p>	<p>Posters Blitz 1</p> <ul style="list-style-type: none"> ▪ <i>The influence of dimensional psychopathology on social versus monetary reward processing</i> (Aldridge-Waddon, L.*, Vanova, M., Puzzo, I., Muneke, J., & Kumari, V.) ▪ <i>Mental Health Force: Assessing and promoting mental health amongst police officers</i> (Moreno, A.*, Rubiol Vilalta, S., & Oliveira-Silva, P.) ▪ <i>Relationship between the use of social networks and youth empathy: An exploratory study with YouTube</i> (Costa, J.*, Campos, L., Dias, P., & Oliveira-Silva, P.) ▪ <i>How Secondary Psychopathy Mediates the Relationship between Sporting Choice and Aggression and its sub facets</i> (Kidd, S. J.*, & Birkin, O.)
<p>16:00 – 17:00</p>	<p>Discussion Round with the Journal Editors</p> <p>Daniel Mograbi, <i>Psychology & Neuroscience</i></p>
<p>17:00 - onward</p>	<p>Evening Programme</p> <p><i>Varanasi Short film & Commentary: Vijay Rana (Zoom)</i> <i>Gather for Fun and Festivities: Wine and Painting Recreations</i></p>

Day 2. Food, Mood & Music for the Mind (24.09.2020)

<p>9:00 – 10:00</p>	<p>Opening Keynotes</p> <p>Prof Felice Jacka: <i>“Nutritional Psychiatry: translating new knowledge into population health benefits”</i> Director Food and Mood Centre, IMPACT, Deakin University, Australia</p>
<p>10:00 – 11:00</p>	<p>Symposium 2: Music, Mind and Wellbeing Convener: Dr Patrícia Oliveira-Silva</p> <ul style="list-style-type: none"> ▪ <i>Promoting music engagement: Findings from the Musical Investment project</i> (Krause, A.) ▪ <i>Musical achievement during lockdown: The parental support miracle</i> (Oliveira, A., McPherson, G., Ribeiro, L.M., & Oliveira-Silva, P.) ▪ <i>Music, Mind and Wellbeing</i> (McPherson, G.)
<p>11:00 – 11:30</p>	<p>Coffee break & Poster Rooms</p>
<p>11:30 - 12.20</p>	<p>Symposium 3: Diet, Depression and Aggression Convener: Dr Alexander Sumich</p> <ul style="list-style-type: none"> • <i>Parabolic elephants</i> (Sumich, A.) • <i>Don't slap the fish: Omega-3 intake and physical aggression is mediated by motor inhibition in response to distressed faces</i> (Fido, D., Heym, N., Bloxson, C.A.J., Hunter, K., Gregson, M., & Sumich, A.)



12:20 – 13:00	Posters Blitz 2 <ul style="list-style-type: none"> ▪ <i>How are Probiotics perceived and accepted by Portuguese Health Care Professionals?</i> (Ferreira, M., Soares, J.*, & Oliveira-Silva, P.) ▪ <i>Characterization of caffeine consumption in the Portuguese population</i> (Peixoto, J.*, & Oliveira-Silva, P.) ▪ <i>Unfolding the barriers consumers and health professionals face towards understanding probiotic and prebiotic products</i> (Soares, J.*, Ferreira, M., & Oliveira-Silva, P.)
13:00 - 14:00	Break (European lunch)
14:00 - 15:00	Presentation session 2: <ul style="list-style-type: none"> ▪ <i>Play on emotions: impact of theatre on emotional regulation, empathy and mental health</i> (Freitas, S., & Oliveira-Silva, P.) ▪ <i>Music-Evoked Nostalgia and Prosocial Behavior</i> (Cho, E.*, & Chagas, P.) ▪ <i>Perfectionism and Burnout in Sport: Moving Beyond the Individual</i> (Olsson, L.*, Madigan, D., & Hill, A.) ▪ <i>Searching for better 3D baseline stimuli</i> (Silva, M.O.*, Teixeira, L., Ferreira, M., & Oliveira-Silva, P.)
15:00 - 15:30	Coffee break & Poster Rooms
15:30 – 16:30	Industry Round Table: Convener: Manuela Pintado, School of Biotechnology, Universidade Católica Portuguesa <ul style="list-style-type: none"> ▪ Luís Simões, Living Food (Kombucha), Portugal ▪ Carla Rodrigues, Diverge, Centro de Inovação do Grupo Nabeiro (Delta Cafés; Coffee), Portugal ▪ Terje Myvold, Nutrimed AS (Omega-3, Curcumin), Norway
16:30 - onwards	Evening programme Gather for Networking speed dating

Day 3. Signal Processing and Neuroinformatics (25.09.2020)

9:00 – 10.00	Opening Keynote Prof Saeid Sanei: “ <i>Deeper into the brain via signal processing and machine learning</i> ” School of Science & Technology, Nottingham Trent University, UK
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<p>10.00 – 11.00</p>	<p>Symposium 4: <i>Looking at synchrony in human interaction across different interpersonal contexts and measures</i> Convener: Dr Patrícia Oliveira-Silva</p> <ul style="list-style-type: none"> ▪ <i>Physiological Synchrony in psychotherapy sessions</i> (Meier, D.* , & Tschacher, W.) ▪ <i>Electrodermal and cardiac synchrony in marital interaction</i> (Coutinho, J.*, Pereira, A.F., Lourenço, V., Meier, D., Oliveira-Silva, P., & Tschacher, W.) ▪ <i>Turn-taking in object-oriented and dyadic interactions: a longitudinal study at 7 and 12 months</i> (Pereira, A.F.*, Lourenço, V., & Coutinho, J.) ▪ <i>Physiological Synchrony in Concert Audiences</i> (Tschacher, W.* , & Meier, D.)
<p>11.00 – 11:30</p>	<p>Coffee break & Poster Rooms</p>
<p>11:30 - 12.30</p>	<p>Symposium 5: <i>Spiking Neural Networks</i> Convener: Prof Nikola Kasabov</p> <ul style="list-style-type: none"> ▪ <i>Spiking Neural Networks</i> (Kasabov, N.) ▪ <i>APE-Network SNN projects: An overview</i> (Sumich, A.) ▪ <i>Modelling Peri-Perceptual Brain Processes in a Deep Learning Spiking Neural Network Architecture</i> (Doborjeh, Z.) ▪ <i>Spatiotemporal dynamics of working and prospective memory in ageing and mild cognitive impairment</i> (Crook-Rumsey, M.) ▪ <i>Personalised Modelling of Longitudinal MRI Data using Brain Inspired Spiking Neural Networks Applied for Early Prediction of Dementia</i> (Doborjeh, M.)
<p>12.30 – 13.30</p>	<p>Break (Sacred European Lunch hour)</p>
<p>13.30 – 14.30</p>	<p>Presentation Session 3</p> <ul style="list-style-type: none"> ▪ <i>Emotional stress state classification and analysis using spiking neural networks</i> (Weerasinghe, M.*, Wang, G. & Parry, D.) ▪ <i>Non-linear multiband EEG signal analysis for detecting Alzheimer and Parkinson</i> (Silva, G.* , Alves, M., Cunha, R., Bispo, B. & Rodrigues, P., M.) ▪ <i>Hyperscanning study of neural alignment of English as a foreign language (EFL) students engaged spoken communication</i> (Kelsen, B.A) ▪ <i>The Neural Correlates of RST: A Systematic Review of the fMRI Literature</i> (Standen, B.* , Firth, J., Sumich, A. & Heym, N)
<p>14.30 – 15.00</p>	<p>Coffee break & Poster Rooms</p>



<p>15.00 – 15:40</p>	<p>Posters Blitz</p> <ul style="list-style-type: none"> ▪ <i>How functional connectivity decay over interhemispheric distances on neurodegenerative diseases</i> (Penalba, L.*, Cifre, I. & Dante, C.R.) ▪ <i>Self-guided virtual reality therapy for social anxiety using biofeedback to manage arousal</i> (Myers, J.* Heym, N., Zysk, E., Sumich, A., Daly, R., Brown, D. & Premkumar, P.) ▪ <i>A psychophysiological approach to assess neuromodulatory oral films</i> (Batista, P.*, Pintado, M., Heym, N., Sumich, S. & Oliveira-Silva, P.) ▪ <i>Frontal and temporal white matter tracts are particularly impaired in oldest-old individuals</i> (Borelli, V. W.*, Schilling, P. L., Lal-Conceicao, E., Soder, B. R., Portuguez, W. P., Franco R.A. & da Costa, C.J.)
<p>15:40 – 16.00</p>	<p>Closing ceremony & ECR Awards</p> <p>Prof Pedro Dias - Dean Research Center for Human Development (CEDH), Faculdade de Educação e Psicologia, Universidade Católica Portuguesa, Porto, Portugal</p>
<p>16.00 – 18.00</p>	<p>Evening Programme</p> <p>Piano recital with the Portuguese pianist António Oliveira & wine reception (BYO)</p>



Poster Rooms:

Links to posters will be made available during the conference

Theme 1: Personality & Psychopathology

- #POSTER-01 [*The role of empathy and attitudes towards sexual aggression in understanding psychopathic and sadistic preference for sexual violence*](#) (Fleet, A., E. & Heym, N.)
- #POSTER-02 [*Childhood maltreatment does not always lead to biased attention towards threat: the moderating role of comorbid anxiety*](#) (Gupta, S., Upadhyay, A., Niraula, S., Kumari, V., Lau, J.YF., & Pandey, R.)
- #POSTER-03 [*A Latent Profile Analysis of Age-Related Differences in Reinforcement Sensitivity*](#) (Firth, J., Kibowski, F., Sumich, A. & Heym, N.)
- #POSTER-04 [*Do Dark Triad traits function as defence mechanisms in reducing death anxiety?*](#) (Layton, E., & Blanchard, A.)
- #POSTER-05 [*The conceptualisation of successful psychopathy – A systematic review*](#) (Wallace, L., Sumich, A., Fido, D. & Heym, N.)
- #POSTER-06 [*An exploration study into the link between Psychopathy and Memory of a Virtual Reality Game in Undergraduate Students*](#) (Kerr, L. & Blanchard, A.)

Theme 2: Brain and Body

- #POSTER-07 [*Fatty Acid Status of Sudanese Patients with Drug-Resistant Epilepsy*](#) (Abuknesha, N., R., Ibrahim, Fatima, A.S., Mohamed, Inaam, N., & Ghebremeskel, K.)
- #POSTER-08 [*Emotion regulation and body satisfaction: comparing athletes and non-athletes*](#) (Correia-de-Sá, T., Dias, P., Marriot, M., & Oliveira-Silva, P.)
- #POSTER-09 [*Spatial Memory for Emotionally-Valenced Faces*](#) (Zaksaite, T. & Smith, A.D.)
- #POSTER-10 [*Cognition and Motor dysfunction in Type III Spinal Muscular Atrophy*](#) (Lenzoni, S., Wennberg, A., Caumo, L., Pegoraro, E., & Semenza, C.)
- #POSTER-11 [*Touch Therapy and the identification of biomarkers in the reconsolidation of traumatic memory*](#) (Longdon, M)
- #POSTER-12 [*Exploring the “dark matter” of social interaction: Systematic review of a decade of research in interpersonal coordination*](#) (Ayache, J., Connor, A., Marks, S., Rhodes, D., Kuss, D.J., Sumich, A., & Heym A.)
- #POSTER-13 [*Psychological wellbeing and cortical arousal: A narrative of dissociation in patients with Functional Neurological \(symptom\) Disorder*](#) (Blanco, S.R.)
- #POSTER-14 [*Discrimination between neurological and laryngeal pathologies through voiced speech analysis*](#) (Alves, M.*, Silva, G., Bispo, B.C., Dajer, M.E., & Rodrigues, P.M.)
- #POSTER-15 [*Discrimination between neurological and laryngeal pathologies through voiced speech analysis Kombucha and the Antioxidant Effect: Amnésic Mild Cognitive Impairment \(aMCI\) and Prevention of Alzheimer's Dementia*](#) (Fraga, J.G., & Oliveira-Silva, P.)
- #POSTER-16 [*Embodied music cognition: towards the understanding of gesture in saxophone performance*](#) (Moura, N. & Serra, S.)
- #POSTER-17 [*Multiracial study on media exposure and body satisfaction*](#) (Aguiar, C., & Oliveira-Silva, P)
- #POSTER-18 [*From the gut to emotions: Impact of taking probiotics on emotional regulation and mental health*](#) (Gonçalves, M., & Oliveira-Silva, P.)



ABSTRACTS

1. KEYNOTE SPEAKERS:

Prof Veena Kumari: “*Personality Pathology: A Dimensional Perspective*”

Director of Centre for Cognitive Neuroscience, Brunel University London, UK

Contact: Veena.Kumari@brunel.ac.uk

Abstract: Despite considerable efforts, our understanding of the links between personality dysfunction and neurobiology remains relatively poor, explained largely by a reliance on categorical classification of personality disorders (PDs). There is emerging consensus that we must now move beyond categorical classification of PDs and consider personality pathology from a dimensional perspective in neuroscientific investigations. In this talk, I will discuss how dimensional models of personality pathology offer a promising strategy for advancing the clinical neuroscience of PDs as well as refining the existing model/s of PD so they can usefully link neurobiological data to clinical observations and potential interventions (Latzman & Kumari, In Press, J. Pers. Disord.).

Brief Biography: Veena Kumari obtained her Doctorate in Psychology (1993) from Banaras Hindu University (India) before moving to the Institute of Psychiatry, King’s College London (KCL, UK) where she later served as Professor of Experimental Psychology (2006-2016) and Deputy Head and Lead for Post-graduate Research for Psychology (2013-2016). Currently, she is Professor of Psychology and the Director of the Centre for Cognitive Neuroscience (CCN) at Brunel University London. Her research interests include the neurobiology of violence in psychosis and personality disorders, pharmacological and psychological therapies for mental disorders, addiction, and personality and individual differences. She has published >270 articles (*h*-index 75), serves in editor/associate editor/editorial board member roles for several journals, supervised > 20 PhDs, and received various awards for her research, including the prestigious Humboldt Research Award.



Prof Felice Jacka: *“Nutritional Psychiatry: translating new knowledge into population health benefits”* Director, Food and Mood Centre, IMPACT, Deakin University, Australia; Centre for Adolescent Health, Murdoch Children’s Research Centre, Melbourne, Australia; Black Dog Institute, Sydney, NSW; James Cook University, Townsville, Qld; International Society for Nutritional Psychiatry Research (ISNPR)

Contact: f.jacka@deakin.edu.au

Abstract: With depressive disorders being the leading source of disability globally, the identification of new targets for prevention and management is imperative. The 20th century has seen major shifts in dietary intakes globally, with a marked increase in the consumption of sugars, snack foods, take-away foods and high-energy foods. At the same time, the consumption of nutrient-dense foods, such as high-nutrient vegetables and raw fruits, is diminishing. Poor diet is now recognised as the leading risk factor for illness and early mortality globally. However, there is now overwhelming body of evidence to tell us that unhealthy diet is also a key risk factor for psychiatric illnesses, including depression, anxiety and dementia.

Professor Jacka has pioneered and expedited the development of a robust body of evidence regarding the influence of lifestyle behaviours, particularly diet, on common mental disorders and is now recognised as a research leader in this field. In this presentation, she will provide an up-to-date, critical assessment of the evidence regarding the impact of diet quality on depression, anxiety across age groups and countries. She will then address the rapidly developing evidence base pointing to diet as a critically important and modifiable risk factor in parents prior to conception and in pregnant mothers and their children. She will particularly focus on the new evidence for the microbiome-gut-brain axis in mood and behavior. Finally, she will discuss new evidence for diet as a clinical strategy for improving mental and brain health and address the future research imperatives in this field.

Take home message: Extensive evidence now supports associations between diet quality and the common mental disorders, depression and anxiety. Experimental evidence also shows that dietary improvement can treat depression. Nutrition preconception and during pregnancy is of substantial relevance to mental and brain health outcomes in children. Mechanisms relate particularly to the gut and its resident microbiota. There is enormous potential for both clinical and public health interventions focused on nutrition for the prevention and treatment of mental, neurodevelopmental and neurodegenerative disorders.

Brief Biography: Professor Felice Jacka is Professor of Nutritional Psychiatry and Director of the Food & Mood Centre at Deakin University. She is internationally recognized as a leader in the rapidly developing field of research focused on Nutritional Psychiatry, and founder and president of the International Society for Nutritional Psychiatry Research (ISNPR) and immediate past president of the Australian Alliance for the Prevention of Mental Disorders (APMD). Professor Jacka has pioneered and led a highly innovative program of research that examines how individuals’ diets interact with the risk for mental health problems. Her current work focuses closely on the links between diet, gut health and mental and brain health. This research is being carried out with the ultimate goal of developing new, evidence-based prevention and treatment strategies for mental disorders. She has recently published a book for the general public called ‘Brain Changer’ through Pan Macmillan Australia and Yellow Kite in the (2019). Her children’s book – ‘There’s a Zoo in my Poo’ – will be published in July 2020.



Prof Saeid Sanei: “*Deeper into the brain via signal processing and machine learning*”
School of Science & Technology, Nottingham Trent University, UK

Contact: saeid.sanei@ntu.ac.uk

Abstract: Tools and algorithms in signal processing and machine learning can reveal more information about the underlying brain activities including the changes in normal brain rhythms, brain responses to various stimuli, and brain connectivity. Quantification of these changes from multichannel EEG or MEG signals help discover and identify a vast range of brain states, such as sleep and mental fatigue, abnormalities such as Alzheimer disease and seizure, and the brain responses for BCI or rehabilitation monitoring.

Brief Biography: Professor Saeid Sanei is a PhD graduate of Imperial College London in bioengineering and a Fellow of British Computer Society. He worked in National University of Singapore, King's College London, Cardiff University, University of Surrey, and currently is with Nottingham Trent University. His research interest is in biomedical data acquisition, processing, and learning with major focus on EEG. He is the author of 5 books (monographs), a number of editorial books and book chapters, and approximately 400 peer-reviewed papers. He supervised, as the main supervisor, 34 very successful PhD students and 6 Postdocs. He has been an Associate Editor for many journals and a member of IEEE MLSP and SPTM Committees. As part of his international networking, he organised and chaired many international events including the IEEE ICASSP 2019 in the UK with over 3000 participants. For the past 4 years he has also been a Visiting Academic in Digital Health to the Electrical Engineering Department of Imperial College London.



2. SYMPOSIA:

#SYM-01

Adverse Childhood Experiences (ACEs) – impact on internalising and externalising psychopathology and intervention strategies

Convener: Dr Nadja Heym, nadja.hey@ntu.ac.uk

Overview: Adverse childhood experiences such as witnessing or experiencing domestic violence (DV), especially at a young age, can have detrimental immediate and long-term consequence. ACEs have been linked to higher risk for mental health, e.g., internalizing/externalizing behaviours, self-harming, violent behaviours, conduct disorder, depression and anxiety, psychosis (Meltzer et al., 2009; Maikovic et al., 2008; Read et al., 2008; Felitti & Anda, 2010), and negative life outcomes, e.g., higher rates of crime and delinquency, higher likelihood of future abuse, relationship difficulties, unemployment and financial difficulties (Colman et al., 2009; Farrington, Loeber & Van Kammen, 1990). Identification of risks and needs for the provision of efficient interventions to facilitate tailored trauma focused support is critical to reduce the psychological impact of ACEs in vulnerable individuals, particularly children. The current symposium will present research around the impact of ACEs on psychopathology in children from different backgrounds, the conceptualisation of sexual violence by stakeholders, and a trauma recovery stages focused formulation approach for risk and needs-based intervention choices.

Title: Psychopathology risk in children from domestic violence/abuse (DVA) background

Authors: Heym, N.¹, Fleet, A.¹, Sumich, A.¹, & Arnall, E.²

In partnership with UAVA – United Against Violence & Abuse
<http://www.uava.org.uk/> (Anna Kaproski) and Living Without Abuse
<https://www.lwa.org.uk/> (Tammy Clinton-Harris)

Affiliations: 1. Psychology Department, Nottingham Trent University, UK; 2. Social Work and Social Care, University of Wolverhampton, UK

Corresponding author: Nadja Heym, nadja.hey@ntu.ac.uk

Abstract: Witnessing DVA is one of the most common types of child abuse (ONS, 2019). 20% of children in the UK live in DVA households (NSPCC, 2011) and 63% of those get directly harmed (SaveLives, 2015). There has been little investigation of the exacerbated risk of DVA on the most vulnerable group, children, and how to support them. This study examined the (i) impact of witnessing or directly experiencing DV in a cohort of children referred to DV support services; and (ii) specific issues presented in children who engage in child-to-other violence (C2OV). Service users (N=331; 2-17 years) completed routine risk assessments and the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The whole cohort showed abnormal levels of SDQ scores, and those who suffered as opposed to witnessed abuse scored significantly higher across the domains. SDQ scores were indicative of greater risk to self, poorer health and psychosocial outcomes, and lower pre-intervention adjustment scores. A



subset of children who engaged in child-to-other violence (C2OV; N=82; 32% of total sample; 4-16 years) had the highest levels of internalising and externalising problems, showed highest risk to themselves as well as lower health and psychosocial adjustment outcomes than non-C2OV children, indicating a specific risk and needs-based approach for this subgroup to offer more tailored support. The current study highlights the SDQ as a good initial risk indicator in helping with early detection, prediction of risk, and tool for optimised intervention or referral pathway planning.

Title: Adverse childhood experiences and psychopathology among Indian adolescents: Clarifying the role of child work

Authors: Rakesh Pandey¹, Shulka Gupta¹, Aakanksha Upadhyay¹, Rajendra Prasad Gupta¹, Shanta Niraula², Jennifer Lau³, & Veena Kumari⁴

Affiliations: ¹Department of Psychology, Banaras Hindu University, Varanasi

²Central Department of Psychology, Tribhuvan University, Kathmandu

³Psychiatry, Psychology and Neuroscience (IoPPN), King's College, London

⁴Brunel University London

Corresponding author: Rakesh Pandey, pandeyr@bhu.ac.in; rpan_in@yahoo.com

Abstract: We recently reported that adolescents with a history of child work in India and Nepal are at high risk for maltreatment (abuse and neglect) and experience poor mental health. In this study, we aimed to disentangle the impact of maltreatment and child work on mental health by assessing childhood maltreatment and psychopathology in matched groups of adolescents with (N=21) and without history of child-work (N=23), and to replicate our earlier study on extended sample (N=183). Confirming our earlier findings, the majority of child-work sample (N=183) reported childhood maltreatment (88.5%) and direct/indirect victimization (100%). Symptoms of one or more psychiatric disorders (e.g., conduct disorder, specific phobia etc.) were endorsed more often by adolescents with (95.2%) than without a history of child work (60.9%). Our findings suggest that mental health problems in Indian adolescents with a history of child work are largely explained by their maltreatment history.

Title: Violence in the Family: Exploring the Role and Place of Sexual Violence

Authors: Elaine Arnull¹, Judith Ryder² & Becky Mather³

Affiliations: 1. Social Work and Social Care, University of Wolverhampton, UK; 2. Dept of Sociology and Anthropology, St. Johns University, US; 3. Psychology Department, Nottingham Trent University, UK

This paper explores the ways in which individuals name and define the use of sexual violence in a family. Employing focus groups with adult family members referred to a specialist provider in the UK, the research draws upon the breadth of experience amongst participants regarding their assumptions about sexual violence, including perceived effects of and means of coping. The research addresses an acknowledged gap in the literature about sexual violence and its role



within the family. The aim is to enable a co-constructed understanding of sexual violence, and the paper discusses how this knowledge may be utilised by social workers.

Title: Stages of trauma recovery formulation pyramid: Mapping risk and needs to intervention

Authors: Roche, A., Fleet, A., Palmer, F., Sumich, A., & Heym, N.

In partnership with LWA – Living Without Abuse <https://www.lwa.org.uk/> (Tammy Clinton-Harris & Lisa Murphy)

Affiliations: Psychology Department, Nottingham Trent University, UK

Corresponding author: Nadja Heym, nadja.heyman@ntu.ac.uk

Domestic Violence and Abuse (DVA) support organisations have seen a rise in referrals in response to the Covid-19 lockdown, with limited intervention services available, in particular for affected children. This project aims to dynamically co-create an efficient rapid response support system, including a service-provider led online-intervention toolkit (SPOT) for DVA risk groups who may have limited access to in-person interventions. To facilitate practitioner-led application of SPOT, an initial decision making tool to guide intervention choices for children and parents from a DVA background has been developed. We establish recommendations through trauma informed clinical approaches using a formulation pyramid of stages of trauma recovery. These stages are mapped onto (i) key issues of behavioural problems seen in affected children and characteristics of parent-child dynamics (as indicated by assessment scores), and consequently (ii) onto most appropriate intervention strategies incorporated in SPOT. As such, the formulation pyramid aims to allow service providers to locate and understand children along their trauma recovery process, and administer most appropriate interventions across those stages, respectively. Overall, the formulation pyramid provides a practical and systematic tool for practitioners to utilise to aid their decision-making process in regard to intervention choices for parents and children from a DVA background.

#SYM-02

Music, Mind and Well-being

Convener: Patrícia Oliveira-Silva

Overview: In this roundtable, we will explore the role and purpose of music for individuals, and the ways people engage with music to regulate their mood and emotions in ways that reinforce their overall wellbeing. Presenters in this roundtable will discuss what it means to be ‘musical’ through an examination of the personal and environmental factors that affect musical development, ability and identity. Also, we will discuss the role of parental support on children’s musical education.



Title: Promoting music engagement: Findings from the Musical Investment project

Authors: Krause, A.

Affiliations: James Cook University, Queensland, Australia

Corresponding author: Amanda Krause, amanda.krausel@jcu.edu.au

Abstract: A growing body of research has begun to examine music investment and well-being; yet very little has considered how best to promote life-long investment in music. This presentation will present findings from an Australian Research Council funded discovery project that focused on generating knowledge about how and why we should invest in music-making to promote well-being. In particular, by drawing on quantitative and qualitative analyses, these findings concern differentiating the psychosocial variables related to continuing versus ceasing musical participation, exploring the reasons why people cease their participation and how to re-engage them in participating, and how participating in musical activities influences perceived well-being.

Title: Musical achievement during lockdown: The parental support miracle

Authors: Oliveira, A.¹, McPherson, G.², Ribeiro, L.M.³, & Oliveira-Silva, P.¹

Affiliation(s): 1. Human Neurobehavioral Laboratory (HNL), Research Center for Human Development (CEDH), Faculdade de Educação e Psicologia - Universidade Católica Portuguesa, Porto, Portugal; 2. University of Melbourne, Melbourne Conservatorium of Music, Australia; 3. Research Center for Human Development (CEDH), Faculdade de Educação e Psicologia - Universidade Católica Portuguesa, Porto, Portugal.

Corresponding author: António Oliveira, 325318002@porto.ucp.pt

Abstract: It is widely believed that parental support has a significant impact on children's education, particularly in musical instrument education. In fact, extensive research has shown that parental support is one of the factors perceived as being of the highest importance in the early stages of a musician's development. At the start of 2020, the outbreak of a global pandemic crisis posed new and unprecedented challenges to education, particularly music education, forcing families to stay at home to prevent contagion. This investigation aimed to find whether parental support, provided during lockdown, impacts the students' achievement reported by their musical instrument teacher. A total of 39 participants were recruited from the first grade of the music instrument course of 2 public music conservatories in the northern region of Portugal. Results show a strong relation between parental support and musical achievement, as those students who had higher levels of supportive parental involvement performed better than before the pandemic crisis.

Title: Music, Mind and Wellbeing

Authors: McPherson, G.



Affiliations: University of Melbourne, Melbourne Conservatorium of Music, Melbourne, Australia

Corresponding author: Gary McPherson, g.mcpherson@unimelb.edu.au

Abstract: Music engages our emotions, imagination, intelligence, bodies and communities, and in its various forms is common to all societies. But what does it mean for individuals to be ‘musical’, and in what ways does music form an invaluable aspect of our daily lives? Gary E. McPherson studied music education at the Sydney Conservatorium of Music, before completing a master of music education at Indiana University, a doctorate of philosophy at the University of Sydney and a Licentiate and Fellowship in trumpet performance through Trinity College, London. He is the Ormond Professor of Music at the Melbourne Conservatorium of Music and has served as National President of the Australian Society for Music Education and President of the International Society for Music Education. His research interests are broad and his approach interdisciplinary. His most important research examines the acquisition and development of musical competence, and motivation to engage and participate in music from novice to expert levels. With a particular interest in the acquisition of visual, aural and creative performance skills, he has attempted to understand more precisely how music students become sufficiently motivated and self-regulated to achieve at the highest level.

#SYM-03

Diet, Depression and Aggression

Convener: Alex Sumich

Title: Parabolic Elephants

Authors: Sumich, A.

Affiliation: Psychology Department, Nottingham Trent University, UK;

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A model of depression has been proposed that is underpinned by four brain networks that have been linked to symptoms of negative emotional bias, cognitive inflexibility, rumination and anhedonia. The current presentation draws on data from a series of studies to explore how these networks relate to physiological processes (inflammation, gut microbiome), modulation by environment (e.g., adversity) and amelioration by psychological and nutritional interventions.

Title: Don’t slap the fish: Omega-3 intake and physical aggression is mediated by motor inhibition in response to distressed faces

Authors: Fido, D.¹, Heym, N.², Bloxsom, CAJ.², Hunter, KA.³, Gregson, M.² & Sumich, AL.^{2,4}



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Abstract: The innate violence inhibition mechanism (VIM) purportedly regulates maladaptive aggressive behavior through motor inhibition, in response to expressions of distress, and is implicated in psychopathy-related aggression. Deficiency in eicosapentaenoic acid (EPA; an omega-3 fatty acid) is implicated in aggression and callous-unemotional (CU) traits, however, its relationship to the VIM remains unknown. Two studies tested relationships between EPA intake, personality (aggression, CU traits), and electrophysiological indices of the VIM. In study one (N=98), participants completed omega-3 intake (FFQ), CU traits (ICU), and aggression (BPAQ) measures. Physical aggression correlated positively with callousness and negatively with EPA intake. CU traits were unrelated to EPA. In study two (N=47), participants completed the same measures and an electroencephalography assessment of VIM. Stop-P300 amplitude (motor inhibition success) in response to facial expressions of distress mediated the relationship between EPA intake and physical aggression. This is the first demonstration of an association between EPA intake and electroencephalographic indices of the VIM. Findings support a role of EPA in regulating aggression through networks involved in distress-cued executive control over behaviour; and provide supporting data to direct future trial designs for nutritional supplementation in non-clinical, clinical and forensic arenas.

#SYM-04

Looking at synchrony in human interaction across different interpersonal contexts and measures

Convener: Patrícia Oliveira-Silva

Overview: The dynamics of interpersonal synchronization naturally emerge in a wide range of social interactions. The importance of synchrony for social cohesion and cooperation, affiliation and secure attachment has led to an increased interest in this topic in psychotherapy research, developmental and social psychology, as well as social and affective neuroscience. In this panel we will present empirical data about different types of synchrony (movement, vocal, cardiac and electrodermal) across different types of dyads (mother-infant or couples) and interactions (helping relationships, competitive or cooperative interactions).

Title: Physiological Synchrony in psychotherapy sessions

Authors: Meier, D., & Tschacher, W.

Affiliations: University of Bern

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Abstract: Coordination of mental and bodily processes forms the core of human interaction. Research on nonverbal synchrony has the potential to provide unique insights to dynamic interaction in psychotherapy sessions. The present proof of principle study aimed to investigate physiological synchrony between a therapist and her clients. Two approaches based on cross-correlations (SUSY – Surrogate Synchrony) resp. correlations of window-wise slopes (SUCCO – Surrogate Concordance) were used to analyse synchrony in respiration and various cardiac measures. The results support the presence of physiological synchrony and further its association with ratings of the therapy process. We established the feasibility of analysing sympathetic and parasympathetic coupling with the described methods.

Title: Electrodermal and cardiac synchrony in marital interaction

Authors: Coutinho, J.^{1*}, Pereira, A.F.², Lourenço, V.², Meier, D.³, Oliveira-Silva, P.⁴, & Tschacher, W.³)

Affiliations: 1. Psychological Neuroscience Lab, CIPsi, School of Psychology, University of Minho, Portugal; 2. CIPsi, School of Psychology, University of Minho, Portugal; 3. University of Bern; 4. Human Neurobehavioral Laboratory (HNL), Research Center for Human Development (CEDH), Faculdade de Educação e Psicologia - Universidade Católica Portuguesa, Porto, Portugal.

Corresponding author: Joana Coutinho, joanafpc@gmail.com

Abstract: In this talk we will present a study in which we looked at the degree to which romantic partners' autonomic responses are coordinated, represented by their pattern of physiological synchrony. For this we used a couple's interaction task in which both spouses electrodermal and cardiac activity was measured. Synchrony computation was based on the windowed cross-correlation of both partner's physiological time series. Our results confirmed the presence of synchrony during the couple's interaction and suggest that autonomic synchrony seems to capture important aspects of the reciprocal influence and co regulation between spouses.

Title: Turn-taking in object-oriented and dyadic interactions: a longitudinal study at 7 and 12 months

Authors: Pereira, A.F.¹, Lourenço, V.¹, & Coutinho, J.²

Affiliations: ¹ CIPsi, School of Psychology, University of Minho, Portugal; ² Psychological Neuroscience Lab, CIPsi, School of Psychology, University of Minho, Portugal

Corresponding author: Alfredo Pereira, alfredo.pereira@psi.uminho.pt

Abstract: We will present a preliminary data analysis for a longitudinal study of turn-taking, in mother-infant interactions, at 7 and 12 months. Turn-taking is the irregular oscillation of speech between partners, characterized by the tight adaptation of the minimal-gap/minimal-overlap effect. Twenty dyads participated in three conditions, including dyadic and triadic (object-oriented) tasks: free-play with objects, free-play without objects, play with a challenging toy. Vocalizations were segmented and turn transition duration measured as floor



transfer offset (overlaps are negative; gaps are positive). We examined the effect of (1) infant's age, (2) task, and (3) turn-transition direction – mother to infant and reverse. We found that face-to-face vocal coordination is equal in both partners and age points, and similar to adult-adult exchanges. The object-oriented tasks consistently increased turn-transition durations. However, infants showed the same behavior at both ages; results suggest that the partner adapting to task difficulty is the mother, with significantly lower transitions, in particular at 12 months. We discuss the findings in terms of reflecting the differential role of each partner in the task, and the importance of social exchanges in shaping object exploration and thus cognitive development.

Title: Physiological Synchrony in Concert Audiences

Authors: Tschacher, W., & Meier D.

Affiliations: University of Bern

Corresponding author: Wolfgang Tschacher, wolfgang.tschacher@upd.unibe.ch

Abstract: Emotional responses to music can be studied at different levels. Traditionally, aesthetic experiences are measured via listeners' self-reports of their appreciation of a piece. As there is also a physiological and behavioral aspect of these experiences, we may also explore these in detail. In a series of concerts, we recorded continuous physiological signals (heart rate, respiration rate, skin conductance responses) of all members of the audiences. We expected that physiological processes of listeners would be synchronized significantly, and that such synchrony would indicate the level of appreciation of the music. In this sample of 99 participants, this expectation was supported.

#SYM-05

Spiking Neural Networks and the application of NeuCube to spatio-temporal brain data

Convener: Prof Nikola Kasbov

Overview

Spiking neural networks are a Machine Learning method that can be applied to visualise, quantify and classify spatio-temporal brain data. SNNs are inspired by and incorporate biologically plausible principles of neuronal function, such that it: constructs a 3D model that maps to a brain template, preserving the spatial information; encodes brain signals into 'spike-trains' (a series of binary events dependent on when the signal reaches a threshold value); initialises a SNN model using a brain inspired small-world (SW) connectivity rule and uses biologically plausible learning rules to evolve the SNN functional connectivity through unsupervised and supervised learning. We will present an overview of SNN and the NeuCube application designed by Prof Nikola Kasabov's team (KEDRI, AUT), followed by a snapshot of studies by the APE and HNL members. We will then present three studies applying SNN to EEG and structural MRI data.



Title: Spiking Neural Networks and NeuCube

Authors: Professor Nikola Kasabov

Affiliation: Knowledge Engineering Research Institute, NZ; School of Engineering, Computing and Mathematical Sciences, Auckland University of Technology, NZ;

Corresponding author: Nikola Kasabov, nkasabov@aut.ac.nz

Abstract: Spiking neural networks (SNN) are the closest computational machine learning methods to how the brain works, representing and processing information as spatio-temporal patterns of spikes (binary integers). This talk highlights the main principles of SNN, their advantages and challenges. A recent direction in SNN is the development of brain inspired SNN, an example of which is the NeuCube computational architecture. The talk highlights the main functionalities and features of NeuCube, along with new development such as on-line incremental, transfer learning, associative memories, integrated brain data modelling. The talk refers to a range of current and future applications for brain data and beyond.

Reference: N.Kasabov, Time-space, spiking neural networks and brain-inspired artificial intelligence, Springer, 2018, 735 pages.

Title: An overview of APE-Network SNN projects

Authors: APE-Research Network

Affiliation: Psychology Department, Nottingham Trent University, UK;

Corresponding author: alexander.sumich@ntu.ac.uk

An overview of some of the SNN studies by members of the APE-Research Network will be presented. Our international collaborative partnership has several studies that include application of SNN to EEG and MRI data. I will briefly mention a few published and emerging studies on i) depression and mindfulness; ii) Response to feedback and self-judgement; iii) The relationship between mood, mind and microbiota; iv) Emotional bias in children from backgrounds of adversity and psychological trauma; v) typical and atypical aging; vi) Neurological disorders; vii) Hyperscanning and interbrain synchrony.

Title: Modelling Peri-Perceptual Brain Processes in a Deep Learning Spiking Neural Network Architecture.

Authors: Zohreh Doborjeh^{1*}, Nikola Kasabov², Maryam Doborjeh², & Alexander Sumich^{2,3}

Affiliation: University of Auckland, NZ; ²Auckland University of Technology, NZ;
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Familiarity of marketing stimuli may affect consumer behaviour at a peri-perceptual processing level. The current study introduces a method for deep learning of electroencephalogram (EEG)



data using a spiking neural network (SNN) approach that reveals the complexity of peri-perceptual processes of familiarity. The method is applied to data from 20 participants viewing familiar and unfamiliar logos. The results support the potential of SNN models as novel tools in the exploration of peri-perceptual mechanisms that respond differentially to familiar and unfamiliar stimuli. Specifically, the activation pattern of the time-locked response identified by the proposed SNN model at approximately 200 milliseconds post-stimulus suggests greater connectivity and more widespread dynamic spatiotemporal patterns for familiar than unfamiliar logos. The proposed SNN approach can be applied to study other peri-perceptual or perceptual brain processes in cognitive and computational neuroscience.

Title: Spatiotemporal dynamics of working and prospective memory in ageing and mild cognitive impairment

Authors: Crook-Rumsey, M.^{1*}, Sumich, A.¹, Howard, C.¹, Espinosa Ramos, J.I.², Dobarjeh, Z.³, Dobarjeh, M.⁴, & Kasabov, N.K.²

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Abstract: Prospective memory is the ability to remember to perform actions in the future, also known as the memory of delayed intentions. It is one of the first complaints of older adults as they begin to develop mild cognitive impairments (MCI) of dementia-related disease. Despite this, few studies have examined the neurophysiology of prospective memory in older adults with MCI. The current study explores the spatiotemporal dynamics of event-related potential (ERP) activity of young adults, healthy older adults and older adults with MCI using a novel application of artificial intelligence known as Spiking Neural Networks (SNNs). Through the machine-learning functionality of SNNs, patterns of spatial and temporal EEG activity can be modelled and used to classify the participant groups. The results demonstrate that SNNs are superior in providing classification accuracy compared to traditional methods. Network analyses performed on the modelled patterns of activity reveal unique insights into the connectivity of working and prospective memory in older adults with and without MCI.

Title: Personalised Predictive Modelling with Spiking Neural Networks of Longitudinal MRI Neuroimaging Data for Ageing Cohort

Authors: Maryam Dobarjeh^{1*}, Zohreh Dobarjeh², Alexander Merkin³, Helena Bahrami², Alexander Sumich⁴, Rita Krishnamurthi³, Oleg N. Medvedev⁵, Mark Crook-Rumsey^{4,2}, Catherine Morgan^{6,7}, Ian Kirk^{6,7}, Perminder Sachdev^{8,9}, Henry Brodaty⁸, Kristan Kang⁸, Wei Wen⁸, Valery Feigin^{3,10}, Nikola Kasabov^{2,11*}

Affiliations :

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Research, University of Auckland, NZ ; ⁷Brain Research New Zealand, NZ ; ⁸Centre for Healthy Brain Ageing (CHEBA), School of Psychiatry, University of New South Wales, Sydney, Australia ; ⁹Neuropsychiatric Institute, the Prince of Wales Hospital, Sydney, Australia; ¹⁰Australia Scientific Neurological Centre, Moscow, Russia ; ¹¹ Ulster University, Londonderry, United Kingdom

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Abstract. Longitudinal neuroimaging requires spatiotemporal brain data (STBD) measurement over time, relevant to understanding dynamic changes in brain structure and/or function underpinning cognitive functions. Making sense of such highly interactive information is challenging, given the temporal features manifest intricate causal relations between the spatially distributed neural sources in the brain. The current paper argues that for the advancement of deep learning algorithms in brain-inspired spiking neural networks (SNN), capable of modelling structural data across time (longitudinal measurement) and space (anatomical components). The paper proposes a methodology of a computational architecture based on SNN for building personalised predictive models from longitudinal brain data to accurately detect and predict an individual's functional state. The pipeline methodology includes methods for clustering; data interpolation over time; deep learning in a 3-dimensional brain-template structured SNN model; classification and prediction of outcomes; visualisation of structural brain changes related to predicted outcomes; interpretation of results; and individual and group predictive marker discovery. To demonstrate the functionality of the proposed methodology, the paper presents experimental results on a longitudinal magnetic resonance imaging (MRI) dataset derived from the community-based cohort Sydney Memory and Ageing Study (MAS) spanning six years of follow-up, from 175 older adults. The models were able to accurately classify and predict 2 years ahead of cognitive declines, such as mild cognitive impairment (MCI) and dementia with 96% and 90% accuracy, respectively. The proposed methodology also offers a 3-dimensional visualisation of the MRI models reflecting the dynamic patterns of regional changes in white matter hyperintensity (WMH) and brain volume over 6 years. The results suggest predictive markers amongst explored brain patterns for dementia and MCI. While our experiments are based on MRI data from the longitudinal MAS cohort, the proposed method is a generic one, applicable to other longitudinal data sets such as other neuroimaging modalities, including also demographic, genetic and clinical data.



3. PRESENTATIONS:

#PRES-01

Title: The influence of dimensional schizotypy on lexical decision

Authors: Vanova, M.¹, Aldridge-Waddon, L.¹, Jennings, B.¹ & Kumari V.¹

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Abstract: Background: There is increasing evidence that atypical social behaviour in psychopathology is related to adjusted subjective and behavioural responses towards social rewards. This research aimed to investigate the influence of dimensional psychopathology on social reward processing in a sample of healthy adults scored on general-population measures of personality and wellbeing.

Method: Eighty-one participants completed self-report and experimental measures of social and monetary reward processing, alongside self-report measures of schizotypal personality traits, psychopathic traits, mood disorder traits, borderline personality traits, and autism spectrum disorder traits.

Results: Higher scores on social anxiety and anhedonia dimensions were associated with reduced subjective and behavioural responses towards social rewards, whilst more pronounced borderline personality traits were associated with increased social reward responding.

Conclusion: The findings of this study illustrate the influence of different personality and wellbeing dimensions on social reward processing and highlight the need for further research to establish their neural underpinning and societal implications.

#PRES-02

Title: The roles of victim sex and celebrity status in judgments of Deepfake Pornography

Authors: Rao, J.¹, Fido, D.¹, & Harper, C.²

Affiliation(s): 1. University of Derby, UK; 2. Nottingham Trent University, UK

Corresponding author: Dean Fido, d.fido@derby.ac.uk

Abstract: Objectives: The objectives were two-fold. First, to explore whether judgement severity of deepfake pornography offences differed as a function of victim sex and/or celebrity status. Second, to outline the predictive power of psychological factors such as psychopathy, rape myth acceptance (RMA), and beliefs about revenge pornography (BRP) on both said judgements and proclivity to offend.

Design: A cross-sectional design using both comparative and correlational arms was used to achieve the objectives.



Methods: Participants (n=290, Mage=34.83 years, 42.1% female) completed an online survey comprised of validated measures of psychopathy, RMA, and BRP, before being asked to read and judge one of four vignettes outlining a deepfake pornography offence (differing only by victim sex and celebrity status). Proclivity measures were also taken.

Results: Judgement severity data were analysed using analyses of variance. Although judgement severity did not differ between vignettes in female participants, male participants reported harsher judgements to perpetrators in vignettes containing female (relative to male) victims and when said victims were not celebrities (relative to where they were). Moreover, and surprisingly, regression analysis suggested that psychopathy, RMA, and BRP did not significantly predict variation in judgements, however, psychopathy positively predicted proclivity to make and disseminate deepfake pornography.

Conclusions: Although limited to a UK sample, we provide the first judgement and proclivity data on an image-based sexual offence that is growing in prevalence and severity. Research such as this on deepfake media production has implications beyond online offending; tapping into avenues of fake news and discreditation in political arenas.

#PRES-03

Title: Differential Morbid Curiosity Pathways in Individuals with Subclinical Sadistic and Psychopathic Traits

Authors: Penford, E.¹ & Heym, N.¹

Affiliation(s): 1. Department of Psychology, Nottingham Trent University, UK

Corresponding author: Eve Penford, evepenford@gmail.com

Abstract: Sadism and psychopathy are distinct but similar constructs, yet there is still little known about their differences. Until recently, research has focused on behavioural aspects of sadism. The present study seeks to investigate other factors that may further distinguish sadism and psychopathy.

588 participants (61.9% female, 33.0% male) completed an online survey investigating the relationship between sadism, psychopathy, and morbid curiosity. Path analysis was used to examine whether the effects of empathy, disgust and motivation mediated the relationships of sadism and psychopathy to morbid curiosity.

Results showed that all variables were correlated to morbid curiosity. However, when shared variance was accounted for in the path model, only vicarious sadism and psychopathy's callous affect facet maintained a relationship with morbid curiosity, and only disgust significantly mediated the effect of vicarious sadism on morbid curiosity. The path analysis revealed distinctions between vicarious sadism and direct sadism, supporting sadism as a dimensional construct. Further, differences between resonant and dissonant empathy styles for sadism and psychopathy suggested that the absence of resonance is primarily related to psychopathic traits, and the presence of dissonance is associated with sadistic traits. The results have implications for development of more specific treatment interventions and conflict resolution. Future research into sadism as a dimensional construct, and motivational factors for sadism are recommended.



#PRES-04

Title: The Neurophysiological Underpinnings of Reinforcement Sensitivity (RST): A Systematic Review of Frontal Alpha Asymmetry

Authors: Firth, J.¹, Standen, B.¹, Sumich, A.^{1,4} & Heym, N.¹

Affiliation(s): 1. Department of Psychology, Nottingham Trent University, UK; 2. Department of Psychology, School of Public Health and Psychosocial Studies, Auckland University of Technology, New Zealand

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Abstract: Frontal alpha asymmetry is considered a neural proxy of approach-withdrawal motivational direction. The Reinforcement Sensitivity (RST) is a neuropsychological model of personality comprising two/three main motivational systems. Prior research has examined frontal asymmetry as a neural correlate of RST however, findings have been inconsistent. This review will systematically examine previous EEG research in relation to frontal asymmetry and RST in healthy adults, and to present a clearer understanding of the neurobiology associated with RST traits. Scopus, Psychinfo, PubMed and Web of Science databases were searched in November 2019 as part of a larger review on neural RST research. A total number of 14848 published studies were identified with 34 studies included in this review. The results highlight that BAS was prominently associated with greater relative left frontal asymmetry both at baseline activity and during task-related activation. Bilateral BAS activation was also reported, indicating that BAS may be linked to aspects of both approach and withdrawal motivation. However, the role of BIS is more inconclusive. This review highlights the need for paradigms that tease apart withdrawal motivation and inhibition in order to accurately determine the neural mechanisms behind BIS.

#PRES-05

Title: Play on emotions: impact of theatre on emotional regulation, empathy and mental health

Authors: Freitas, S.¹ & Oliveira-Silva, P.¹

Affiliation(s): 1.

Corresponding author: Sara Freitas, sarapsifreitas@gmail.com

Abstract: It is known that theatre therapies have a positive psychological effect on mental health. However, little is known about the psychological effect of theatre itself. The goal of this study is to evaluate the impact of practicing theatre on emotional regulation, empathy, and mental health. A group of 44 participants participated in the study, out of which 22 enrolled in a theatre course with a final presentation of a theatre play. The other 22 participants had never participated in theatre-related projects, including during the study. The groups'



sociodemographic characteristics were matched. Evaluation occurred through self-report instruments in two distinct moments of the study. One at the beginning of the making of the play and another after the final presentation for the theatre groups. For the rest of the participants, an approximately similar time interval of 45 days was respected between first and second evaluations. An association between previous experience in theatre and better emotional regulation results were found. Particularly, the participants that had earlier experience in theatre reported greater use of cognitive reappraisal and a tendency towards a lesser use of expressive suppression. Regarding empathy, specifically affective empathy, significant differences were found in the theatre group between the evaluations and the groups on the second moment of evaluation. At this same moment, differences were also found between the groups regarding cognitive empathy and general empathy. No differences were found in mental health. The results are discussed, and limitations of the study and new directions for future investigations are considered.

#PRES-06

Title: Music-Evoked Nostalgia and Prosocial Behavior

Authors: Cho, E.¹ & Chagas, P.C.²

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Abstract: Nostalgia is known to serve many key socio-emotional functions (Sedikides et al., 2016) and likely to facilitate other-oriented behavior, such as prosocial behavior (Zhou et al., 2011). This ongoing study aims to examine if listening to nostalgic music (1) promotes listeners' prosocial behavior, looking through donation behavior, and (2) evokes positive or negative affect. Undergraduate students (N = 73) listened to some nostalgic music of their choice, completed a series of questionnaires, and participated in a Dictator Game. The experiment was initially carried in an in-person setting (n = 55); however, with the Covid-19 situation, it has recently been transformed as an online experiment (n = 18) and is currently ongoing. Multiple regression analysis showed participants' ratings to a nostalgia scale predicted the amount of donation the participants made, $F(4, 68) = 5.95$, $p < .001$, adj. $R^2 = .27$. Detailed results of the relationships between these two while taking into account other variables, including personality, affect, and empathy, will be presented at the conference.

#PRES-07

Title: Perfectionism and Burnout in Sport: Moving Beyond the Individual

Authors: Olsson, L.F.¹, Madigan, D.J.¹ & Hill, A.P.¹



Affiliation(s): 1. School of Science, Technology and Health, York St John University

Corresponding author: Luke F. Olsson, l.olsson@yorks.ac.uk

Abstract: Research suggests that perfectionism is a personality characteristic that positively predicts burnout in athletes. However, to date, this line of research has examined the perfectionism-burnout relationship as an individual issue (i.e., how an athlete's perfectionism influences their own burnout; see Hill & Curran, 2016). It is currently unclear whether the perfectionism from others also has a bearing on athletes' experience of burnout. In this instance, having noted the importance of coaches to the experiences of athletes, we focused on the notion that coaches are a source of stress and burnout in athletes. Consequently, the research used two separate samples to assess two aims. First, to examine the predictive ability of perceived coach perfectionism on athlete burnout. Second, to examine how perceived coach perfectionism may exert an influence on athlete burnout. Competitive adult athletes (sample 1: N = 191; sample 2: N = 220) completed measures of their own perfectionism, perceptions of coach perfectionism, and burnout. Regression analyses from sample 1 showed that athlete perfectionism predicted their own burnout. However, after controlling for athlete perfectionism, perceived coach perfectionism predicted athlete burnout. Mediation analysis from sample 2 highlighted that perceived coach perfectionism can exert an influence on athlete burnout via athlete perfectionism. In other words, when athletes perceive their coach to be more perfectionistic, they become more perfectionistic themselves and this, in turn, disposes them to experience burnout. Overall, the findings suggest that perceived coach perfectionism is important consideration in relation to athlete burnout.

#PRES-08

Title: Emotional Stress State Classification and Analysis using Spiking Neural Networks

Authors: Weerasinghe, M.¹, Wang, G.² & Parry, D.¹

Affiliation(s): 1. Department of Computer Science, Auckland University of Technology;
2. Department of Psychology and Neuroscience, Auckland University of Technology

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Abstract: Human affect recognition is an important research area with applications in health and wellbeing, human-machine interactions and marketing. In this research area, electroencephalogram (EEG) is extensively used to classify and analyze brain activity associated with emotions, using feature extractions in time and frequency domains. However, these extractions require data manipulations and often neglect spatial representations. In the present study, we introduced a simple machine learning model based on Spiking Neural Networks (SNN) equipped with Hebbian-like learning and tested the model with a subset of the publicly available EEG data related to human emotion states. Without manual interventions for feature extraction, our newly developed model can classify Emotional Stress and Relaxation brain states with ~80% accuracy. The differences in spatial connectivity between the two states are also further examined using the NeuCube software architecture based on SNNs.



#PRES-09

Title: Non-linear Multiband EEG signal analysis for detecting Alzheimer and Parkinson

Authors: Silva, G.^{1*}, Alves, M.¹, Cunha¹, R., Bispo, B. & Rodrigues, P.M.¹

Affiliation(s): 1. Universidade Católica Portuguesa, , Centro de Biotecnologia e Química Fina (CBQF), Laboratório Associado, Escola Superior de Biotecnologia, Porto, Portugal.

Corresponding author: Pedro M. Rodrigues, prodrigues@porto.ucp.pt

Abstract: Alzheimer's (AD) and Parkinson's (PD) diseases stand out as the most common neurodegenerative disorders worldwide. The impact on millions of people, combined with the lack of a cure for both diseases and their asymptomatic initial period, highlights the need for diagnosing them at the earliest stages to control their development. In the present study, for maximizing both diseases differentiation, in their early stages, an EEG non-linear multiband analysis was performed to extract features for feeding several machine learning tools. The comparison between: (1) PD vs AD reached classification accuracies of 100% on at least one channel in β , α , θ and δ bands; (2) PD and AD vs controls provided accuracies of 100% on at least one channel in δ band; (3) PD vs controls reached 100% of accuracy on the γ band; and (4) the PD and AD combination vs controls provided 90.6% of accuracy in θ band.

#PRES-10

Title: Searching for Better 3D Baseline Stimuli

Authors: Silva, M.O.¹, Teixeira, L.¹, Ferreira, M.² & Oliveira-Silva, P.²

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Abstract: The use of accurate and appropriate physiological baseline procedures is essential in experimental paradigms in the field of neuroscience. However, the most challenging parts of designing a new study for experimental laboratory studies, especially when using psychophysiological measures, is the choice of the appropriate stimuli for the baseline or control task, in order to compute reactivity. This study aimed to select and validate the most suitable image category to be used as a baseline task, through self-report and physiological measures. The images were selected according to a previous baseline, but adding the 3D and virtual world component, which is the foundation of our experiment. An experiment comprising a number of visual stimuli (15 images) in a virtual world using a Virtual Reality system, in which we assessed valence and arousal through self-report measures after



visualizing each stimulus. Our discussion will emphasize the challenges involved in choosing an appropriate type of stimuli for baseline tasks and suggest that caution is never wasted.

#PRES-11

Title: Hyperscanning study of neural alignment of English as a foreign language (EFL) students engaged spoken communication

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Abstract: Background: It is estimated that a quarter of the people in the world speak English to some degree, with the majority of those using it as a second or foreign language. Depending upon the type of language tasks, role, proficiency, and foreign language anxiety, neural activities involved in communication vary. Speaking a foreign language is generally considered the most anxiety-inducing among the four language skills. Language learning is recognized as an inherently social process and interbrain synchrony (IBS) is commonly observed between communicators regardless of the language used. Hyperscanning has shown the neural areas showing synchronization were more distributed over the brain when people communicated in their second language as compared to their first.

Aim: To investigate neural activity regarding first and second language interactions between interlocutors during social communication to observe possible patterns of interpersonal neural connectivity and examine how this affects spoken communication.

Method: Synchronous dual-person EEG data acquisition will be conducted in first and second language oral communication during turn-taking, cooperation versus memory, and interactive conditions. Additional data will be collected via questionnaires to assess FLA, personal disposition and task difficulty.

Analysis: In addition to traditional statistical methods, the evolving connectivity of emerging IBS will be assessed and visualized in brain-inspired spiking neural network (SNN) models using NeuCube to trace and understand the dynamics and effects of the studied factors during first and second language communication.

#PRES-12

Title: The Neural Correlates of RST: A Systematic Review of the fMRI Literature.

Authors: Standen, B.¹, Firth, J.¹, Sumich, A.¹ & Heym, N.¹

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Abstract: Reinforcement Sensitivity Theory (RST) is a theory of personality based on neurobiological systems of reward and punishment. It proposes that personality is formed by individual differences in the sensitivity of three brain systems: The behavioural approach system (BAS) is sensitive to reward, modulates appetitive motivation and is located in the cortico-ventral basal ganglia circuit. The flight-fight-freeze system (FFFS) is sensitive to punishment, responsible for defensive avoidance behaviours and is located in a hierarchal fashion from prefrontal areas, anterior cingulate, amygdala, hypothalamus and the periaqueductal gray (PAG) based on defensive distance. The behavioural inhibition system (BIS) mediates conflicts between these systems and follows a similar hierarchical structure as the FFFS, starting in prefrontal areas, moving to the posterior cingulate, septo-hippocampal system, amygdala, hypothalamus and PAG. There are many psychometric measures of RST that have been widely used to quantify individual differences in these systems. For these measures to be valid indicators of these neurobiological systems they must be predictive of functioning in the proposed systems. This systematic review summarises 39 fMRI studies that investigated the association between RST scales and neural functioning in healthy adult samples. Findings suggest that BAS scales are generally predictive of activity in frontal and striatal activity in response to reward, supporting the use of psychometrics to quantify BAS. However, findings for the BIS and FFFS were less clear - partially due to studies using outdated psychometric measures that conflate the two systems. Additionally, the tasks used to activate the BIS and FFFS may only target higher level neural activation associated with distal threat. Future studies must endeavour to use revised RST scales and implement a wider array of aversive tasks that can activate the complete defensive hierarchy.



4. POSTER BLITZ:

#POSTBL-01

Title: The influence of dimensional psychopathology on social versus monetary reward processing

Authors: Aldridge-Waddon, L.¹, Vanova, M.¹, Puzzo, I.¹, Muneke, J.¹ & Kumari, V.¹

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Abstract: Background: There is increasing evidence that atypical social behaviour in psychopathology is related to adjusted subjective and behavioural responses towards social rewards. This research aimed to investigate the influence of dimensional psychopathology on social reward processing in a sample of healthy adults scored on general-population measures of personality and wellbeing. Method: Eighty-one participants completed self-report and experimental measures of social and monetary reward processing, alongside self-report measures of schizotypal personality traits, psychopathic traits, mood disorder traits, borderline personality traits, and autism spectrum disorder traits. Results: Higher scores on social anxiety and anhedonia dimensions were associated with reduced subjective and behavioural responses towards social rewards, whilst more pronounced borderline personality traits were associated with increased social reward responding. Conclusion: The findings of this study illustrate the influence of different personality and wellbeing dimensions on social reward processing and highlight the need for further research to establish their neural underpinning and societal implications.

#POSTBL-02

Title: Mental Health Force: Assessing and promoting mental health amongst police officers

Authors: Moreno, A.¹, Rubiol Vilalta, S.² & Oliveira-Silva, P.¹

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Abstract: Police officers are continuously exposed to different stress sources, involving unpredictable, potentially dangerous, and even traumatic situations that threaten these professionals' mental health and increase their likelihood of developing mental health problems (e.g., depression, anxiety, post-traumatic stress). Although there are many qualified training initiatives for police officers' psychological well-being, Portugal still needs to develop further



training and programs regarding this topic as other countries have done (e.g., the UK). Given our current pandemic situation, this concern has become even more prominent. Thus, this research proposal's uniqueness is threefold: to compare in Portugal, Spain and the UK training available concerning mental health for police officers; and assess and compare police officers' clinically relevant psychological symptoms, self-regulation, and interpersonal skills. Afterwards, we aim to develop in Portugal a program focused on promoting police officers' mental health and relevant skills for their intervention in society and crisis situations.

#POSTBL-03

Title: Relationship between the use of social networks and youth empathy: An exploratory study with YouTube

Authors: Costa, J.¹, Campos, L.¹, Dias, P.¹ & Oliveira-Silva, P.²

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Abstract: Nowadays, Information and Communication Technologies (ICT) constitute a crucial sharing tool. Social networks are one of the main ways of communication for young people, and YouTube is one of the most used. Existing evidence has suggested that these ICT, when replaces face-to-face meaningful social situations with either isolating experiences or poorer quality online interplays, may have adverse emotional, social, and psychological effects. This exploratory study explored the relationship between the use of social networks, namely YouTube, and young people's affective and cognitive empathy.

The sample consisted of 157 participants aged 15 to 18, users of YouTube. To evaluate empathy levels, we used a self-report too (Basic Empathy Scale) and created a questionnaire assessing YouTube usage levels. While further exploration of the relationship between these two factors is needed, the results suggest a positive relationship between cognitive empathy and the age users begin to access YouTube.

#POSTBL-04

Title: How Secondary Psychopathy Mediates the Relationship between Sporting Choice and Aggression and its sub facets.

Authors: Kidd, S.J.¹ & Birkin, O.¹

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Abstract: Aggression is a general feature of human beings, a potential condition which can be activated fast or slow and it may take a various forms of manifestation. In sports, whose main characteristic is the competition itself, the essential coordinates of the existence are: the rivalry, the direct confrontation with the opponents, the desire to win and the optimal activation. Today, the increasing number and frequency of aggressive acts occurring on or around the sports ground, makes us wonder where or which is the limit of commutativity. This situation also demands a good understanding of deep psychological connotations of such behaviors. Although there has been a significant body of research carried out relating to sport in general and aggression, an area that is significantly lacking is the relationship of sporting choice towards aggression and what if any factor mediates that relationship. The research carried out looked three sports of different contact of Rugby, Netball and Golf, how that relates to aggression levels and whether the relationship was mediated by the Dark Triad personality traits. The sample included N=163 participants, sub divided into 3 sub groups of Rugby (high contact) N=51, Netball (low contact) N=49 and Golf (no contact) N=63, who completed online psychometric questionnaires: survey: N=163 aged 18 to 71 years ($M = 0.33$, $SD = .47$). The study demonstrated that secondary psychopathy positively mediated the relationship between Rugby a high contact sport and aggression and that secondary psychopathy negatively mediated the relationship between golf and aggression. Thus demonstrating that sporting choice can be a predictor for secondary psychopathy and the levels of aggression displayed.

#POSTBL-05

Title: How are Probiotics perceived and accepted by Portuguese Health Care Professionals?

Authors: Ferreira, M.,¹ Joana, S.¹ & Oliveira-Silva, P.¹

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Abstract: In this Covid-19 pandemic, the search for solutions that aim to improve and maintain a good health condition and to support the immune system has increased exponentially. Within the products that advertise these benefits, according to local pharmacies and retailers, probiotic products were among those that had the most demand. Additionally, existing evidence suggests positive effects of probiotics on brain functioning, particularly influencing affective brain regions. However, there is limited information available regarding the Portuguese health care professionals (HCP) advising practices and perceived familiarity and safety of probiotics. This study aims to characterize in Portugal the HCP's role, awareness and the practice of prescribing probiotics for disease treatments and for general health improvement, before and after the Covid-19 pandemic. To access the Portuguese HCP perception on probiotics intake, semi-structured interviews will be conducted through virtual platforms along with a sociodemographic questionnaire.



#POSTBL-06

Title: Characterization of caffeine consumption in the Portuguese population

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Abstract: Background: Historically and universally, caffeine has been considered a widely used psychoactive substance worldwide with substantial economic and social impacts. It also appears to have physiological, cognitive, and emotional effects for those who consume it. Method: The aim of this study is to characterize the consumption of this methylxanthine in the Portuguese population (n = 223, ranging from 18 to 35 years old). The amount of caffeine consumed, the caffeinated products used, and reasons for coffee consumption were explored using online surveys. Results: The results point to higher consumption in males (when compared to females), in older subjects (31 to 35 years old), and a larger consumption of 50 ml coffee (also known as “espresso”). The more frequent reasons to consume caffeinated products reported by respondents were to keep alert and the taste of these products. Discussion: The consumption of caffeinated products by the Portuguese population is moderate (comparing to other countries) despite being considered a daily drink for a wide age group.

#POSTBL-07

Title: Unfolding the barriers consumers and health professionals face towards understanding probiotic and prebiotic products

Authors: Soares, J.R., Ferreira, M. & Oliveira-Silva P.

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Abstract: Probiotics and prebiotics are microbiota management tools for improving host health that can be used to battle healthcare costs since they can intervene in the prevention and treatment of various conditions and management of health status in general. Additionally, more recent research has drawn the consumers’ attention to probiotics in the face of evidence that the gut and the microbiota have a crucial role in brain-related disorders and cognitive functioning. Since probiotics effectiveness can be species-, dose-, and disease-specific, it’s vital to provide adequate tools to consumers and health care professionals (HCP) to assess the available options. This study aims to present a review of the paradigm about pre/probiotic



products, as well as, create an online database that characterizes the main products on the Portuguese market, considering the target conditions, the experimental design applied, scientific evidence (with reference) and product discrimination. The HCP's reluctance to prescribe probiotics and the consumers' difficulty in finding reliable information highlights a need for a quality organization and availability of this information on the benefits of probiotics for improving the host health.

#POSTBL-08

Title: How functional connectivity decay over interhemispheric distances on neurodegenerative diseases.

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Abstract: White matter loss, specifically at corpus callosum, has been repeatedly shown to be affected in neurodegenerative diseases. We hypothesize that interhemispheric functional connectivity might be affected due to an alteration of the white matter tracts. The present study investigates correlations between fMRI time-series and how the physical distance between these time-series decays differs in Alzheimer Patients (AD), Fronto-Temporal Dementia (FT), and Healthy Subjects (HS). Two datasets were used for this study. The first consists of 36 HS, 26 FT, and 17 AD patients obtained from the Institute of Cognitive Neurology (INECO, Buenos Aires, Argentina) and the second is a publicly available database consisting of 22 HS and 17 AD from the Alzheimer's Disease Neuroimaging Initiative (ADNI).

Results showed a higher decay on the connectivity in function to distance in both groups of patients (specifically on distances over 70mm). This higher decay is especially significant on contralateral correlations, suggesting that corpus callosum atrophy may correlate negatively with functional connectivity. The robustness of these results is shown by the replication in both datasets. We have also tested how resting-state networks are affected by this decay, showing that more RSN with more laterally distant areas are more affected (lateral visual and auditory RSNs). Finally, we reported how this correlational decay is related to phenotypic measures of atrophy and executive function but not to the age.



#POSTBL-09

Title: Self-guided virtual reality therapy for social anxiety using biofeedback to manage arousal

Authors: Myers, J.¹, Heym, N.¹, Zysk, E.,¹ Sumich, A.¹, Daly, R.¹, Brown, D.² & Premkumar, P.¹

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Abstract: Virtual-reality exposure therapy (VRET) improves confidence in public-speaking when exposure to social threat is self-guided. Biofeedback about physiological arousal improves control over threatening thoughts. Biofeedback could enhance the responsiveness to self-guided VRET. The aim of the study was to establish whether (1) VRET with biofeedback improves social anxiety, and (2) improvement in social anxiety is greater for people receiving VRET with biofeedback than without biofeedback.

Forty-five participants with psychometrically defined social anxiety were randomly allocated to VRET with biofeedback (n=21) and without biofeedback (n=24). Participants engaged in three weekly sessions comprising of a 20-minute talk in front of a virtual audience in a virtual lecture theatre. Participants could guide their exposure to social threat by modifying their virtual social environment at four-minute intervals. Participants receiving biofeedback viewed their physiological arousal based on heart rate and brain electrical activity in the alpha frequency band. Participants were asked to lower their arousal levels in response to biofeedback. Self-reported public-speaking anxiety was measured after each session and at one-month follow-up. Self-reported social anxiety was assessed at baseline, post-therapy and one-month follow-up.

VRET yielded an overall improvement in public-speaking anxiety and social anxiety from baseline to end-of-treatment and follow-up. The improvement in social anxiety did not differ between VRET with biofeedback and VRET without biofeedback conditions.

Self-guided VRET for public-speaking anxiety improves social anxiety. Improvement is sustained at one-month follow-up. Receiving biofeedback does not enhance the response to self-guided VRET.

#POSTBL-10

Title: A psychophysiological approach to assess neuromodulatory oral films

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Abstract: Oral films (OF) are a new delivery system of drugs or neuromodulator molecules (e.g., caffeine) by oral administration. Several pharmaceutical and nutraceutical companies have been investing in the knowledge of these innovative products and technologies. Although there are multiple products in the market, the regulatory guidelines are much uncertainty about the appropriate methods, specifications, and standardization for developing and evaluating these OF. This systematic review aims at exploring the use of the psychophysiological approach to evaluate the neuromodulator OF in order to increase the knowledge and the alertness about this theme. The PRISMA criteria were applied, and after searching the electronic databases, 6 publications ranging from 1993 to 2020 were found suitable for inclusion in this study. The data confirmed the lack of psychophysiological studies in the evaluation of OF and their importance. The advantages of using psychophysiological measurements as valuable evaluation methods were suggested as a new evaluation methodology.

#POSTBL-11

Title: Frontal and temporal white matter tracts are particularly impaired in oldest-old individuals.

Authors: Borelli Vendramini, W.¹, Schilling Porcello, L.¹, Leal-Conceicao, E.¹, Soder, Bernardi, R.¹, Portuguez, Wetters, P.¹, Franco, Rosa, A.¹ & daCosta, Costa, J.¹

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Abstract: Herein, we investigated white matter tract abnormalities in oldest-old individuals, compared with middle-aged adults with Diffusion Tensor Imaging (DTI). Cognitively normal, community-dwelling individuals were included in this study. Individuals between 55-65 years-old and above 80 years-old composed the Middle-aged (MG) group or the Oldest-old group (OG), respectively. Participants underwent a DTI exam, and their images were processed using TORTOISE and FSL. Fractional anisotropy (FA) of each white matter tract was compared between groups using the JHU atlas, using a t-test with the R Studio software. Eleven OG and ten MG individuals were included. FA was significantly increased in the OG compared with MG within the following regions: bilateral Fornix/Stria Terminalis ($p < 0.0001$), left posterior thalamic radiation ($p < 0.001$), genu and splenium of the Corpus Callosum ($p < 0.001$). However, internal capsule tracts were similar between groups. Oldest-old presented decreased white matter integrity preferentially in frontal and temporal regions, while motor tracts appeared preserved.



5. POSTERS:

#POSTER-01

Title: The role of empathy and attitudes towards sexual aggression in understanding psychopathic and sadistic preference for sexual violence.

Authors: Fleet, A. E.¹ & Heym, N.¹

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Abstract: Psychopathic and sadistic traits have been linked to increased risk of sexual and non-sexual violence (Porter & Woodworth, 2006). However, research has yet to explore the involvement of empathetic and masochistic tendencies, or how attitudes towards sexual aggression are involved in preferences for sexual violence. The current study (N=282) examined the role of empathy and attitudes alongside psychopathic and sadistic traits in the enjoyment and arousal of sexual and non-sexual violence, depicted in video clips. Results revealed that affective empathy mediated relationships between the callous affect facet of psychopathy and the enjoyment of non-consensual sexual (NCS) violence, but not the relationships between sadism and enjoyment of NCS violence. Additionally, attitudes towards sexual aggression was the strongest unique predictor of enjoyment and sexual arousal to watching NCS violence. Whilst attitudes were a direct predictor of enjoyment of NCS violence, they did not drive the associations between callous affect and sadism with the enjoyment of NCS violence. Implications for empathy-aggression models and for the acceptance of sexual aggression and rape myths are considered in relation to a preference for sexual violence.

#POSTER-02

Title: Childhood maltreatment does not always lead to biased attention towards threat: the moderating role of comorbid anxiety

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Abstract: Childhood maltreatment is associated with attentional bias (AB) towards threat-related cues (prominently in PTSD victims) and is linked with several psychopathologies like anxiety. Therefore, the role of anxiety and its possible interaction in producing AB needs to be explored. However, the few studies exploring the overlapping effect of anxiety and abuse are



inconsistent regarding the direction of this bias (i.e. towards/away from threat). To address these limitations, the present study investigated the relationship between threat related AB using a modified Spatial Cueing Task and severity of abuse (measured using Juvenile Victimization Questionnaire) among a vulnerable sample of Indian adolescent workers (N=82). The study further explored the role of anxiety (measured using Youth Inventory-4R) in explaining the above relationship. Results revealed that though no significant main effect of abuse severity or anxiety was found on AB, anxiety emerged as a significant moderator of the relationship of abuse severity with AB to threatening stimuli under longer exposure duration of 500ms ($\beta = -12.93, p = .03$). Further, a crossover interaction was observed from simple slope analysis suggesting that with increasing severity of abuse, high anxious adolescents develop an avoidant tendency, i.e., directing their attention away from threat as opposed to their initial orientation towards threat under no/low abuse condition ($\beta = -14.54, p = .050$). Contrarily, low anxious adolescents shifted their attention towards threat when severity of abuse increased ($\beta = 10.92, p = .047$). Results underscore the importance of additional research and clinical trials based on these findings that might help to establish Cognitive Bias Modification protocols as a treatment to mitigate the adverse long-lasting effects.

#POSTER-03

Title: A Latent Profile Analysis of Age-Related Differences in Reinforcement Sensitivity

Authors: Firth, J.¹, Kibowski, F.¹, Sumich, A.¹, & Heym, N.¹

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Abstract: According to the revised-Reinforcement Sensitivity Theory (rRST), individual differences are underpinned by three personality systems – Behavioural Activation (BAS), Behavioural Inhibition (BIS) and Fight-Flight-Freeze (FFFS). The current study aims to examine age-related differences of rRST traits in a wide sample of children and adults. A latent profile analysis (LPA) was performed with the rRST across four age-groups: children (n= 188; 8-11yrs), young adults (n=455, 18-24yrs), middle adults (n= 286; 25-34yrs) and older adults (n=255; 35-55yrs). The results revealed two main profiles in children: high rRST and low rRST. Whilst in young adults, four profiles emerged including a risky profile marked by high Anxiety (BIS) and Fight (FFFS). A further fifth profile was shown for middle adults that was marked by low Anxiety (BIS), Fear (FFFS) and high-BAS. However, for older adults, only three rRST profiles were reported. Overall, the results highlight the difference in the variation of rRST profiles across youth and adult populations.

#POSTER-04

Title: Do Dark Triad traits function as defence mechanisms in reducing death anxiety?

Authors: Layton, E.¹ & Blanchard, A.¹



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Abstract: Research and began to view the negative emotions often associated with the Dark Triad traits, such as lack of empathy, callousness and pessimism as being necessary to defend those individuals against potentially psychologically and emotionally harmful situations. Few studies, however, have looked at the Dark Triad personality traits (i.e., Machiavellianism, psychopathy and narcissism) in regard to acting as a defence mechanism against negative associations surrounding death and dying coined as death anxiety. In this current study (n = 88), using multiple regression analysis, we investigated whether individuals who score higher in aspects relating to the Dark Triad traits, due to the malevolent nature of the traits, would therefore score a lower level of death anxiety. Three types of defence mechanisms (immature, mature and neurotic) were investigated to establish which those individuals with higher in Dark Triad Trait levels utilize. The study suggests that individuals high in psychopathy, vulnerable narcissism and grandiose narcissism did not appear to have lower levels of death anxiety. However, interestingly, those high in Machiavellianism traits had higher levels of death anxiety when considering their own deaths and dying but not when considering other individuals.

#POSTER-05

Title: The conceptualisation of successful psychopathy - A systematic review

Authors: Wallace, L.¹, Sumich, A.¹, Fido, D.² & Heym, N.¹

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Abstract: Objectives of this systematic review are to (a) investigate existing theoretical conceptualisation of successful psychopathy and, (b) consider future trajectories of research into successful psychopathy. Design: The systematic review was conducted using four databases: Scopus, Zetoc, PSYCinfo, and Proquest. Based on a scoping review, the search strategy will centre around the two key concepts of “psychopathy” and “success”. Methods: Papers were screened for applicable inclusion, using the criteria of (a) sample age, (b) reporting relationships between psychopathy and outcome behaviours, (c) availability in English, and (d) discussion of psychopathy and individual success. Exclusion criteria was based primarily upon the psychometric measures used to investigate psychopathy in the general population, i.e. no studies including the PCL-R or Dark Triad (DT) scales will be included in the analysis. Data was synthesised using a data extraction table demonstrating all relevant publication information, and selected papers were subject to a quality assessment (using AXIS protocols). Results: A narrative synthesis was performed. The key factors associated with the successful psychopathy construct were fearlessness, stress immunity, social potency, normal or superior cognitive performance, professional achievement, stable socioeconomic status, leadership, pride, and aversion to punishment during conflict. Inconsistent findings were considered a



result of the variations in psychopathy measurements used, and a lack of an agreed definition of success. Conclusions: Inconsistent findings were considered a result of the variations in psychopathy measurements used, and a lack of an agreed definition of success. Recommendations are provided.

#POSTER-06

Title: An exploration study into the link between Psychopathy and Memory of a Virtual Reality Game in Undergraduate Students

Authors: Kerr, L.¹, Blanchard, A.¹

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Abstract: Psychopathy and memory have both been extensively researched separately and together. There is considerable amounts of research that has emphasised the links that memory and emotion has on individuals that have high psychopathic trait levels. Research argues that fear does not affect those that have high levels of psychopathy compared to those with lower psychopathic levels. Nonetheless, there is only a limited amount of current literature that has used virtual reality to explore the relationship between psychopathy and memory. The present study aims to reference the current gap in literature to explore whether using virtual reality to create a fear arousal would have an effect on psychopathy and memory. A sample of 20 students from universities in Lincoln were recruited using social media and university platforms. Participants were asked to play a virtual reality game called The Haunted Graveyard and then answer a memory questionnaire about the game as well as a subclinical psychopathy measure. Results from correlational tests revealed that there was no relationship between psychopathy and memory when fear arousal was present. It is suggested that further research is required to gather a broader understanding of the relationship between psychopathy and memory when using virtual reality to create a fear arousal.

#POSTER-07

Title: Fatty Acid Status of Sudanese Patients with Drug-Resistant Epilepsy

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Abstract: Introduction: Epilepsy affects over 50 million people worldwide and accounts for approximately 1% of the global burden of disease¹. Patients are treated with anti-epileptic drugs. About 30% of patients do not respond to treatment and continue to have seizures. The pathophysiology of epileptic seizures is not well understood. However, chronic inflammation is thought to play a critical role. There is evidence that chronic inflammation is stimulated by saturated (palmitic and stearic) and omega 6 (linoleic and arachidonic) fatty acids. Aim: To investigate if drug resistant epileptic patients (DRE) have an abnormal fatty acid profile indicative of pro-inflammatory activity. Subjects and Methods: Patients with DRE (n=15) and healthy subjects (n=15) matched for age and gender were recruited from the University of Khartoum Teaching Hospital, Sudan. Fasting blood specimen, 5 ml, was collected for plasma phosphatidyl-choline fatty acid assessment. Results: The DRE patients compared with their healthy counterparts had higher stearic ($18.3\pm 3.1\%$ vs. $15.7\pm 2.1\%$, $p=0.001$), palmitic ($23.2\pm 5.6\%$ vs. $21.3\pm 3.8\%$, $p<0.05$) and total saturated ($42.2\pm 5.5\%$ vs. $38.0\pm 3.5\%$, $p=0.001$) fatty acids. In contrast, they had lower levels of linoleic (LA, $19.8\pm 3.5\%$ vs. $22.5\pm 4.2\%$, $p=0.001$) and arachidonic (AA, $8.2\pm 2.6\%$ vs. $11.4\pm 2.7\%$, $p=0.001$) acids. Conclusion: The omega -6 fatty acid findings suggest an accelerated elongation of LA to AA and subsequent conversion of the latter to its pro-inflammatory metabolites (PGE₂ and LTB₄) in the patients. This abnormality is indicative of a chronic inflammatory state. Acknowledgments: We express our gratitude to the patients and their parents for participating in the study.

#POSTER-08

Title: Emotion regulation and body satisfaction: comparing athletes and non-athletes

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Abstract: Background: Body dissatisfaction has marked implications in an individual's life and has been associated with the development of eating disorders. The literature points to the existence of associations between body satisfaction, emotion regulation, and participation in physical activity, particularly involvement in sports that do not focus on body aesthetics. Methods: The current study compared athletes with non-athletes regarding capacity for emotion regulation and body satisfaction. Capacity for emotion regulation was assessed using psychophysiological data collected during an experimental paradigm. Self-report instruments were used to assess self-perception regarding body satisfaction, emotional range, and emotional differentiation. Results: Results suggest that a greater capacity for emotion regulation (measured using psychophysiological data) is associated with greater body satisfaction in athletes. Discussion: This study brings further evidence for the relevance of teaching adaptive emotion regulation strategies as a possible way to prevent the incidence of eating disorders and weight-related attitudes, namely, body dissatisfaction.



#POSTER-09

Title: Spatial Memory for Emotionally-Valenced Faces

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Abstract: Spatial memory, or the ability to remember locations, helps us keep track of which locations to seek out and which to avoid, and therefore is crucial for our survival. One important aspect that has been shown to influence spatial memory is the emotional valence of information. Previous research has shown that locations of negative images are remembered better than locations of positive images. However, there is also evidence to suggest that this depends on the type of stimuli used. When images of facial expressions are used, evidence indicates that locations for positive items are remembered better. However, existing research used negative or positive images, with no neutral items. In this study, we used neutral, as well as positive and negative images of facial expressions, to investigate spatial memory for emotionally-valenced information. We found that locations for both negatively and positively-valenced images were remembered better than for neutral images, however this depended on position at test. We also found that spatial memory for the “odd-one-out” valence – whether neutral, positive, or negative – was remembered better than for the “common” valence – i.e. when two neutral, two positive, or two negative faces were presented. To account for the results, we suggest that emotional valence may act as an additional memory cue, resulting in enhanced spatial memory.

#POSTER-10

Title: Cognition and Motor dysfunction in Type III Spinal Muscular Atrophy

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Abstract: Spinal muscular atrophy (SMA) is an autosomal recessive neuromuscular disorder characterized by degeneration of alpha motor neurons in the spine, resulting in progressive proximal muscle weakness, paralysis, and eventual death. Previous research has focused on cognitive functioning in children, showing an absence of cognitive impairment. This study is the first, to our knowledge, to investigate cognition among adult Type III SMA patients (N=22),



exploring possible cognitive outcomes in relation to motor neurodegeneration. A neuropsychological testing battery was used to measure specific cognitive abilities. Expanded Hammersmith Functional Motor Scale (HFMS), Revised Upper Limb Module (RULM), and Six Minute Walk Test (6MWT) were used to measure functionality. Our findings show a relation between motor functioning and disease severity and cognition in adult SMA Type III patients, specifically in executive function and naming abilities. Overall, cognitive abilities were associated with motor dysfunction, suggesting central nervous system changes at multiple levels.

#POSTER-11

Title: Touch Therapy and the identification of biomarkers in the reconsolidation of traumatic memory

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Abstract: Study Design Proposal: The persistent and involuntary recollection of traumatic memories is central to the pathology of disorders such as PTSD. Havening, a novel psychosensory technique, incorporates exposure and reframing of trauma memory with a Touch component, and has been shown to be effective in reducing occupational stress in a single session. Severe trauma has been linked to impaired ‘proof-reading’ of memories during REM sleep, a key stage in LTM formation. REM sleep is characterised by increased -wave activity, which has also been observed in preliminary research during Havening, thought to underlie memory remodeling and attenuated response during therapy. The enzyme ADAR, pivotal to memory formation, and its key target, AMPA, are also highly active during -wave sleep. The study will involve genotyping blood samples from participants to identify SNPs in their released peptides, including stress effectors and ADAR, and relating these to observed responses to the Havening intervention. The effects of these SNPs on synaptic remodeling will also be investigated using human neuronal and non-excitatory cell lines. This study will run in parallel with existing research at NTU intended to explore the efficacy of Havening in the recovery of elite athletes through psychometric and physiological measures including EEG and fNIRS, and aims to support increased personalisation of treatment plans through use of biomarkers to identify appropriate trauma therapies.

#POSTER-12

Title: Exploring the “dark matter” of social interaction: Systematic review of a decade of research in interpersonal coordination



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Abstract: Labelled as interactional synchrony or mimicry, interpersonal coordination can be defined as the spontaneous tendency to imitate or synchronize our movements and be mutually entrained with each other. This phenomenon, often been described as social glue, has been related to prosociality and social bonding. However, recent findings have challenged this view, pointing potential detrimental effects in term of self-regulation and decision-making processes, and suggesting new ways to study this phenomenon. Interpersonal coordination has typically been studied from a first- or third-person perspective rather than dynamically, neglecting reciprocal exchange occurring during social interaction. Social neuroscience researchers have highlighted our lack of understanding of this "dark matter" of social interaction, calling for a "two-body" approach to capture the dynamical processes of dyadic exchanges. Almost 10 years after this call, the aim of this systematic review is to draw a state of the art of this research field, highlighting new approaches and current limitations. Using the PRISMA protocol, we selected a sample of studies investigating the emergence of interpersonal coordination in non-pathological and non-expert adult populations. The final selection of 16 articles reveals a complex picture in term of different experimental protocols, statistical indices and psychological outcomes measured. Despite innovative low-cost video-recording methods and the use of extensive statistical analyses to capture the full spectrum of this phenomenon, these scattered results stress the need to disentangle the different psychobiological layers involved in interpersonal coordination.

#POSTER-13

Title: Psychological wellbeing and cortical arousal: A narrative of dissociation in patients with Functional Neurological (symptom) Disorder

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Abstract: Despite the high prevalence and cost, little is known about the biopsychosocial aetiology of FND (Carson et al., 2011; Szaflarski et al., 2018). Nevertheless, the key factors of stress, trauma, pain and dissociation are implicated in theoretical models. The current poster presents a study into psychological wellbeing and cortical arousal, with specific regard to dissociation in FND. Participants (n=17 FND, n=18 matched controls) completed scales on Dissociation and Stress, Anxiety and depression before completing a visual oddball paradigm,



whilst electroencephalographic (EEG) activity was recorded to assess event-related potentials. Findings show higher amplitude in ERPs (N100 and P300) within the FND group relative to controls, especially in target stimuli. The findings further highlight the relevance of dissociative symptoms in FND, which may be underpinned by mechanisms reflected in N100 and P300 amplitudes. Taken together these findings suggest that elevated measures of psychological wellbeing are a result of chronic illness and are not specific to FND, except for elevated levels of dissociation. Furthermore, findings provide evidence of altered cortical activity and altered patterns of activation within adult patients of FND with chronic symptomology which is mediated by dissociation.

#POSTER-14

Title: Discrimination between neurological and laryngeal pathologies through voiced speech analysis

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Abstract: Speech is the most important form of communication used by Mankind and involves a complex neuro and physiological coordination. The voice is the most relevant speech element, showing strong impact on its quality and being used to detect many neurological and laryngeal pathologies. The present work aimed to develop an algorithm that detects and distinguishes neurological from laryngeal pathologies, including Reinke's edema and vocal nodules, by using a multiresolution cepstral analysis of the sustained vowel "a". Regarding classification, decision trees, Support Vector Machines and K-nearest-neighbors were used as classification methods in leave-one-out cross validation. The classification results showed accuracies of 100% for distinguishing neurological diseases from the other study groups.

Keywords: Speech, neurological diseases, laryngeal pathologies, classification.

#POSTER-15

Title: Kombucha and the Antioxidant Effect: Amnesic Mild Cognitive Impairment (aMCI) and Prevention of Alzheimer's Dementia

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Abstract: It is widely accepted that Alzheimer's dementia (AD) has a neuroinflammatory process in the initial course of pathogenesis. Bossù et al. (2018) reveal the importance of supplementing symbiotic and anti-inflammatory drugs in the initial period of AD, involving patients with Amnesic Mild Cognitive Impairment (aMCI). There is evidence that Kombucha's antioxidant effect is related to a significant improvement in the progression of neurodegenerative diseases related to the neuroinflammatory condition. Thus, this study aims to compare the differences in cognitive functioning in a group of elderly people diagnosed with aMCI, divided into two conditions ('experimental or taking Kombucha' and 'control or taking placebo,' for 21 days). This study will consist of four moments, in which the Montreal Cognitive Assessment (MoCA) will be given, including the monitoring of the diet. To this end, this study has the partnership of the Portuguese company 'Living Food', which will make the active substance (i.e., Kombucha) available and the control condition (bottled water in the same packaging).

#POSTER-16

Title: Embodied music cognition: towards the understanding of gesture in saxophone performance

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Abstract: The theoretic framework of embodied music cognition shifted the paradigm of the research conducted in the domain of body-music relationship by underpinning the idea that bodily movement plays a main role in the fundamental processes of music performance and experience (Leman & Maes, 2015). Gestural expression has been proved to influence musical expressiveness, intentionality and communication – dimensions of high importance in the development of meaningful artistic presentations (Davidson, 1991; Godøy & Leman, 2010). In this study we present a preliminary exploration of gesture-making in the specific case of saxophone performance, framed on a larger on-going research. A conceptual background of literature regarding embodied cognition and gesture-making in music is introduced as basis of the test of a qualitative methodology of analysis applied to two video recordings of saxophone performances. Correspondences between gesture types and musical score and context were established, as well as comparisons between the corporeal syntax of both saxophonists.

#POSTER-17



Title: Multiracial study on media exposure and body satisfaction

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Abstract: This study aims to understand how the impact of media exposure to digitally altered female body shapes affects body satisfaction and impacts eating behaviors, comparing four ethnic groups. This exposure's possible implications will be assessed through self-reporting instruments and the monitoring of peripheral neurophysiological data. We anticipated finding differences between different ethnicities in terms of body satisfaction, the pattern of exposure, consumption of the media, and dominance of the use of the emotional regulation strategy. It is also expected to have evidence of the internalization of European beauty ideals in women of different ethnicities.

#POSTER-18

Title: From the gut to emotions: Impact of taking probiotics on emotional regulation and mental health

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Abstract: The bi-directional gut-brain axis has been increasingly studied for its complexity and relevance. Through the use of probiotics, the intestinal microbiota can be changed in a way that is beneficial to humans, reducing their stress levels and increasing the feeling of well-being associated with a more stable emotional regulation. The main objective of this project is to assess whether there is a positive effect on the emotional regulation and mental health of healthy adult individuals after consuming probiotics (with the Lactobacillus and Bifidobacterium strain) for a continuous period (i.e., 1 month). In this quantitative study, we will administer probiotics to a group of healthy subjects and a placebo substance to control group. In four assessment points (i.e., pre-treatment; 15-day treatment; first follow-up; second follow-up). In each moment we will assess emotion regulation, psychopathological symptoms, mood, and mental health.



6. OTHER SESSIONS:

ROUND TABLES

A. The black box of Editorship explained

Editing a scientific journal is a major scholarly commitment and substantially contributes to the academic community. Thus, it is often a great honour to be responsible for the scientific publications in a journal. Editorship allows an overview of the development of a scientific area, and a privileged position to direct this development through editorial decisions, such as which special issues to foster or which reviews to promote. Whilst the glamorous life of an editor may seem seductively rewarding to the humble academic, it can also be hard work, consuming a great deal of time; and is not without frustrations. In this session, we have the pleasure to host Dr Daniel Mograbi, editor-in-chief of the ‘Psychology & Neuroscience’ journal published by the American Psychological Association (APA), who will unveil secrets of the editorial black box and discuss his experience and lessons learnt through commitment to editing a scientific journal.

B. What makes university-industry collaboration successful? Key factors to foster mutual trust and influence the collaborative partnership.

University-industry collaboration is increasingly recognized as a vehicle to improve innovation through knowledge and technology exchange. Policymakers and governmental bodies have systematically encouraged taking on and fostering this approach. However, researchers, universities and industry often have distinct motivations, goals and constraints within such partnerships, which can sometimes require negotiation to avoid complication.

In this open dialogue, invited speakers from both sides will share common interests, frame the critical issues involved in this collaboration, and address potential impediments to achieving a healthy and vibrant research enterprise.

We anticipate that this informal exchange of ideas will:

- Facilitate the understanding of the distinct perspectives on university-industry partnerships
- Offer specific advice to researchers at universities and leaders in the industries on how to build bridges and overcome constraints;
- Stimulate new approaches within this collaboration;
- Highlight the critical consequences of this collaboration to the broader public.



WORKSHOP

Using Generalisability Theory to Examine Sources of Error and Distinction Between State and Trait in Psychological Measurement

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Generalisability theory is a unique and powerful method to examine potential sources of measurement error and to evaluate true reliability and generalisability of measurement across different circumstances and contexts. It is recommended as the most appropriate psychometric method to validate state and trait measurement tools and to evaluate sources of measurement error.

Dr Oleg Medvedev will demonstrate the application of Generalisability Theory to longitudinal clinical trial data using the Positive and Negative Symptom Scale (PANSS) for schizophrenia.

Oleg teaches Research Methods and Statistics at the University of Waikato, New Zealand. A substantial amount of his work focuses on application of advanced statistical and psychometric methods, such as Generalisability Theory and Rasch analysis, to evaluate and enhance measurement of health-related outcomes. Some research areas include health psychology, schizophrenia, mindfulness-based interventions, well-being, health-related quality of life, psychophysiology of stress, healthy aging and rehabilitation medicine.



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International Affect, Personality and Embodied Brain (APE) research network

<https://apenetwork.wordpress.com/appe-2020-conference/>

NTU APE research group

<https://www.ntu.ac.uk/research/groups-and-centres/groups/affect,-personality-and-the-embodied-brain-ape>