ABSTRACTS

19th FREDA NEWCOMBE PRIZE LECTURE

Wednesday November 26th 17:00

Prof. Francesca Happé
Kings College London

TBD

INVITED KEYNOTE

Thursday November 27th 11:30

Prof. Chris Bird
University of Sussex

The earliest stages of Alzheimer's disease: specific cognitive deficits or generalised impairments?

INVITED KEYNOTE

Thursday November 27th 16:00

Prof. Alexander Sack
Maastricht University

Non-invasive brain stimulation: from basic neuroscience research to mental health policy changes

Wednesday 26th November

FREE PAPERS

10:00 **Understanding the relationship between post-stroke cognition and depression: the role of social isolation**

Margot Juliëtte Overman[1], Reena Vohora[1], & Nele Demeyere[2]
[1]Oxford Institute of Clinical Psychology Research and Training, University of Oxford, UK, [2]Nuffield Department of Clinical Neurosciences, University of Oxford, UK

Mood disorders are common after stroke and affect up to one third of all stroke survivors. It has previously been shown that post-stroke cognitive impairments strongly predict depression, however the mechanisms underpinning this association are not well understood. A novel theory of chronic illness (Iovino et al., 2023) proposes that the relationship between symptom severity and mood disorders is mediated by social isolation. This study investigated the potential impact of social isolation on depression in stroke survivors with and without cognitive impairments. Stroke survivors (n = 82) in the chronic phase of recovery completed the Oxford Cognitive Screen (OCS), Social Disconnectedness Scale (SDS), UCLA Loneliness Scale, and Hospital Anxiety and Depression Scale (HADS). Serial mediation analyses demonstrated that loneliness, but not social network size, influenced the relationship between cognitive impairments and depression. This indicates that subjective experiences of social isolation, rather than objective social disconnectedness, may increase the risk of depression in stroke survivors with cognitive deficits. These findings have clear implications for the treatment of depression after stroke and suggest that feelings of loneliness may be a suitable target for intervention in post-stroke depression.

10:20 **On The Multiverse of Story Recall and Blood Biomarkers of Alzheimer's Disease**

Davide Bruno*[1,2], Ainara Jauregi-Zinkunegi*[1], Rachel Studer[2], Rachael Wilson[2], Henrik Zetterberg[2,3,4,5], Sterling C. Johnson[2] & Kimberly D. Mueller[2]
[1]Liverpool John Moores University, UK, [2]University of Wisconsin – Madison, USA, [3]University of Gothenburg, Sweden, [4]University College London, UK, [5]Hong Kong Center for Neurodegenerative Diseases, China

Alzheimer's disease (AD) detection with blood-based biomarkers promises to revolutionise dementia diagnosis. However, blood testing is still a challenge in remote settings and rural areas. Cognitive testing that is sensitive to plasma biomarker levels can be a useful proxy. A common test for dementia assessment is story recall - where a story is read out and then free recalled. Alongside standard metrics, process-based metrics have been derived that are effective at detecting AD-related pathology, such as recall of proper names and serial positions. We set out to compare a range of story recall metrics against plasma AD biomarkers, and examine differences between males and females. The Wisconsin Registry for Alzheimer's Prevention cohort was used for analysis: participants (n=1195, 69% females; mean age 67.2, SD = 7.7) were free of dementia. Data included logical memory performance, demographics, clinical and genetic information, and plasma biomarkers. Analyses were cross-sectional with a maximum of two years between assessment and biomarker extraction. We carried out multiverse analyses to allow comparison of alternative models with permutations of covariates. Separate linear regression analyses were performed for different story recall metrics as predictors and different biomarkers as outcomes. With females, p-tau217, which is the most effective plasma biomarker for AD, was predicted significantly >80% of the time by all story recall metrics; however, with

males, only delayed recall of proper nouns and total forgetting were significant >80%. The utility of process scoring for story recall tests and sex-related differences will be discussed.

10:40 **Individual differences in brain functional organization: Revisiting the textbook brain**

Guy Vingerhoets[1], Emma M. Karlsson[1], & Robin Gerrits[2]
[1]Ghent University, Belgium, [2]Max Planck Institute for Human Cognitive and Brain Sciences Leipzig, Germany

We used functional MRI to investigate the hemispheric dominance of two typically left hemisphere localizers (word generation and tool pantomiming) and two typically right hemisphere localizers (landmark estimation and face recognition) in each of 100 right handers and 100 left handers taken as a representative sample of the Flemish population. All participants also completed a neuropsychological status battery and an abbreviated scale of intelligence to examine the relationship between different phenotypes of brain organization and neuropsychological performance. In right-handers 71% showed the prototypical hemispheric segregation and 29% showed an atypical pattern most often due to the atypical lateralization of one localizer. In left-handers 42% showed the typical pattern and 8% showed a complete reversal of this typical pattern. Half of the left-handers showed atypical functional segregation due to one, two, or three atypically lateralized localizers. No significant group differences were found for cognitive or IQ performance between participants with typical, atypical, or reversed typical brain organization. The findings confirm prototypical brain organization in most right-handers although atypical hemispheric segregation is certainly not rare. In left-handers atypical hemispheric segregation is observed in 50% and 8% even show a completely mirrored functional asymmetry. In healthy participants atypical hemispheric segregation does not seem to have a substantial effect on general cognition. While confirming the general population bias of hemispheric functional segregation, our results highlight the high prevalence of atypical brain organisation in the general population. Individual variability, even in right-handers, should be taken into account in treatment protocols of neurosurgery and neurostimulation.

11:00 UNDERGRADUATE PRIZE WINNER

The Diagonal Sulcus and Language: A Study of Preterm and Term-Born Adolescents

Ellie Carre[1]
[1]Royal Holloway, University of London, UK

Language Impairment (LI) is a common problem within preterm populations that has negative consequences throughout life and can be exacerbated by brain injury. The absence of an anatomical variant in Broca's area known as the diagonal sulcus (DS; a third, additional sulcus) could reflect a structural correlate of LI, which could be used to improve interventions and aid identification of preterm individuals at highest risk of LI. Few papers have examined the DS's potential role in language ability; this study aims to fill this gap in the literature. Secondary data (structural and functional MRI scans, cranial ultrasound results and neuropsychological tests; Northam et al., 2011) were used to assess DS presence, brain injury presence (preterm only), functional language lateralisation and language ability in 50 preterm participants and 30 term-born controls. The DS was more common in the left hemisphere in controls; no interhemispheric difference was found in the preterm sample. As expected, controls had higher language scores than preterm participants, while brain-injured and non-brain-injured preterm groups did not differ (possibly due to methodological limitations). Preterm individuals with a

left DS performed better on language tests than those without. However, neither right nor left DS presence, brain injury or functional language lateralisation were significant predictors of language score for both samples, explained via methodological limitations. Altered neuroanatomical asymmetry in language regions could contribute to prematurity's increased LI risk, while left DS presence could protect against LI in preterm populations. However, improved DS identification in future research is required before using this to inform LI risk in clinical contexts.

HUMPHREYS & RIDDOCH PRIZE, SHORTLISTED CANDIDATES

12:00 **Exploring the Impact of Lesion Location and Functional Connectivity Gradient Changes on Aphasia Recovery Following Stroke**

Ramya Balakrishnan[1], Tirso Rene del Jesus Gonzalez Alam[2], Cathy J. Price[3], & Elizabeth Jefferies[1]

[1]Department of Psychology, York Neuroimaging Centre, University of York, UK, [2]School of Psychology and Sports Science, Bangor University, UK, [3]Wellcome Centre for Human Neuroimaging, University College London, UK

Aphasia resulting from stroke is a heterogeneous disorder affecting not only language subdomains linked to traditional language network regions, but also brain areas not typically associated with language function. Recovery trajectories vary widely across different stroke phases, with many factors contributing to this variability; two key factors are lesion location and functional reorganisation. To explore these dynamics, we combined lesion symptom mapping and lesion gradient symptom mapping to address two fundamental questions: (1) Which lesion areas contribute to specific language outcomes (focal lesion effects)? (2) How do stroke-related changes across multiple dimensions of functional connectivity gradients influence these outcomes? Language outcomes were derived by performing principal component analysis on subtests of a comprehensive aphasia test. These outcomes were used as covariates of interest to examine their associations with lesion location from structural MRI and functional connectivity gradient changes derived from resting-state fMRI (n = 60). Lesion–symptom mapping revealed that persistent deficits in phonology, working memory, writing, and comprehension were associated not only with perisylvian language regions, but also with occipital, parietal, and temporal areas. Connectivity gradient analysis provided novel insight by demonstrating that the functional roles of brain regions can be positioned along a principal gradient between the default mode and control networks. Notably, a shift of frontal and cingulate regions toward the DMN was associated with poorer language performance, while a compensatory shift of the left inferior frontal gyrus toward the DMN related to improved speech but impaired writing.

12:15 **The role of social experience and motivated cognition in the representation of concepts: a behavioral and functional neuroimaging study**

Doina-Irina Giurgea[1], Veronica Diveica[2], Penny M. Pexman[3], & Richard J. Binney[1]

[1]School of Psychology, Bangor University, UK, [2]Montreal Neurological Institute, McGill University, Canada, [3]Department of Psychology, Western University, Canada

The ventral anterior temporal lobe (vATL) is the centre of a supramodal and category-general hub for semantic processing. Dorsolateral ATL regions, such as the temporal pole (TP) and anterior middle temporal gyrus (MTG), have been associated with more specialised semantic function including social concept processing. Understanding of their role is limited by (i) inconsistent operationalizations of socialness, and (ii) the confounding effects of other semantic dimensions. One such dimension could be reward, given links between social interaction and

hedonic value. To address these issues, we performed two pre-registered experiments: behavioural (N = 90) and fMRI (N = 30), examining the orthogonal effects of socialness and a reward-related dimension (i.e., motivation). We used a 2x2 factorial design and a synonym judgement task, controlling for a large set of psycholinguistic variables, including concreteness and affective valence. In behaviour, we found social concepts are processed more accurately than non-social concepts. Distortion-corrected fMRI analyses showed a significant main effect of socialness in the ATL, whereby social concepts activated the left TP and MTG more strongly than non-social concepts. All conditions engaged vATL, consistent with its category-general hub role. Multivariate analyses showed distinguishable patterns of activation associated with social vs non-social and high vs low motivation concepts in the left MTG and TP, and that patterns of activation in the bilateral MTG are decoded across levels of association with the other dimension, suggesting independence. We demonstrate that socialness and motivation are independent dimension that also interact in terms of magnitude in some regions (e.g., MTG).

12:30 **High-level and low-level routes to activity in olfactory cortex**

Tabitha L. James[1], Louis Renoult[1], Carl M. Philpott[1], & Fraser W. Smith[1]
[1]*The University of East Anglia, UK*

Primary olfactory areas receive signals directly from the olfactory bulb, the first olfactory processing region in the brain. Primary and secondary olfactory regions show activity in response to both bottom-up, top-down (e.g., olfactory imagery), and cross-modal (e.g., vision) olfactory stimulation. To our knowledge, fMRI has not been used to explore overlapping patterns of neural activity in these regions during bottom-up, top-down, and cross-modal olfactory stimulation. In the present fMRI study, we used MVPA to investigate overlap in neural representations when olfactory information is received cross-modally via vision or top-down via olfactory imagery in comparison to bottom-up olfactory input. In part one, 25 participants viewed pictures of olfactory and non-olfactory associated objects (picture task) and completed an olfactory-label cued imagery task. Objects evoked pleasant (e.g., strawberry, perfume, and rose) and unpleasant odours (e.g., vomit, sweat, and rotten-egg). Nineteen participants returned for part two where phenethyl alcohol (rose) and hydrogen sulphide (rotten egg) were presented using an olfactometer, which systematically controls odour presentation. Regions of interest (ROIs) included primary (piriform cortex (PC) and the amygdala (AMY)) and secondary (hippocampus (HPC), insula (INS), and the orbitofrontal cortex (OFC)) olfactory regions. Preliminary cluster-level corrected whole-brain analysis of the olfactory associated pictures contrasted with the non-olfactory pictures shows activation of the PC, AMY, INS, and OFC. This supports previous findings suggesting that primary olfactory regions may be activated by visually received olfactory information. The in-progress MVPA analysis will establish whether the activation patterns found here and during olfactory imagery overlap with bottom-up olfactory activity.

FREE PAPERS

13:40 **Characterizing Abstract Reasoning via Large-Sample Lesion Data, AI, and Graph Mapping**

Lisa Cipolotti[1], Mohamad Zeina[2], Henry Watkins[2], James Ruffle[2], Amy Nelson[2], Joe Mole[1], Patrick Murphy[1], & Parashkev Nachev[2]
[1]*Department of Neuropsychology, National Hospital for Neurology and Neurosurgery, UCLH NHS TRUST and UCL Institute of Neurology,* [2]*High-Dimensional Neurology, UCL Institute of Neurology*

Abstraction, often impaired after prefrontal cortex lesions, is an important desideratum of intelligence, yet its neurocognitive architecture remains unclear. This study applies our novel approach integrating detailed cognitive performance analysis on a large sample of patients, AI, and graph lesion-deficit mapping to examine abstraction using the Proverb Interpretation Test (PIT). We assessed 134 healthy controls (HC) and 159 patients with focal, unilateral, frontal or posterior lesions on a PIT, adapted from previous work. We analysed interpretation accuracy and concrete errors. We modelled responses by similarity with the corresponding output of large language models (LLMs), differentially ablated of putatively abstraction-sensitive components. Graph lesion-deficit mapping was used to characterise critical neural substrates, as captured by the LLM representation. Frontal lesion patients were significantly more impaired than posteriors and HC. Left frontal patients were significantly more impaired than right frontal patients and made more concrete errors. Targeted ablation of the LLM caused a progressive shift toward concreteness, proportional to pruning extent. This derived measure distinguished impaired patients from HC. Lesion mapping implicated the left frontal and right frontal parietal networks. Our novel approach combining detailed investigation of cognitive performance in a large sample of patients with AI and graph lesion-deficit mapping provides crucial information about the neurocognitive architecture of abstraction. Our findings highlights the left frontal and right frontoparietal networks role in abstraction and demonstrates the diagnostic potential of LLM-based qualitative error analysis. The PIT emerges as a sensitive marker of left frontal dysfunction, offering clinical value in cognitive assessment.

14:00 **Exploring changes in cognitive network structures across the genetic FTD disease spectrum: a GENFI study**

Jackie M. Poos[1], Harro Seelaar[1], John C. van Swieten[1], James B. Rowe[2], Barbara Borroni[3,4], Daniela Galimberti[5,6], Pietro Tiraboschi[7], Mario Masellis[8], Elizabeth Finger[9], Robert Laforce[10], Caroline Graff[11], Alexander Gerhard[12], Raquel Sanchez-Valle[13], Alexandre Medonca[14], Fermin Moreno[15], Matthis Synofzik[16], Rik Vandenberghe[17], Simon Ducharme[18], Isabelle Le Ber[19], Johannes Levin[20,21,22], Thibaud Lebouvier[23], Benedetta Nacmias[24], Markus Otto[25], Chris Butler[26,27], Carmela Tartaglia28, Jonathon D. Rohrer[29], & Lize C. Jiskoot[1,24]

[1]*Department of Neurology, Alzheimer Center Erasmus MC, Erasmus MC University Medical Center, Rotterdam, the Netherlands,* [2]Department of Clinical Neurosciences and Cambridge University Hospitals NHS Trust, University of Cambridge, UK, [3]Department of Clinical and Experimental Sciences, University of Brescia, Italy, [4]Molecular Markers Laboratory, IRCCS Istituto Centro San Giovanni di Dio, Italy, [5]Fondazione Ca' Granda, IRCCS Ospedale Policlinico, Italy, [6]Dept. of Biomedical, Surgical and Dental Sciences, University of Milan, Italy, [7]Fondazione IRCCS Institute Neurologico Carlo Besta, Italy, [8]Sunnybrook Health Sciences Centre, Sunnybrook Research Institute, University of Toronto, Canada, [9]Department of Clinical Neurological Sciences, University of Western Ontario, Canada, [10]Clinique Interdisciplinaire de Mémoire, Département des Sciences Neurologiques, and Faculté de Médecine, Université Laval, Canada, [11]Department of Neurobiology, Care Sciences and Society, Center for Alzheimer Research, Division of Neurogeriatrics, Bioclinicum, Karolinska Institutet, Sweden, [12]Division of Neuroscience and Experimental Psychology, Wolfson Molecular Imaging Centre, University of Manchester, UK, [13]Alzheimer's disease and Other Cognitive Disorders Unit, University of Barcelona, Spain, [14]Faculty of Medicine, University of Lisbon, Portugal, [15]Cognitive Disorders Unit, Department of Neurology, Donostia Universitary Hospital, Spain, [16]Department of Neurodegenerative Diseases, Hertie-Institute for Clinical Brain Research and Center of Neurology, University of Tübingen, Germany, [17]Laboratory for Cognitive Neurology, Department of Neurosciences, KU Leuven, Belgium, [18]Department of Psychiatry, Douglas Mental Health University Institute and Montreal Neurological Institute, McGill University, Canada, [19]Sorbonne Université, Paris Brain Institute – Institut du Cerveau – ICM, France, [20]Department of Neurology, LMU University Hospital, Germany, [21]German Center for Neurodegenerative Diseases, Germany, [22]Munich Cluster for Systems Neurology (SyNergy), Germany, [23]Univ. Lille, Inserm, CHU Lille, France, [24]Department of Neurofarba, University of Florence, Italy, [25]Department of Neurology, University of Ulm, Germany, [26]Nuffield Department of Clinical Neurosciences, University of Oxford, UK, [27]The George Institute for Global Health, Imperial College London, UK, [28]Tanz Centre for Research in Neurodegenerative Diseases, University of Toronto, Canada, [29]Dementia Research Centre, Department of Neurodegenerative Disease, UCL IoN, UK

Research in genetic frontotemporal dementia (FTD) shows that cognitive decline can begin years before symptom onset. Traditional neuropsychological analyses, which often compare composite cognitive domain scores at group level, may overlook subtle effects within cognitive subprocesses and ignore the complex interrelationships between them. To address this, we used network analysis to explore the network structures for C9orf72, GRN, and MAPT mutations,

examining within- and between-group patterns of cognitive associations. We analyzed cross-sectional data from 860 participants (411 presymptomatic, 169 symptomatic, and 280 controls) from the GENFI cohort, a longitudinal study on genetic FTD. All participants completed a standardized neuropsychological battery assessing attention and processing speed, language, executive function, memory, visuoconstruction, and social cognition. Gaussian Graphical Models were used to estimate network structures. Along the C9orf72 mutation gradient—from controls to presymptomatic and symptomatic stages—we observed a progressive decline in node strength for attention and executive functions. Conversely, node strength increased for language, visuoconstruction, and emotion recognition. Notably, age and education levels showed declining connectivity through disease stages. For GRN, executive function node strength decreased markedly from controls to symptomatic stages. The influence of age was prominent presymptomatically but diminished later. In MAPT, emotion recognition gained importance in the symptomatic network, and age showed less influence than in GRN. These findings demonstrate that network analysis is a valuable approach for uncovering mutation-specific patterns of cognitive change in FTD, highlighting the importance of examining interrelationships between subprocesses to better understand early disease mechanisms and progression.

14:20 **How to dissociate true disruption from normal variability during cognitive monitoring in awake craniotomy**

Teuni ten Brink[1], Fleur van Ierschot[2,3], Joost Agelink van Rentergem[4], Pierre Robe[2], & Martine van Zandvoort[2,3]

[1]Center of Excellence for Rehabilitation Medicine, UMC Utrecht Brain Center, University Medical Center Utrecht, and De Hoogstraat Rehabilitation, the Netherlands, [2]Department of Neurology and Neurosurgery, University Medical Center Utrecht / UMC Utrecht Brain Center, the Netherlands, [3]Experimental Psychology, Helmholtz Institute, Utrecht University, the Netherlands, [4] Department of Psychosocial Research and Epidemiology, Netherlands Cancer Institute, Amsterdam, The Netherlands

Reliable cognitive monitoring during awake craniotomy requires differentiating errors caused by direct electrical stimulation (DES) from normal variation. Currently, decisions rely on arbitrary cut-offs (e.g. 3 errors=disruption) that are not tailored to the task or the patient's baseline performance. We propose a statistical method combining normative data with the patient baseline performance to estimate the probability of making ≥3 errors. This informs whether a task can reliably detect abnormal performance within the time constraints of awake craniotomy; tailored to the individual. This approach is demonstrated using the Digital Trail Making Test (Di-TMT). The Di-TMT was administered to 82 healthy adults to collect normative data. Participants completed 10 trials of Di-TMT-B. Because errors within trials are correlated, trials were classified as correct (0 errors) or incorrect (≥1 error). A Bayesian hierarchical model was used to estimate individual error probabilities (π) drawn from a group-level distribution, capturing between-subject variability. Using Markov Chain Monte Carlo (MCMC), we estimated the posterior distribution of each individual's error rate accounting for any off-stimulation data we had for this individual. The probability of ≥3 errors in 4 trials was then calculated from these posteriors. Errors on the Di-TMT-B occured as part of normal performance, stressing the need for individualized statistical cut-offs. We showed how the method can be used to decide whether an error is caused by DES. The model offers a statistical grounded way to decide if a cognitive task is suitable for intraoperative testing, and supports more reliable decision-making during awake craniotomy.

14:40 **Cross-Linguistic Evaluation of the Mini-Linguistic State Examination (MLSE) in Primary Progressive Aphasia: A Comparative Study in Dutch, Spanish, and English**

Lize C. Jiskoot[1,2], Rose Bruffaerts[3], Esther van den Berg[1], Nikil Patel[4], Jordi Matias-Guiu Antem[5], Peter Garrard[4], & Harro Seelaar[1]

[1]Department of Neurology and Alzheimer Centre, Erasmus MC University Medical Centre, Rotterdam, the Netherlands, [2]Dementia Research Centre, University College London, UK, [3]Department of Biomedical Sciences, University of Antwerp, Belgium, [4]Molecular and Clinical Sciences Research Institute St George's, University of London, UK, [5]Department of Neurology of the Hospital Clinico San Carlos, Spain

Primary Progressive Aphasia (PPA) is a neurodegenerative disorder marked by gradual decline in language and speech abilities, with three clinical variants: non-fluent (nfvPPA), semantic (svPPA), and logopenic (lvPPA). Existing diagnostic language test are impractical due to lengthy administration and challenging test procedure. The Mini-Linguistic State Examination (MLSE) was developed as a short screening test to assess language deficits in PPA. Comparisons across different language versions of the MLSE have not been performed thus far, this study therefore aimed to evaluate the MLSE in Dutch (MLSE-NL), Spanish (MLSE-S), and English (MLSE-UK). This study included 176 patients with PPA and 254 controls. Internal consistency was lower for the MLSE-S (α=0.76) compared to MLSE-NL and MLSE-UK (α=0.85 and α=0.89, respectively). No significant differences were found in MLSE total scores. Motor Speech scores were lower in lvPPA in MLSE-NL than MLSE-S (BF_{10}=2.135). MLSE-UK Phonology scores were lower than MLSE-S scores in nfvPPA (BF_{10}=2.536). Semantic scores were higher in Dutch patients with svPPA (BF_{10}=1.051) and nfvPPA (BF_{10}=1.509) than English patients. Syntax scores were lower in patients with nfvPPA in MLSE-UK than in both MLSE-NL (BF_{10}=3.715) and MLSE-S (BF_{10}= 0.542). In patients with lvPPA, MLSE-S scores were lower than MLSE-UK scores for Working Memory (BF_{10}=2.212). This study demonstrated that the MLSE is a reliable screening tool for assessing language impairments in PPA across the Dutch, Spanish, and English versions. Our findings support the MLSE as a practical and reliable language tool for use in multilingual clinical contexts, facilitating consistent assessment of impairments in PPA across languages.

INVITED SYMPOSIUM
SOCIAL COGNITION: DEVELOPMENT & DIAGNOSIS

15:30 **Aging Autistic Adults: Social Cognition and Beyond**

Hilde Geurts[1], Leo Kannerhuis[2]

[1]*University of Amsterdam,* [2]Youz/Parnassiagroup

Cognitive decline is an inevitable part of aging, but the timing, affected domains, and rate of decline vary greatly between individuals. Autistic people often show differences across cognitive domains, including executive functioning and social cognition, from a young age. This raises the question of whether they face an elevated risk of cognitive decline later in life. While neurodegenerative disorders appear more common among autistic adults, little is known about how aging specifically affects their (social) cognition. One widely discussed idea is that autistic adults may experience "accelerated aging." Interestingly, however, the first studies of older autistic adults suggest a different picture: in some areas, especially social cognition, age-related changes appear to be less pronounced than in non-autistic adults of the same age. This talk will present recent, and at times contrasting, cross-sectional and longitudinal findings across multiple

cognitive domains, including social cognition. Overall, autistic and non-autistic adults show similar aging patterns, with some subtle differences. Yet the autistic population is very diverse. More detailed analyses reveal that one subgroup show differences mainly in memory rather than social skills. These differences are linked to higher psychological distress, highlighting the importance of individualized assessments rather than one-size-fits-all conclusions. Future research is crucial to clarify whether autistic individuals in these subgroups face a higher risk of developing neurodegenerative conditions.

16:00 **Is it time to change the autism diagnostic criteria?**

Catherine Crompton
University of Edinburgh

The diagnostic criteria for autism include 'persistent deficits in social communication and social interaction across multiple contexts…manifested by…deficits in social emotional reciprocity…non-verbal communication…and developing, maintaining and understanding relationships'. However, recent research has moved from examining autistic social behaviours as independent and intrinsic to the individual, and instead examined them within real-world, bi-directional social interactions. The Double Empathy problem, a sociological theory, posits that the communicative difficulties that autistic people experience are due to the different ways that autistic and non-autistic people communicate, rather than an individual, autistic deficit. This suggests that autistic people will have more successful interactions with other autistic people, and that non-autistic people will have more successful interactions with other non-autistic people. Research evidence has found empirical support for this theory: interactions between autistic people are more successful than "cross-neurotype" interactions between autistic and non-autistic people; and difficulties interpreting social cues is experienced by autistic and non-autistic people. What does this mean for how we understand autistic social differences? If at least part of the difficulty in cross-neurotype interactions comes from non-autistic social difficulties in interacting with autistic people, what does this mean for autistic social "deficits"? How do we measure bi-directional social difficulties? How do we characterise, or measure an "autistic" communication style? And what does this mean for the autism diagnostic criteria?

16:30 **Mapping cognitive heterogeneity in childhood and adolescence**

Duncan Astle
MRC Cognition and Brain Sciences Unit, University of Cambridge

Human brain development takes a long time and results in highly variable outcomes, with differences in cognition being among the most variable and impactful of those outcomes. This variability in brain development is important for understanding differences in cognition, mental health and learning. But measuring and mapping that variability is extremely challenging. In particular, different taxonomic systems – both dimensional and categorical – struggle to find ways of formally capturing the diversity that exists across individuals. This difficulty has cascading consequences for how we identify and support needs in clinical and educational settings, as well as for the study of mechanisms that underpin the emergence of this diversity. This talk showcases the application of different computational frameworks that address two related developmental challenges. Firstly, how do we capture the incredible cognitive heterogeneity that exists across childhood and adolescence? Here we use non-linear mapping techniques to capture differences in cognitive ability, such as difficulties in executive function

and language, and how these intersect within particular individuals. Secondly, can we build developmental models that formalise simple biological principles in order to capture complex developmental phenomena? Here we create simple simulations that capture the emerging connectivity of the human brain and allow us to test systematically what ingredients are needed for complex brain topologies – and individual differences therein – to emerge over time.

19th FREDA NEWCOMBE PRIZE LECTURE

17:10 **TBD**

Francesca Happé
Kings College London

Thursday 27th November

INVITED SYMPOSIUM
FROM NEUROPSYCHOLOGY TO MECHANISMS OF NEURODEGENERATION

09:00 **Longitudinal cognitive change and its associations with biomarkers of preclinical Alzheimer's disease between ages 70-78 in members of the British 1946 Birth Cohort**

Kirsty Lu[1], Sarah E. Keuss[1], Jennifer M. Nicholas[2], Rebecca Street[1], Ashvini Keshavan[1], Sarah-Naomi James[3], David Cash[1], William Coath[1], Heidi Murray-Smith[1], Andrew Wong[3], Marcus Richards[3], Sebastian J. Crutch[1], Jonathan M. Schott[1]
[1]Dementia Research Centre, UCL Queen Square Institute of Neurology, University College London, UK, [2]Department of Medical Statistics, London School of Hygiene and Tropical Medicine, UK, [3]MRC Unit for Lifelong Health and Ageing at UCL, University College London, UK

With the arrival of disease-modifying therapies for Alzheimer's Disease (AD), there is a need for sensitive cognitive measures that can detect subtle cognitive decline in the preclinical stages of the disease. Insight 46 – a sub-study of the MRC National Survey of Health and Development (the British 1946 birth cohort) – provides an opportunity to investigate longitudinal associations between brain pathologies and cognition in a cohort of identical age (all born in the same week in 1946) with a lifetime of prospectively-collected health and socioeconomic data. Participants (n=502) have been assessed three times at ages ~70, ~73 and ~78 with measures including a cognitive battery (paper-and-pencil and computerised tests), brain MRI, β-amyloid-PET and blood-based biomarkers. Between ages 70-73, there was little cognitive change overall, but we observed practice effects on memory tests and age-related declines on speed measures. Among amyloid-positive participants, faster rates of whole-brain and hippocampal atrophy were associated with reduced practice effects on memory measures and with accelerated long-term forgetting (assessed over 7 days). By age 78, there was clear divergence in cognitive trajectories with poorer performance among those with elevated β-amyloid and plasma phosphorylated tau-217. New data will also be presented from the third time-point where digital pens have been used to capture 'process metrics' from traditional paper-and-pencil tests including the Digit Symbol Substitution Test. Preclinical AD-related subtle cognitive decline is detectable in a population-based sample of adults in their 70s, most notably in the memory domain. We would like to highlight opportunities for collaboration and sharing data.

09:30 **Towards an earlier diagnosis for (atypical forms of) Alzheimer's disease**

Ilse Bader
Amsterdam UMC, the Netherlands

Alzheimer disease (AD) is characterized by presence of amyloid β (Aβ) plaques and tau neurofibrillary tangles that lead to a gradual decline in cognitive function, typically starting with predominant memory disturbances. However, AD is a highly heterogeneous disease, which is exemplified by atypical clinical variants of AD. Atypical AD is characterized by various non-amnestic phenotypes, including predominant disturbances in processing of visual information in posterior cortical atrophy (PCA, "visual-AD"), language deficits in logopenic variant primary progressive aphasia (lvPPA, "language-AD"), and behavioral and personality changes in behavioral AD (bvAD). Compared with typical amnestic AD, atypical variants are often

associated with younger age-at-onset (≤65 years), lower *APOE*ε4 prevalence, and potentially faster progression. These distinctions indicate that the typical vs atypical AD disease trajectories differ, thereby limiting the generalizability of findings from amnestic AD to non-amnestic forms. For patients with an atypical phenotype of AD, this has led to under-recognition (e.g., relatively long diagnostic delays), and under-representation (e.g., exclusion from clinical studies). In this talk I would like to discuss characteristics of atypical AD, and current challenges to move towards an earlier AD diagnosis while taking into account different presentations of the disease. To illustrate alternative early detection approaches, I will discuss the design of the BeyeOMARKER study: a prospective study on blood- and eye-based biomarkers for early detection of AD pathology in the eye clinic. Taken together, this will provide an update on developments towards detection of (atypical) AD, which is important for advancing early diagnosis and tailored care.

10:00 **What is the relevance of APOE for cognitive changes in preclinical Alzheimer's disease?**

Michael Hornberger
Clinical Neurosciences, Department for Clinical and Experimental Studies, Faculty of Medicine, University of Southampton

Apolipoprotein E (APOE) is the most common genetic risk factor in the population for Alzheimer's disease. However, cognitive correlates of APOE to detect preclinical Alzheimer's disease can been variable. In this talk, I will give a short background explaining what APOE is and how it increases the pathophysiology of Alzheimer's disease. I will then provide some experimental evidence showing how APOE genotype can influence cognitive performance in preclinical Alzheimer's disease. Finally, I will highlight how APOE can be potentially affect outcomes in preclinical Alzheimer's disease intervention studies.

10:30 **Diagnostic challenges in frontotemporal dementia**

Esther van den Berg
Dept. of Neurology, Erasmus MC University Medical Center, Rotterdam, the Netherlands

Frontotemporal dementia is a devastating form of early onset dementia. It is characterized by profound changes in behavior and personality, including disinhibition and emotional blunting. Frontotemporal dementia is a spectrum of disorders including the behavioral variant, language variants and/or motor neuron disease. In a significant proportion there is a monogenetic cause of the disease. Frontotemporal dementia poses a true diagnostic challenge. In many cases there is a significant delay in diagnosis, prohibiting specialized care for patients and their families. In this presentation prof. dr. van den Berg (clinical neuropsychologist) will focus on the challenges and opportunities of neuropsychological assessment in (early) frontotemporal dementia. What red flags should clinicians look out for? Which cognitive domains should be assessed? How valid and reliable are the available tests for executive functioning and social cognition? What innovative ways of cognitive assessment show promise in the near future? In addition to these clinically-oriented questions prof. van den Berg will also make a case for theory-driven assessment of sociocognitive abilities, such as emotion recognition and empathy. How can cognitive theory strengthen clinical assessment and vice versa?

KEYNOTE LECTURE

11:30 **The earliest stages of Alzheimer's disease: specific cognitive deficits or generalised impairments?**

Chris Bird
University of Sussex

The biological changes associated with Alzheimer's disease appear to target specific brain regions and circuits. This raises the tantalising possibility that sensitive cognitive tests could be developed if they target the processes underpinned by these brain circuits. I will first discuss recent work with mid-age individuals who carry the APOE4 allele. Such individuals have a greater genetic risk of Alzheimer's disease-related neuropathology. Our findings hint at both specific cognitive changes in APOE4 carriers, as well as more general effects on reaction times. I will then present studies using movie watching and story comprehension and memory, where we see generalised impairments the processing of naturalistic events in adults with Mild Cognitive Impairment. While these results offer a better understanding of the disorientation that can be present in the earliest stages of Alzheimer's disease they also highlight the difficulty in identifying specific cognitive markers of the disease.

INVITED SYMPOSIUM
BRAIN STIMULATION: BASIC SCIENCE TO CLINICAL APPLICATION

13:30 **The Role of Neurochemistry in Semantic Memory and Its Neuroplasticity: Combining Multimodal Imaging and NIBS (TMS and TUS)**

JeYoung Jung
University of Nottingham, UK

Semantic memory, the knowledge that supports language and meaning, relies critically on the anterior temporal lobe (ATL). My research examines its neurobiological underpinnings by integrating multimodal neuroimaging (fMRI and MRS) with non-invasive brain stimulation (NIBS), including transcranial magnetic stimulation (TMS) and transcranial ultrasound stimulation (TUS). In this talk, I will present work demonstrating how individual neurochemical profiles, particularly GABA and glutamate, shape semantic performance and predict responsiveness to stimulation. Intrinsic ATL GABA levels predict both semantic ability and neural activity, and that GABA and glutamate further determine individual responses to TMS. More recently, I demonstrated that TUS can enhance semantic memory while inducing neurochemical, structural, and functional changes in the ATL. Together, these findings highlight the central role of neurochemistry in semantic memory.

14:00 **Brain stimulation and cognition: Electroconvulsive therapy (ECT)**

Esmee Verwijk
Amsterdam UMC, the Netherlands

Treatment with (non-)invasive brain stimulation is applied trans diagnostically and has an effect on cognitive functioning. Brain stimulation can primarily be used to improve cognitive (dys)function. However, the use of brain stimulation in neuropsychiatric disorders can lead to cognitive side effects. Electroconvulsive therapy (ECT) is a form of invasive brain stimulation that is highly effective as a treatment for depression. However, ECT causes cognitive complaints that are a concern for both patients and physicians. This applies to a subgroup of patients who are vulnerable to these complaints. To date, too little is known about the patient-related risk

factors that predict and/or influence this vulnerability, and about the prevention, monitoring, and treatment of these cognitive complaints. This presentation the latest insights into the prediction, prevention, monitoring, and treatment of ECT-related cognitive complaints will be presented.

14:30 **Tuning the Brakes: Non-invasive Brain Stimulation and Inhibitory Control**

Alekhya Mandalli
University of Sheffield, UK

Inhibitory control—the ability to suppress prepotent responses—is central to executive function and is compromised in conditions ranging from substance use disorders to age-related decline. Non-invasive brain stimulation (NIBS) techniques, such as transcranial magnetic stimulation (TMS) and transcranial electrical stimulation (tES), offer powerful tools to both probe and modulate the neural circuits underlying this capacity. In this talk, I will draw on three recent lines of evidence to illustrate how NIBS can be leveraged to study and strengthen inhibitory networks. First, I will highlight the use of cortico-cortical paired associative stimulation (ccPAS) in enhancing inhibition as measured with the stop-signal task. I will then examine how this approach translates to clinical contexts, showing that individuals with chronic alcohol use exhibit impaired plasticity of inhibitory networks. Finally, I will discuss how transcranial random noise stimulation (tRNS) can tune the brakes on response inhibition, improving No-Go performance and boosting medial prefrontal inhibitory function. Together, these findings demonstrate that while NIBS can reliably influence inhibitory control, its effects are shaped by neuroplastic potential, clinical state, and demographic factors. Tailoring stimulation protocols to individual profiles is essential for advancing replicability and maximising clinical impact. This work highlights how external modulation of the brain can provide unique insights into the mechanisms of cognitive control and the conditions under which interventions are most effective.

15:00 **Ethical issues of using neurostimulation in implantable brain-computer interfaces for people with motor impairments**

Bouke van Balen
Utrecht UMC, the Netherlands

In this talk, I will explore some ethical issues that are at stake when combining neurostimulation with brain-computer interfaces (BCIs) for people with motor impairments. After setting the stage by discussing some general applications and ethical issues, I will zoom in on the application of using bi-directional BCIs to generate naturalistic sensory perceptual experiences for disabled people. This case raises philosophical questions with real-world relevance, such as: what is a natural perceptual experience? Does everyone have the same perceptual experiences? Should everyone have the same natural experiences? Can we generate natural perceptual experiences by stimulating the brain? The aim of my talk is to show that these philosophical questions that transcend disciplinary boundaries need addressing in the domain of neurostimulation.

KEYNOTE LECTURE

16:00 **Non-invasive brain stimulation: from basic neuroscience research to mental health policy changes**

Alexander Sack
Maastricht University

Transcranial Magnetic Stimulation (TMS) Transcranial Electric Stimulation (TES) are two noninvasive brain stimulkation (NIBS) techniques capable of manipulating neural network activity and inducing longer lasting neuroplastic changes in the healthy and diseased human brain. Unfortunately, NIBS-induced effects are often characterized by large intra- and inter-subject variability, hindering its reproducibility on single-subject-level. To improve its scientific reliability and clinical efficacy, it is imperative to gain a fundamental understanding of the NIBS-induced brain network effects underlying these (differences in) mental changes. Our group has successfully demonstrated that concurrent TMS+fMRI can reveal how TMS signals propagate through connected cortico -subcortical-networks. However, concurrent TMS+fMRI studies ignore ongoing fluctuations in neural communication efficacy (oscillatory states) that affect how different network nodes interact. We propose to overcome this fundamental limitation by concurrent TMS+EEG+fMRI, enabling us to apply TMS at predefined oscillatory states to probe state-dependent gating of TMS signals within brain-wide functional networks. We use this innovation to study in healthy volunteers how the exact individual location as well as individual (oscillatory) brain state affect the signal propagation of TMS within targeted networks, opening an exciting noninvasive avenue of network research into dynamic cognitive brain circuits and their dysfunction. Importantly, this knowledge can then be directly translated to the clinic by developing and evaluating new patient-tailored TMS therapies, replacing the current

POSTERS

Group A: Wednesday, November 26th, 11:15-12:00 and 13:15-13:40

Lifespan Psychosocial Risk Factors and Their Impact on Cognitive Functioning in Dementia: The Role of Early Adverse Life Events

Matteo Antoniol[1], Antonella Gentile[1], Andrea Melendugno[2], Sara Mondini[1], Franca Stablum[1], Massimo Nucci[1], Elisa Di Rosa[1]
[1]University of Padua, Italy, [2]Casa Madre Teresa di Calcutta (O.P.S.A.), Padua, Italy

The increasing global prevalence of dementia and the limited efficacy of disease-modifying treatments have shifted focus toward prevention, particularly modifiable risk factors. One of these is depression, and recent evidence suggests that anxiety disorders, alongside prolonged psychological stress, may influence dementia risk and progression as well. However, evidence remains mixed, and further investigation is needed to clarify the role of psychosocial factors in influencing clinical aspects of dementia. This study explored the relationship between lifetime history of depression, anxiety, and adverse life events, and current cognitive and affective symptoms in individuals with dementia. We assessed 35 patients using the Montreal Cognitive Assessment (MoCA), the Geriatric Depression Scale (GDS), and the State-Trait Anxiety Inventory (STAI). The Psychological History Questionnaire (PSYq) was administered to gather information on lifetime depression, anxiety, and adverse life events. Results showed a significant positive association between global cognitive functioning (MoCA) and the lifetime number of adverse life events ($p = .009$). However, early-life adversities were negatively associated with executive and visuospatial abilities (MoCA subtests; $p = .017$). Moreover, individuals reporting early adverse events performed significantly worse on the Clock Drawing Test ($p = 0.027$) compared to those without early adversities, matched for age, education, and dementia severity. Results align with evidence indicating that early-life adverse events may worsen executive functioning and suggest that these effects can have a long-term impact on cognitive performance as well on cognitive resilience in patients with dementia. A better understanding of these associations could inform future preventive strategies and early intervention efforts.

Digital health technologies for neuropsychological assessment in frontotemporal dementia: a scoping review

Liset de Boer[1], O. Aro[1], Harro Seelaar[1], Lize C. Jiskoot[1], & Jackie M. Poos[1]
[1]Alzheimer Center, Department of Neurology, Erasmus University Medical Center, Rotterdam, Netherlands

Digital health technologies have created new opportunities for diagnosis and disease monitoring by enabling more objective and accessible evaluations of cognitive functioning. While digital health technologies have shown promise in the field of preclinical Alzheimer's disease, its application in frontotemporal dementia (FTD) remains underexplored. This scoping review aims to provide an overview of the current literature on innovative digital health technologies for assessing behavior and cognition in FTD. We screened 1607 studies focusing on methods beyond digital replications of traditional neuropsychological tests, including eye tracking (ET) and active and passive remote cognitive assessments in clinical and preclinical stages of the core variants of FTD (i.e., behavioral variant FTD (bvFTD), primary progressive aphasia (PPA)). 35 studies were included in this review. We highlight that digital health technologies have the potential to improve early diagnosis and monitoring in FTD. However, this scoping review highlights important gaps in the literature. Most studies are experimental in design, with no research yet conducted on validity, reliability, or normative data. Therefore, many neuropsychologists hesitate to adopt digital methods in clinical settings due to insufficient scientific evidence on feasibility, clinical relevance,

and diagnostic accuracy. Future research should aim to validate and integrate digital health technologies into clinical practice, ensuring they are user-friendly, ecologically valid, and capable of capturing the multifaceted nature of FTD.

Evidence-based implementation of WegWijzer (Wayfinder): tracking and tackling wayfinding problems after acquired brain injury

Sanne Böing[1,2], Milan van der Kuil[3], Teuni ten Brink[2], Anne Visser-Meily[2,4], Elbrich Jagersma[3], Jorit Meesters[3,5], & Ineke van der Ham[1,6]

[1]Health, Medical and Neuropsychology, Leiden University, [2]Centre of Excellence for Rehabilitation Medicine Utrecht, UMC Utrecht Brain Center, University Medical Centre Utrecht en De Hoogstraat Rehabilitation, [3]Basalt Rehabilitation Delft, [4]Rehabilitation Medicine, Physiotherapy & Sports, UMC Utrecht Brain Center, University Medical Centre Utrecht, [5]Haagse University of Applied Sciences, [6]Faculty of Architecture and the Built Environment, Technical University Delft

Navigation skills are crucial to live independently, but up to 40% of people with acquired brain injury have difficulty finding their way, estimating distances, remembering routes, or experience anxiety when navigating. This strikingly high percentage is often overlooked during clinical assessments and, as a result, wayfinding difficulties frequently go untreated in rehabilitation. WegWijzer (Dutch for wayfinder) is developed to inventory and treat navigational problems. WegWijzer consists of a normed and validated self-report questionnaire (n=7150) and computerized objective test (n=11887), and a blended-care training program that provides an individually tailored compensation strategy training using a serious game. An RCT with 36 ABI patients showed that subjective navigation ability improved significantly over time for those in the intervention group ($p<.01$), and that post-treatment scores for the intervention group were better than for the control group ($p<.01$). Moreover, the intervention group attained self-determined navigation goals post-treatment and maintained these navigation goals at the follow-up assessment. Currently, the diagnostic tools and evidence-based intervention are piloted in three rehabilitation centers to evaluate and reassess their feasibility and effectiveness within the specific context of medical specialist rehabilitation. From fall 2025 onward, patients are screened and tested for navigation problems, and can include the training in their treatment program. We present findings from the RCT, discuss opportunities and challenges encountered in the implementation pilot, and share preliminary and anecdotal findings about the patients that have used the tool within the outpatient rehabilitation setting.

Cognitive and Psychological Impact of Chronic Nitrous Oxide Use: A Case Report from an Irish Clinical Setting

Seán O'Farrell1, Damien Lowry1, & Valerie Twomey1,2

[1]Tallaght University Hospital, [2]Trinity College Dublin, Ireland

Nitrous oxide (N_2O), commonly known as laughing gas, is a dissociative anaesthetic widely used in medical settings. However, recreational misuse, often referred to as "nagging", has become increasingly prevalent, particularly among individuals aged 16–24. Despite its widespread use, the long-term cognitive and psychological impacts of chronic N_2O misuse remain poorly understood. This case report describes a male patient admitted to Tallaght University Hospital (TUH) with complications linked to prolonged N_2O misuse. A six-month neuropsychological follow-up was completed using the Adverse Childhood Experience (ACE), Fatigue Impact Scale (FIS), Brief Pain Inventory (BPI), Symptom Checklist-90 (SCL-90), Test of Premorbid Functioning (TOPF), Repeatable Battery for the Assessment of Neuropsychological Status (RBANS), and selected subtests from the Delis-Kaplan Executive Function System (DKEFS) and Neuropsychological Assessment Battery (NAB). Findings suggest persistent cognitive impairments, mood disturbances, and fatigue, with potential links to underlying trauma. The case illustrates the complex interplay of neuropsychological, psychiatric, and social factors in chronic N_2O misuse. While limited by its single-subject design, it provides valuable clinical insight. This case forms part of a broader emerging study and underscores the urgent need for

clinical awareness, early intervention pathways, and targeted public health policies addressing N_2O misuse globally.

Encouraging Everyday Use of Motor Imagery for People with Parkinson's: a self-directed approach

Charlotte Growcott[1], Emma Gowen[1], Sharika Bhan[1], Marcos Moreno Verdú[2], Ellen Poliakoff[1]
[1]University of Manchester, [2]UCLouvain

Motor Imagery (MI) involves imagining movement of the body without overt movement, which can be visual (imagining what an action looks like) or kinaesthetic (related sensations e.g. muscle tension). It has potential as a rehabilitation tool in various clinical populations including people with Parkinson's (PwP). There is evidence that some PwP already use MI as a strategy (without knowing the term), but many do not understand what it is/how it could be used. To address this, we developed a resource to explain MI with input from PwP. The aim of this study was to investigate if it was feasible and acceptable to encourage MI in daily life using the resource, alongside examples of how to use MI. Participants attended 3 testing sessions in the community and spent 6 weeks practicing MI as was suitable for them. Eight PwP attended a baseline testing session in the community where various measures were taken. They returned 2 weeks later and repeated the same measures before receiving the resource and spending 6 weeks practicing MI, supported by weekly phone calls and a diary, before returning to repeat the measures. The resource and approach were found to be acceptable by participants, although experiences of using and applying MI varied among participants (e.g. alongside an exercise regime or within speech and language therapy) . Nevertheless, self-reported embodiment and vividness of kinaesthetic MI tended to increase after MI use. These results will help inform the development of the MI resource as well as future MI interventions for PwP.

Trained Participants Recreate Images of Geometric Visual Hallucinations Induced by Stroboscopic Light

Trevor Hewitt[1], Ethan Grove[1], David Schwartzman[1], Anil Seth[1,2]
[1]Sussex Centre for Consciousness Science, Department of Engineering and Informatics, University of Sussex, Brighton, UK, [2]Program for Brain, and Consciousness, Canadian Institute for Advanced Research (CIFAR), Toronto, Canada

Visual hallucinations are commonly reported during psychedelic experiences, altered states of consciousness, psychiatric conditions, and neurological disorders, yet their contents remain poorly characterized quantitatively. The present study demonstrates that participants can reliably recreate visual hallucinations in a format suitable for quantitative computer-vision analysis. Simple visual hallucinations of geometric forms comparable to psychedelic and clinical hallucinations can be rapidly induced via stroboscopic light stimulation, representing an ideal paradigm for controlled quantitative analyses. To leverage this towards developing a quantitative understanding of the contents of visual hallucinations, two experiments were conducted in which over 100 participants were trained to recreate images of geometric visuals from hallucinatory and veridical visual experiences either through freehand drawing (Experiment 1) or a generative image-recreation interface (Experiment 2). Quantitative analysis revealed systematic differences in hallucinated geometric forms across strobe frequencies. These findings support the theorised effect of stroboscopic frequency on the content of the induced hallucinations while challenging current models of their neural mechanisms. Methods were validated with trials where participants recreated image stimuli instead of hallucinations. Image recreation is shown to be a viable tool for quantitative investigations into the phenomenology of visual hallucinations. A better understanding of visual hallucinations could shed light on how the brain constructs conscious experiences from sensory input. This research opens the door for computer-vision-based analyses of visual experiences across contexts, including psychedelic experiences and neurological disorders.

"Avenues of communication are shutting down around me": A Qualitative Exploration of the impact of face and body movement on everyday communication in people with Parkinson's

Safiya Riyazuddin[1], Ellen Poliakoff[1], Gary Copitch[1], Heather Lane[1], Karen Lander[1]
[1]*University of Manchester*

People with Parkinson's (PwP) experience significant face and body changes that impact communication and social interactions. However, the experiential impact of face and body movements on communication is still underexplored. This study was developed with input from a person with Parkinson's into the questions, analysis and interpretation. Twelve PwP (6 male, 6 female) were interviewed about their experiences of the effects of changes in face and body movements on everyday communication. Most participants were aged 56-75, with one aged 36. Participants rated the impact of their symptoms on their daily lives; 3 reported no difficulties, 8 reported mild difficulties and 1 reported moderate difficulties. Five themes were identified using thematic analysis. First, misinterpreted and misunderstood movements (or lack of movements) leading to unwanted (perceived or real) reactions from others. Second, a negative feedback loop of increased anxiety and self-consciousness leading to worsening symptoms within interpersonal interactions. Third, difficulties with multitasking in social settings and within conversations. Fourth, distance and withdrawal within conversation and from social interactions. Finally, attempts at adapting to communication changes (e.g. using alternative channels such as gesture and voice, asking others to help) with mixed results and often frustrations. Experiences of being misunderstood differed across types of symptoms and ages, with younger participants emphasising settings such as in dating or at work. These findings bring further awareness to an underexplored topic, as well as providing suggestions for future interventions and strategies for addressing communicative and social difficulties in people with Parkinson's.

Detecting Deception: Memory Control and Executive Functions in Evaluating Misinformation

Delaram Sadeghzadeh[1], Gabija Urbonaviciute[1], & Paul W. Burgess[1]
[1]*University College London*

Why do some individuals fall for misinformation while others remain resistant? While prior work has examined cognitive and demographic predictors, the role of cognitive control—particularly memory control and executive functioning—remains under-investigated. This study examined whether individual differences in memory control and executive functions predict susceptibility to misinformation, focusing on both accuracy and efficiency of truth judgments. Participants completed a narrative-based false memory paradigm that controlled for prior exposure, providing measures of accuracy, reaction time, and inverse efficiency scores (ISE). Executive function was assessed via the Brixton Spatial Anticipation Test and the Self-Ordered Pointing Task (SOPT). Misinformation susceptibility was measured with a real-life news evaluation task involving true, fake, and unfamiliar plausible headlines. Correlation analyses explored associations between tasks, and hierarchical regressions tested predictive power after controlling for demographics, news consumption habits, and general cognitive ability (IQ). Narrative false memory and Brixton performance emerged as significant predictors of news task performance, even after accounting for covariates. Backward elimination regressions confirmed these predictors as robust across models. Stronger memory control and executive pattern detection skills were associated with higher accuracy and efficiency in detecting misinformation. The findings suggest that both memory control and executive function contribute uniquely to misinformation judgments. The narrative false memory task, combined with targeted executive assessments, offers a powerful and ecologically valid approach for future research into the cognitive mechanisms underpinning truth discernment in real-world contexts.

When the Mind's Eye Is Blind: Aphantasia and Its Cognitive Impact

Madeleine Vohs[1], Oliver Lindemann[2], & Rolf Zwaan[3]
Erasmus University of Rotterdam

Aphantasia, the inability to voluntarily generate mental imagery, has recently gained recognition but remains poorly understood in neuropsychology. While most studies focus on visual imagery, many individuals with aphantasia also report absent or reduced imagery in auditory, tactile, olfactory, or gustatory domains, suggesting a broader multisensory condition. This narrow focus limits theoretical understanding and overlooks clinical relevance. In social cognition, for example, imagery contributes to remembering faces and voices, simulating others' perspectives, and supporting empathy—functions that may be altered in aphantasia and thus overlap with domains studied in autism spectrum disorder and related populations. In neurodegeneration, the role of imagery has received little attention despite its potential importance: imagery deficits may overlap with early cognitive changes in dementia, influence autobiographical memory and emotion regulation, and affect the success of rehabilitation strategies that rely on visualization or mental rehearsal. At the neural level, almost nothing is known about the differences between aphantasics and typical imagers, leaving fundamental questions about brain networks that support conscious simulation unanswered. Despite growing interest, no standardized diagnostic tool exists to capture the multisensory nature of aphantasia, and most assessments rely on subjective self-report. Raising awareness of these limitations is crucial to broaden research, improve clinical recognition, and integrate aphantasia into central discussions of cognition, dementia, and mental health.

CARES: Children At Risk - an Eye-tracking Study

Evelien Urbanus[1], Sophie van Rijn[2], & Hanna Swaab[2]
[1]Vrije Universiteit Amsterdam, Department of Clinical, Neuro, and Developmental Psychology, [2]Universiteit Leiden, Clinical Neurodevelopmental Sciences

Understanding how young children develop social and adaptive behavior requires insight into the neurocognitive building blocks that shape these abilities, particularly in the domains of social cognition and executive functioning. Although social cognition and executive functioning are essential for interpreting social information and regulating behavior, little is known about how they emerge and vary in early childhood. With the CARES project (Children At Risk – an Eye-tracking Study), we aim to chart this development using eye-tracking, a method well-suited for children with varying intellectual and language abilities. Eye-tracking allows us to detect subtle variations in cognitive processing and can help identify individual differences across developmental phases. By linking these measures to both concurrent and longitudinal behavioral outcomes, we aim to identify children at risk for adverse behavioral trajectories and can help guide the focus of early supportive measures. We will outline the aims and design of the CARES project.

Cognitive Profiles and Rehabilitation Strategies in Early-Stage Parkinson's and Alzheimer's Disease: Applied Perspectives from Clinical Neuropsychology

Denise Vecchio
University of Bristol

Parkinson's disease and Alzheimer's disease are neurodegenerative conditions characterized by progressive cognitive decline and behavioural symptoms that significantly impact quality of life. Early neuropsychological assessment and targeted interventions may help slow cognitive deterioration and promote better functional adaptation. This study aims to identify distinct cognitive patterns in the early stages of Parkinson's and Alzheimer's disease, and to explore the potential of cognitive rehabilitation interventions targeting executive functions and memory. The design involves a comparative study based on preliminary data from standardized neuropsychological assessments (MoCA, Stroop, Rey Auditory Verbal Learning Test). Participants include patients with a recent diagnosis of Parkinson's disease (n=10) and Alzheimer's disease (n=10), recruited from clinical settings. Descriptive analyses and between-group comparisons will be conducted to identify strengths and weaknesses across cognitive domains. It is hypothesised that patients with Parkinson's disease will show greater deficits in executive functions, whereas those with Alzheimer's disease will exhibit more pronounced

episodic memory impairment. The identification of distinct cognitive profiles can guide the development of personalised, evidence-based rehabilitation programmes, ultimately improving the effectiveness of interventions in clinical practice.

Characterising mental health and feasibility of using app-based questionnaires to monitor mental health: A sub-study of mTBI-Predict

Eleanor Worth[1], Hannah S. Lyons[1,2], Mia Mann[3,4], Tom Inns[5], Maria Balaet[6,7], Agata Czarnecka[8,9], Peter J. Hellyer[8,9], Caroline Mugo[1], Sarah Berhane[3,4], Adam Hampshire[8], Helen Brunger[10], Samuel J. E Lucas[11,13], Karen J. Mullinger[12,13], Ryan Ottridge[14], Andrew Palmer[14], Jack Rogers[15], Alice Sitch[3,4], Carl Krynicki[16,17], Lisa J. Hill[4,18], James L. Mitchell[2,9,18], & Alexandra J. Sinclair[1,2,4]

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(see full programme for full list of affiliations)

Mild traumatic brain injury (mTBI) can cause lasting disability with 37% unable to work 6 months post-injury. The mTBI-Predict trial (ISRCTN:18210449) aims to identify prognostic biomarkers. This nested sub-study, in a smaller sub-cohort aimed to characterise mental health, post-traumatic stress disorder (PTSD) and the feasibility of using app-based assessments. Patients with mTBI (defined by VA/DoD criteria) were recruited within 21 days of injury. The Mini International Neuropsychiatric Interview (MINI) evaluated pre-morbid mental health in mTBI and healthy participants; 6 app questionnaires at 21-days (baseline), 2- and 3-months post-injury. Of 45 mTBI patients recruited, 37 completed the MINI (median age 26(IQR:21-38); 44.4% male), pre-morbid mental health morbidity was greater than in healthy controls (n=20): suicidality risk 32.4%(12/37) versus 0.0%(0/20), current suicidality 21.6%(8/37) versus 0.0%(0/20), recurrent major depressive episodes 27.0%(10/37) versus 15.0%(3/20) and lifetime panic disorder 13.5%(5/37) versus 5.0%(1/20) respectively. Functional outcomes improved over time (Mayo-Portland Adaptability Inventory median 19.0(IQR7.0-24.0) at 21-days, 9.0(0.0-8.3) at 2-months, and 6.0(1.5-24.4) at 3-months). Questionnaire evaluations of depression, anxiety, suicidal behaviours and PTSD improved between 21 days and 3-months. Alcohol-use increased (AUDIT score 3.0(0.3-6.5) at 21 days & 4.5(0.8-7.0) at 3 months). App-based questionnaire completion showed poor adherence: 55.6% at 21 days, 28.9% at 2-months, and 35.6% at 3-months. Antecedent mental health morbidity was higher in mTBI compared to healthy participants. Mental health improved following the injury, but alcohol use increased. Compliance with the app-based assessments was low, and the small sample limits meaningful inference. These results suggest that poor pre-morbid mental health may increase mTBI risk.

Group B: Thursday, November 27th, 11:00-11:30 and 13:00-13:30

Cross-Cultural Neuropsychological Battery to Assess Cognitive Performance in Palestinians

Lama Abbas[1], Sarah MacPherson[1], Clara Calia[1]
[1]*University of Edinburgh*

Cross-cultural research on neuropsychological tools and normative data remains largely absent. This study has developed a neuropsychological test battery in Arabic and English to assess accelerated ageing in Palestinians, world's largest refugee population, who endure long-term suffering and trauma due to the on-going occupation of their land. The battery, alongside self-report acculturation and trauma scales, includes a cognitive screening tool, some objective memory tests (The Verbal Memory Arabic Test, The Visual Working Memory Binding Test, and the Rey Complex Figure Test) and a subjective memory questionnaire. It also includes tests of executive function (Colour Trails Test 1 and 2, and The Five Digit Test) and verbal fluency. The study aims to evaluate whether these measures are suitable to be used with Palestinians and to explore whether Palestinians experience cognitive decline. The battery was administered to 118 Palestinians (60% male) living in the UK, with a mean age of 45 years (SD=11), 68% with post-graduate degrees. As expected, the findings show that cognitive performance declines with age and improves with higher education and acculturation levels. However, Palestinians' performance was mostly similar to the populations that these tests were originally developed for and administered to. This indicates that these tests are suitable for use with Palestinians.

Protocol: Cognitive and Behavioural Rehabilitation in ALS, PMA and PLS

Famke J. Asberg[1,2], Esther T. Kruitwagen-van Reenen[1,2], Anita Beelen[1,2], Anne J.M. Visser-Meily[1,2], Teuni F. Ten Brink[1,2]
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Amyotrophic lateral sclerosis (ALS), progressive muscular atrophy (PMA), and primary lateral sclerosis (PLS) are characterized by motor impairments, such as respiratory issues, trouble walking and swallowing -and speech difficulties. However, up to 50% of patients also experience cognitive and behavioral symptoms, of which 5%-10% have ALS-frontotemporal dementia (FTD). These symptoms negatively impact patients and family carers. However, they are often under-appreciated, as motor impairments receive greater clinical attention. Dutch ALS guidelines recommend psycho-education and support in the case of these symptoms, but do not specify how to monitor symptoms or tailor interventions. As a result, cognitive and behavioral symptoms are not consistently monitored, and interventions are not well integrated into clinical practice for ALS patients. Our aim is to improve management of cognitive and behavioral dysfunction in ALS, PMA, and PLS. We will first evaluate approaches for monitoring cognitive and behavioral changes, and synthesize evidence on the effectiveness of interventions. This will be achieved through a systematic literature review, and a survey among Dutch and European ALS health care professionals. Subsequently, we will develop and implement a toolbox of targeted interventions and formulate recommendations for monitoring. Finally, we will evaluate the acceptability, adherence and experience of the toolbox in clinical practice. The toolbox will be integrated into clinical practice. Healthcare professionals will receive guidance in how to monitor cognitive and behavioral changes, and to provide cognitive rehabilitation. By improving diagnosis and management of these symptoms, this project aims to enhance the quality of life for patients and carers.

Impact of awareness of genetic status on clinical and cognitive outcomes in familial frontotemporal dementia

Liset de Boer, Jackie Poos, Julie de Houwer, Tine Swartenbroekx, Olaiya Aro, Babette Reichard, Harro Seelaar, Lize Jiskoot
Alzheimer Center, Department of Neurology, Erasmus University Medical Center, Rotterdam, Netherlands

Genetic frontotemporal dementia (FTD) accounts for 30–50% of cases and is most often caused by pathogenic variants in C9orf72, GRN, or MAPT. First-degree relatives of affected patients face a 50% risk of carrying a mutation. Knowing one's genetic status may affect mood or test-taking behavior, which in turn could influence cognitive performance and clinical assessments. Such effects may complicate the interpretation of subtle early biomarkers, making it essential to account for awareness in future clinical trials. Therefore, this study aims to investigate how awareness of genetic status affects clinical, cognitive, and behavioral outcomes in individuals from families with genetic FTD. We included 235 first-degree relatives of FTD patients enrolled in the FTD Risk Cohort (FTD-RisC, Erasmus MC, 2010–2025). Participants were classified as aware carriers, aware non-carriers, learner carriers (learning one's status during a follow-up visit), learner non-carriers, or unaware individuals (carriers and non-carriers at 50% risk). All were clinically presymptomatic (CDR-plus-NACC-FTLD = 0). Assessments included standardized neuropsychological testing, the Clinical Dementia Rating scale plus NACC-FTLD, the Frontotemporal Dementia Rating Scale (FRS), Beck Depression Inventory-II (BDI-II), and the Neuropsychiatric Inventory (NPI). Subsets underwent magnetic resonance imaging (MRI) and serum neurofilament light chain (NfL) measurement. Cross-sectional and longitudinal outcomes are currently being examined using linear mixed-effects models, adjusting for age, sex, and education. Piecewise models are being applied to evaluate within-subject change before and after disclosure of genetic status. Results will be presented during the conference.

The Neural Bases of Residual Language and Executive Function in Post-Stroke Aphasia

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Aphasia following a middle cerebral artery stroke has been shown to impair multiple language domains and can often co-occur with executive function deficits. To explore this via the cognitive neuroscience toolkit, we can utilize neuropsychological batteries to provide rich behavioral profiles and task-fMRI to capture neural activity of specific behaviors. However, an underlying assumption exists that behavior on the batteries generalizes to task performance/behavior inside the scanner, and that these measures jointly map onto underlying neural activity. We tested this assumption formally using task-fMRI to probe three language-cognitive domains—semantics (speech comprehension), phonology (repetition), executive function (pattern matching)—in a large sample (N=36), collecting both neural activity and behavior. Patients also underwent detailed neuropsychological battery testing where specific tasks were comparable to the fMRI tasks to different degrees: the repetition tasks in-and-out-of-scanner were almost identical, but semantic and executive function tasks were only broadly related to each other. Analyses revealed correlations between behavioral measures were largely insignificant, regardless of task similarity in-and-out-of-scanner. However, neural engagement was largely consistent with task demands: the pattern-matching task engaged the multiple demand network under the hard condition and the default mode network under the easy condition, while the comprehension task elicited bilateral ventral anterior temporal lobe activity. These results potentially suggest that the decoupling of behavioral measures from neural signal is due to the scanner's stressful ambient environment and patients' difficulties with task instructions. They also underscore the necessity of patient-centric experimental design and a more careful approach to brain-behavior investigations in chronic PSA. Aphasia following a middle cerebral artery stroke has been shown to impair multiple language domains and can often co-occur with executive function deficits. To explore this via the cognitive neuroscience toolkit, we can utilize neuropsychological batteries to provide rich behavioral profiles and task-fMRI to capture neural activity of specific behaviors. However, an underlying assumption exists that behavior on the batteries generalizes to task performance/behavior inside the scanner, and that these measures jointly map onto

underlying neural activity. We tested this assumption formally using task-fMRI to probe three language-cognitive domains—semantics (speech comprehension), phonology (repetition), executive function (pattern matching)—in a large sample (N=36), collecting both neural activity and behavior. Patients also underwent detailed neuropsychological battery testing where specific tasks were comparable to the fMRI tasks to different degrees: the repetition tasks in-and-out-of-scanner were almost identical, but semantic and executive function tasks were only broadly related to each other. Analyses revealed correlations between behavioral measures were largely insignificant, regardless of task similarity in-and-out-of-scanner. However, neural engagement was largely consistent with task demands: the pattern-matching task engaged the multiple demand network under the hard condition and the default mode network under the easy condition, while the comprehension task elicited bilateral ventral anterior temporal lobe activity. These results potentially suggest that the decoupling of behavioral measures from neural signal is due to the scanner's stressful ambient environment and patients' difficulties with task instructions. They also underscore the necessity of patient-centric experimental design and a more careful approach to brain-behavior investigations in chronic PSA.

Rigid Minds in a Changing World: A Predictive Processing Account of Borderline Personality Disorder

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Predictive processing theory provides a powerful framework for understanding how the brain learns and adapts to its environment. It proposes that cognition depends on generating predictions about incoming information and updating these models when discrepancies arise. Distorted predictions can bias perception and behaviour, while failures to update can lead to rigid, maladaptive patterns of thought and action. Borderline personality disorder (BPD), characterized by maladaptive interpersonal schemas and inflexible social behaviour, provides a compelling case in point. We present two studies that examined predictive processes in BPD using statistical learning paradigms. The first demonstrates that the ability to detect and consolidate environmental regularities remains intact in BPD. The second shows that difficulties emerge when those regularities change, revealing reduced flexibility in updating learned representations. Together, these findings suggest that BPD is associated not with global learning impairments but with selective deficits in predictive updating. More broadly, they illustrate how predictive processing theory can link neurocognitive mechanisms to psychiatric phenomena and highlight potential targets for intervention.

The Impact of Recreational Drug Use on Prospective Memory: A Mixed-Methods Investigation

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Recreational drug use is believed to negatively impact neurotransmitter communication systems crucial for cognitive processes. This study investigated the effects of recreational drug use on prospective memory (PM) through three interrelated studies. In the first study, 27 studies were systematically reviewed, revealing inconsistent results in self-report studies and consistent deficits in lab-based methods for illegal drug users. The second study examined 53 drug users and 47 non-users, showing PM deficits only in lab-based measures. The third study interviewed seven drug users, highlighting the role of retrospective memory, cue availability, time awareness, and attention in PM. The study also identified cognitive factors (metacognition and motivation) explaining observed discrepancies. In summary, this comprehensive investigation emphasises consistent PM

impairments identified through lab-based measures and highlights critical cognitive factors influencing differences between questionnaire- and lab-based PM assessments.

Efficacy of transcranial magnetic stimulation in anorexia nervosa: a systematic review and meta-analysis

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Transcranial magnetic stimulation (TMS) has emerged as a promising treatment for various neuropsychiatric conditions, including depression, obsessive–compulsive disorder, and Parkinson's disease. Recent research has focused on evaluating its effectiveness in treating patients with anorexia nervosa (AN). This systematic review and meta-analysis examined the impact of TMS on patients with AN and evaluated any potential adverse effects. We conducted search according to PRISMA guidelines and comprehensively analyzed data from multiple data-bases, including Pubmed, Scopus, Embase, Web of Science, and the Cochrane Library, up to September 13th. Statistical analysis utilized the Comprehensive Meta-analysis software version 3.0. The systematic review encompassed 17 studies, with nine undergoing meta-analyses. The primary target for TMS was the dorsolateral prefrontal cortex, with two studies targeting the dorsomedial prefrontal cortex, one targeting the insula and one targeting the inferior parietal lobe. The findings revealed a significant increase in body mass index (BMI) following TMS(SMD: −0.025, 95% CI: −0.0505 to −0.005, P-value = 0.045). Additionally, the Eating Disorder Examination Questionnaire (EDE-Q) score was quantitatively reported in six studies, which permitted its inclusion in the meta-analysis. The analysis exhibited a significant decrease in EDE-Q score after TMS (SMD: 0.634, 95% CI: 0.349-0.919, P-value < 0.001). Subgroup analysis based on TMS session duration indicated that the effect size of TMS on EDE-Q score is more pronounced when the session duration exceeds 20 min. In conclusion, TMS represents an effective therapy for patients with AN, leading to improvements in both BMI and core symptoms of AN, with minor and transient side effects.

This "is so needed": Staff and Family Perspectives on a Care Home Dementia Assessment Service (DiADeM)

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This NHS England commissioned pilot project aimed to improve dementia diagnostic rates (DDR) for people with advanced dementia in care homes across Herefordshire and Worcestershire using the Diagnosing Advanced Dementia Mandate (DiADeM) tool. Although around 70% of care home residents live with dementia, fewer than half have a formal diagnosis. Our multidisciplinary team completed 97 DiADeM assessments across 34 care homes, resulting in 84 new diagnoses; notably, 17% of those screened already had a diagnosis unknown to carers. Post-diagnostic support was tailored and comprehensive, including care plan reviews, advanced care planning, medication reviews, environmental modifications, education for carers and families, and onward referrals. Feedback was gathered from 15 staff, 20 family members, and one resident via questionnaires, analysed using Reflexive Thematic Analysis. Themes included increased understanding of dementia, appreciation of nurses' compassionate care, enhanced access to personalised support, and improved collaborative working. Concerns were also raised about the sustainability of support for care homes, staff, families, and patients once the pilot ended. The project showed that person-centred diagnostic services within care homes can improve DDR, enhance care quality, and empower families and staff. Findings support integrating DiADeM into local care

pathways while also highlighting the need for robust post-diagnostic services. Methodological limitations included low resident response rates and the absence of validity testing for questionnaires. Nonetheless, the overwhelmingly positive feedback demonstrates the value and necessity of this approach in addressing the needs of people with suspected dementia in care home settings.

Reflections on collaborations with patient partners in neuro-oncology healthcare research: researchers and patient partners perspectives

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There is growing interest in collaborations between patients and researchers in health(care) research, including neuro oncological and neuropsychological studies. However, there is a disparity between the anticipated positive impact and the well-intentioned but complex realities of collaborative health(care) research. In working with patient partners, we aim to do the right way of working that does justice to their knowledge and 'being'. Nevertheless, in daily practices, ethical issues can occur. In this study, we reflect on ethical issues as described by the first author's autoethnographic research diary notes while working with patient partners in her PhD project on existential treatment in neuro-oncology patients. The patient partners are individuals with a primary malignant brain tumour or their spouse. Brain tumour patients often have a shortened life span and may suffer from physical and cognitive deficits. We selected three case descriptions in which we describe ethical issues related to: 1) confrontation with negative health status updates of patient partners, 2) influence (deterioration) of cognitive functioning on collaboration in research, and 3) responding to issues that reach beyond research activities. These reflections offer insights into building meaningful partnerships with patient partners diagnosed with a brain tumour and how we can align these in our efforts to work towards (epistemic) justice. We expect similar ethical issues in research involving patient partner groups with similar characteristics, such as people with a progressive disease and/or cognitive deficits. In a follow-up study that we are currently working on, we describe reflections from the perspective of the patient partners.

Structural Connectivity and IQ in Children with Drug-Resistant Epilepsy: A Graph Theory Approach

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Paediatric Drug-Resistant Epilepsy (PDRE) is a network disorder associated with IQ deficits. The heterogeneity of these deficits is not fully explained by clinical factors, highlighting the need to examine underlying brain network architecture. Graph theory enables the quantification of structural connectivity at both global and regional levels; however, studies combining these measures in lesion-free PDRE remain scarce. Fifteen healthy controls and seventy-one PDRE patients underwent diffusion-weighted magnetic resonance imaging. For each participant, a 253 x 253 streamline count connectivity matrix was constructed and analysed using the Brain Connectivity Toolbox, which computed global and nodal metrics. The nodal metrics were averaged for each of Yeo's 7 (+ 1 subcortical) functional networks. Associations between metrics and IQ were assessed using correlations, a covariate-controlled general linear model (GLM), and mediation analysis. Global metrics did not predict IQ. An eight-network GLM revealed that the Default mode network (DMN) and Subcortical nodal efficiency (NE) predicted IQ. Crucially, mediation analysis showed that group differences in IQ were partly explained by a "push-pull" dynamic: higher DMN nodal efficiency was associated with higher IQ. In comparison,

higher subcortical nodal efficiency was associated with lower IQ. Findings suggest that IQ deficits in PDRE may be driven by the opposing influences of a potentially compensatory DMN and a maladaptive Subcortical network's hyper-connectivity. While these results are hypothesis-generating due to limited power and uneven group sizes, they highlight specific, competing network alterations over global changes. Future studies should confirm these opposing roles in larger cohorts.

Separated at birth: Rediscovering the lost emotions in Luria's Working Brain

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Aleksandr Luria, a towering figure in 20th century neuropsychology, repeatedly emphasised the importance of emotions and the right hemiphere in his writings. It is surprising, therefore, that Luria's most influential book, The Working Brain, appears to lack an explicit section on these topics. This is especially notable because of a comment in the book's English-language Introduction, by Karl Pribram, referencing Luria's thoughts about precisely this material. Remarkably, it seems that Luria did write such an explicit chapter, in the original Russian edition. However, in the English (but not the Dutch)-language version, the relevant sections were separated, embedded elsewhere without chapter headings, and altered, presumably following an explicit translation decision. This talk describes the nature of these changes. The talk also offers a brief commentary, on the ways in which Luria's ideas were in some respects prescient, and in other respects less well-informed about the brain basis of emotions and the right hemisphere. This reunification offers an interesting time capsule on the opinions of one of neuropsychology's greatest minds, on a topic which Luria admits had, at the time, only a modest empirical foundation.

Translating Neuroplasticity Into Clinical Practice: Cognitive Rehabilitation After Brain Injury

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Neuroplasticity is a fundamental principle underlying recovery after acquired brain injury (ABI), yet its translation into effective clinical practice remains inconsistent. While structural and functional reorganisation of neural networks has been well documented, the mechanisms by which such plastic changes support cognitive rehabilitation are still debated, particularly regarding their clinical applicability. This work presents a narrative review of studies published between 2010 and 2024, identified through PubMed, PsycINFO and Cochrane Library, focusing on adult ABI populations including stroke and traumatic brain injury. Findings indicate that rehabilitation outcomes are optimised when interventions are multimodal, combining restorative cognitive training, compensatory strategies and psychotherapeutic support. Evidence highlights the importance of timing, with early interventions maximising plastic potential, although meaningful improvements can also be achieved in chronic phases due to the persistence of neuroplastic capacity. Emotional and motivational processes strongly influence adherence and treatment success, underscoring the need to integrate psychological support into neurorehabilitation protocols. Furthermore, digital innovations such as computer-based training and virtual reality demonstrate promising effects on engagement and long-term recovery. This synthesis suggests that neuroplasticity should not be viewed solely as a theoretical construct but as a clinically relevant framework guiding the design of evidence-based rehabilitation. The integration of neuroscientific knowledge with clinical neuropsychology points toward the development of personalised and longitudinal approaches, requiring stronger methodological rigour and larger sample sizes in future studies. Overall, advancing our understanding of neuroplasticity offers a valuable pathway for improving cognitive rehabilitation and patient outcomes in ABI.