



**16th Conference of the NEUROPSYCHOLOGICAL
REHABILITATION SPECIAL INTEREST GROUP OF THE WFNR
(NR-SIG-WFNR)**

and

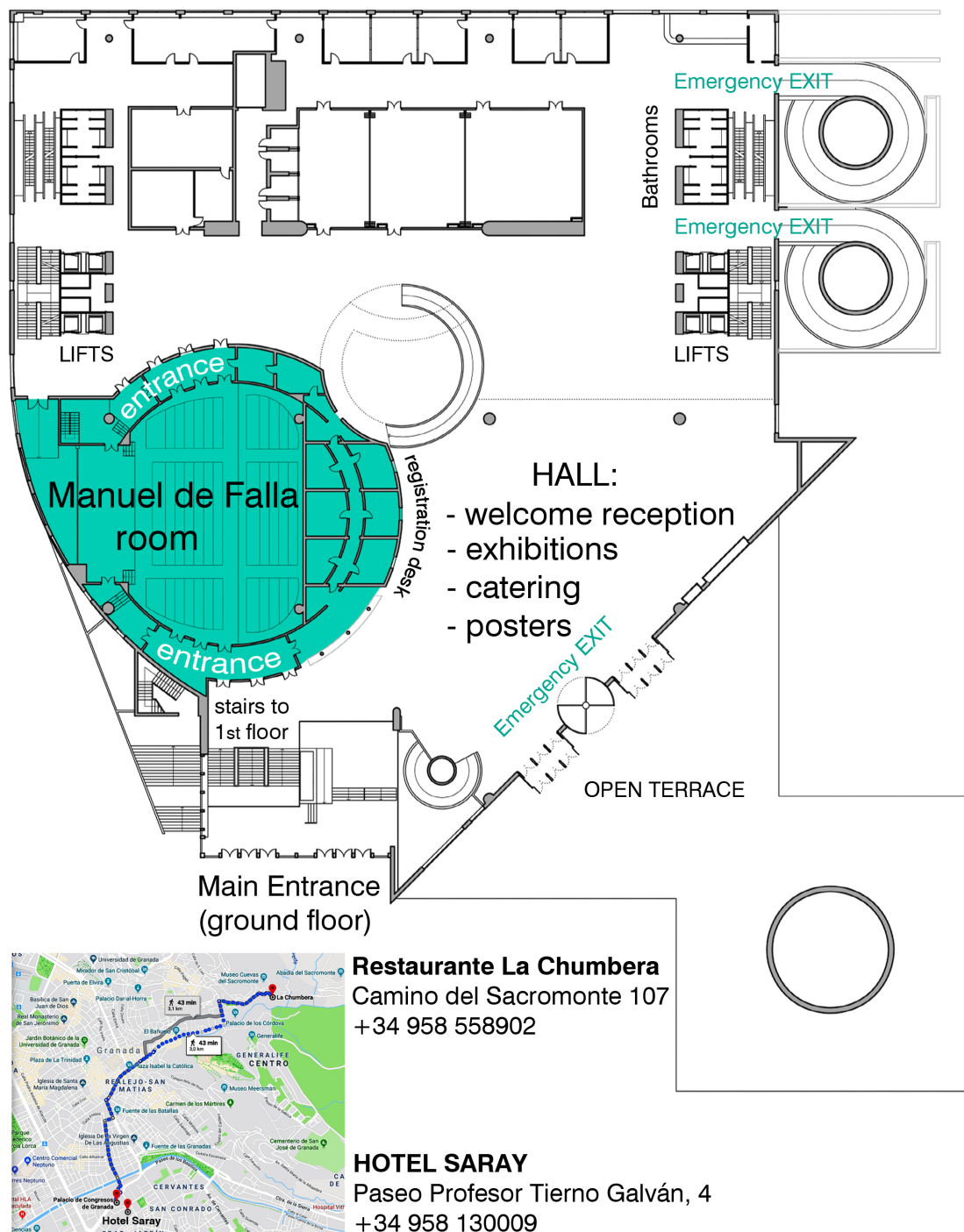
**15th Congress of the Andalusian Society of Neuropsychology
(SANP)**

Granada, Spain

Thursday 27th and Friday 28th June 2019

PLAN OF THE VENUE

MANUEL DE FALLA ROOM (1st FLOOR)



PALACIO DE CONGRESOS DE GRANADA
Paseo del Violón s/n +34 958 246700
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Conference Programme at a glance – THURSDAY

7.30	Arrival, Registration and Dropping Posters at Registration Desk
8.20	Welcome and Opening Address Manuel de Falla Room Chair: Alfonso Caracuel. Mind Brain & Behaviour Research Centre CIMCYC, <i>University of Granada (Spain)</i> Welcome and Introduction Representatives of Academia and Politics
8.30	Opening Address: Is it time to move on from SMART goals? Professor Barbara Wilson
9.00	Session 1: Daily-life, family and insomnia after ABI Chair: Jennie Ponsford Isabel Gosselt: Cognitive complaints during daily-life activities in brain tumour patients; toward better understanding of complaints and cognition functions 9.15 Bert Lenaert: The momentary and time-lagged relationships between daily activities and post-stroke fatigue using experience sampling methodology 9.30 Penny Analytis: The experience of the sibling relationship when one sibling has an acquired brain injury 9.45 Sharon Buckland: It depends who you ask: Insights from dyadic relationships and mixed methods into concepts of loss after acquired brain injury 10.00 Satu Baylan: Incidence and prevalence of post-stroke insomnia: a systematic review and meta-analysis 10.15 Panel Discussion
10.30	Morning Break: <i>Tea & Coffee</i> Exhibition Hall
11.00	Session 2: Datablitz Chair: Satu Baylan Ieke Winkens: <i>Maastricht University (Netherlands)</i> Psychometric properties and feasibility of the Clinician's Rating Scale for evaluating Impaired Self-Awareness and Denial of Disability after brain injury (CRS-ISA-DD) (<i>Datablitz 1</i>) 11.05 Eline van Lieshout: The effect of non-invasive brain stimulation on post-stroke cognitive function: a systematic review (<i>Datablitz 2</i>) 11.10 Sharon Savage: Word training in a case of alcohol-related brain damage: maintenance and transference to everyday activities (<i>Datablitz 3</i>) 11.15 Leanne Rowlands: Focus on feelings: A mixed-methods evaluation of an emotion-oriented brain injury treatment programme (<i>Datablitz 4</i>) 11.20 Helena Thornley: Stepping into a patient's confabulations to step out of them together: An MDT approach to treating confabulations (<i>Datablitz 5</i>) 11.25 Alvaro Javier Cruz Gomez: Cingulate cortical thinning as an early marker of brain damage and cognitive impairment in early diagnosed Multiple Sclerosis patients (<i>Datablitz 6</i>)
11.30	Session 3: Understanding and improving social participation Chair: Caroline van Heugten Lee Cubis: Using social identity mapping to understand the impact of brain tumour on social groups and identity: A qualitative study 11.45 Irene Renaud: Activities and participation six months after mild traumatic brain injury in children and adolescents: the Brains Ahead study, a prospective longitudinal cohort study 12.00 Christian Salas: A Chilean study on social isolation after acquired brain injury 12.15 Bert Lenaert: Rehabilitation Interventions for improving social participation after traumatic brain injury: Systematic review and meta-analysis 12.30 Panel Discussion

12.45	Poster Session 1
1.15	Lunch
2.00	Session 4: Key factors in rehabilitation: feedback, working alliance, training others Chair: Michael Perdices Anneke Terneusen: Non-confrontational feedback to increase awareness of deficits during cognitive rehabilitation after brain injury Nicholas Behn: A systematic review of training for communication partners of people with traumatic brain injury (TBI) Jennie Ponsford: Factors associated with working alliance and homework compliance and their association with response to cognitive behavioural therapy for anxiety and depression following traumatic brain injury Wendy Longley: Neuropsychological assessment feedback as a psycho-educational therapeutic intervention: a randomised controlled trial with cross-over and follow-up in patients with multiple sclerosis Jacinta Douglas: Development and evaluation of participant led videos to train support workers of people with severe acquired brain injury Panel Discussion
2.15	
2.30	
2.45	
3.00	
3.15	
3.30	Afternoon Tea
4.00	Session 5: Datablitz Chair: Myrtha O'Valle Aicha Dikshoorn: The incidence of cognitive impairment and longitudinal cognitive change in patients with breast cancer: a systematic review of longitudinal studies (Datablitz 7) David Lucena-Anton: Virtual reality interventions to improve quality of life after stroke: a meta-analysis of randomized controlled trials (Datablitz 8) Monica Rosu Stanciu: Orbitofrontal and ventromedial circuits, mental disorder and dissociation (Datablitz 9) Jessica Bruijtel: The relationship between effort and fatigue in traumatic brain injury patients (Datablitz 10) Christine Resch: Participation as the ultimate outcome of paediatric rehabilitation: a systematic review of measurement properties (Datablitz 11) Nicole Sugden: Predicting use of digital, nondigital, and interpersonal memory aids in everyday prospective memory tasks (Datablitz 12)
4.05	
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4.25	
4.30	Session 6: Rehabilitation for children and adolescents: Goals and effectiveness Chair: Fergus Gracey Anna Adlam: The clinical and cost effectiveness of Teen Online Problem Solving for adolescents who have survived an acquired brain injury in the UK: A randomised controlled feasibility study (TOPS-UK) Irene Renaud: Effectiveness of the Brains Ahead! intervention: A randomized controlled trial in school-aged children with mild traumatic brain injury and caregivers Suncica Lah: Treatment for insomnia in adolescents with moderate to severe traumatic brain injury: A feasibility multiple baseline single-case series Fergus Gracey: Understanding the Neuropsychological Rehabilitation Goals of Children with acquired brain injury through the International Classification of Functioning, Disability and Health: Children and Youth Version Lisa Edelkraut: Pharmacotherapy of traumatic childhood aphasia: Beneficial effects of donepezil alone and combined with intensive naming therapy Panel Discussion
4.45	
5.00	
5.15	
5.30	
5.45	
6.00	Close of Day 1
6.30	Welcome Drinks brought to you by TANDF

POSTERS - THURSDAY

Poster #	Name	Title
13	Gemma, Más-Sesé	Transcranial direct current stimulation (tDCS) in patients with visual hemineglect. Experience in a Neurorehabilitation unit
14	Bateman, Andrew	How primary care can help stroke survivors with returning to work: focus groups with stakeholders from a UK community
15	Velez Coto, Maria	Prediction of cognitive reserve based on complexity of work and time of exposition in an unemployed sample
16	Sanchez Lara, Encarna	Online cognitive stimulation with VIRTRAEL® compensates that Cognitive Reserve does not prevent flexibility deficit in elderly people
17	Adams, Alexandra	A meta-analytic review of social cognitive function following stroke
18	Bykov, Yury	Cognitive Rehabilitation in Patients with Parkinson's Disease
19	Analytis, Penny	The experience of attending a camp for families with a child with acquired brain injury: Perspectives of young people with acquired brain injury and siblings
20	Jamieson, Matthew	Developing VRSET: A Virtual Reality Shopping Errands Task for Use in Brain Injury Rehabilitation
21	Romero-Gonzalez, Borja	Neurodevelopment at 6 months old in infants born of a high-risk pregnancy: a comparison with healthy pregnancies.
22	Baylan, Satu	Moderators of outcome in listening based interventions for cognitive recovery and mood after stroke
23	Nagino, Koji	The effect of Galvanic Vestibular Stimulation (GVS) on autonomic nervous activity during posture transformation
24	Gracey, Fergus	The Possible Selves of Individuals with an Acquired Brain Injury
25	Fernandez-Fillol, Carmen	Relationship between Severity of Violence and levels of Generalized Anxiety, Depression, Post-traumatic Stress Disorder and Neurocognitive Impairments
26	Marín-Morales, Agar	Emotion recognition in batterers
27	Marín-Morales, Agar	Working memory and distorted thoughts about violence in batterers
28	Daugherty, Julia C	Preliminary Validation of the Coin in Hand Test: Applications with Intimate Partner Violence
29	Lozano-Ruiz, Alvaro	Language and Culture Influences in Working Memory: A Cross-cultural Study through the EMBRACED Digit Span Task
30	Cherney, Leora	Depression and subthreshold depression in aphasia
31	Cherney, Leora	Visual Attention to Emotional Stimuli in Persons with Aphasia
32	Tucker, Peter	Service improvement project: analysis of routine clinical data in paediatric neuropsychological rehabilitation
33	Velasco Collado, Yael Nelea	Melodic Intonation Therapy: Improving language production in a patient with non-fluent aphasia
34	Martínez García, Vanesa	Efficacy of a diaphragmatic breathing training program in a chronic patient with aphasia to reduce anxiety related to communication with unfamiliar people
35	Martinez-Cortes, Maria Carmen	Improving communication skills and oral production in a patient with non fluent Aphasia following a rehabilitation program based on the successive approximation method in the natural environment
36	Limond, Jennifer	The clinical and cost effectiveness of Teen Online Problem Solving for adolescents who have survived an acquired brain injury in the UK: Protocol for a randomised controlled feasibility study (TOPS-UK)
37	Adlam, Anna-Lynne R	Genetic and environmental influences on recovery of severe paediatric brain injury: The UK study protocol

38	Hashimoto, Shingo	Assessment of Unilateral Spatial Neglect with Eye Tracking System
39	Shimizu, Daisuke	Effectiveness of a behavioural approach to use public transportation in acquired brain injured participants: a single case experimental design study
40	Honda, Nobuyuki	Will short-term group training give an effect on self-awareness?
41	Yamashita, Madoka	The relationships between resting functional networks connectivity and errorless/errorful learning
42	Spreij, Lauriane	Towards a digital neuropsychological assessment: the feasibility and added value in patients with acquired brain injury
43	Salazar Frías, Daniel Alberto	Improving everyday performance by training to deal with distractions and unexpected problem-solving situations in an acquired brain injury: case study
44	Leathem, Janet	Omega-3 fatty acid supplementation effect on mild cognitive impairment: a randomised controlled trial
45	Powell, Theresa	A qualitative study exploring the experiences of mindfulness training in people with acquired brain injury
46	van Heugten, Caroline	Joining forces to improve psychosocial care for people with cognitive deficits
47	Almubark, Bazah	Development and Validation of the Plymouth Saudi Memory Test (PSMT) for the Arabic speaking population with acquired brain injury
48	Romero-Ayuso, Dulce	Assessment of Cognitive Instrumental Activities of Daily Living from an ecological perspective
49	Romero-Ayuso, Dulce	Thinking Operations and Activities of Daily Living in Cognitive Impairment People
50	Pérez-Marfil, M ^a Nieves	Interaction between socioeconomic status and neuropsychological development in children aged 7, 9, and 11 years in Ecuador
51	Daza González, María Teresa	Effectiveness of a reading multimodal training program for deaf children.
52	Segundo Marcos, Rafael	Creativity, working memory and inhibitory control in children
53	Segundo Marcos, Rafael	Creativity and academic achievement in the school context
54	Raukola-Lindblom, Marjaana	Language comprehension and fatigue after traumatic brain injury
55	Gosselt, Isabel	Cognitive assessment in a digital era: current state-of-art in neuropsychological outcome measures
56	Ruiz-Gómez, Eduardo Jesus	Theory of Mind in Patients with Acquired Brain Injury
57	Castro Yeguas, Vincente	Development of an interdisciplinary intervention for acquired brain impairment patients in the acute and post-acute phases : two case descriptions
58	Villalobos, Maria Dolores	Relationships between cognitive performance, self-awareness improvement and functional outcome in patients with acquired brain injury
59	Guerrero-Pertíñez, Gloria	Support, monitoring and reminder technology for mild dementia (SMART4MD)
60	Guerrero-Pertíñez, Gloria	Results of Phase I of the pre-pilot feasibility study of TV-ASSISTDEM
61	Revert-Alcántara, María De Las Nieves	Diagnostic Utility of the Computerized Neuropsychological Evaluation Battery COGNITO for the Early Cognitive Decline Detection in a Spanish Sample
62	Revert-Alcántara, María De Las Nieves	Neuropsychological and Speech Therapy Rehabilitation Program in a Clinical Case of Visual Agnosia with Pure Alexia
63	Bustos-Valenzuela, Patricia	Theory of mind developmental in a girl with a diagnosis of autism spectrum disorder

64	Okamura, Yoko	A report of the holistic comprehensive neuropsychological rehabilitation in Japan.
65	Denison, Alice	Using Talking Mats to support conversations with people with cognitive communication disorder
66	Doval,Sandra	Artificial intelligence models (machine learning) applied in neuropsychological assessment and neurorehabilitation
67	Pardo Palenzuela, Natividad	Improvement in cognitive efficiency after intervention by immersive virtual reality. A clinical case.
68	Tanemura, Rumi	Development of ICT tool for supporting work activities among persons with cognitive disorders

Conference Programme at a glance - FRIDAY

8:00	Arrival – Drop Posters at Registration Desk
	Session 7: Different models of intervention: barriers and outcomes Chair: Anna Adlam
8.30	Shari Wade: A Comparative Effectiveness Trial of Family Problem Solving Treatment for Adolescents after Traumatic Brain Injury (TBI): Improvements in Quality of Life
8.45	Shari Wade: Moving from Research to Clinical Practice: The Long and Multi-National Road of Teen Online Problem Solving (TOPS)
9.00	Kate Psaila: Outcomes of community neurorehabilitation for traumatic brain injury after 1 year, measured by The Mayo Portland Adaptability Index 4th Edition (MPAI-4)
9.15	Shai Betteridge: A pilot service initiative to provide intensive daypatient cognitive rehabilitation for people with cognitive and behavioural disability after brain injury: Individual and service-level outcomes
9.30	Barbara Wilson: The first vegetative patient to have an MRI scan continues her recovery after 21 years
9.45	Panel Discussion
	Session 8: Datablitz Chair: Miguel Perez Garcia
10.00	Laura Mora: The flubbed body: malleability of the representation of hands and face in personal neglect (Datablitz 13)
10.05	Daan Verberne: Comparing participation outcome over time across international stroke cohorts: outcomes and methods (Datablitz 14)
10.10	Bazah Almubark: Validation of the Cognistat for its use in Arabic speaking population with Acquired Brain Injury (Datablitz 15)
10.15	Peggy Spauwen: Efficacy and safety of amantadine as a treatment for apathy in two individuals with brain injury: A Single-Case Experimental Design (Datablitz 16)
10.20	Penny Trayner: Process mapping and software engineering to improve rehabilitation efficiency (Datablitz 17)
10.25	Andrea Kusec: Measuring motivation and engagement: Do we need more than one measure? (Datablitz 18)
10.30	Morning tea
	Session 9: Research designs in single-case interventions and validation of assessment tools Chair: Igor Bombin
11.00	Robyn Tate: Developing an algorithm to evaluate methodological rigor of single-case studies
11.15	Michael Perdices: Methodological rigour of single-case studies in the education and clinical psychology literature
11.30	Pamela Brown: Reversible drug-induced parkinsonism within an inpatient neurorehabilitation setting: a case study
11.45	Andrew Bateman: BRIEF encounters with Rasch: a new look at reliability and fit statistics in assessment of executive functions in children with acquired brain injury
12.00	Lauriane Spreij: Cognitive complaints and underlying cognitive impairments measured by a digital neuropsychological assessment
12.15	Panel Discussion
	Session 10: Datablitz Chair: Raquel Vilar Lopez
12.30	Pamela Ruiz Castaneda: Working memory and hot executive functions in psychotic patients (Datablitz 19)
12.35	Nicole Sugden: A scoping review of prospective memory self-report and informant-report assessment tools (Datablitz 20)
12.40	Johanne Rauwenhoff: Are negative trials really negative? Analyzing the data of a randomized

12.45	controlled trial from an individual perspective (Datablitz 21) Szymon Zdanowski: Applicability of 9-Hole Peg Test as a tool to improve insight in Huntington's disease (Datablitz 22)
12.50	Sharon Savage: MyWordTrainer: App-based word retraining in semantic variant Primary Progressive Aphasia (Datablitz 23)
12.55	Fleur van der Feen: Subjective visual complaints in patients with multiple sclerosis (Datablitz 24)
1.00	Poster Session 2
1.30	Lunch
	Session 11: New findings in neuropsychological profiles of different populations Chair: Michael Perdices
2.15	Elena Lozano-Soto: Pattern of neuropsychological impairment and clinical correlates in relapsing-remitting multiple sclerosis
2.30	Adam Vujic: Use it or lose it? How engagement in mentally stimulating activities relates to markers of neurodegeneration in individuals with mild cognitive impairment
2.45	Marta Gomez Herranz: The effects of treatment adherence on different neurological conditions, cognitive impairment and depressive symptomatology in adults with Atrial Fibrillation and Silent Brain Infarcts
3.00	Dulce Romero-Ayuso: Tactile perception, motor cognition, inhibitory control and cognitive impulsivity in children with ADHD
3.15	Dafne Herrero: Sensorimotor Outcomes of children exposed to foetal Zika Virus Infection during first or second trimester of gestation
3.30	Panel Discussion
3.45	Afternoon tea
	Session 12: Effectiveness of peer-befriending and interventions for ADL, attention and memory Chair: Jonathan Evans
4.15	Jennie Ponsford: Efficacy of activities of daily living retraining during posttraumatic amnesia: A randomised controlled trial
4.30	Sharon Savage: When practice does not make perfect – examining the impact of word retraining on untrained words in Semantic Dementia
4.45	Dolores Navarro: Effectiveness of a rehabilitation system on attentional functions through multiplkay competitive tasks: Clinical and neurophysiological study in patients with Acquired Brain Injury
5.00	Nicholas Behn: SUpporting wellbeing through PEeR-Befriending (SUPERB) trial: An exploration of fidelity in peer-befriending for people with aphasia
5.15	Aris Malapaschas: Accessibility and Acceptability of Voice-Activated Personal Assistants for People with Cognitive Impairments due to Acquired Brain Injury
5.30	Panel Discussion
5.45	Conference close: Professor Barbara Wilson
6.00	Meeting of the NR-SIG-WFNR and General Assembly of the SANP
8.00	Conference Dinner: La Chumbera Restaurant

FRIDAY POSTERS

Poster #	Name	Title
13	Schrieff, Leigh	Investigating the effect of psychoeducation interventions in improving misconceptions of traumatic brain injury (TBI) among first year university students
14	Ljungqvist, Linda	Multidisciplinary neuropsychological group rehabilitation for elderly stroke patients in Turku City Hospital
15	Coundouris, Sarah	A meta-analytic review of prospection deficits in Parkinson's disease
16	Norup, Anne	Evaluating the Feasibility of a Family Intervention following Traumatic Injury: Preliminary Experiences.
17	Romero-Barrero, Ana	A Study of Empathic Skills and the Recognition of Facial Expressions in People Diagnosed with Alzheimer's Disease
18	Pérez-Marfil, M ^a Nieves	Preliminary validity evidences for the Spanish version of the BENCI Battery
19	Melillo, Christine	Self-Identity Reconstruction in Veterans and Military Service Members after Traumatic Brain Injury
20	Fasfous, Ahmed	Challenges of providing cognitive rehabilitation services in Palestine
21	Fujiwara, Mamiko	Discourse analysis for Japanese people with TBI : Why their communications are incomprehensible?
22	Sunagawa, Kosaku	Numeric input operation in electronic devices among clients with Unilateral Spatial Neglect
23	Martínez-Cortés, María Del Carmen	Learning compensatory strategies and the improvement of visuoconstructive skills in people with hemispatial neglect from Acquired Brain Injury following a multimodal intervention program
24	Martinez-Cortes, Maria Del Carmen	Quality of life and functional autonomy of patients with developmental disorder and refractory epilepsy. A single case study
25	Bloch, Ayala	Applying the principles of neuropsychological rehabilitation to build a holistic vocation-focused day program for cancer survivors
26	Behn, Nicholas	"Help me find a girlfriend": A single-case study of a dating intervention for a person with traumatic brain injury.
27	Burneo-Garces, Carlos	Exploring the Factors that Affect the Neurocognitive Performance of Ecuadorian Preschoolers: A Preliminary Study
28	Burneo-Garces, Carlos	Three New Tools to Assess Working Memory in Preschoolers: A Preliminary Study of Their Psychometric Properties
29	Domensino, Anne-Fleur	Measuring cognition on the spectrum from test to daily life
30	Wijenbergh, Melloney	Does fear and catastrophizing about mental activities lead to performing less mental activities?
31	Mion, Marco	Bespoke cognitive and psychological follow-up after surviving an out-of-hospital cardiac arrest – the CARE (Care After RESuscitation) clinic model
32	Huacache Urbano, Jessica	Study of a case of attentional syndrome and visuospatial dyspraxia in a 10 year old girl with convulsive syndrome.
33	Denison, Alice	Evaluating the effectiveness of a group intervention for inpatients with acquired brain injuries
34	Wilson, Barbara	Some delayed improvement in a patient with Locked-In Syndrome (LIS)
35	Wilson, Barbara	What are the characteristics of the supplementary motor area syndrome (SMAS) and what is the prognosis for people who have this syndrome?
36	López-Martín, Angela	The role of neurocognition and social cognition with functional outcomes in schizophrenia.
37	Guerrero-Pertíñez, Gloria	Profile of the patient with cognitive deterioration and mild dementia and their caregivers

38	Glinik, Olga	Cognitive neuropsychological rehabilitation of numeracy skills in an adolescent with acalculia and severe visual and motor deficits due to ABI
39	Fufaeva, Ekaterina	Neuropsychological evaluation of children in low consciousness state after severe traumatic brain injury
40	Bustos-Valenzuela, Patricia	Autism and Theory of mind: proposal of a development trajectory model
41	Rosu Stanciu, Monica	Interference of dissociation in the processes of attention and perception
42	Gomez-Lopez, Maria Jesus	Effectivity of a multi-disciplinary rehabilitation program for acquired brain injury (ABI) and the influence of time interval from brain injury to rehabilitation start.
43	Lucena-Antón, David	Whole-body vibration therapy to improve spasticity in hemiplegic stroke patients: a systematic review
44	Lucena-Antón, David	Physical therapy interventions to improve postural balance and balance confidence in Parkinson's Disease: a meta-analysis of randomized controlled trials.
45	Csilinko, Aniko	Combined effects of high definition tDCS and behavioral therapy in a verbal STM impaired patient
46	Torralba Muñoz, Jose Maria	Long term effects of a neuropsychological intervention with transcranial direct current stimulation (tDCS) in anomic aphasia
47	Crawford, Linda	Behavioural couples therapy within IDT rehabilitation after stroke: using themes focussing on meaningful roles reduced risk by increasing insight and engagement in rehabilitation
48	Pandero Logrono, Miriam	Meconium Aspiration Syndrome. Cognitive consequences in adulthood
49	Pandero Logrono, Miriam	Cognitive disorders and facial emotion recognition deficits. A correlational study.
50	Vartiainen, Riitta	Communication and emotions – a group treatment trial for TBI patients
51	Hidalgo Berutich, Silvia	Neuropsychological and speech therapy in neurodevelopmental disorder: an evidence based study
52	Hidalgo Berutich, Silvia	Neuropsychology of Creativity Applied in Children with ADHD: Intervention Program
53	Janssen, Ellen	The efficacy of eye movement desensitization and reprocessing for posttraumatic stress-disorder in patients with acquired brain injury: a multiple baseline single-case experimental design
54	Brown, Pamela	A multidisciplinary approach exploring use of CardioWall® within an inpatient neurorehabilitation setting
55	Pérez, Sara	Building the evidence base in neurorehabilitation in syndromic craniosynostosis. Psychoeducational programs.
56	Martínez-Montero, Tania	Neuropsychology of Breast Cancer: a review system
57	Heutink, Joost	A new test for assessment of simultanagnosia in patients with acquired brain injury
58	Montañez, Miguel	Effectiveness of a stimulation program with Brain Trainer in working memory and processing speed
59	Pardo Palenzuela, Natividad	The potential of comprehensive treatment of acquired brain injury based on immersive virtual reality
60	Breen, Olivia	Building Resilience in Families after Brain Injury: A Pilot Group Intervention
61	Farrington-Douglas, Claire	Assessment and treatment for Cognitive Communication Disorder (CCD) across the pathway from acute to community

62	Farrington-Douglas, Claire	Including friends in conversation partner training (CPT) with people with cognitive communication disorder (CCD)
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Is it time to move on from SMART goals?

Wilson, Barbara A.¹

¹The Oliver Zangwill Centre and The Raphael Hospital

This talk begins by describing reasons why a goal setting approach is important in neuropsychological rehabilitation. It then addresses SMART goals which many therapists and psychologists have been taught to follow for a number of years.

These are goals which are Specific, Measurable, Achievable, Realistic and in a Timeframe. A recent discussion with ex-clients/patients attending a rehabilitation centre, however, concluded that SMART goals might be too controlling. These previous clients believed that their goals should be freer in order to develop more confidence, greater feelings of safety and a more hopeful outlook to the future. These were the goals they valued, and they felt that the SMART goals were too restrictive.

We consider a new approach to goal setting as suggested in an acronym devised by McPherson and her colleagues (2017) and ask whether subsequent changes in activity will ever replace SMART. The talk concludes with the view that at times SMART goals need to be challenged.

Correspondence: Barbara A. Wilson; barbara.wilson00@gmail.com

Reference

McPherson, K.M., Kayes, N.M., & Kersten, P. (2017). MEANING as a smarter approach to goals in rehabilitation. In R.J. Siegert & W.M.M Levack (Eds.) (2017) *Rehabilitation Goal Setting: Theory, Practice and Evidence* (pp.105-119). Boca

Raton Fl: CRC Press.

Session 1: Daily-life, family and insomnia after ABI

Cognitive complaints during daily-life activities in brain tumour patients; toward better understanding of complaints and cognition functions

Gosselt, Isabel, K.¹, Spreij, Lauriane, A.¹, Schepers, V.P.M.^{1,2}, Visser-Meily, Johanna M.A.^{1,2} and Nijboer, Tanja C.W.^{1,3}

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Background and aims: Brain tumour patients often report cognitive complaints. It is unknown whether these complaints are restricted to specific daily-life situations. In this study, we assessed cognitive complaints across different cognitive domains (memory, attention, executive), during daily-life activities (work/study, driving, etc.), using the *Cognitive Complaints – Participation inventory* (CoCo-P). Next, we examined the relation between these complaints and general cognitive functioning (measured with the Montreal Cognitive Assessment (MoCA)).

Methods: We recruited brain tumour patients receiving outpatient rehabilitation at the University Medical Center Utrecht, the Netherlands. The CoCo-P and MoCA were administered. Response options for the CoCo-P ranged from 0 (independently without effort) to 3 (not possible). Responses were subdivided into: %restrictions and %incapable. The relation between cognitive complaints (total score CoCo-P) and general cognitive functioning (total score MoCA) was examined by Pearson's correlation.

Results: So far, we included 18 patients (MoCA: 8 patients scored <cut-off). All (100%) patients experienced restrictions regarding social contacts and work/education; of which 50% was incapable to work/study. Additionally, 72% experienced restrictions regarding

leisure activities and family life, and 73% regarding (grocery) shopping. These complaints could not be clarified by underlying cognitive deficits, as no significant relation was found between the CoCo-P and MoCA.

Conclusions: Brain tumour patients receiving outpatient rehabilitation, often experience cognitive complaints in work, social contacts, leisure activities and (grocery) shopping. Neuropsychological screeners are not sensitive, complex, and ecologically valid enough to capture complaints in dynamic, interactive, multi-task daily-life situations. As expected, cognitive complaints should be assessed complementary to general cognitive functioning.

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The momentary and time-lagged relationships between daily activities and post-stroke fatigue using experience sampling methodology

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Background and aims: The experience Sampling Method (ESM) consists of repeated measurements in real world settings of clinically relevant experiences, such as symptoms, mood and behavior. In contrast to retrospective questionnaires, ESM captures variations in symptoms over time and across contexts. Measuring real-

time patient experiences and behavior allows investigating the relationship between daily life activities and fatigue after stroke.

Method: Using the *mHealth* application 'PsyMate', we measured fatigue and daily activity patterns (e.g., type of activity such as working or resting) after stroke ($N=26$). The PsyMate app provided patients with ten signals (beeps) per day during six consecutive days. Each beep was followed by a digital questionnaire. We investigated the momentary relationship between daily activities and fatigue, but also assessed whether type of activity at earlier time points predicted current fatigue levels.

Results: Based on 1011 measurement moments across participants, multilevel regression analyses showed that momentary fatigue was highest when participants indicated they were resting or doing nothing, compared with other activities such as working, household, self-care, relaxing, or transport. However, when predicting current fatigue based on activities earlier in time, time-lagged analysis showed that only self-care predicted significantly lower fatigue relative to all other activity types.

Conclusions: ESM data allow gaining detailed understanding of complex symptom patterns and how they vary across time and context. These results may suggest that resting is a response to current fatigue but does not predict fatigue later in time. However, future studies should assess the long-term relationship between fatigue and daily activity patterns.

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The experience of the sibling relationship when one sibling has an acquired brain injury

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³School of Social Sciences, Faculty of Arts, Monash University, Melbourne, Australia

Background and aims: Sibling relationships have a unique family role, and as the longest family relationship many people have, its importance extends across the lifespan. For people with acquired brain injury (ABI), siblings may provide long-term support in rehabilitation. Yet few studies have investigated this relationship. This study explored the sibling relationship from the perspective of people with ABI and siblings.

Method: Semi-structured interviews were conducted with 14 people with ABI and 17 siblings (Age 7–12 years $n = 7$, 13–18 years $n = 6$, 19–25 $n = 7$, 26–65 $n = 11$).

Results: Using thematic analysis, four themes were identified: *Family dynamics*; *ABI isolation*; *Love-hate relationship*; *Changing relationship*. Family context and post-ABI dynamics contextualised participants' perspectives of sibling relationships. Participants perceived ABI as an isolating experience within the family and amongst friends. This shaped the experience of the sibling relationship as a source of closeness and support but also distance and conflict. Participants reflected on the changing nature of the relationship over time, with greater understanding of ABI and of practical ways to manage sequelae leading to increased closeness.

Conclusions: For these participants, the sibling relationship was experienced as a source of love and support, but also of misunderstanding and conflict. The relationship was seen as continually evolving, as ABI sequelae intersected with people's development, family contexts, and societal responses to ABI. Interventions to increase understanding of the long-term practical and psychological implications of ABI for

people with ABI and siblings may assist in fostering stronger sibling bonds.

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It depends who you ask: Insights from dyadic relationships and mixed methods into concepts of loss after acquired brain injury

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Background and aims: After a person experiences an acquired brain injury (ABI), there can be a time of grieving for what has been lost. However, little is known about the loss felt by relatives of people with ABI, and whether the family feels a common loss as a unit. This study aims to investigate concepts of loss amongst patients and families after ABI.

Method: 37 participants took part in a semi-structured interview (21 patients with ABI and 16 relatives of someone with an ABI). Of the participants, 16 were dyadic relationships. They also completed the Brain Injury Grief Inventory (BIGI) as a quantitative measure of loss after ABI. Interviews were analysed using thematic analysis and mixed methods results were interpreted using side-by-side comparisons and transformation.

Results: Five main themes emerged from the interviews: Person; Activity; Future; Career; Relationships. There were distinct differences between patient and relative losses and only two dyads experienced similar loss. Relative loss related to widespread lifestyle losses whereas patient loss focused more on an individual loss. No significant statistical differences were seen on the BIGI between family members and patients, although BIGI results were not always congruent with the depth of loss expressed qualitatively.

Discussion: Loss may be a shared experience between patients and relatives, but the meaning and type of loss is different between the groups. The use of quantitative methods allows us to

estimate severity of feelings of loss, but qualitative methods are necessary for identifying how this loss is experienced by an individual.

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Incidence and prevalence of post-stroke insomnia: a systematic review and meta-analysis

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Background and aims: Problems with sleep are reported to be common after stroke but the incidence and prevalence of insomnia and insomnia symptoms following stroke is not yet established. The aim of our review was to conduct a systematic review and meta-analysis of the incidence and prevalence of insomnia and insomnia symptoms in individuals affected by stroke.

Method: We searched seven main electronic databases using a concept based search strategy with medical subject headings (MeSH) and keywords relating to stroke and insomnia to identify studies from inception to September 25, 2018. The protocol was registered with PROSPERO, registration CRD42017065670.

Results: No studies examining incidence of post-stroke insomnia were identified. Twenty-two studies on prevalence of insomnia or insomnia symptoms including data from 19,125 individuals with stroke were included with fourteen studies suitable for inclusion in the meta-analysis. Meta-analysis indicated pooled prevalence of 38.15% (CI 30.04–46.60)

with significantly higher prevalence estimates for studies using non-diagnostic tools, 40.70% (CI 30.96–50.82) compared to studies using diagnostic assessment tools 32.21% (CI 18.5–47.64). Greater insomnia symptoms were indicated in those with comorbid depression and anxiety.

Conclusion: The prevalence of both insomnia and insomnia symptoms were found to be considerably higher in stroke survivors compared to previous prevalence estimates in the general population. Studies investigating the incidence, insomnia symptom profile and changes in insomnia prevalence over time are needed to inform clinical practice and to encourage tailored interventions that consider this symptomatology. Recommendations for further research and practice points for clinicians will be provided.

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Session 2: Datablitz

Psychometric properties and feasibility of the Clinician's Rating Scale for evaluating Impaired Self-Awareness and Denial of Disability after brain injury (CRS-ISA-DD)

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Background and aims: Awareness deficits are common after traumatic brain injury (TBI). The Clinician's Rating Scale for evaluating Impaired Self-Awareness and Denial of Disability after brain injury (CRS-ISA-DD) is developed to distinguish between awareness deficits accounted for by neurocognitive factors and awareness deficits influenced by psychological factors. This study aimed at evaluating its internal consistency and feasibility, inter-rater reliability and convergent validity.

Method: 78 community-dwelling Dutch patients with TBI (3.1 years post injury) participated in this cross-sectional study. Main measurement instrument was the CRS-ISA-DD. Other measures of awareness of deficits, cognitive functioning, avoidance coping, defense mechanisms, anxiety and feasibility also were used.

Results: Internal consistency was good (Cronbach's α = .69 to .83). On average it took less than 10 minutes to complete the scale and raters found it easy to do. Inter-rater reliability was excellent for both the ISA ($ICC_{(1,2)} = .928$) and DD scale ($ICC_{(1,2)} = .810$). More severe ISA was associated with worse scores on neuropsychological tests ($\rho = -.22$ to $-.42$). More severe DD was associated with less anxiety ($\rho = -.21$).

Conclusions: The CRS-ISA-DD has good inter-rater reliability, internal consistency and feasibility. Results regarding convergent validity were mixed. One reason may be that variability in awareness scores was low; only few patients had severe awareness deficits. Future research including more patients with moderate or severe ISA or DD is necessary to further confirm that the CRS-ISA-DD can be used to make a clear

distinction between patients with awareness deficits accounted for by neurocognitive factors and awareness deficits influenced by psychological factors.

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The effect of non-invasive brain stimulation on post-stroke cognitive function: a systematic review

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Background and aims Cognitive impairment after stroke has been associated with lower quality of life and independence in the long run, stressing the need for methods that target impairment for cognitive rehabilitation. The use of non-invasive brain stimulation (NIBS) on recovery of language functions is well-documented, yet the effects of NIBS on other cognitive domains remain largely unknown. Therefore, we conducted a systematic review that evaluates the effects of different stimulation techniques on domain-specific (long-term) cognitive recovery after stroke.

Method Three databases (PubMed, Embase, and PsycINFO) were searched for articles (in English) on effects of NIBS on cognitive domains, published up to January 2018.

Results Forty articles were included: randomized controlled trials ($n=21$),

studies with a crossover design (n=9), case studies (n=6) and studies with a mixed design (n=4). Most studies tested effects on neglect (n=25). The majority of the studies revealed treatment effects on at least one time point post-stroke, in at least one cognitive domain. Studies varied highly on the factors time post-stroke, number of treatment sessions and stimulation protocols. Outcome measures were generally limited to a few cognitive tests.

Conclusions Our review suggests that NIBS is able to alleviate neglect after stroke. However, those results are still inconclusive and preliminary for the effect of NIBS on other cognitive domains. A standardized core set of outcome measures of cognition, also at the level of daily life activities and participation, and international agreement on treatment protocols, could lead to better evaluation of the efficacy of NIBS and comparisons between studies.

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Word retraining in a case of alcohol-related brain damage: maintenance and transference to everyday activities

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Background and aims: Word retraining programs have been shown to improve naming ability in patients with post-stroke and progressive aphasia. Here, we investigate the benefits of this approach for a younger patient with alcohol related brain damage (ARBD), who was experiencing difficulty retrieving words important to his activities of daily living.

Method: A 22-year-old, Danish-speaking man, DJ, completed a 4-week “Look, Listen, Repeat” program run on a computer. A multiple baseline-across-behaviours experimental design was implemented, using matched sets of 30 photographs, where two sets were sequentially trained (10 sessions over 2 weeks per set), while the third remaining untrained. Photographs depicted household items or those sold in a bike shop (where DJ wanted to work). Naming was assessed at baseline, immediate post-intervention, 1 and 4 months after the end of training. Generalisation was assessed pre- and post-intervention using a video scene description task. Finally, an ecological test was completed 2 months post-training to determine transfer to naming the actual items in the kitchen or bike shop.

Results: Naming accuracy of trained sets improved significantly after each 2-week block of intervention ($p < .001$) and was maintained over the follow-up period ($p = .375$), while control words were unchanged ($p = 1.00$). Although DJ’s improvement in retrieving trained words on the video description generalisation task did not reach significance ($p = .289$), his ability to name actual objects in their natural setting was clearly greater for trained (85%) versus untrained items (64%). **Conclusions:** Short, intensive word retraining programs can improve word retrieval in ARBD.

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Focus on feelings: A mixed-methods evaluation of an emotion-oriented brain injury treatment programme

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Background and aims: Acquired brain injury (ABI) is a leading cause of death and disability worldwide. Many treatment options and rehabilitation programmes

are available to help survivors adjust to, and manage, post-injury impairment. However, these are often cognitively-based, and do not emphasise the socio-emotional consequences that are typically most burdensome for both patients and their relatives. To address this, the Brain Injury Solutions and Emotions Programme (BISEP) was developed. The BISEP is a 7-week group programme that is built upon a traditional psycho-education group approach, but with a strong emphasis on *emotion* and *emotion regulation* (ER).

Method: A total of 35 participants with ABI were recruited from the North Wales Brain Injury Service and took part in this within-subjects pre-post design study. All completed an emotion regulation task, and several emotion-based questionnaires before, and after, attending the BISEP, in groups of 5-8.

Results: Quantitative evidence suggests that the BISEP is a (significantly) effective approach for improving anxiety symptomology, self-report ER, and some aspects of ER from the experimental task. Qualitative data from post-intervention interviews are consistent with these findings, and highlight the themes of *community*, *emotion regulation*, and *positivity*: which are potential strands for further investigation.

Conclusions: These findings are encouraging and suggest a potential avenue for treatment which addresses a core source of patient and family distress.

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Stepping into a patient's confabulations to step out of them together: An MDT approach to treating confabulations

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Background and aims: P was a successful manager. Following a subarachnoid haemorrhage, he was admitted to a brain injury unit with severe cognitive

communication disorder, severe executive function, memory and attention impairments. His main barrier to engaging with rehabilitation was his severely reduced insight and his confabulations. He believed he worked in the hospital, frequently absconded, required 24-hour one-to-one support, and did not engage in conventional therapeutic intervention. This case reflection discusses a multidisciplinary (MDT) approach to prioritising treatment of P's confabulations, exploring the factors that led to success.

Method: After initially focusing on building up P's tolerance of therapists and orientation, we gradually built attention and insight through activities that he could relate to in "business mode". This included interviewing staff, reviewing the unit's website, and later, writing blog entries about his experience of brain injury. Alongside this, we carried out cognitive assessment, functional practice in own home, facilitated community access, and implemented MDT-wide behavioural and communication guidelines.

Results: By discharge, P acknowledged he was a patient, engaged in an intensive brain injury education group programme, discussed his brain scans with the doctor, and explained his experience of confabulations and brain injury to others. P participated in discharge planning to ongoing rehabilitation with the hope of eventual home discharge.

Conclusions: Despite widely held best practice not to collude with confabulations, the MDT found that stepping into P's confabulations, using recognisable language/formats (e.g. agendas, minutes, Outlook), enabled staff to build trust, insight and eventually reduce his confabulations.

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Cingulate cortical thinning as an early marker of brain damage and cognitive impairment in early diagnosed Multiple Sclerosis patients

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Background and Aims: Cortical Thinning (CT) represents a feasible index of cortical gray matter damage obtained through Magnetic Resonance Imaging (MRI). Although CT represents an early feature in Multiple Sclerosis (MS), very little is known about its relationship with neuropsychological performance in this clinical population, especially at initial stages of the disease. We aimed to examine CT in a group of early-diagnosed Relapsing Remitting (RRMS) patients in comparison with a Healthy Control (HC) group and furthermore, its relationship with cognitive performance.

Methods: We recruited a sample of 18 relapsing-remitting RRMS patients and 18 HC matched in gender, age and Intelligence Quotient (IQ). All participants were assessed with Matrix Reasoning Subtest (WAIS-III) and Brief Repeatable Battery of Neuropsychological Tests (BRB-N). Individual z-scores for each cognitive domain assessed by BRB-N were calculated and CT was obtained through CAT-12 toolbox using 3D T1-weighted scans. Two-sample t-test was performed in SPM v.12 to assess significant differences in regional CT between groups. Results were presented with $p < 0.05$ FDR-cluster corrected with an auxiliary threshold of $p < 0.001$.

Results: Compared to HC, RRMS patients show a poorer performance in neuropsychological tests assessing information processing speed. In addition, significant differences in CT were found at posterior cortical areas and posterior and middle regions of cingulate cortex in RRMS group, which were inversely correlated with attentional/executive z-scores.

Conclusions: Posterior and middle cingulate CT represents an early feature of gray matter damage in early diagnosed RRMS patients and is related with their cognitive status.

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Session 3: Understanding and improving social participation

Using social identity mapping to understand the impact of brain tumour on social groups and identity: A qualitative study

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Background and aims: Social groups can protect against the detrimental effects of brain tumour on depression; yet, people with brain tumour experience social losses that are associated with psychological distress. This study aimed to explore peoples' experiences of changes in social networks after brain tumour using social identity mapping techniques. Semi-structured interviews explored the meaning and function of social networks.

Method: 20 people with primary brain tumour (35% benign; 15% grade II; 20% grade III; 30% grade IV) were purposively recruited based on age, gender and tumour-type. Participants completed two semi-structures interviews, 3 months apart, including developing a visual social map to characterise their social networks (i.e. importance, function, meaning). Guided by phenomenology, social maps and interview transcripts were coded and analysed to identify major themes.

Results: Four major themes emerged. The first depicted continuation and stability of social networks with enduring and supportive networks and a maintained sense of identity. The second theme described maintenance and expansion of social networks with supportive pre-existing networks, forming of new social networks and integration of old and new identities. The third theme described loss and ongoing disconnection from social networks with associated sense of isolation and loss of previous identities. The fourth theme described a loss of previous social networks and rebuilding of new connections with a shift towards a new identity.

Conclusions: Social losses were distressing and led to negative identity change, however those able to maintain, expand or rebuild their social networks reported continuation or positive changes in their identities.

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Activities and participation six months after mild traumatic brain injury in children and adolescents: The Brains Ahead study, a prospective longitudinal cohort study

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Background and aims. Approximately 20% of children experience post-concussive symptoms (PCS) six months after Mild Traumatic Brain Injury (MTBI) and beyond. PCS after MTBI has been studied thoroughly, but little is known about activities and participation in children after MTBI. This study aimed to investigate the natural course of activities and participation of children up to six months after a mild traumatic brain injury.

Method. Participants were 302 children diagnosed with MTBI aged 6-18 years old and their parents recruited at Emergency Rooms. Outcome measures were activities and participation assessed with the Child and Adolescent Scale of Participation (CASP) and the Children's Assessment of Participation and Enjoyment (CAPE) filled out by participants at two weeks, three months and six months post-MTBI. Because of a ceiling effect, the primary outcome measure (CASP) was divided into deviant (not maximum score) or full functioning.

Results. Friendman, Cochran's Q, and MC Nemar's tests (CASP) and Repeated Measures ANOVA's (CAPE) show a significant increase on activities and participation between two weeks and three and six months post-MTBI. Based on the parents' perspective, 67% of the children returned to full functioning at six months post-injury, with only 38% of the children themselves.

Conclusions. Findings indicate that most

children return to maximum level of activities and participation over time post-MTBI, particularly during the first three months post-MTBI, and remains stable hereafter up to six months post-MTBI. Currently we are analysing the predictive value of personal, injury-related, and environmental factors on activities and participants.

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A Chilean study on social isolation after acquired brain injury

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Background and Aims: During the chronic phase social isolation is a common problem among brain injury survivors, relating to low levels of quality of life and emotional symptomatology. In this talk I will present data from a Chilean study a) comparing structural, functional and subjective measures of social isolation between people with and without brain damage and b) exploring the relationship between social isolation and socio-emotional variables.

Methods: 51 individuals with acquired brain damage (20 TBI, 29 Stroke, 2 Tumor) where compared with age and education matched healthy controls in measures of structural, functional and subjective social isolation, as well as Quality of Life, Psychological Well-Being and emotional symptoms. Participants with acquired brain damage where living in the community and time since injury was 57 months on average.

Results: There were no group differences on the overall size of the network. The ABI group had a larger family network and a smaller friendship network. ABI patients reported less frequency of contact and satisfaction with friends. There were no differences in perception of support, time spent alone and loneliness. The ABI group exhibited lower levels of social participation/hobbies, lower scores on

measures of QOL, Emotional-Wellbeing and higher levels of depression. The size of the friendship network was positively associated to emotional well-being, engagement in prosocial activities and hobbies.

Conclusion: This study replicates findings showing that non-kin network is the most vulnerable after brain damage. It also presents novel evidence on the relationship between changes in the friendship network and socio-emotional variables.

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Rehabilitation Interventions for improving social participation after traumatic brain injury: Systematic review and meta-analysis

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Background and aims: The extent to which individuals who suffered traumatic brain injury (TBI) successfully integrate in the community and resume social and professional roles is considered one of the most important treatment outcomes. However, the effectivity of rehabilitation interventions in improving social participation remains unclear. We aimed to systematically review the literature and to analyze the data from randomized controlled trials (RCTs) focusing on social participation after TBI.

Method: Four online databases were searched for RCTs of interventions in TBI patients where social participation was a primary or secondary intervention outcome. Reference lists of relevant review articles were hand searched for additional RCTs. Pre- and post-intervention means and standard deviations of social participation outcomes were extracted along with study characteristics and information regarding methodological quality.

Results: Data extraction is finished. Title and abstract of 3763 records were screened, after which 281 full-text articles were assessed for eligibility. In total, 24 RCTs will be included in the quantitative synthesis (meta-analysis). At the conference, we will present an overview of patient characteristics and the measures used in these RCTs to assess social participation and discuss the interventions that have been used to improve participation.

Conclusions: This ongoing systematic review and meta-analysis represents a much-needed effort to evaluate the effectiveness of rehabilitation interventions in improving social participation after TBI. Results will be relevant for clinicians, researchers, and policy makers.

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Session 4: Key factors in rehabilitation: feedback, working alliance, training others

Non-confrontational feedback to increase awareness of deficits during cognitive rehabilitation after brain injury

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Background and aims: Patients who receive cognitive rehabilitation after acquired brain injury often lack awareness of their deficits. These individuals have trouble understanding the changes caused by the brain injury and the impact this has on them and their surroundings. They are less motivated for therapy and show less participation in therapy, which negatively affects rehabilitation outcomes. Adequate treatment of impaired self-awareness of deficits is necessary but literature on evidence-based treatments is limited. This study investigates the effects of a new intervention during cognitive rehabilitation on self-awareness of deficits.

Method: A multi-center randomized controlled trial including 118 participants compares care as usual to a new intervention. This new intervention consists of a combination of psycho-education, cognitive tasks and non-confrontational feedback.

Short-term effects are investigated at the start of cognitive therapy, three and six weeks later. These include effects on self-awareness of deficits (Self-Regulation Skills Interview; Patient Competency Rating Scale), motivation for therapy scored by the patient (Motivation for Traumatic Brain Injury Rehabilitation Questionnaire) and the cognitive therapist (on a 10-point Likert scale), as well as participation in therapy (Pittsburgh Rehabilitation Participation Scale). Long-term effects are studied three, six, nine and twelve months after baseline and include effects on self-awareness of deficits, quality of life (Stroke Specific

Quality of Life Scale), social participation (Utrecht Scale for Evaluation of Rehabilitation – Participation) and mood (Hospital Anxiety and Depression Scale).

Results & Conclusions: The design of the study will be presented, including the content of the new intervention and first experiences of the trial.

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A systematic review of training for communication partners of people with traumatic brain injury (TBI)

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Background: Communication impairments are prevalent after TBI with incidence rates above 75%. Provision of education and training to communication partners is a key part of rehabilitation for people with TBI and can help to improve their communication skills. Objective: To summarise the current evidence on communication partner training and its effectiveness for improving outcomes for people with TBI and/or their communication partners.

Method: A systematic literature search was conducted across nine databases (AMED, CINAHL, EMBASE, Medline/EBSCOHST, PsycINFO, PsycBITE, PsycARTICLES, PubMed, Scopus) to August 2018. Studies were included if they described an intervention directed at adult communication partners where the primary focus of the program was on improving the communication skills for adults following TBI. Relevant data were

extracted and studies were critically appraised using the Physiotherapy Evidence Database (PEDro) scale or Risk Of Bias in N-of-1 Trials (ROBiN-T). Interventions were described using Template for Intervention Description and Replication (TIDieR).

Results: Eight articles met the eligibility criteria. These articles reported on six studies including three RCTs, two non-randomised group comparisons and one single-case experimental design. All studies reported some positive change in the skills of the person with TBI and/or their communication partner, who included family members, police officers, paid carers and sales assistants. The methodological quality of the studies was varied and intervention description poor.

Conclusions: The articles provided some quantitative evidence for the effectiveness of training communication partners. However, greater methodological rigour is needed, more clearly described interventions to ensure replication into clinical practice, and more consistent follow-up post-treatment.

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Factors associated with working alliance and homework compliance and their association with response to cognitive behavioural therapy for anxiety and depression following traumatic brain injury

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Background and Aims: Anxiety and depression are common following traumatic brain injury (TBI). Cognitive

behavioural therapy (CBT) may alleviate symptoms. However, it is not known how cognitive impairments impact therapy processes. This study examined working alliance and homework compliance and their association with response to CBT-ABI.

Method: The study used data from the Ponsford et al. (2016) RCT examining efficacy of Motivational Interviewing and CBT-ABI for people with TBI. Data from 31 participants were utilized (177 CBT audio-recordings). Participants (70.97% males) had diagnoses of depression, anxiety or both, mean age 47.3 years, mean PTA 22.08 days and were mean 2.97 years post-injury. Working Alliance was assessed using Working Alliance Inventory - Short Form - Observer version (WAI-SR-O) over 9 sessions. Homework compliance was assessed using the Homework Rating Scale-Revised. Pre-CBT learning and memory (BIRT List Learning) and executive function (Hayling) were assessed. HADS anxiety and DASS depression scores measured anxiety and depression symptoms respectively.

Results: Multilevel linear regressions revealed that greater time post-injury was associated with stronger working alliance. Homework engagement was associated with longer time post-injury, older age, stronger working alliance and therapist competence in reviewing homework. Older age, stronger client homework engagement and higher therapist competence in reviewing homework were associated with greater reduction in HADS anxiety. Longer time post-injury, older age and stronger client homework engagement were associated with greater decrease in DASS depression.

Conclusions: Whilst cognition did not impact therapy processes or outcomes, longer time post-injury conferred benefit for working alliance, homework compliance and treatment response.

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Neuropsychological assessment feedback as a psycho-educational therapeutic intervention: a randomised controlled trial with cross-over and follow-up in patients with multiple sclerosis

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Background and aims: There is no strong evidence supporting the direct therapeutic benefit of neuropsychological assessment (NPA) with feedback for patients with neurological disorders; the evidence currently relies mostly upon satisfaction surveys. This study investigated the psychological benefits of NPA feedback in multiple sclerosis (MS) using a semi-structured, collaborative feedback intervention delivered by clinical neuropsychologists experienced in MS.

Method: This was a randomised controlled trial with crossover and follow-up. Seventy-one MS patients were randomly allocated to one of two groups: NPA with feedback or “sham wait-list” control. The primary patient hypotheses were that NPA with feedback would lead to improved knowledge of cognitive functioning and improved coping. A range of primary and secondary psychological measures was used to evaluate these, and other, hypotheses. Outcome instruments were administered by a research assistant blinded to group allocation.

Results: At one week post-NPA there were no significant group-by-time interaction effects. Importantly, there was no significant deterioration in psychological status despite most patients receiving “bad news” confirming impairment. This, along with high satisfaction ratings, confirmed the safety and acceptability of the feedback protocol. At one month follow-up, results

of within-subjects analyses over time, which used the combined intervention and control sample, showed that patients improved in their knowledge of cognitive functioning, MS self-efficacy, and mood.

Conclusions: These results provide modest evidence that NPA feedback is an effective psycho-educational intervention in MS. This places NPA feedback within the “wellness” framework of MS management in its potential to improve knowledge, psychological wellbeing, and adjustment over time.

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Development and evaluation of participant led videos to train support workers of people with severe acquired brain injury (ABI)

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Background and aims: Participant Led Videos (PLV) give people with disability the opportunity to self-direct the training of their support workers. The process of creating PLV includes supporting a person to think about and express their personal goals and translate them into constructive approaches to inform support workers about how the person wants to be supported. Throughout the process, the choices, thinking and, where possible, the language, are that of the person with disability. This study evaluated a project that set out to co-design, pilot, and document a process for producing PLV with people with ABI and resultant cognitive and communication impairments.

Method: We used qualitative and quantitative methods to document the experience and measure satisfaction from multiple perspectives: five primary participants, five close supporters and four staff facilitators. Primary participants

had severe ABI and high support needs. Participants were interviewed twice (1-week and 4-months after production of the videos).

Results: All participants reported high levels of satisfaction with the process and strongly endorsed its usefulness. Primary participants and their supporters recommended the process for others (average rating exceeded 8/10). Thematic results revealed the importance of people with disability having a voice and taking control in directing their lives, personal growth through participation and engagement, and feeling validated through the experience.

Conclusions: Use of PLV has much potential to improve the delivery of support and maximise outcomes by enabling people with cognitive and communication impairments to have choice and control, set their own goals and direct their supports.

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Session 5: Datablitz

The incidence of cognitive impairment and longitudinal cognitive change in patients with breast cancer: a systematic review of longitudinal studies

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Background and aims: Breast cancer (BC) patients may develop cognitive impairment that affects quality of life during and after the diagnosis and treatment period. The objective of this

study was to analyze 1. incidence of cognitive impairment 2. cognitive changes over time at an individual level.

Methods: A systematic search within Medline and Embase was conducted by including longitudinal studies on BC that i) reported incidence of cognitive impairment before chemotherapy (CT) and after CT ii) used standardized neuropsychological tests iii) were published from inception until 2019 in English, Dutch or Spanish. We used the original authors' criteria for cognitive impairment.

Results: The titles and abstracts of 779 articles were screened, which resulted in the inclusion of seventeen studies. The incidence of cognitive impairment in BC patients was 27% before CT, 21% after CT and 21% at six months' follow-up (FU). When adjusted for baseline cognitive functioning, 24% of the patients showed cognitive decline from baseline to post-CT, 21% declined from baseline to six months FU and 24% declined from baseline to one year FU.

Conclusions: This study shows that one out of four BC patients show cognitive impairment prior to CT treatment, suggesting that cognitive impairment is not specifically related to CT. Furthermore, a significant number of patients show cognitive decline during disease course (21% at six months, 24% at one year FU). This study shows that assessment of cognitive functioning, ideally over time, in BC patients is crucial, and may help rehabilitation interventions or evaluate work limitation.

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Virtual reality interventions to improve quality of life after stroke: a meta-analysis of randomized controlled trials

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Background and aims: Stroke is the main cause of disability in adulthood. Recently, the improvement of Virtual Reality technologies has been used in the rehabilitation of stroke patients. The present study aimed to evaluate the effectiveness of virtual reality on the quality of life of stroke patients.

Method: A systematic review and a meta-analysis of randomized controlled trials (RCT) was conducted. The search was performed during March 2018 in the following databases: Pubmed, PEDro, Web of Science, Scopus, The Cochrane Library and Medline at EBSCO. The inclusion criteria were: (i) RCTs; (ii) English articles published between 2007 and March 2018; (iii) Virtual reality interventions. PEDro scale was used to measure the methodology quality.

Results: A total of 8 randomized clinical trials with a total of 430 patients (control group n=214; intervention group n=216) were included in the systemic review, of which 5 contributed information to the meta-analysis. PEDro scores showed a good methodological quality of the studies (ranged from 5 to 10). All pooled analyses were based on random-effects models. Statistical analysis showed not favourable results for the Modified Barthel Scale [Standardized mean difference (SMD)=-2,3909; CI95%:(-5,0399;0,2581)], and Stroke Impact Scale [SMD=-0,5664; CI95%:(-3,7031;2,5704)]. Therefore, no significant benefit was found on improving quality of life.

Conclusions: The results obtained seem to confirm that virtual reality interventions are not effective to recover the quality of life after stroke. Due to meta-analyses are based on a limited number of trials, the results should be treated with considerable caution.

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Orbitofrontal circuit, mental disorder and dissociation

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Background and aims: The

symptomatology of the orbitofrontal circuit (OPFC) is characterized by deficits in inhibitory control and manifestations in emotional behavior. Patients with mental disorder (MD) and dissociative symptoms (DS) have alterations in the processing and emotional, behavioral and personality regulation. In this study, we analyzed the involvement of OPFC in these patients.

Method: The clinical sample consists of 60 participants with MD and DS and the non-clinical 60 controls. With an observational cross-sectional, the mean scores of the Stroop Color and Word Test (SC/SW) and Labyrinth Test (LT) tests were compared in both samples. The correlations between the dissociative typology and the OPFC were analyzed in the clinical sample.

Results: The results show statistically significant differences between participants: SC ($t=6.096$, $p<.000$), SW ($t=10.325$, $p<.000$) and LT ($t=5.927$, $p<.000$). Significant correlations are given for the cases of psychological dissociation (PD) and the inhibitory control score ($r=.423$; $p<.001$), as for the cases of somatoform dissociation (SD) and the score in the follow-up of rules ($r=.371$; $p<.002$).

Conclusions: Participants with MD and DS have shown little inhibitory control and low ability to respect limits and follow rules compared to controls. The association between the OPFC and the PD reveals deficits with poor control of waiting, impulses and interference. The SD is associated with alterations characterized by irritability, emotional

lability and distractibility. According to these findings, the OPFC could be dissociated according to the dissociative typology, manifesting different types of emotional behavior.

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The relation between effort and fatigue in traumatic brain injury patients

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Background and aims: Increased feelings of mental fatigue in traumatic brain injury patients (TBI) are assumed to be due to investment of more effort to maintain task performance. Alternatively, these feelings could be due to a higher vulnerability to the fatigue-inducing effects of effort. This study aimed to determine whether the same amount of effort leads to increased feelings of fatigue in patients than controls.

Methods: TBI patients (N=20) and healthy controls (N=20) complete an adaptive N-back task to induce fatigue. Task difficulty adjusts to performance, allowing both groups to invest comparable amounts of effort. Participants report their momentary fatigue before and after the task using a visual analogue scale and report, the amount of effort needed to complete the task using the Rating Scale Mental Effort.

Results: Preliminary results of 28 (14/14) participants showed that fatigue and effort levels were higher in TBI patients compared to controls. There was, however, no significant difference between groups in mean pre- to post-task changes in fatigue. Multiple regression analysis showed that post-task fatigue was positively related to effort in both groups. Pre-task fatigue was only related to effort in patients but not in controls.

Conclusion: TBI patients show higher levels of fatigue but there seems to be no difference in the vulnerability to the fatigue-inducing effects of effort between TBI patients and controls. Final results of this study will be presented at the conference.

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Participation as the ultimate outcome of paediatric rehabilitation: a systematic review of measurement properties

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Background and aims. Interest in participation as the ultimate outcome of paediatric rehabilitation is increasing rapidly. Current literature suggests to define participation by two constructs: 'attendance' and 'involvement'. Multiple instruments to assess participation have been and are being developed. When selecting instruments in research and clinical practice, measurement properties are essential to consider for valid and reliable assessment. The present review provides a comprehensive overview of participation measures for children with frequently occurring neurological conditions (i.e. acquired brain injury (ABI) and cerebral palsy (CP)), and their measurement properties.

Method. The systematic review adhered to the PRISMA statement. Four electronic databases were searched, focusing on measures of participation in social interactions and activities, corresponding to ICF subdomains of interpersonal relationships, major life areas, and community and social life as well as the constructs of attendance and involvement. Quality of psychometric studies was assessed per the COSMIN guideline.

Results. We identified 33 instruments and instrument subscales that had been used to assess participation in children with ABI or CP. Of these, 21 have been evaluated for psychometric properties in these populations. Multiple instruments used to assess participation did not align with novel participation concepts such as attendance and involvement.

Conclusions. While instruments are available for a wide age range (3-18 years) and various social life areas (home, school, and community), psychometric quality varies. Combining knowledge on measurement properties and content provides guidance for instrument selection for future research and clinical practice: examples will be presented.

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Predicting use of digital, nondigital, and interpersonal memory aids in everyday prospective memory tasks

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Background and aims: Prospective memory (PM) failures can have serious and life-threatening consequences, especially for individuals with cognitive impairments who experience frequent PM failures. Individuals may compensate for PM failures by using nondigital aids, interpersonal reminders, emerging digital reminder technology, or a combination thereof. We aimed to investigate the frequency that these types of aids are used and factors that predict individuals' choice of memory aid usage.

Method: Participants were 673 adults from the general population. Participants completed online or paper questionnaires containing a checklist of PM aids used in the previous month, the Australian Personality Inventory, Martin and Park Environmental Demands Questionnaire, Comprehensive Assessment of Prospective Memory, and demographic questions. Multinomial logistic regression was used to predict use of memory aids.

Results: Participants reported using between 1 and 27 memory aids ($M = 10.15$, $SD = 4.17$) in the previous month. A combination of digital, nondigital, and interpersonal reminders was the preferred choice of memory aid usage (81%) over digital-only (0.3%), nondigital-

only (0.9%) or interpersonal reminders only (0.6%). Choice of memory aid usage was best predicted by age, gender, neuroticism, conscientiousness, and self-reported PM.

Conclusions: The findings indicate that the general population rely on a multitude of digital, nondigital, and interpersonal reminders, often used in combination, to assist them in everyday PM tasks. Further research is needed to investigate the effectiveness of using single as opposed to multiple memory aids. This research has important implications for the selection of compensatory memory aids in rehabilitation settings.

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Session 6: Rehabilitation for children and adolescents: Goals and effectiveness

The clinical and cost effectiveness of Teen Online Problem Solving for adolescents who have survived an acquired brain injury in the UK: A randomised controlled feasibility study (TOPS-UK)

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Background and aims: We report the findings of a feasibility randomised controlled trial (RCT), evaluating the feasibility of recruiting adolescents with acquired brain injury (ABI), the acceptability of an online problem-solving intervention in the UK, and the feasibility and acceptability of collecting data online. If feasible, a definitive trial will test the clinical and cost effectiveness of the intervention.

Method: Twelve adolescents (12-18 years) and their families identified at five National Health Service Trusts were randomised (1:1 ratio) to receive the online intervention or treatment as usual. Participants completed screening, baseline, and 17-week follow-up online questionnaires. Qualitative interviews were also conducted.

Results: (i) the study aimed to randomise 50 participants, however, only 12 were randomised, with one site only recruiting one participant; (ii) some participants reported having difficulty completing the online questionnaires but that telephone support was helpful; (iii) randomisation was acceptable; (iv) 5 (of 6) participants in the intervention arm completed all sessions, with one family not starting due to a change in circumstances; and (v) 17-week follow-up data were obtained for 11 (of 12) parents and 7 (of 12) adolescents. Qualitative data indicated that the intervention was acceptable and changes to the study procedure were suggested.

Conclusions: This study demonstrates that the online problem-solving intervention is acceptable to adolescents with ABI and their families in the UK. The main difficulty was recruitment of adolescents and their families. Potential solutions will be considered, with the aim of conducting a definitive RCT that will be able to recruit to target.

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Effectiveness of the Brains Ahead! intervention: A randomized controlled trial in school-aged children with mild

traumatic brain injury and caregivers

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Background and aims: Most children recover completely after mild traumatic brain injury (MTBI), but approximately 20% of children experience post-concussive symptoms (PCS) six months after the injury and beyond. These symptoms can lead to limitations in activities and participation. In this study, the effect of an intervention aimed to prevent long-term problems on activities and participation in children and adolescents post-MTBI, was compared with usual care, consisting of a concise information brochure. The intervention consists of an inventory of symptoms, standardized- and individualized psychoeducation and follow-up.

Method: Participants were 124 children diagnosed with MTBI aged 6-18 years old and their caregivers. Primary outcome measure was activities and participation assessed with the Child and Adolescent Scale of Participation (CASP) filled out by the parents at two weeks, three months and six months post-MTBI. Secondary outcome measures were fatigue, PCS,

posttraumatic stress symptoms (PTSS), and quality of life (QOL), measured at two weeks and six months post-MTBI.

Results: Generalized Estimated Equations showed that both groups improved over time but there was no significant difference between the groups on the primary outcome measure, activities and participation. Mann Whitney U-tests showed that the intervention group reported significantly less fatigue, PCS, and PTSS, and a better QOL compared to the control group at six months post-MTBI.

Conclusions: Superiority for the intervention over usual care was found for secondary outcome measures only. Lack of effect on the primary outcome measure may be due to the ceiling effects of the CASP.

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Treatment for insomnia in adolescents with moderate to severe traumatic brain injury: A feasibility multiple baseline single-case series

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Background and aims: Sleep disturbances are frequent, persistent, and reduce

quality of life in adolescents with traumatic brain injury (TBI). Insomnia is common following paediatric TBI. Insomnia treatment could lead to functional improvements; but no treatments have yet been developed and applied to this population. The aims of this study are to (i) establish the feasibility and acceptability of cognitive behavioural therapy for insomnia (CBT-I), and (ii) explore efficacy of CBT-I on sleep, fatigue, mood, and cognition in adolescents with insomnia and TBI.

Method: Five adolescents (aged 11 to 13 years) with moderate to severe TBI randomised to 7- or 14-days baseline underwent CBT-I (4 weekly sessions) and completed follow-up assessments. Feasibility and acceptability were compared to a-priori set criteria. Efficacy was determined by (i) visual inspection and statistical analysis of time-series graphs using SSD for R for daily sleep data, and (ii) comparing reliable change indices to changes in scores obtained on questionnaires assessing sleep, fatigue, mood, and cognition from baseline to follow-up.

Results: Feasibility and acceptability met or exceeded a-priori set criteria for recruitment, treatment completion, adolescents' and parents' satisfaction, and acceptability ratings. Significant improvements in sleep were found during treatment and maintained on follow-up, in 3 out of 4 adolescents who completed the treatment. All participants showed significant reductions in fatigue. Improvements in mood and cognition were also found.

Conclusions: CBT-I is feasible, acceptable, and may be an efficacious treatment for adolescents with moderate to severe TBI. Large randomised controlled studies are needed. **Correspondence:** Suncica Sunny Lah; suncica.lah@sydney.edu.au

Understanding the Neuropsychological Rehabilitation Goals of Children with acquired brain injury through the International Classification of Functioning, Disability and Health: Children and Youth Version

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Background and aims: To increase understanding of the community neuropsychological rehabilitation needs of young people with Acquired Brain Injury (ABI) through analysis of their goals.

Method: Goal data was extracted from the clinical records of 98 children with ABI (59% male, 2-19 years old, 64% Traumatic Brain Injury, TBI; mean time post injury 3.65 years) within a community neuropsychological rehabilitation service. Three hundred and twenty-six neuropsychological rehabilitation goals were identified and coded using the International Classification of Functioning, Disability and Health: Children and Youth Version (ICF-CY). Analyses summarised distribution of goals across the ICF-CY and associations with demographic and injury-related variables.

Results: 52% of goals were related to Activities and Participation (AP), 28% Body Functions, 20% Environmental Factors (EF) and <1% Body Structures. The three most common classifications within these domains were 'major life areas' (16%), 'mental functions' (26%) and 'support and relationships' (10%), with 'school education' the most common two-level classification. The number of EF goals increased with age at assessment ($V=0.14$)

and was higher amongst children with non-traumatic causes of ABI ($V=0.12$).

Conclusions: Young people with ABI have a range of neuropsychological rehabilitation goals predominantly focused on activities and participation, with an important emphasis on environmental or contextual factors. More detailed levels of classification revealed common goals in the domains of mental functions, relationships and school education. The findings suggest community rehabilitation for children with ABI should attend to neuropsychological needs in contexts such as family and school, with increased focus on relationships and environment through adolescence.

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Pharmacotherapy of traumatic childhood aphasia: Beneficial effects of donepezil alone and combined with intensive naming therapy

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Background and aims: Aphasia therapy is the only available treatment for childhood aphasia. Although this strategy promotes recovery, it remains to be explored whether the addition of a cognitive-

enhancing drug can augment and accelerate the benefits provided by aphasia therapy.

Method: We report a pharmacological treatment involving a 9-year-old right-handed girl who had chronic anomic aphasia associated with traumatic lesions in the left temporal-parietal cortex. We performed a single-subject, open-label design encompassing administration of the cholinergic agent donepezil (DP, 5 mg/day) alone (12 weeks), followed by a combination of DP and intensive naming training (INT) (2 weeks) and thereafter by a continued treatment with DP alone (12 weeks), washout, and another INT. Comprehensive language and neuropsychological evaluations were performed at baseline, at two endpoints (week 12 and week 26), and after washout of both interventions (week 34).

Results: Baseline evaluation disclosed marked naming impairment for nouns, executive and attention functions were also impaired. Treatment with DP alone significantly improved spontaneous speech, auditory comprehension, word and non-word repetition, and noun naming. Additionally, these interventions improved processing speed, selective attention, and concentration. Combined DP-INT further improved significantly more naming of treated nouns than of untreated ones. After washout of both interventions, most of these changes remained within the normal range concerning both normative data and scores obtained by healthy controls. There were no side effects of drug treatment. The patient obtained enough recovery to return to regular schooling.

Conclusion: Cholinergic augmentation alone and combined with INT improved anomia and related cognitive posttraumatic deficits.

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THURSDAY POSTERS

Transcranial direct current stimulation (tDCS) in patients with visual hemineglect. Experience in a Neurorehabilitation unit

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Background: Hemispatial neglect is a frequent symptom after a stroke with right hemispheric involvement (parietal lobe). It is defined as the inability to attend to stimuli from the contralateral space to the lesion and is based on the model of interhemispheric rivalry. tDCS increases cortical excitability and changes the neural structures in damaged areas of the brain, inducing neuroplasticity. Several studies have reported beneficial effect of tDCS for hemispatial neglect.

Aim: Describe the effect of tDCS on hemispatial neglect in patients in the subacute phase of a stroke.

Subjects and Methods: Descriptive study. tDCS protocol: 15 sessions anodal stimulation on right posterior parietal cortex (P4), return on P3. (Time: 20 min. Intensity: 1 mA). To evaluate the visuospatial hemineglect Line Bisection Test (LBT), Letter Cancellation Test (LCT) and Trail Making Test-A (TMT-A) were used. Outcome measures were assessed before and after treatment.

Results: Six patients with right hemispheric lesion. Age: 64.3 years (SD: 15.5). Time from the event to tDCS: 85.8 days. The patients had received an average of 23 cognitive rehabilitation sessions pretDCS. 83.3% of the patients improved their score in LBT (average: 1.3 points) and in LCT (average: 13.6 more localized stimuli). TMT-A: 66.6% of patients improved the execution.

Conclusions: Our results suggest that the effect of the anodic tDCS applied on the right posterior parietal cortex could improve the symptoms of hemispatial neglect, so the tDCS could be an adjuvant therapeutic modality to recover the symptoms of negligence. More studies are necessary to confirm these preliminary observations.

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How primary care can help stroke survivors with returning to work: focus groups with stakeholders from a UK community

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Aims and Background: There is limited evidence about how primary care can best enable stroke survivors to go back to work. We explored opinions of stakeholders from some UK community services on the role of Primary Care in overcoming the problem of successful return to work after stroke.

Methods: Four focus groups were recorded and transcribed. Participants were 18 people who were TIA/stroke survivors, carers, an employer representative, GPs, Occupational Therapists and clinical commissioners. Thematic coding enabled a framework analysis and creation of a table enabling comparisons between perspectives.

Results: Four themes were identified – barriers to return to work and awareness; role of GP, other support, and recommendations for improvement. Primary Care Clinicians were unaware of

the effects of invisible impairments, and of ways to effectively support patients' returning to work. Patients described that work adjustments were more straightforward for physical than invisible impairments; that large organisations provided more structured return to work support and that local neurorehabilitation services were beneficial. However, GPs were unaware of the option of referral to relevant services. All stakeholders welcomed greater involvement of primary care. Clinical commissioners noted that provision of OT was not a priority because of economic issues and problems are not acute. Suggestions for improvement included 1) a navigator to guide patients through available services. 2) A neurorehabilitation assessment integrated within the electronic record, highlighting invisible impairments. 3) A patient held shared-care plan.

Conclusion: Return to work is an interagency challenge requiring coordinated action. Primary care has the potential to support stroke survivors successfully return to work, and address inequalities in access to vocational rehabilitation support.

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Prediction of cognitive reserve based on complexity of work and time of exposition in an unemployed sample

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Introduction: Cognitive Reserve (CR) explains some differences in susceptibility to age-related cognitive decline and outcomes after acquired brain injury. Occupation, besides education, leisure and cognitive activities, is related to CR. Complexity of work has shown strong correlation with person's CR, but little attention has been paid to duration of

jobs. Aim: to determine the predictive value of the Complexity-Duration of Work (CDW) indices for CR.

Method: 85 unemployed people (54.1% female; \bar{x} age=42.19, SD=8.69) were interviewed for obtaining three CDW indices multiplying months at jobs by complexity of work: i) managing data, ii) people, and iii) things, according to the USA Dictionary of Occupational Titles. CR score was obtained by the CR-Questionnaire of Rami (2011) which include one question about the job's category with just 5 response options.

Results: Regression analysis showed two significant models: working with data ($R^2_{\text{adjusted}}=0.275$; $p<0.001$) and people CDW indices ($R^2_{\text{adj.}}=0.177$, $p=0.001$). Prediction power decreased in both when time was excluded (raw complexity with data: $R^2_{\text{adj.}}=0.167$, $p<0.001$; raw complexity with people: $R^2_{\text{adj.}}=0.072$, $p=0.009$).

Conclusions: Estimation of cognitive reserve based on occupation is much more accurate when complexity of job is combined with the time that people have been working. The time that people carried out a job should be included in questionnaires of CR. This imply that long-term unemployed might have fewer opportunities to achieve larger RC through their jobs. Since CR is a relevant indicator of prognostic in neuropsychological interventions for older adults, people with brain damage or unemployed, we need more studies about its key factors.

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Online cognitive stimulation with VIRTRAEL© compensates that Cognitive Reserve does not prevent flexibility deficit in elderly people

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Background and aims: Cognitive Reserve (CR) have showed protective role against cognitive component deficits.

Contradictory results have been found about this positive effect on the flexibility deficit in the elderly. This protective effect on flexibility is not present in other neurological conditions like as Multiple Sclerosis (Santangelo et al., 2019). Study aims were (A) to determine relationship between cognitive reserve and flexibility in elderly people and (B) the efficacy of a computerized training program to improve flexibility performance.

Methods: Sample for aim A: 136 elderly people (72.3% women), mean age=74 (SD=7.5); for aim B: 46 elderly people (80.4% women), mean age=71.5 (SD=6.2). Instruments. Assessment: Cognitive Reserve Questionnaire (Rami et al., 2011), Stroop Task-Condition4 D-KEFS (Delis et al., 2001), Rule Shift Cards Test (Rule-Shift, Wilson et al., 1996) and a wide cognitive battery. Training: 10-week-training with VIRTRAEL©

Results: For aim A: there were a significant association between CR and all cognitive test scores except Stroop-4 errors ($Rho=-.153$; $p=.09$) and Rule-Shift 2nd part errors ($Rho=-.003$; $p=.98$). For aim B: significant change after training for Stroop-4 errors (Wilcoxon $Z=-4.29$; $p<.001$) and Rule-Shift 2nd part (Wilcoxon $Z=-3.74$; $p=.001$)

Conclusions: Cognitive reserve does not protect elderly people against flexibility deficit. Cognitive stimulation could be a way to compensate for the lack of effect of cognitive reserve on executive function components such as flexibility.

VIRTRAEL© is a free online training that fill this gap because it improves flexibility performance in elderly people.

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A meta-analytic review of social cognitive function following stroke.

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Background and aims: Although it is widely recognised that social cognitive difficulties are often evident following stroke, important questions remain about the nature and magnitude of these difficulties, as well as the factors that determine the degree of this impairment.

Method: Meta-analytic methodology was used to quantify the magnitude of stroke-related deficits across four core social cognitive domains (theory of mind, social perception, social behaviour, and affective empathy). In total, 56 datasets involving 2530 participants (933 with stroke, 1597 non-clinical controls) were analysed.

Results: Three of the four core domains of social cognitive function were significantly disrupted in people with stroke. Specifically, while the effect size for affective empathy failed to attain significance ($r = -.33$), moderate to large deficits were identified for theory of mind ($r = -.41$), social perception ($r = -.55$), and social behaviour ($r = -.45$). There was also evidence that these deficits were robust across both left and right lateralized lesions, across social cognitive assessments that differed in their broader cognitive demands (first- versus second-order theory of mind, and emotion labelling versus discrimination), as well as in tasks that varied in their modality of presentation.

Conclusions: These data have important practical implications as they indicate that assessment of social cognitive function should be routinely conducted in people who have suffered a stroke. Social

cognitive function should also be routinely considered in post-stroke rehabilitation efforts given such deficits have consistently been identified as important predictors of functional outcomes such as mental health and quality of life.

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Cognitive Rehabilitation in Patients with Parkinson's Disease

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Background and aim: Parkinson's disease (PD) is progressive neurodegenerative pathology. Cognitive and emotional impairments are considered as a non-motor disorders. Mobile biofeedback stimulation (BOS) was assessed as a technology of neurorehabilitation.

Methods: Assessment tools: Montreal Cognitive Assessment (MoCa), Hospital Anxiety and Depression Scale (HADS), United Parkinson Disease Rate Scale (UPDRS), Hoehn-Yahr Scale, Vegetative disturbance Scale, SF-36. 112 patients with PD were included this trial. All patients were divided into 2 groups: 1) therapy with BOS-brain stimulation ($n=56$); 2) therapy without stimulation ($n=56$).

Results: PD group: 63,4% of patients had akinetic-rigid-tremor syndrome as motor dysfunction, 32,1% had mild cognitive impairments, 35,7% - anxiety, 33% – depression. PS group: 36,8% of patients had akinetic-rigid syndrome as motor dysfunction, 50% had mild cognitive impairments, 39,5% – subclinical depression

Results: of BOS-stimulation in PD group: MoCa-test before BOS-stimulation was $22,71 \pm 0,54$, after – $25,55 \pm 0,4$ ($p < 0,0001$), in control group $22,77 \pm 0,47$ and $24,54 \pm 0,43$ ($p < 0,0001$). HADS anxiety index before BOS-stimulation was $9,75 \pm 0,6$, after – $5,7 \pm 0,47$ ($p < 0,0001$), in control group $8,98 \pm 0,58$ and $7,89 \pm 0,55$ ($p < 0,0001$). However, before stimulation

66,1% of patients had clinical and subclinical anxiety, after stimulation 37,5%. In group without stimulation 62,5% and 53,6% respectively. HADS depression index before BOS-stimulation was $8,68 \pm 0,55$, after – $7,3 \pm 0,52$ ($p < 0,0001$), in control group $9,13 \pm 0,5$ and $8,11 \pm 0,48$ ($p < 0,0001$). However, before stimulation 53,6% of patients had clinical and subclinical depression, after stimulation 33,9%. In group without stimulation 64,3% and 51,8% respectively. SF-36 physical index before BOS-stimulation was $19,20 \pm 3,89$, after – $42,86 \pm 5,24$ ($p < 0,0001$), in control group $10,83 \pm 3,11$ and $16,67 \pm 4,06$ ($p < 0,05$). SF-36 mental index before BOS-stimulation was $50,86 \pm 5,45$, after – $53,79 \pm 2,35$ ($p < 0,0001$), in control group $41,07 \pm 2,51$ and $43,67 \pm 2,49$ ($p > 0,05$).

Conclusions: Obtained data reveal that most frequent type of Parkinson's disease was akinetic-rigid-tremor, non-motor symptoms were presented by mild cognitive impairments, anxiety, depression. Best results of therapy were received in Parkinson's disease group, particularly in motor, cognitive and emotional functions.

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The experience of attending a camp for families with a child with acquired brain injury: Perspectives of young people with acquired brain injury and siblings

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Background and aims: Paediatric acquired brain injury (ABI) is associated with long-term negative sequelae, and families must

continually adapt to meet the changing needs of the child with ABI and family members. Interventions which provide enriching educational opportunities, such as condition-specific camps, may support families following ABI. This study explored the experience of a camp for children with ABI and their families from the perspective of young people with ABI and siblings.

Method: Semi-structured interviews were conducted with seven people with ABI and 15 siblings.

Results: Using thematic analysis, four themes were identified: *Accepting ABI*; *Camp friendships*; *Personal mentoring*; *Escape from daily life*. Participants experienced camp as an environment where ABI was understood and accepted, and they felt relieved of the pressure to explain their family's situation. This acceptance provided the background to camp friendships and to having fun. By interacting with others in similar situations, participants felt they understood ABI better, and for some, this shaped their values and future career choices. Whilst camp was viewed as an escape from daily life, for some participants, negative experiences such as family conflict crept into the camp experience.

Conclusions: Condition-specific camps may provide young people with ABI and siblings with opportunities to better understand ABI and its impact on the individual and the family. Camps may also provide opportunities to have fun and to make friends, providing a buffer against challenges faced by families with a child with ABI. As such, camps may provide an important allied health support service.

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Developing VRSET: A Virtual Reality Shopping Errands Task for Use in Brain Injury Rehabilitation

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Background and aims: Everyday tasks developed within immersive, interactive virtual reality (VR) can provide clinicians and researchers with a platform for assessing the function of, and testing assistive technology for, those undergoing rehabilitation following neurological impairment. We present the first iteration of a novel room-scale VR shopping errands task (VRSET), informed by the neuropsychological assessment literature and observation of the in-situ task performance of three patient-occupational therapy pairs.

Method: A study involving 32 healthy participants examined the use of VRSET for cognitive assessment and as a test-bed for investigating assistive technologies, in the form of spatially-relevant augmented reality (AR) guidance. The convergent validity of the VRSET was compared to a standard test of executive function (D-KEFS Tower test). Qualitative feedback was gathered about the experience of using the VRSET.

Results: The overall scores on the VRST shopping task were not correlated to the overall scores on the Tower test. Participant feedback was could be split into four main themes; the 'realness of VR', Usability of the VR, Perception of their own performance, and feedback about the AR assistance.

Conclusions: The experience of developing and performing research using a VR shopping task means we can provide insights and guidelines for those developing VR tasks for functional assessment or research.

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Neurodevelopment at 6 months old in infants born of a high-risk pregnancy: a comparison with healthy pregnancies.

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Background and aims: Pregnancy is a period that could have an influence on future children development. Lifestyle, alimentation or medical supplementation could determine maternal and foetal health thorough pregnancy. Besides, some women have several medical conditions which forced them to maintain a more careful and strict lifestyle, such as having a systemic disease or a thrombosis risk. For that reason, future children neurodevelopment could be different according to have a high risk pregnancy (HRP) or a healthy pregnancy (HP). In this sense, the aim of this study was to compare infants' neurodevelopment of mother who had an HRP vs. a HP.

Method: A total of 51 pregnant women were recruited during pregnancy and followed-up until their infants came to a neurodevelopment assessment when they have 6 months old. Cognitive, language and motor neurodevelopment were compared between a group of infants whose mothers had a HRP (n =26) and a HP (n=25).

Results: Infants whose mother had a HRP had higher scaled scores in cognitive (t = -2.65; p = 0.01), fine motor (t = -2.32; p = 0.02) and gross motor neurodevelopment (t = -2.68; p = 0.10).

Conclusions: It seems that infants' neurodevelopment is higher when a woman have an HRP. Normally, a HRP needs more medical attention and care than a HP, it could be a possible explanation, as those infants have received specialized care when they were fetuses. This fact highlights the importance of putting more special attention to every pregnant woman, no matter their medical condition.

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Moderators of outcome in listening based interventions for cognitive recovery and mood after stroke

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Background and aims: Cognitive deficits and low mood are common after stroke. Recent research suggests that music listening may enhance the recovery of memory, attention, and mood early post-stroke. We do not yet know which demographic, clinical and treatment related factors moderate the behavioural effects of music listening. We explored the moderators of cognition and mood outcomes in a randomised controlled trial (MELLO trial) comparing music listening interventions (including mindful music listening, and music listening alone) and audiobook listening early post-stroke.

Methods: Seventy-two individuals with ischemic stroke were randomised to receive an eight-week music listening (n=47) or audiobook listening (n=25) intervention. Sixty participants completed the study. Moderation analysis was undertaken with specified demographic and baseline cognitive function measures to examine their interaction with assigned intervention, in relation to cognition and mood outcomes at three-month and six-month post-stroke.

Results: Amount of listening and some baseline cognitive measures moderated

the effect of the interventions. Greater listening dosage and frequency during the intervention were associated with better immediate verbal memory (story recall) performance. Lower baseline speed of information processing and selective attention were associated with greater improvement on immediate verbal memory and attention switching after the music intervention. Side of stroke and verbal memory (list learning), moderated treatment outcomes for mood.

Conclusions: A small number of baseline characteristics, as well as intervention dosage moderated the effect of the music listening intervention on key outcomes. Investigating moderators of treatment interventions is important in order to develop interventions that are better tailored to individuals.

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The effect of Galvanic Vestibular Stimulation (GVS) on autonomic nervous activity during posture transformation

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Background and aims: In recently, Galvanic Vestibular Stimulation (GVS) is used in physical therapy for improving unilateral spatial neglect and improving postural control. However, there is no report on the influence of GVS on autonomic nervous system. Thus, this study observed autonomic nerve activity when GVS was used to healthy men.

Methods: Eight healthy men participated in this study. GVS was applied by attaching electrodes to bilateral mastoid and stimulating them for 20 minutes. GVS carried out three conditions; left cathode GVS (LGVS), right cathode GVS (RGVS), attach electrodes but not stimulation (Sham GVS). Participant were instructed to stand up from supine position four times in 20 minutes. We observed

electrocardiogram (ECG) during GVS or Sham GVS. Power spectra obtained from spectral analysis were defined as low frequency (LF) and high frequency (HF). LF power to HF power (LF/HF) shows sympathetic predominance. A repeated-measure two-way ANOVA assessing conditions and time was performed. Results: LF/HF increased significantly in all conditions when stand up from the supine position. LGVS was significantly increased LF/HF when compare with other conditions ($F=6.652$, $p=0.014$).

Conclusion: Results from this study suggested that the LGVS affects sympathetic nerve activity associated with postural changes. This may be because LGVS stimulated the right insular cortex. Since the right insular cortex stimulates the sympathetic nerve, results from this study may have been caused. Since sympathetic nervous activity affects blood pressure and heart rate, it is thought that the latest attention is necessary when GVS is applied to patients.

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The possible selves of individuals with a brain injury

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Background and aims: Possible selves reflect future self-identity, providing concrete form to an individual's hopes, fears and expectations. They enable insight into aspects of motivation, adjustment and identity; key topics within the acquired brain injury (ABI) literature. The primary aim of this mixed methods pilot study was to investigate the feasibility and acceptability of the possible selves method in participants with an ABI for the first time.

Method: 21 participants with an ABI completed an adapted version of Clarke's

(2016) possible selves interview and two questionnaires relating to health-related quality of life and current-ideal self-discrepancy.

Results: All participants were able to describe some possible selves, although a large proportion of 'expected' possible selves were not given. Results indicated good inter-rater reliability of the coding and participant-rated acceptability of the method. Exploratory analyses revealed no significant results between balance of possible selves, strategies to achieve hopes & brain injury-possible selves enmeshment and psychosocial outcomes. However, when brain injury references were re-coded, participants who had 'recovery-focused' possible selves, indicating a desire to return to pre-injury functioning, reported higher levels of current-ideal self discrepancy. Effect sizes are reported for comparison and provide future direction for hypothesis testing.

Conclusions: Future studies should look to refine the possible selves method as applied to those with an ABI. The results of the current study suggest that the possible selves approach could be a useful construct to explore identity and goal-setting in people with a brain injury.

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Relationship of the severity of the violence and levels of generalized anxiety, depression and post-traumatic stress disorder

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Background: Due to the complexity and different manifestations of intimate partner violence (e.g. physical, psychological and sexual), different types of IPV must be taken into account when measuring the severity of violence (Ford-Gilboe et al., 2016). Related to intimate partner violence, we can find

psychological sequels such as generalized anxiety (Beck et al., 2015), depression (Lövestad et al., 2017) or post-traumatic stress disorder (Golding, 1999).

Objective: The objective of this poster was to study the relationship between severity of violence, general anxiety, depression and PTSD.

Method: The Composite Abuse Scale Revised-Short Form (CASR-SF; Ford-Gilboe et al., 2016), the Generalized Anxiety Disorder scale (*GAD-7*; Spitzer et al., 2006), PTSD Checklist for the DSM-5 (PCL-5; Weathers et al., 2013) and The Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) were administered to 36 female victims of IPV from non-profit women associations in Granada Province, Spain.

Results: The results showed Pearson correlation between CASR-SF and GAD-7 total scores [$r=0.427$, $n=36$, $p=0.009$], CASR-SF and PCL-5 total scores [$r=0.419$, $n=36$, $p=0.011$] and CASR-SF and PHQ-9 total scores [$r=0.442$, $n=28$, $p=0.18$]. In turn, the results show high significant correlations between GAD-7 and PCL-5 [$r=0.850$, $n=37$, $p=0.000$], GAD-7 and PHQ-9 [$r=0.906$, $n=28$, $p=0.000$] and PCL-5 and PHQ-9 [$r=0.839$, $n=27$, $p=0.000$].

Conclusions: The results show that greater severity of violence is related to higher levels of anxiety, post-traumatic stress and depression disorders in women who have been victims of intimate partner violence. In addition, presenting with one of these disorders (PTSD, GA or depression) is highly correlated with suffering the other two.

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Emotion recognition in batterers

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Background: The study of batterers has increased in order to improve psychological treatments and to reduce the recidivism.

Aims: To analyse the relationship between emotion recognition and the severity of violence against women in batterers, other criminals and controls.

Method: *Participants.* 50 batterers, men sentenced for violent crimes against their partner; 49 men convicted of other crimes; and 48 men without crimes.

Materials. We used the Revised Conflict Tactics Scale (CTS-2) and the Eyes Test by Baron-Cohen. *Statistical analyses.* Two one-way Anovas were conducted to compare the three groups. Pearson correlation was conducted to explore the relationship differentiates the scores of both tests.

Results: There were significant differences between groups in the Eyes Test ($p=0,015$) and the CTS-2 ($p=0,039$) scores. The lowest scores in emotion recognition were found in the batterers group, whereas the highest in the controls group. In addition, a negative correlation was found between the scores of both instruments ($r=-0,337$, $p=0,000$).

Conclusions: The results show that the greater severity of violence against women, the lower level of recognition of emotions. It is really important to continue with emotional and psychological study of batterers in order to offer specific treatments according to the type of violence.

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Working memory and distorted thoughts about violence in batterers

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Background: Intimate partner violence is a serious social problem. It is really important to determine the neuropsychological and psychological profile in batterers to improve the treatments.

Aims: To analyze the relationship between working memory and distorted thoughts about general violence and violence against women in batterers, others criminals and controls.

Method: *Participants.* 50 batterers (BG), men sentenced for violent crimes against their partners; 49 men convicted of other crimes (OCG); and 48 men without crimes (CG). *Materials.* We used the Letter-Number sequencing and the Inventory of Distorted Thoughts about Women and Violence (IDTWV). *Statistical analyses.* Two one-way Anovas were conducted to compare the three groups. Pearson correlation was conducted to explore the relationship different the scores of both tests.

Results: There were significant differences between groups in Letter-Number sequencing ($p=0,003$) and in subscales of IDTWV ($p<0,001$ in both). We found negative correlations between Letter-Number sequencing and the IDTWV in the three groups (**OCG:** general violence $r=-0,377$, $p=0,008$; violence against women, $r=-0,421$, $p=0,003$; **BG:** general violence $r=-0,322$, $p=0,023$; violence against women $r=-0,311$, $p=0,028$; **CG:** general violence $r=-0,293$, $p=0,044$).

Conclusions: Working memory is different between CG and criminal groups. In addition, working memory is related to the distorted thoughts about general

violence and violence against women: the lower level of working memory, the greater number of distorted thoughts. This study shows that neuropsychological assessment and treatment are really important in criminals. The specific and sensitive treatments addressed to particular criminal groups will mean a significant improvement and it will reduce recidivism.

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Preliminary Validation of the Coin in Hand Test: Applications with Intimate Partner Violence

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Introduction: Female victims of intimate partner violence (IPV) suffer neuropsychological sequelae linked to posttraumatic stress and brain injury due to the abusive relationship. Evaluating cognitive impairment has consequences in forensic cases in terms of assessing acquired damages and the victim's testimony. As a part of routine protocol, effort tests are required in order to rule out the possibility of insufficient effort or simulation. Nonetheless, the majority are not free and there are no computerized versions. Furthermore, some validation measures have been found to result in significant levels of false-positives among female victims. With this in mind, we have translated and computerized the *Coin in Hand* (CIH), the only test in the public domain with similar characteristics to the TOMM. The objective of the present study is to test for differences in performance

between both women who have and have not suffered IPV.

Methods: 62 women (ages 18-67) were recruited, of whom 53 were female victims of IPV and 9 had not suffered IPV. A independent sample t-test was conducted.

Results and Discussion: Preliminary analyses demonstrated that there were no differences between female victims and women who had not suffered IPV in the total number of correct responses on the CIH ($t(41) = -.819, p = .218$).

Nonetheless, due to the fact that the sample size was small, generalizations cannot be made. As the study is still underway, the sample size will be more robust for data presented at the NR-SIG-WFNR conference.

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Language and Culture Influences in Working Memory: A Cross-cultural Study through the EMBRACED Digit Span Task

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Background and aims: Despite the vital importance of working memory, there is a limited number of instruments adapted to specific populations to measure it. Some authors have shown that performance in WM may be influenced by culture or language (Lopez et al., 2016). The aim of present study is to go deeply on that presumable differences using a sample of Non-Hispanics, Hispanics and Spaniards.

Method: A total of 72 participants were included. Of them, 43 were Non-Hispanics, 16 were Hispanics and 13 were Spaniards. All of them are a subsample of the normative data collection for the EMBRACED neurocognitive battery, whose purpose is to adapt a computerized battery sensitive to cultural factors. All the participants performed the EMBRACED Digit Span task. It consists of two subtasks: Forward (DSF) and Backward (DSB), in which seven pairs of trials are presented auditorily. The total number of correct trials and longest correct series were recorded. ANOVAs and post-hoc pairwise comparisons were performed for both DSF and DSB.

Results: We found significant differences between Non-Hispanics and Hispanics who performed the task in Spanish when we compared the total number of correct trials in DSF. When we compared by language, we found significant difference for the total number of correct trials and for the longest correct series in DSF.

Conclusions: The differences found show that there are probably cultural factors influencing the WM. This increases the necessity of having tests adapted to concrete populations to prevent diagnosis errors and improve an effective, suitable assessment.

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Depression and subthreshold depression in aphasia

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Background/Aims: Depression occurs frequently after stroke. Yet information about depression in persons with stroke-related aphasia is lacking because those with aphasia are often excluded from studies of depression. Aims were (1) to investigate the prevalence of depression

and subthreshold depression in aphasia; (2) to describe the linguistic characteristics associated with their aphasia; and (3) to compare linguistic and cognitive differences amongst participants with aphasia and depression, subthreshold depression, and no depression.

Methods: 144 participants with chronic aphasia due to a single left-hemisphere stroke completed an “aphasia-friendly” adapted version of the Center for Epidemiologic Studies Depression Scales (CES-D) to assess prevalence of depression. Based on previous studies, we defined participants as having depression if they had a CESD score ≥ 16 and subthreshold depression as CESD scores between 8 and 15. Participants also completed the Western Aphasia Battery-Revised (WAB-R) to evaluate type and severity of aphasia.

Results: Average age of participants was 56.45 years (SD = 12.34), education was 15.15 years (SD = 2.51) and time post onset was 30.62 (33.06). Prevalence of depression was 19.44% while the prevalence of subthreshold depression was 22.22%. CESD scores ranged from 0 to 39. Depressed persons with aphasia had significantly lower WAB-R reading scores than those without depression.

Conclusions: Since subthreshold depression can progress to depression, clinicians should routinely screen for depressive symptoms. The detection of subthreshold depression may lead to earlier treatments which can aid in improving the emotional wellbeing of persons with aphasia.

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Visual Attention to Emotional Stimuli in Persons with Aphasia

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Background and Aims: Eye-tracking research has shown that depressed individuals spend longer viewing negatively valenced stimuli compared to non-depressed individuals. Most of this research has measured visual attention in long time segments (i.e., time segments greater than 1 second) thus obscuring the fine-grained nature of eye-movements. Analyzing attention in smaller time segments may provide a better understanding of how visual attention to emotional stimuli changes over time. We aimed to compare persons with aphasia to healthy controls in visual attention to emotional stimuli, conducting a fine-grained analysis of eye-movements by measuring visual attention every 50 ms.

Methods: Twenty-four persons with chronic aphasia (post-onset > 6 months) and 13 healthy age and education-matched controls participated. Stimuli in a free-viewing eye-tracking task consisted of 80 trials (20 pairs of happy-neutral faces and 20 pairs of sad-neutral faces, each presented twice). Trial order was randomized and neutral faces were presented equally on the left and the right of the emotional face. Growth curve analysis was used to investigate the attentional probabilities over time.

Results: Both groups demonstrated a strong initial face orienting effect. Onset was different for the two groups and the post-peak decrease in fixed probability was less steep for healthy controls. As time progressed, persons with aphasia were less biased to sad faces compared to healthy controls.

Conclusion: Sustained avoidance from sad faces may help protect persons with aphasia from negative mood states. We suggest that including positive valenced stimuli in speech-language therapy may improve persons with aphasia mood status.

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Service improvement project: analysis of routine clinical data in paediatric neuropsychological rehabilitation

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Background and aims: In paediatric neuropsychological rehabilitation there is no consensus in measures to collect in clinical practice. This community-based service uses measures recommended for research by McCauley et al. (2012). This project asks questions: a. How well are measures being collected? b. Are clinically predicted relationships found at assessment? c. Is change between assessment and review observed?

Participants: Data was collected through routine clinical practice from 150 children with brain injury and their families. Age range 0-18 years, age at injury 0-18 years, traumatic and non-traumatic brain injury, mild to severe severity.

Method: a. Frequencies of PedsQL, BRIEF, SDQ, CASP questionnaires. b. Derive clinical hypotheses of relationships between key variables at assessment; c. Test differences between assessment and review averages.

Results: a. Considerable gaps in data particularly at review. b. Correlations found between measures of social function ($p = -0.664$, $n=18$, $p = 0.003$), emotional ($p = -0.374$, $n=84$, $p < 0.01$) and academic function ($p = -0.445$, $n = 81$, $p < 0.01$). c. At review there was improvement in executive function ($n=21$; $z=-2.877$; $p=.004$), emotional-behavioural function ($n=34$; $z=-2.376$; $p=.017$), family function ($n=28$; $z=-2.609$; $p=.009$), child participation ($n=21$; $z=-2.103$; $p=.035$).

Conclusions: Predicted relationships were found between variables at assessment. Positive change was found at review. Service improvement recommendations: continue data collection at item level, find and overcome barriers to data collection, include demographic and intervention

data to understand relationship between injury, intervention and outcome, pursue consensus on what should be collected for clinical outcomes.

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Melodic Intonation Therapy: Improving language production in a patient with non-fluent aphasia

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Background: Melodic intonation therapy (MIT) uses musical speech elements (melody and rhythm) to improve language production in non-fluent aphasia patients.

Aim: We analyse the effectiveness of an intervention in a patient with non fluent aphasia with chronic brain damage to increase the oral production of functional words implementing a rehabilitation program based on MIT.

Method: A single study case using a pre-post design was implemented. A 60-year-old patient with poorly articulated, non fluent and severely restricted speech output as the result of left temporal meningioma excision participated in the study.

Materials: In the assessment the Battery for the Assessment of Aphasic Disorders (BETA) and an oral production questionnaire were administered.

Process: A training of seven functional words was carried out during 18 sessions of 30 minutes divided into three levels of increasing difficulty. In all levels different tasks were trained: Level 1: humming, unison intoning, unison intoning with fading, immediate repetition and response to a probe question); level 2: phrase introduction, unison with fading, delayed repetition and response to a probe question; level 3: delayed repetition, introducing sprechgesang,

sprechgesang with fading, delayed spoken repetition, and response to a probe question.

Results: All the seven trained words were acquired. The functional use of the words was observed when responding a probe question. However, the spontaneous oral production of the words trained was not shown.

Conclusions: MIT based rehabilitation programs can be useful for the rehabilitation of patients with chronic brain damage that present aphasia. In particular, the results suggest possible benefits in activities of daily living vocabulary acquisition.

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Efficacy of a diaphragmatic breathing training program in a chronic patient with aphasia to reduce anxiety related to communication with unfamiliar people

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Background: Communication between patients with aphasia and unfamiliar people might provoke threatening situations which could trigger anxiety responses.

Aim: We analyse the effectiveness of a diaphragmatic breathing (DB) training in an aphasic patient to improve anxiety management.

Methodology: This study was conducted in a 57-year-old chronic patient with aphasia after stroke as a pre-post single case. Anxiety levels were measured using the State-Trait Anxiety Inventory, Hamilton Anxiety Scale, Visual Analog Scale, Mood Evaluation Scale. The baseline levels were registered in a controlled space room (CerNep daycare center). Then the patient was exposed to real scenarios (university canteen and

restaurant in downtown) to complete the scales with a therapist. Specific training in DB was carried out during 11 sessions of 30 minutes. DB exercises with increased difficulty were performed with fading support: lying down-sitting, without and with distractors.

Results: The patient showed a decreased in STAI state in both natural environments (canteen and restaurant) from percentile 89 to 50 and 97 to 70 respectively and less anxious in both experimental settings according to the Visual Analog Scale (bar/restaurant: from 4 to 2 and 5 to 2). Finally, a decrement on psychic anxiety at the restaurant (from 7 to 5) was observed.

Conclusions: After the training the patient was able to perform the DB exercises in both lying-and -sitting positions and to perform them in crowd and noisy places. The DB help him to reduce his anxiety levels when communicating with other unfamiliar people. Therefore, DB can be effective for the anxiety management on people with aphasia.

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Improving communication skills and oral production in a patient with non fluent Aphasia following a rehabilitation program based on the successive approximation method in the natural environment

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Background and aims: We analyse the effectiveness of a rehabilitation program based on successive approximations to the natural environment in a patient with aphasia.

Method: A single-case study using a pre-post design was conducted on a male 34-years-old patient with chronic non-fluent aphasia. The Battery for the Assessment

of Aphasic Disorders and an observational record of oral-production of communication responses were administered. A 16-sessions intervention based on the successive approximations method was run by a neuropsychologist and a speech-therapist. The program was implemented in 30' sessions- 3times/week to train the oral production of 25 sentences related with the communication required in a restaurant. The training followed four stages:1-Pre-assessment in both clinic and restaurant in downtown environments;2-Training of 25 sentences;3-Training with restaurant noise as background and roleplaying;4- Post-assesment.

Results: The pre-assesment results showed 8 errors (semantic/phonemic paraphasias) in the reading of the 25-sentences task, thus 17/25 sentences were correctly read. At the bar, even if the waiter could understand the order 6 phonemic-paraphasias were registered while reading the menu. After the training, at the clinic, the patient was able to read all the 25/25 sentences with no errors. At the bar, the patient was confident and no errors in production and comprehension when ordering his meal were observed and the conversation with the waiter occurred fluently.

Conclusions: The results showed the acquisition and functional use of all the sentences trained in both controlled(clinical) and natural(bar) environments. Training based on successive approximations to natural environments can be useful for patients with aphasia who avoid interacting with unknown interlocutors.

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The clinical and cost effectiveness of Teen Online Problem Solving for adolescents who have survived an acquired brain injury in the UK: Protocol for a randomised controlled feasibility study (TOPS-UK)

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Background and aims: This is the protocol for a feasibility randomised controlled trial (RCT) with an embedded qualitative study and feasibility economic evaluation. If feasible, a later definitive trial will test the clinical and cost effectiveness of an online intervention to enhance problem-solving ability versus treatment as usual in adolescents acquired brain injury (ABI).

Method: Fifty adolescents (12-18 years) and their families identified at participating UK National Health Service Trusts will be recruited and randomised in a 1:1 ratio to receive the online intervention or treatment as usual. Participants will be followed up by online questionnaires 17 weeks after randomisation. Qualitative interviews will capture participants' experiences of the study.

Results: Descriptive statistics on the outcome measures with appropriate point estimates, standard deviations, and 95% confidence intervals for between group differences will be reported. The feasibility outcomes will include: (i) number of participants at each stage of the study; (ii) evaluation of appropriateness of the trial and economic evaluation methods and procedures; (iii)

assessment of participants' willingness to be randomised to treatment allocation; (iv) adherence to treatment; and (v) attrition. The standard deviation of the BRIEF-2 (parent) score will be reported. BRIEF-2 is the proposed primary outcome for the main trial, hence the standard deviation is required for calculation of the sample size.

Conclusions: If the current study demonstrates feasibility, outcomes will be used to inform the development of a fully powered RCT to examine clinical and cost effectiveness of the online problem-solving intervention.

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Genetic and environmental influences on recovery of severe paediatric brain injury: The UK study protocol

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Background and aims: There is substantial variation in recovery after pediatric traumatic brain injury (pTBI).

Understanding the genetic and environmental factors influencing this variation, would allow optimization of treatments to reduce the profound negative societal and economic impact of pTBI. This study will examine the

associations between genetic and environmental factors on global functioning and neurocognitive and behavioural functioning following severe pTBI.

Method: We will collect salivary DNA samples and measures of parenting and home environment from approximately 85 children in the U.K. who have participated in the international Approaches and Decisions in Acute Pediatric TBI Trial (ADAPT). The primary outcome will be global functioning assessed by the pediatric Glasgow Outcome Scale-Extended (GOSE) at 3-, 6-, and 12-months post-injury. Secondary outcomes will include an assessment of cognitive and behavioral functioning 12-months post-injury.

Results: An analytic approach that seeks to identify genes and variants associated with recovery that are over-represented (gene-enrichment) across response to injury and neurocognitive and behavioral reserve biologic processes will be used. Mixed model analyses will evaluate the association of genotypes with recovery after severe pTBI and to elucidate the association of environmental factors with recovery. How genetic and environmental factors and genetic and early clinical factors interact to influence recovery after severe pTBI will also be evaluated.

Conclusions: The study findings will help us to better understand what determines variation in recovery following pTBI, supporting the ability to provide accurate prognosis and develop novel precision treatments.

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Assessment of Unilateral Spatial Neglect with Eye Tracking System

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There are various classifications for Unilateral Spatial Neglect (USN). Among them, the symptom of the patient not

recognizing objects on the left side despite looking at them is difficult to distinguish by conventional evaluation. Therefore, the gaze of USN was analyzed with an Eye Tracking System to classify USN into two types: (i) they do not look on their left side and do not recognize them, and (ii) they do not recognize objects on their left side despite looking at them. There were 20 subjects (12 males and 8 females; average age 68.4 ± 9.6 years) who showed USN with initial acute right hemisphere injury. The gaze during Birmingham Object Recognition Battery's Object Decision System was recorded using an Eye Tracking System. Nine patients did not recognize the left side notwithstanding looking at them. Their MMSE ($p = 0.02$), copying test ($p = 0.02$), and drawing test ($p = 0.00$) had significantly lower scores than another USN type. As a qualitative feature, hypergraphia in the line-cancellation test ($p = 0.00$) and a hemifield defect ($p = 0.00$) were found in the copying test. Hypergraphia and a hemifield defect were reported as symptoms peculiar to right-hemisphere injury. In other words, the type of USN in which the left side was unrecognized despite looking at them was considered a symptom peculiar to right-hemisphere injury.

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Effectiveness of a behavioural approach to use public transportation in acquired brain injured participants: a single case experimental design study

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Background and aims: Individuals with acquired brain injured (ABI) participants and their families experience improved quality of life when the individuals become able to go out alone. This study introduced an intervention to enable two patients with ABI participants to use public transportation.

Method: Two community-dwelling adults (one male, one female) aged 57 and 35 years, respectively, with attention and memory difficulties and anxiety following an ABI were included in an A-B-A₂ single-case experimental design study. Phase A assessed the baseline, phase B was the intervention, and phase A₂ was the follow-up. The method adopted of practising the use of public transportation included a chained behavioural approach and positive feedback. The effects of the behavioural practice were evaluated together with the degree of intervention by the patients' families and therapists.

Results: Both participants gained the ability to use public transportation through behavioural practice. Tau-U statistical analyses were used to establish the significant differences in measures among phases. Tau-U analysis indicated statistically significant improvement in the use of public transportation between the baseline and intervention (male: Tau = 1, $p < .01$, female: Tau = 1, $p < .05$). There were nonsignificant differences between intervention and follow-up (male: Tau = 0.2, $p = .42$, female: Tau = 0.5, $p = 0.2$).

Conclusion: A behavioural approach incorporating chaining allowed the use of public transportation for people with ABI residing in the community. Positive feedback allowed them to experience a sense of accomplishment. The effects were sustained through the follow-up.

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Will short-term group training give an effect on self-awareness?

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Background and aims: Self-awareness (SA) deficits after brain injury gives a significant influence of smooth reintegration. In this study, we limit the training period, conduct group training (GT) focusing on self-awareness, and examine the change in SA.

Methods: GT participants were 12 persons who agreed to the research purpose. GT period was set to 1 course 12 times (1 time 2 hours). The contents of training consisted of three elements: (1) acquisition of knowledge about disabilities, (2) understanding of their own problems, (3) planning - execution - reviewing, and was carried out hierarchically. Also, for each GT, we confirmed and reviewed the goals of the whole group and individual participants before and after training. Standardized neuropsychological tests were conducted at BaseLine, Pre, Post, Follow.

Results: Cognitive function did not show a dominant difference in the change in the period. In addition, participants' motivation remained, and no significant difference within the period was noticed. Emergent/Anticipatory Awareness, Strategy Generation, and Strategy Effectiveness were improved before and after GT, and a significant difference was recognized. In Strategy Use, improvement was seen in the results of BaseLine and Post, and a significant difference was recognized.

Conclusions: The study showed that the short-term GT we conducted has an effect on improving SA after brain injury. In addition, it was shown that the participants in GT continued to participate in training while maintaining motivation. Furthermore, this GT showed that the improved SA has the effect of continuing even after the completion of training.

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The relationships between resting functional networks connectivity and errorless/errorful learning

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Background and aims: The brain functional networks connectivity in the resting state represents the intrinsic functional architecture and also correlates the cognitive performances (Fox et al. 2005). Whereas investigating the resting functional connectivity seems to be useful for considering adaptations based on neural mechanisms, there are insufficient researches in the field of rehabilitation. We investigated the relationships between the resting functional networks connectivity and the learning scores using errorless learning (EL) and errorful learning (EF) which are well known methods in memory rehabilitation.

Method: 43 healthy adults underwent an fMRI session included a resting state and subsequent four tasks: EL-learning/test, EF-learning/test. Our tasks were color-name associations learning using Japanese traditional colors, like “Hiwamoegi”, which are unfamiliar to the majority of Japanese. We focused on the task-control networks; Cingulo-opercular network (CON) and Fronto-parietal network (FPN)

and analyzed them by applying graph theory.

Results: The number of functional connectivities of CON showed negative correlations with both EL and EF scores, and that between FPN and CON showed negative correlation with EL scores.

Conclusions: CON and FPN sustain top-down cognitive control for stability and flexibility, respectively. CON integrates information over many repetitions on a slower time scale (Dosenbach, et al. 2013).

It is suggested that subjects who have many functional connectivities of CON and weak functional segregation between CON and FPN tend to process information uniformly and accumulatively, which cause low learning effect even if the working memory load is low.

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Towards a digital neuropsychological assessment: the feasibility and added value in patients with acquired brain injury

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Background and aims: A digital neuropsychological assessment (NPA) has important benefits compared to a conventional paper-and-pencil NPA. A digital NPA allows a more standardized administration, an automatized scoring and in particular novel outcome measures (e.g., strategy, fluctuations in

performance) that go beyond traditional outcome measures (e.g., accuracy, time needed to finish). In this study, we examined the feasibility and added value of a digital NPA in patients with acquired brain injury (ABI) and healthy controls.

Method: We recruited (former) outpatients with stroke ($n=56$), traumatic brain injury (TBI; $n=61$) and healthy controls ($n=56$). A digital NPA containing 12 tasks was administered by using a tablet screen and laptop. A semi-structured interview was conducted regarding user experience.

Results: In total, 10% of TBI patients and 2% of stroke patients did not complete >1 task due to fatigue and overstimulation (e.g., overdose of stimuli on tablet screen). The brightness of the screen was adjusted in 8% of the TBI patients, and none of the stroke patients. The majority enjoyed working with a digital NPA (healthy 91%; stroke 95%; TBI 82%) and felt that the tactile response (e.g., drawing) on the tablet screen was comparable to paper-and-pencil (healthy 63%; stroke 78%; TBI 69%). Fluctuations in performance during the tasks were recorded as novel outcome.

Conclusions: The administration of a digital NPA could be considered feasible in ABI patients. Overstimulation should be taken into account for individual use, especially with TBI patients. The use of a digital NPA gives additional information about fluctuations in performance.

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Improving everyday performance by training to deal with distractions and unexpected problem-solving situations in an acquired brain injury: case study

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Background and aims: Empirical research shows that deficits in executive/monitoring abilities (inhibition, error detection, problem solving) following acquired brain injury produce serious impact on patients IADL's performance. One successful strategy to improve this, is to provide feedback about patients' errors (Ownsworth et al., 2006, 2017; Schmidt et al., 2012). However, in most error-based studies, the same tasks/level of difficulty was repeated during the training sessions, therefore both habit and monitoring could be the cause of error reduction. The aim of the present study was to improve patients' executive/monitoring skills by asking to deal with new competing distractors and to solve unexpected conflicting situations.

Method: A changing criterion design was administrated to an ABI patient with executive function deficits affecting his independence in IADL. It was provided online/offline-feedback on significant IADL's tasks, with emphasis on making the patient aware of how to deal with distracting/conflicting situations. The given tasks were gradually increasing in monitoring requirements by adding new distractors and conflicting situations to be detected/solved across sessions.

Results: First, the errors committed and addressed through the feedback sessions (errors, actions towards distractors, failures to detect/solve conflicting

situations) were drastically reduced on post-intervention performance. Second, it was found behavioral improvements to generalize to tasks with new distractors/conflicting situations on the post-intervention phase.

Conclusions: These results provide preliminary support for the efficacy of an error-based approach where patients have to deal with different IADL's situations with increasing monitoring requirements to ameliorate trained performance and to transfer learning and strategy use towards untrained situations.

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Omega-3 fatty acid supplementation effect on mild cognitive impairment: a randomised controlled trial

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Background: Several recent clinical trials have shown that docosahexaenoic acid (DHA) from fish oil supplements has a significant effect on cognitive performance in cognitively impaired older adults.

Aims: This randomised-controlled trial aimed to investigate the cognitive effects of high dose DHA fish oil supplement in older adults with subjective memory complaints, and to examine the moderating effect of the apolipoprotein E (apoE) 4 allele on cognition and well-being.

Method: Seventy-two adults between the ages of 60-90 from New Zealand received a DHA supplement equivalent to 1491 mg DHA + 351 mg of eicosapentaenoic acid (EPA) per day or a placebo supplement for a period of 12 months.

Results: No treatment effect was found

on cognitive measures, but a treatment effect was found on systolic blood pressure ($p = 0.03$, $\eta^2 = 0.08$), and a treatment interaction for apoE4 carriers on depression ($p = 0.04$, $\eta^2 = 0.07$) and anxiety ($p = 0.02$, $\eta^2 = 0.09$) scores in favour of the DHA supplement.

Participants with omega-3 index levels below the 50th percentile at baseline showed greater improvements in digit span backwards and forwards scores.

Conclusions: Despite the lack of treatment effect on the cognitive and well-being measures, the positive result for apoE4 carriers and on systolic blood pressure justifies further trials. It may be a prudent step going forward to replicate the design elements (dose, duration and cognitive measures) of previous trials in order to understand why not all older adults benefit from taking a fish oil supplement.

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A qualitative study exploring the experiences of mindfulness training in people with acquired brain injury

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Background and aims: Eight past studies have explored the benefits of mindfulness-based interventions (MBIs) for people with acquired brain injury (ABI). Whilst results were promising, some studies suffered from high attrition suggesting a need to explore the experiences of receiving such interventions. We therefore explored how individuals with ABI make sense of their experience of learning and practicing mindfulness and their views about the acceptability and helpfulness of an MBI group.

Method: Six focus group interviews were conducted with 14 participants with ABI after they had completed an eight-week mindfulness group. Group interviews were transcribed verbatim and analysed using Interpretative Phenomenological Analysis.

Results: Four themes provided information about participants' experiences of mindfulness training and being in the group; "Developmental learning process", "Group as a supportive environment for learning", "Benefits of mindfulness" (which included thoughts on how mindfulness could have an indirect impact on cognitive functioning) and "Increased awareness". Interestingly, the latter theme revealed how increased awareness of internal and external experiences facilitated the ability to recognise and break patterns of unhelpful thoughts and/or emotions.

Conclusions: Most participants considered mindfulness beneficial in helping them cope with emotional and cognitive consequences of ABI. Although we did not set out to explore mechanisms by which mindfulness is effective, findings did suggest possible mechanisms. We also made recommendations for implementing MBIs in this population e.g. emphasise the difference between mindfulness and relaxation when inviting people to join groups and make adjustments to the structure and length of sessions to accommodate memory problems and fatigue.

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Joining forces to improve psychosocial care for people with cognitive deficits across diagnoses: social health as a common framework

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Background & Aims: Cognitive deficits have major impact on independence in daily life and participation in society. Similarities in the impact on participation and well-being have resulted in the development of comparable psychosocial interventions across populations, separately, without using the expertise in other fields. We argue that each of the fields and the field of psychosocial care in general would benefit from closer collaboration on development and evaluation of innovative psychosocial interventions.

Methods: Collaboration is complicated by different care models, theoretical frameworks, and terminology. We performed a scoping literature review to harmonize the development of psychosocial care for people with cognitive deficits.

Results: Social health is characterized by three dimensions that refer to the ability to function in accordance to competencies and talents, autonomy in daily life, and engagement in social activities. These dimensions have been operationalized for dementia to stimulate optimization and innovations of care. In line with the concept of social health, social participation (being active in social roles) is considered the ultimate goal of rehabilitation for people with brain injury using the ICF framework. For severe mental illness, the recovery model of mental health underpins health care policy. The concept of social health - the ability to participate in work or other meaningful activities and to feel healthy despite a condition - translates to the leading care models within different fields.

Conclusions: We propose social health as a common language and framework. We

will elaborate on strategies for collaboration using examples of interventions to improve social health.

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Development and Validation of the Plymouth Saudi Memory test (PSMT) for the Arabic speaking population with acquired brain injury

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Background and aims: Memory deficits are a common consequence following acquired brain injury (ABI). To date, most existing memory tests were developed for the English-speaking population, and they are not appropriate for assessing Arabic speaking patients. Therefore, the purpose of the study was to develop a memory test that examines long term memory mainly episodic memory, semantic memory, recognition memory and prospective memory, and short term memory namely working memory in Arabic speaking population with ABI. The developed long term memory test (LTMT) focuses on 5 principal domains evaluated in 14 tasks.

Method: A total of 61 ABI patients (30 stroke and 31 traumatic brain injury) and 80 healthy adults were tested. The study was completed in two stages: (1) development of the long term memory test (LTMT), and (2) validity and reliability study.

Results: The test-retest reliability indicated high stability of scores over time. High discriminative validity was shown in which a significant difference between the performance of patients and the control group was found on all principal domains and sub-domains apart from the faces recognition/recognition sub-domain.

Conclusion: This study offers a valid and

reliable memory test that is hoped will be beneficial to Arabic patients with ABI.

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Assessment of Cognitive Instrumental Activities of Daily Living from an ecological perspective

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Background and aims: Executive functions are necessary to lead an independent life and exercise the right of personal autonomy. The executive functions have been especially related to the cognitive instrumental activities of daily life, such as scheduling appointments, domestic economic management, making purchases, taking the bus, among others. The aim of this systematic review has been to know what tests are available for the assessment of executive functions with ecological validity.

Method: An electronic search was conducted in MEDLINE, Cochrane Central, PsycInfo and IEEE Xplore until August 2018, in addition to a manual search. The PRISMA criteria and the covidence platform were used to select articles and extract data.

Results: 49 studies were identified. There are 65 tools to assess executive functions, of them 45 are performance based measures. Most tests or assessment tasks are aimed at the adult population with

acquired brain damage, cognitive impairment or dementia. On the other hand, there are few available tests for the assessment of children, observing an emergency in the last years of tests or tasks in the field of mental health and addictive behaviors. We have found 35 different virtual tasks for the detection of errors during the execution of the cognitive instrumental activities of daily living.

Conclusions: The main scenarios developed are related to shopping, community mobility, cooking and management tasks, through multitasking, which in addition to executive functions such as planning, supervision and monitoring of the action include prospective memory for events and time from an ecological perspective.

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Thinking operations and Activities of Daily Living in Cognitive Impairment People

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Background and aim: Several studies show that cognitive impairment affects the instrumental activities of daily living such as the use of the telephone, the handling of money, the preparation of food or the taking of medication. That is, activities that requires greater capacity for abstraction and planning, but not affect the basic activities of daily life. This study presents an experimental research that evaluates the effectiveness of the D-Riska,

the digital version of the Riska cognitive test and their relations with functional performance in activities of daily living.

Method: A total of 51 community – dwelling adults aged 60 years and above participated in this study. A protocol of four cognitive tests was administered assessing: a) general cognitive ability with Cognitive Evaluation of Montreal (MoCA); b) the Inventory of Routine Tasks 2 (RTI-2); c) the dysexecutive questionnaire (DEX-SP); and 4) a new digital tool based on the Occupational Therapy Cognitive Assessment (LOTCA): Digita-RISKA.

Results: The results show significant differences in all tests when comparing healthy older population and population with cognitive impairment. Riska-d has a high correlation with MOCA and with dependence on instrumental activities of daily living allowing to detect patients with cognitive impairment.

Conclusions: RISKA-d is an easy tool, quick to use and with a high acceptability by occupational therapists.

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Interaction between socioeconomic status and neuropsychological development in children aged 7, 9, and 11 years in Ecuador

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Background and aims: The socioeconomic status (SES) of parents have a crucial influence on the cognitive development of children, but it is not clear whether this effect varies as a function of the children's age. The objective of this study was to

investigate the development of children aged 7, 9, and 11 years of parents with extremely low SES in a developing country (Ecuador).

Method: The study included 274 Spanish-speaking schoolchildren from Guayaquil (Ecuador), divided among 7-year-olds (45 boys, 44 girls), 9-year-olds (45 boys, 46 girls), and 11-year-olds (47 boys, 45 girls). They completed a socioeconomic survey and the BENCI (Computerized battery for children's neuropsychological assessment) Battery.

Results: Statistically significant interactions were found between SES and age for verbal memory in immediate [$F(2,268) = 6.90, p = .001$] and delayed recall [$F(2,268) = 7.45, p = .001$]. In the language domain, a statistically significant interaction between SES and age was observed in verbal comprehension [$F(2,268) = 5.81, p = .002$] and phonetic fluency [$F(2,268) = 6.63, p = .002$]. With regard to executive function, interactions between SES and age were found in abstract reasoning [$F(2,268) = 24.51, p < .001$] and inhibitory control [$F(2,268) = 6.10, p = .002$].

Conclusions: Statistically significant differences were observed as a function of SES group and age in verbal memory, language, and executive function, observing wider between-group differences among the 11-year-olds.

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Effectiveness of a reading multimodal training program for deaf children

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Introduction: Deaf children have great difficulty with reading, and often, many of these children not attain the same reading levels as hearing children.

Objective. The aim of this study was to determine the effectiveness of a reading multimodal training program to enhance the use of an alternative reading route based on the multimodal aspects of language.

Method: Forty prelocutive deaf children between 6 and 10 years of age were pseudo-randomly allocated into experimental and control groups. All children (experimental and control groups) were assessed on measures of phonological recoding and related skills before and after the intervention began. The experimental group received a 6-months systematic training program (20 weekly sessions of 45 min), with reading tasks which require use, manipulate and associate multimodal language information (e.g. lip reading, information derived from orthography, kinesthetic feedback associated with speech movements and vibro-tactil feedback associated with sounds of speech). The control group received the same number of sessions in similar conditions, but with non-multimodal reading tasks.

Results: In post-intervention assessment, statistically significant mean differences favouring the experimental group were found for the phonological recoding measures.

Conclusions: These results suggest that the multimodal training program was effective to promote the use of an alternative route through the multimodal-phonological recoding training. The longer-term effects of this training could result in a higher level of reading skills, compared with children who do not receive the multimodal training.

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Creativity, working memory and inhibitory control in children

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Introduction: Previous studies with adults has been suggested that creative ability could be closely related to executive functions. However, in the case of children there are very few studies aimed at exploring the possible relationship between both constructs.

Objective: To analyse, in a group of schoolchildren, if those who show better performance in a test of creative intelligence (or cognitive creativity) obtain better results in two specific tasks of executive functions (working memory - updating- and control inhibitory).

Method: 55 children between 12 and 13 years old participated. They were classified into two groups depending on their CREA creative intelligence scores: high creativity (n = 28) and low creativity (n = 27). Both groups were administered a 2-back task, to obtain the working memory measurement (updating), and the children's version of the Attention Network Test (Child-ANT) to obtain the measure of inhibitory control.

Results: Children with high creativity scored significantly higher (2.06) than the group with low creativity (1.46) in task 2-back (U = 221.5, p = .008). This result was supported by the positive correlation between the creativity test scores and those of the 2-back task (r = .320; p = .017). However, no significant differences were found on task of inhibitory control between groups.

Conclusion: These results suggest that children between 12 and 13 years old the

capacity to maintain and update information in working memory could have a key role in the development of this cognitive aspect of creativity.

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Creativity and academic achievement in the school context

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Introduction: The role of creativity in academic achievement is a topic of interest to educators and neuropsychologists.

Objective: The aim of this work was to analyze the relationship between creative thinking and academic achievement in the main subjects of the Spanish Primary Education curriculum (Spanish language and literature, mathematics, sciences, and English as a foreign language).

Method: 60 children between 10 and 11 years old participated (5th year of Primary Education). They were classified into two groups depending on their scores in a cognitive creativity test (CREA Test), administered at the beginning of the second trimester of the course: high creativity ($n = 39$) and low creativity ($n = 21$). As measures of academic achievement, the Grade Point Averages (GPA) obtained in each subject at the end of the first trimester of the course were used.

Results: Children with high creativity obtained GPA higher than the group with low creativity in all subjects, although these differences were only statistically significant in sciences ($U = 285.5$; $p = .041$), and marginally significant in foreign

language ($U = 292.5$; $p = .062$). These results were supported by the positive correlation between creativity scores and GPA in sciences ($r = .327$; $p = .011$), and between creativity scores and GPA in foreign language ($r = .207$; $p = .037$).

Conclusion: These results suggest that creative thinking skills in elementary school children could be a predictor of academic success even in the basic subjects that ensure knowledge and skills fundamental to later educational stages.

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Language comprehension and fatigue after traumatic brain injury

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Background: Communication disorders after traumatic brain injury (TBI) include difficulties in speaking, understanding, reading, writing, conversation skills and participation. These deficits result from underlying cognitive and related neural impairments. Symptoms of fatigue are common after TBI and may have influence on cognitive performance as well as everyday communication. Further, TBI-related damages in white matter have been suggested to result in deficits of language comprehension and fatigue.

Objective: Our aim is to resolve the types of cognitive-communication disorders in patients with TBI and how these disorders

are associated with diffuse tensor imaging (DTI) measures of white matter tracts. At present we are analyzing language comprehension and fatigue scale data of 38 TBI and 25 healthy participants.

Method: Language comprehension and fatigue scale data of 38 subjects (12 male and 26 female) with moderate to severe TBI, aged 19-53 (M = 34) years, was analyzed. The control group consisted of 25 healthy subjects. A battery of subtests of language comprehension and the Mental Fatigue Scale were administered. Appropriate analysis will be conducted to compare the mean performance, the overall performance time and the fatigue scale between the groups.

Results and conclusions: The preliminary results indicate that performance was quite similar in language comprehension subtests for the participants with TBI and the control group. The overall performance time was slower in most of the tasks for participants with TBI. The self-reported fatigue scale was significantly higher for the participants with TBI. The updated results and the conclusions will be presented in the congress.

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Cognitive assessment in a digital era: current state-of-art in neuropsychological outcome measures

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Background and aims: Cognitive impairments are assessed with neuropsychological paper-and-pencil tasks. These tasks have been reconsidered due to the lack of sensitivity and ecological validity. It is of great importance to develop alternative test methods and/or more sensitive outcome measures. This literature study provides an overview of outcome measures used in different test methods for the assessment of cognitive functions in acquired brain injury patients.

Methods: A systematic review was performed (2008–2018) using PubMed. Cognitive measures regarding memory, attention and executive functions were extracted for the following test methods: computer tasks, real-life tasks and virtual reality (VR) simulations.

Results: In total, 514 articles were found. We included 55 articles; 15 focussing on computer tasks, 13 real-life tasks and 27 VR simulations. Preliminary results showed accuracy measures (correct responses) in 80-100% of the studies (across all methods). Total duration to complete the task was used in 54-74% of studies (across all methods). Efficiency (effective strategy) was used in 46% of real-life tasks and 41% of VR simulations. Only in 15% of VR simulations (and no other method), eye gaze events were measured.

Conclusions: Even though technological advances in computer tasks and VR simulations allow for novel, potentially more sensitive and ecologically valid, outcome measures, most studies still use accuracy and total duration. Also, these measures are used as indication of several cognitive (dis)functions; e.g. accuracy is used for assessing memory, attention as well executive functions. The potential of computerised assessment and novel sensitive outcomes measures is currently not employed sufficiently.

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Theory of Mind in Patients with Acquired Brain Injury

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Background and Aims: Patients with Acquired Brain Injury (ABI) usually suffer alterations of Theory of Mind (ToM) related frontal functions and to the severity of the injury. The objectives of this work are: 1) to compare the performance of ToM tasks between clinical subjects with frontal and non-frontal ABI, 2) to compare the results of subjects with mild and severe ABI, and 3) To study if ToM results are related to language comprehension.

Method: 20 patients participated in the study, divided into 4 groups (severe-frontal, mild-frontal, severe-non-frontal mild-non-frontal). The patients performed the following tests: False Belief, Second Order Belief, Test of the Hints, Test of the Eyes, Metaphorical Communications and Strange Stories and Token Test.

Results: The severe-frontal group presented worse results than both non-frontal groups in all the ToM tests (Mann-Whitney, $p < 0.05$), while the mild-frontal group did worse than the non-frontal groups only in the Strange Stories (Mann-Whitney, $p < 0.05$), no differences were found between the two frontal groups nor between the two non-frontal groups. The score of the TOM tests correlated with that of the Token Test (Spearman, $p < 0.05$).

Conclusions: There are more alterations in the ability to make mentalistic inferences in patients with frontal ABI. ToM worsens

with the severity of the injury, and the performance in these tasks may be related to verbal comprehension, which may be compromised in these patients. A comprehensive and individual ToM assessment is necessary to determine and address the factors that intervene in the social difficulties patients may suffer.

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Development of an interdisciplinary intervention for acquired brain impairment patients in the acute and post-acute phases: two case descriptions
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Background and aims: Acquired brain impairment can cause both cognitive and motor disorders. During rehabilitation, the first phase of motor re-learning implies the use of cognitive functions such as attention and working memory if the process is no longer automatic. As a neuropsychologist and physiotherapist, we have developed an interdisciplinary intervention targeting spatial and kinesthetic working memory while stimulating motor aspects such as balance.

The primary aim of this pilot study is to examine the capacity of the intervention to stimulate the cognitive processes targeted. We also explore the evolution of balance skills.

Method: We administered tests of the targeted cognitive functions and compared them to non-targeted processes such as verbal working memory and general cognitive efficiency. Balance skills were evaluated separately. The assessments were performed before and after the intervention. Two patients (stroke and traumatic brain injury) underwent the stimulation: 16 sessions of 30 minutes for 4 weeks. We present them

here as case descriptions.

Results: The results show improvement for the targeted cognitive functions. In contrast, their performance on the non-targeted tasks stays rather stable or evolves irregularly. Their balance skills also improve after the intervention.

Conclusions: We have developed an intervention that activates cognitive processes involved in motor learning while stimulating motor aspects simultaneously. We present two patients that have underwent the stimulation as case descriptions. The evolution of their balance skills and performance on the cognitive variables targeted compared to non-targeted processes is encouraging. However, a study including more patients and a better methodology is needed.

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Relationships between cognitive performance, self-awareness improvement and functional outcome in patients with acquired brain injury

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Background and aims: self-awareness is often impaired in patients with acquired brain injury, it reduces the effectiveness of rehabilitation, resulting in poorer functional outcomes. Many researches have attempted to clarify the relationships between impaired self-

awareness and cognitive performance (especially memory and executive functions), obtaining inconsistent results.

Method: A sample of patients with acquired brain injury from the National Centre for Brain Injury Treatment of Madrid (Spain), where they receive an integrative rehabilitation treatment, has been assessed at the admission and discharge from the center. The assessment consists of an awareness of deficit scale, a brief neuropsychological battery and a functional scale.

Results: Using correlation analysis we explore the relationships between the different cognitive variables and self-awareness. In addition, with regression models we study the possible predictive value of the different cognitive domains (memory and executive functions) in self-awareness and functional changes (differences between admission and discharge scores).

Conclusions: An appropriate self-awareness is needed for a successful rehabilitation process patients with acquired brain injury. Go in depth in the study of the relationships between cognitive performance, self-awareness and functional outcome is very important for addressing and designing the intervention programmes as accurate as possible.

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Support, monitoring and reminder technology for mild dementia (SMART4MD)

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Background and aims: We aim to test the influence on Quality of Life (QoL) of

people with cognitive impairment and carers who use a digital platform (SMART4MD), as well as the influence on other measures such as medication adherence, development of cognitive impairment, functional decline, service utilization and also economic analysis.

Method: A pragmatic, multicenter randomized controlled trial (RCT). A total of 1200 dyads (persons with mild cognitive impairment (PwMCI)+carers (CC)). Intervention: data-enabled computer tablet with the SMART4MD application. The core functionalities of the application are based on reminders, cognitive supporting activities and optional status of health information sharing with family and informal carers. The core functionalities of the application are based on reminders (medication, appointments with healthcare providers, meeting up with family and friends, etc.), cognitive supporting activities (clock, calendar, brain games, photos) and optional status and health information sharing with family and informal carers (including mood, specific health problems such as headaches). An important feature is its personalization facility: main users (PwMCI and informal carers) will be able to switch on/off or change various features and information sharing possibilities. The application is intended to be used daily at home, mainly by the PwMCI themselves, with the help of their informal carers when needed.

Results: The main indicator will be to improve the quality of life of people with dementia and their caregivers, increase treatment compliance, reduce the costs related to dementia by helping reduce the number of missed appointments and hospital readmissions and help to reduce functional deterioration.

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Results of Phase I of the pre-pilot feasibility study of TV-ASSISTDEM

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Background and aims: Phase I of the pre-pilot feasibility study of TV-ASSISTDEM, based on the methodology of Sheeman and Lucero (1), is part of the European multicentre randomised controlled trial "Evaluation of the Efficacy of a TV-Based Assistive Integrated Service To Support European Adults Living With Dementia" (AAL-2016-024). TV-AssistDem is a technological tool which has been developed to facilitate remote support to patients with mild cognitive impairment and mild dementia (PMCI/MD). The aim of Phase I of the pre-pilot was to test and adapt the TV-AssistDem prototype in the clinical setting before committing to the full pilot (2).

Method: This study consisted of a usability evaluation of the TV-AssistDem prototype with 7 dyads, formed by PMCI/MD and their informal caregivers, recruited by the Spanish Health Research Institute of Malaga (IBIMA). The participants' feedback was reported by the clinical researchers to the developers using the tool Mantis.

Results: The participants were asked to perform different tasks with the system and provide feedback on the Set-Top-Box Services and Interface.

The participants found the remote control reported visual limitations regarding the size and colours of some buttons. The participants found the main menu user-friendly but suggested changes in the appearance of the different functionalities: Cognitive Stimulation, Videoconference, My health, My memories, Calendar and reminders, General Information.

Conclusions: The data provided by this study is being used to improve the TV-AssistDem prototype, to optimize the final version and adapt the TV-AssistDem

intervention to the context and requirements of this specific population.

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Diagnostic Utility of the Computerized Neuropsychological Evaluation Battery COGNITO for the Early Cognitive Decline Detection in a Spanish Sample

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Background and aims: The Cognitive Decline (CD) causes a huge impact on people's quality of life, so its early detection is a priority. Recently, the computerized tools destined to its evaluation have grown in importance because of their advantages concerning traditional methods: 1) standardized stimulus presentation, allowing for a significant reduction of reaction time and an accurate errors evaluation; 2) individual adjustment by difficulty levels. The computerized neuropsychological evaluation battery COGNITO (Ritchie et al., 1993) is a brief and easy to manage via a touch screen instrument, which value a wide range of cognitive domains (attention, processing speed, memory, executive functions and constructive visual skills). It's applicable from adolescence and allows selecting difficulty levels, increasing its Diagnostic Utility (DU). It has been adjusting to diverse languages (French, English, Indian and Chinese shortly) and validated with

different populations and goals. No Spanish version is available yet. The aim of this work is validate COGNITO in a Spanish sample in order to determine its DU in the early CD detection.

Method: subsequently to the translation and adaptation of four tests to population characteristics, a transversal study was conducted with normal subjects.

Results: the UD of COGNITO was evaluated by the area under the curve calculation (Aroc), sensitivity, specificity and positive productive and negative predictive values. Regulatory data are obtained by age and educational level, and cutting points for CD detection.

Conclusions: the COGNITO Spanish validation preserves the psychometric characteristics of the original version, showing high sensitivity and specificity in early CD detection.

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Neuropsychological and Speech Therapy Rehabilitation Program in a Clinical Case of Visual Agnosia with Pure Alexia

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Background and aims: 15-year-old girl, medical record of germ cell hypophysis tumor (treated with chemotherapy and radiation therapy) and secondary diabetes. The subject expresses severe difficulties in reading, writing and memory processes, which causes a high degree of deterioration in the academic performance. The aim of this work was to keep the subject's previous school efficiency.

Method: an initial assessment was carried out from the neuropsychology and speech therapy areas, by means of an evaluation battery composed of RECOB (Visual

Object Recognition Battery), Superposed Images of Barcelona Test, Hooper Visual Organization Test, Rey Complex Figure, Symbol Search Subtest WAIS-IV, ANT, TAVEC, EPLA and BETA Battery. The results showed a complete loss of reading ability or pure alexia (primarily in the phonological processing), integrative agnosia, spatial transformation agnosia, mild associative agnosia and moderate difficulties of memory (particularly in the fixation and encoding phase). An interdisciplinary work team composed of two neuropsychologists and a speech therapist, carried out a 4-hours-weekly rehabilitation program based on a three levels of visual information recognition model (Warrington, 1985; Humphreys, Riddoch and Quinlan, 1988). Finally, another examination was conducted six months later.

Results: after the intercession, the reading skill and the visual recognition ability are mostly within the normal parameters, causing minor interferences in the educational sphere, as well as in her quality of life.

Conclusions: our neuropsychological and speech therapy intervention program was highly effective, showing significant improvements in all the visual agnosias presented by the patient.

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Theory of mind developmental in a girl with a diagnosis of autism spectrum disorder

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Aims: Current studies of Autism spectrum disorder (ASD) has been focused on inhibitory control, since it is indicated that this function would be responsible for the

alteration of theory of mind (ToM). The aim of this study was to demonstrate that affective bond contributes to ToM developmental -and that it is not influenced by inhibitory control- through the implementation of a program that stimulates personal interests of a girl diagnosed with ASD.

Design: It has been used an experimental design, of a single case, of female gender, 6 years old. For the measurement of ToM, it was used, under pre/post test, the Infant Neuropsychological Evaluation Test (TENI). Statistical analysis was by application of percentage of non-overlapping data (PND) and non-overlap of all pairs (NAP).

Results: indicated that, effectively, affective bond that is facilitated through the consideration of interests, abilities and needs that a child could manifest, promotes and improve development and functioning of ToM. It was observed an exponential statistical advance.

Conclusion: It is fundamental to adapt therapeutic intervention to the interests of a child with ASD, considering as a central element affective bond. This not only implies considering their interests, but also allowing them to establish the objectives of the therapeutic work. This stimulation produces an important neurobiological activity: activation of nucleus accumbens -increase of levels of motivation and affective bonding- limbic system, prefrontal areas and mirror neurons, whose final product is the development of ToM's ability. Results sustenance is that the inhibitory control did not present functioning increase.

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A report of the holistic comprehensive neuropsychological rehabilitation in Japan

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Background and aims: There is few holistic comprehensive neuropsychological rehabilitation program for elderly person with acquired brain injury in Japan. Neuropsychological rehabilitation is important not only for young person but also elderly person. It helps improve and compensate for cognitive and behavioural skills for them. The aim is to study of the effect of this program, and to confirm the benefit of rehabilitation for elderly person with acquired brain injury

Method: Participants were 3 elderly persons from 50's to 70's. They had 2 hours program per month, including group sessions and individual sessions for 3 years. They were examined using assessments in every six months. The assessments were The Profile of Mood States: POMS, The General Health Questionnaire-28: GHQ-28, The General Self-Efficacy Scale: GSES, and The Patient Competency Rating Scale: PCRS.

Results: In case 1, the score of PCRS decreased after program. Case 2's GSES score increased after temporary increase. The mood was improved in case 3.

Conclusions: The holistic comprehensive neuropsychological rehabilitation gave some benefits for elderly with acquired brain injury, though they varied for each other. The decreasing of PCRS may show the gain of awareness for his brain injured. Observation on others may occur the decreasing self-efficacy. Peer support may be good for easing the mentally instable state. single case design would be necessary to confirm the effect of this kind.

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Using Talking Mats to support conversations with people with cognitive communication disorder

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Background/Aim: Talking Mats (TM) is an internationally established visual communication tool, used with people with communication difficulties to express opinions and preferences, make decisions, and support understanding (Murphy et al, 2010). A common misconception of TM is that it is for people with limited speech. Studies into its use with a brain-injured population have focused on aphasia (Murphy, 2000). However, research in dementia and learning disabilities shows that TM can improve attention and interaction, leading to better quality and quantity of information (Ferm et al, 2010). TM is being used in clinical practice with people with cognitive communication disorder (CCD) to support a range of conversations, including goal-setting, decision-making, insight-raising and service evaluation. TM appears to improve communicative effectiveness by helping people with CCD to structure and express their thoughts in a logical way, support attention and memory difficulties by providing a visual reference and reduce tangentiality and verbosity. The aim of this study is to establish whether TM supports people with CCD to communicate more effectively than during a structured conversation without TM.

Method: Participants have CCD following an acquired brain injury. Participants will be interviewed in two conditions with a cross-over design: a structured conversation on a particular topic with and without TM. Interviews will be videoed and evaluated by assessors using a consensus approach to the Effectiveness Framework for Functional Communication (Murphy et al, 2010).

Results: Results of the above study will be presented alongside discussion regarding the implications of this for clinical practice and future research.

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Artificial intelligence models (machine learning) applied in neuropsychological assessment and neurorehabilitation

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Background and aims:

Neurorehabilitation promotes the different abilities and attitudes of people suffering from a central nervous system lesion to function at the highest level of their ability. In the framework of Artificial Intelligence, supervised learning is a type of machine learning algorithm that uses a set of known data (called a training data set) to make predictions. The training data set includes input data and response values. The objective of this study was to develop a prototype of artificial intelligence based on a supervised learning design that could be used to develop an algorithm by dividing a sample of data obtained through the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS).

Method: We assessed the cognitive status in two different groups: a group of participants with cognitive impairment (1) or not (0) that was compared with a healthy group according to the domains of the RBANS. 5 indexes of the RBANS were used: Immediate memory; Visuospatial / constructive; Language; Attention and delayed memory.

Results: The global score for each domain was used to analyze the probabilities based on the total scores obtained in order to summarize the correction process and optimize the classification.

Conclusions: This artificial intelligence system can be used to predict the level of recovery and the prognosis of a patient in the areas measured by RBANS only with the initial evaluation data. This work incorporates the novel approach to artificial intelligence in neuropsychology,

demonstrating its usefulness and future role in this field.

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Improvement in cognitive efficiency after intervention by immersive virtual reality:

A clinical case

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Introduction: The development and use of new technologies in the neurorehabilitation of patients with acquired brain damage (ABI) is increasing. That is why it is necessary to evaluate its real effectiveness in the treatment of patients with this profile. The aim of this study is to evaluate the efficacy of the use of immersive virtual reality (IVR) as a potential tool in the cognitive neurorehabilitation of patients with acquired brain injury.

Method: A neuropsychological assessment protocol was developed in a single case pre-post design in a young male with a frontal deficit due to diffuse axonal injury after a severe TBI. A cognitive training was implemented using serious PC games by immersive virtual reality technology.

Results: An improvement of the cognitive efficiency is obtained, reflected in processes such as reflexivity, generation of strategies and planning in goal-directed behavior with a reduction of time to achieve the established results.

Conclusion: In general, this case provides support to the idea of the efficacy of cognitive neurorehabilitation of strategies based on the use of IVR, due to the improvement of cognitive efficiency

observed together with the increase in patient motivation, adherence to treatment and improvements in mentioned aspects of executive functions. This makes necessary the elaboration of future studies that continue evaluating the efficacy, generalization of the use of techniques based on the IVR and the protocolization of the treatments for patients with brain injury.

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Development of ICT tool for supporting work activities among persons with cognitive disorders

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Background and aim: Memory log is a helpful compensation tool for memory disorder. We developed an ICT tool for supporting work activities in persons with cognitive disorders and tested the utility of the tool.

Method: The tool has following functions; calendar, hand writing note, photograph, movie, plans of a day and procedures of occupational activities.

Subjects: 9 persons with memory disorders due to brain damage and vocational supporting persons.

Results: Over 50 % of persons with memory disorders rated the tool as useful, and 95% of them rated it as easy to use. But 50% of them need assistance to use it. 100% of vocational supporting persons rated it as convenient, and 86% of them responded that they assisted operating the tool. The difficult operations were as follows; the location of operation key, learning operations of the tool, and they need supports for using the tool. The advantages of the tool were as follows; availability in daily life, management of taking medicine, choosing their possessions, confirming their schedule and content of their jobs, and they could verify job activities. The tool were

evaluated as useful for persons with asponaneity and dysexecutive syndrome. The following items were evaluated as useful; plans of the day and details of schedule, and memos. Procedure of activities were showed by using pictures and videos. The ongoing activity was indicated by color sign.

Discussion: The development target of the tool were to present schedules and procedures of work activities.

Comprehensible manuals for work activities could be developed by using pictures and videos. The tool were showed to be usable, but procedures and steps of work activities and were highly complex, and then the operations to input this work information in the ICT tool was also complex. The ICT tool is useful for vocational rehabilitation, but users needs much support for these input operations. It is thought to be useful that the persons with cognitive disabilities are provided the previously input ICT manuals.

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Friday 28th June

Session 7: Different models of intervention: barriers and outcomes

A Comparative Effectiveness Trial of Family Problem Solving Treatment for Adolescents after Traumatic Brain Injury (TBI): Improvements in Quality of Life

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Background and aims: To examine changes in quality of life (QoL) in adolescents receiving family problem-solving therapy (F-PST) following traumatic brain injury (TBI).

Method: Adolescents hospitalized for moderate-to-severe TBI were randomized to: face-to-face F-PST (34), therapist-guided online F-PST (56), and self-guided online F-PST (60). Participants included 96 boys and 54 girls, of whom 124 were Caucasian and 6 were Hispanic. Outcomes were assessed pre-treatment and 6 and 9 months later. Adolescents and parents rated adolescent QoL and TBI-related symptoms on the PedsQL and Health and Behavior Inventory (HBI), respectively. We used mixed modelling to examine changes over time, and moderators of treatment efficacy.

Results: Both therapist- and self-guided online groups demonstrated increases in parent-reported QoL from baseline to 9 months, Cohen's $d = 0.75$; $p = 0.004$ and Cohen's $d = 1.30$; $p < 0.001$, respectively. The face-to-face group had poorer parent-reported QoL at 6 months [Mean: 62 (SE: 3.4)] than either the therapist- [Mean: 71 (SE: 2.8)] or self-guided online group [Mean: 72 (SE: 2.6)]. There were no changes or group differences in self-reported QoL over time. Similar findings were observed on the HBI. Differential treatment effects on parent-reported outcomes were found in boys versus girls and in those from single versus two-parent households. Improvements in parent-reported HBI ratings mediated QoL improvements.

Conclusions: Both online treatments, but not traditional face-to-face F-PST, were associated with clinically meaningful improvements, raising questions about our current delivery paradigm. Individual and family characteristics moderate treatment efficacy, underscoring the potential of personalized treatment.

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Moving from Research to Clinical Practice: The Long and Multi-National Road of Teen Online Problem Solving (TOPS)

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Background and aims: Six randomized controlled trials since 2002 have demonstrated the efficacy of Teen Online Problem Solving (TOPS) in improving behavioral and family outcomes in adolescents with traumatic brain injury (TBI). This presentation examines pathways and barriers to clinical implementation in the United States and efforts to develop culturally tailored versions for delivery in the United Kingdom, New Zealand, and Italy.

Method: Qualitative interviews were conducted with neuropsychologists at nine U.S. children's hospitals wishing to implement TOPS clinically to identify institutional and state-wide facilitators and barriers to implementation. Psychologists in the UK, NZ, and Italy completed qualitative interviews and/or focus groups with children and adolescents (9 – 18 years old) with TBI and their families, and healthcare and education providers to obtain feedback about content and delivery.

Results: U.S. psychologists identified: 1) capacity; 2) state/institutional regulations regarding telehealth; and 3) ability to obtain reimbursement as potential barriers to implementation. All U.K. participants considered TOPS to be an acceptable and relevant intervention. Suggestions included less text, British-English spelling, and an avatar to guide

young children (9-12 years) through the website. During piloting, all U.K. participants found the videos helpful and valued weekly video-conferences with the coach. NZ feedback included suggestions to establish rapport before beginning and phone check-ins around homework. Cultural consultants recommended including common Maori words/phrases and culturally relevant scenarios. In Italy, feedback focused on modifying video content to emphasize common social challenges.

Conclusions: Our experiences demonstrated the cross-cultural applicability of TOPS and underscored the value of international collaboration.

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Outcomes of community neurorehabilitation for traumatic brain injury after 1 year, measured by The Mayo Portland Adaptability Index 4th Edition (MPAI-4)

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Background and aims: Traumatic Brain Injury (TBI) is a long-term condition with wide reaching consequences. Post-acute neurorehabilitation for TBI can be effective (Cicerone et al., 2011). However,

factors such as the diversity of the condition, mean that research is challenging (McMillan 2013). The Mayo Portland Adaptability Inventory – 4th Edition (MPAI-4) has been designed to measure participation after TBI. **Aim:** to demonstrate the value of routine evaluation of a community TBI service through systematic outcome measurement at initial assessment and one-year review and consider whether the MPAI-4 is a sensitive tool for this UK population.

Method: Anonymised MPAI-4 data was analysed retrospectively for 80 people with Initial Assessment and 1 Year Review outcome measures available. This service evaluation did not require NHS ethics and followed guidance stated by the Confidentiality Advisory Group. Bespoke community neurorehabilitation was delivered as indicated from assessments.

Results: No significant difference between total scores was found for gender, severity of injury or time since injury, $p > 0.05$. A repeated measures t-test indicated lower (improved) total scores at one year with a large effect size. Paretian principles (Devlin et al 2009) indicated 83% of MPAI-4 total scores improved, with 71% scores reaching at least Minimal Clinically Significant Difference (MCID).

Conclusions: The MPAI-4 was found to be an effective outcome measure. Findings indicate neurorehabilitation for people injured before and after one year were effective, irrespective of severity of injury. Routine service evaluation is recommended to improve efficacy of neurorehabilitation services and contribute to the rehabilitation literature.

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A pilot service initiative to provide intensive daypatient cognitive rehabilitation for people with cognitive and behavioural disability after brain injury: Individual and service-level outcomes

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Background and aims: Provision of early cognitive-behavioural rehabilitation for people with ABI in the UK is limited by a national shortage of specialist nursing. In 2016 we reorganised our services to establish a neuropsychology-led daypatient programme providing intensive (5-day) holistic interdisciplinary rehabilitation for people with complex cognitive and behavioural needs but low or no nursing needs. Two referral pathways exist, the first for patients transitioning from acute care early after injury and the second for patients already resident in the community.

Method: This study analysed routinely-administered measures for the first 24 patients admitted, specifically assessing patient symptoms and satisfaction with the service, and characterising the rehabilitation provided. A comparison group was formed using data from patients admitted the previous year to the inpatient beds that the new service replaced.

Results: Compared with previous admissions, patient complexity significantly increased and rehabilitation complexity significantly decreased, reflecting earlier intervention and lack of nursing input respectively. An equivalent number of therapy hours was provided. Within the daypatient group, over an average admission of nine weeks, significant improvements in ability, adjustment and participation on the Mayo-Portland Adaptability Inventory-4 were observed, and patient satisfaction with the service was very high. Furthermore, the reorganisation has reduced (i) demand for inpatient beds, (ii) waiting times for specialist neurorehabilitation services, and (iii) length of inpatient stays.

Conclusions: The service will undergo further evaluation including of long-term

outcomes, but thus far findings are highly promising and indicate strong potential to improve management of cognitive and behavioural disability after brain injury.

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The first vegetative patient to have an MRI scan continues her recovery after 21 years

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Background and Aims: Kate was a teacher when she became ill with acute disseminated encephalomyelitis (ADEM) in 1997. She had damage to her brainstem and both thalami. She had a disorder of consciousness for several months. She was the first patient in a vegetative state to have an MRI scan. Her responses to photographs of familiar faces differed from responses to scrambled images with the same colours and brightness and the results were no different to those of an age matched control. The aim of this presentation is to show that, although severely physically handicapped, Kate continues to improve 21 years later.

Method: When Kate left hospital 22 months after becoming ill, her family was told that any more recovery was unlikely. At that time, Kate could make hardly any noise nor could she move much. She received 8 years of neuropsychological rehabilitation and since then she has been seen each year to monitor her recovery.

Results: Kate remains in a wheelchair, is tube fed and has a tracheostomy in place. However, she is cognitively normal and has used a computer for many years. She received speech therapy for 6 years. This was stopped as it was thought she would show no more change. Kate used to rely on a letter board to communicate but, determined to talk, threw this away after 14 years. She now communicates with

perfectly intelligible speech. Recovery has slowed but has not completely stopped.

Conclusion: Kate's story shows that recovery can continue for many years.

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Session 8: Datablitz

The flubbed body: malleability of the representation of hands and face in personal neglect

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Background and aims: Personal Neglect (PN) refers to a form of hemi-inattention for one side, usually the contralesional side, of one's own body. Recent studies suggested that PN may be linked to a distorted body representation, which may have important implication for functional rehabilitation. However, there is currently no research attempting to further investigate the extent of this distortion.

To this aim, we conducted a study to explore the representation of the face and hands in right brain damaged patients.

Method: We recruited 9 right brain damaged patients (5 with PN) and a group of 16 healthy controls. Participants were presented with a series of photos illustrating their face or hands, which had been previously distorted (by progressively increasing or reducing either their length or their width). Participants had to choose the photo that best matched their real size.

Results: Overall, patients with PN were less accurate and had a larger representational "error window" for the face and the left hand, when compared with performance of controls and patients not showing PN. Interestingly, the disruption did also affect the right hand. In particular, the face was perceived smaller ($M = -34.5\%$, $SD = 8.55$); whilst the right and left hands were perceived larger

than their real size ($M = 29.5\%$, $SD = 16.9$ for the right; $M = 46\%$, $SD = 6.52$ for the left).

Conclusions: Our study confirms an underlying disruption of the body representation in patients with PN.

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Comparing participation outcome over time across international stroke cohorts: outcomes and methods

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Background and aims: Currently, there is no consensus on which participation measure to use post-stroke. This study aimed to enable a direct comparison of participation levels in the first year post-stroke, assessed by different outcome measures internationally.

Method: Two prospective stroke cohort studies, from Australia (START-PrePARE) and the Netherlands (Restore4stroke), were used following community-dwelling persons from stroke onset to 12 months post-stroke. The Activity Card Sort-Australia (ACS-Aus) and Utrecht Scale for Evaluation of Rehabilitation-Participation (USER-P) were used. Activity domains were matched across measures to find common denominators and original scoring methods were recoded, hereby enabling a direct comparison of retained activities.

Results: Ninety-one (START-PrePARE) and 218 (Restore4stroke) persons with stroke were included. No major differences in characteristics were observed between the cohorts. Higher participation levels were observed (radar charts) in the first months post-stroke for the Australian cohort than in the Dutch cohort, especially for unpaid work ($p < .003$; Bonferroni correction). At 12 months post-stroke, participation levels were similar, without significant differences in retained activities using the defined common denominators ($p > .003$).

Conclusions: An international comparison of retained activities in the first year post-stroke was achieved using new methods. High participation levels were observed in both cohorts. Unpaid work showed different frequencies at 2-3 months, contributing to different trajectories over time across cultures. Important insights were gained. Although valuable information is inevitably lost with recoding, the approach may assist future studies on the harmonization of data across cohorts, particularly for one of the key outcomes of stroke: participation.

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Validation of the Cognistat for its use in Arabic speaking population with acquired brain injury

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Background and Aims: The use of cognitive assessments is important for the detection of cognitive impairment in Acquired Brain Injury (ABI).. The Cognistat is a commonly used cognitive screening tool that has been developed to detect cognitive deficits among patients with neurological and psychiatric conditions. The aim of the study is to test the psychometric properties of the Cognistat for its use in Arabic-speaking populations with ABI.

Method: A total of 107 healthy Arabic speaking adults and 62 acquired brain injury patients were involved in the study. After the completion of the cross-cultural adaptation process, psychometric properties of the adapted cognitive tool were evaluated.

Results: The Arabic version of the Cognistat was found to have acceptable internal consistency. The test-retest reliability showed high stability of scores over time. The concurrent validity was examined through comparing the performance of patients on the adapted Arabic Cognistat and MMSE. It was significant for the orientation and comprehension. The results indicated high discriminative validity in which a significant difference between the performance of patients and the control group was found on all sub-tests.

Discussion and Conclusion: Data collected suggests that the Arabic version of the Cognistat is a valid and reliable cognitive screening tool. It is anticipated that the Arabic Cognistat will be widely

used in the Arabic speaking countries, allowing for a very precise evaluation of cognitive deficits in acquired brain injury patients.

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Efficacy and safety of amantadine as a treatment for apathy in two individuals with brain injury: A Single-Case

Experimental Design

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Background and aims: Studies on the efficacy of amantadine as a treatment for apathy after brain injury are scarce and of low quality. We examined the efficacy and safety of amantadine for treatment of apathy in two individuals with brain injury.

Method: Two double-blind, randomized, single case experimental (baseline-amantadine-placebo-withdrawal) design (SCED) studies. Apathy was measured with a tailored Visual Analogue Scale (VAS) (scored daily), the Neuropsychiatric Inventory (NPI) apathy subscale and the Behaviour Rating Inventory Executive Function for Adults (BRIEF-A) "initiate" subscale (scored once every phase). Safety measures (performed weekly) included a rating scale of possible side effects of amantadine and physical

examination. Visual analyses and statistical analyses, TAU-U and reliable change index, were performed.

Results: Analyses showed no significant difference in apathy symptoms (VAS) between baseline and amantadine phase in case 1 (TAU-U=-0.09, P=0.45).

Surprisingly, apathy symptoms increased significantly from baseline to amantadine phase in case 2 (TAU-U=-0.45, P=0.00).

After the amantadine phase (in the placebo phase), apathy symptoms significantly decreased in both cases, particularly in case 2. This decrease was also found on the NPI apathy subscale in case 2. Side effects (particularly loss of appetite, urine retention, and slurred speech) were seen in case 2 during amantadine phase.

Conclusions: Amantadine did not decrease apathy symptoms in two patients with brain injury. In one individual, side effects were seen during amantadine phase, which may explain the increase in apathy during amantadine phase, followed by a decrease during placebo phase. Results should be replicated in future (SCED) studies.

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Process mapping and software engineering to improve rehabilitation efficiency

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Background and aims: Multidisciplinary neuropsychological rehabilitation requires collaboration and coordination between patients, professionals and family. Driven by the need to reduce costs and improve efficiency, reporting rehabilitation activities and outcomes, including goal attainment scaling(GAS), led to development of new software. "GoalManager" provides an ICF driven

assessment that makes a coordinated, GAS implementation possible even when therapists are from different organisations. It also facilitates mapping of team activities targeted toward goal attainment.

Method: A typical rehabilitation case was modelled with time budgets for each step. Consensus on time allocated to each step was agreed between clinicians. We then mapped the time taken with the new software, based on billing data from a private practice using the software.

Results: By having a structured online assessment using the ICF core dataset GoalManager made it possible to agree&describe the patient profile in less than 4 hours. Enabling each clinician to link a goal to the impairments created a rich patient report, requiring 5 fewer hours than budgeted. Coordinating the goal review cycle every 3 months during a 6 month treatment cycle saved 17 hours per patient. Cumulatively, saving 30 hours of work per client, the programme has also improved the transparency and accuracy of therapeutic communications between professionals

Conclusion: By creating a shared electronic record accessed by independent providers we have been able to cut the cost of delivering a multidisciplinary report that includes SMART objectives and Goal Attainment Scaled outcomes. The economic time saving case for wider adoption is clear. Further research will map the ICF codes to time taken to achieve goals.

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Measuring motivation and engagement in acquired brain injury: Do we need more than one measure?

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This study investigated psychometric properties of the Motivation for Traumatic Brain Injury Rehabilitation Questionnaire (MOT-Q), the Brain Injury Rehabilitation Trust Motivation Questionnaire-Self (BMQ-S), the Rehabilitation Therapy Engagement Scale—Revised (RTES-R), and the BMQ-Relative (BMQ-R) in individuals with an acquired brain injury (ABI). Thirty-nine patients with an ABI completed the MOT-Q, BMQ-S, measures of apathy (Apathy Evaluation Scale-Self), insight (Patient Competency Rating Scale-Self), depression, and anxiety (HADS). Twenty clinicians provided 39 ratings using the RTES-R, BMQ-R, measures of patient apathy (Apathy Evaluation Scale-Clinician) and insight (Patient Competency Rating Scale-Clinician). Internal consistency, test-retest reliability, interrater reliability, and convergent validity were estimated. The MOT-Q ($\alpha = .93$) and BMQ-S ($\alpha = .91$) had excellent internal consistency and test-retest reliability (intraclass correlation coefficient [ICC] = 0.80 and 0.85). The MOT-Q and BMQ-S did not correlate with each other. The MOT-Q correlated with insight ($r = -0.37$). The BMQ-S correlated with insight ($r = -0.44$), apathy ($r = .50$), depression ($r = .55$), and anxiety ($r = .49$). The RTES-R ($\alpha = .96$) and BMQ-R ($\alpha = .95$) had excellent internal consistency and good interrater reliability (ICC = 0.67 and 0.68). The RTES-R and BMQ-R correlated with each other ($r = -0.88$), with apathy ($r = -0.82$ and $r = .88$), and insight ($r = -0.61$ and $r = .63$). The MOT-Q, RTES-R, BMQ-S, and BMQ-R have good reliability and validity. Using the MOT-Q and BMQ-S together may provide additional insight into patient levels of motivation.

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Session 9: Research designs in single-case interventions and validation of assessment tools

Developing an algorithm to evaluate methodological rigor of single-case studies

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Background: Critical appraisal scales play an important role in evaluating internal validity and methodological rigor (MR) of studies. Yet, few such scales take into account the differential impact that scale items exert on the MR of the experiment. The study aim was to develop an algorithm for single-case studies that addressed this issue using the Risk of Bias in N-of-1 Trials (RoBiNT) Scale (Tate et al., 2013).

Method: The algorithm was designed to differentially weigh item scores in a hierarchical classification into Very High, High, Moderate, Fair, Low or Very Low MR. Classification criteria were based on the scores of item 1 (design), item 3 (data sampling), the combined score of items 6 (inter-rater agreement) and 7 (treatment adherence), and the combined score of items 2 (randomisation), 4 (blind participant/practitioner) and 5 (blind assessor). Multiple iterations of the algorithm were trialled, using a sample of 95 published reports from the neurorehabilitation literature

Results: Of the 96 neurorehabilitation papers, 2 (2.1%) were classified as having Very High MR, 5 (5.2%) as having High MR, 11 (11.5%) as Moderate, 19 (19.8%) as Fair, 29 (30.2%) as Low MR and 30 (31.3%) as having Very Low MR.

Conclusion: The algorithm enables the range of MR to be identified and provides a means to classify MR taking into account the differential importance of items evaluating internal validity. It provides practical guidelines for interpreting risk of bias of individual single-case designs.

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Methodological rigour of single-case studies in the education and clinical psychology literature

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Background: We have developed an algorithm to classify methodological rigour (MR) of single-case designs (SCD). Items of the Internal Validity subscale of the Risk of Bias in N-of-1 Trials (RoBiNT) Scale (Tate et al., 2013) are differentially weighed in a hierarchical four-step classification. Step 1: item 1 (design); Step 2: item 3 (data sampling); Step 3: items 6 (inter-rater agreement) and 7 (treatment adherence); Step 4: items 2 (randomisation), 4 (blind participant/practitioner) and 5 (blind assessor). The aim of this study was to evaluate MR of SCDs in the education and clinical psychology literature.

Method: MR was evaluated for a random sample of 18 single-case intervention studies, containing 46 experiments, published in 2017 in Behavior Modification and the Journal of Applied Behavior Analysis. Algorithm classifications were compared with What Works Clearinghouse design standards (Kratochwill et al., 2013).

Results: Twenty-one (45.7%) and 14 (30.4%) experiments were classified as Very Low and Moderate MR respectively.

Two (4.2%) experiments were classified into each of the Very High, Fair and Low MR categories. Correspondence with the What Works Clearinghouse (WWC) classification was high (Kendall's Tau-b = 0.797, Z = 6.058, p < .001).

Conclusion: The algorithm provides a means of identifying SCDs that can demonstrate credible causal relationships between the intervention and changes in the target behaviour (Very High and High MR), demonstrate correlations (Moderate and Fair MR), or yield questionable evidence of intervention effects (Low and Very Low MR). Concurrent validity between the algorithm and WWC standards, supports these findings.

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Reversible drug-induced parkinsonism within an inpatient neurorehabilitation setting: a case study

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Background and aims: Medication associated with drug-induced parkinsonism (DIP) includes antiepileptic drugs (AEDs) and modern atypical antipsychotics. Risk is higher with valproate than other AEDs, with diagnosis difficult due to insidious onset. We describe an individual within inpatient neurorehabilitation who demonstrated reversible DIP following valproate reduction.

Method: A 43-year old male 20-years post-TBI had sodium valproate (Epilim) increased following increased seizures. Six months later an antipsychotic (Risperidone) was introduced for challenging behaviour. One year after sodium valproate increase, concerning symptoms raised by family and multidisciplinary team included slowed movement (bradykinesia), freezing, muscle rigidity, impaired posture/balance,

loss of automatic movements and speech delay. Falls risk changed from low to moderate. Neurology review led to introduction of lamotrigine and reduced sodium valproate dose. Balance, motor processing speed and attention were monitored.

Results: Significant improvement on Berg Balance Scale with reduction in falls risk occurred from period of higher-dose sodium valproate (7 assessments) to post-dose reduction (5 assessments; NAP=1, p=0.0027).

Three months following dose reduction, sustained attention and motor processing speed improvements were noted. Three consecutive scores of 4 on Test of Everyday Attention-Elevator Counting early dose reduction, increased to 6 after three months. Performance on star/letter cancellation and line bisection tasks improved from completion time of 60-70 minutes with physical assistance due to "getting stuck", to 30 minutes without assistance or errors.

Conclusions: DIP is reversible however early detection is important; rehabilitation professionals must have awareness of drugs implicated, and increased vigilance, especially with psychotropic polypharmacy which may increase risk of DIP.

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BRIEF encounters with Rasch: a new look at reliability and fit statistics in assessment of executive functions in children with acquired brain injury

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Aims/Background: Questionnaire assessments designed using a Classical Test Theory approach merit review in the context of advances in modern psychometrics. The BRIEF is described as an adjunct measure of executive function with multiple subscales. We have analysed a significant dataset of the BRIEF,

testing the originally published subscales for fit to the Rasch Measurement Model. The BRIEF includes eighty six items which were selected due to their reported high level of reliability and relevance in measuring everyday behavioural indicators of EF in young people. In the original scale development, principle component analysis identified eight subdomains of EF which form the subscales (emotional control, inhibit, shift, initiate, working memory, plan/organise, organisation of materials and monitor).

Method: Data were from 509 Parent Completed Brief Forms regarding children, 179 female 330 male, aged 5-18 years at assessment ($M = 14.16$ years, $SD = 4.82$). The injuries obtained ranged from birth to 15 years, and were a result of mixed causes including brain tumours (51%), TBI (28%), Encephalitis (5%), strokes (2%), birth complications (2%) and others. The Rasch software RUMM2030 was used following procedures reported by Tennant and Conaghan, using the partial-credit model for polytomous data.

Results: Most subscales failed to achieve fit to the model ($p < 0.05$) except for Working Memory ($\chi^2 = 82.4, p = 0.15$, Person Separation Index = 0.85). The 3 point likert showed disordered thresholds for only one of the 86 questions.

Conclusions: Further research that handles BRIEF data using this approach may yield new insights into executive function assessment and rehabilitation in this patient group.

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Cognitive complaints and underlying cognitive impairments measured by a digital neuropsychological assessment

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Background and aims: The majority of patients with acquired brain injury (ABI) reports cognitive complaints during daily life activities. A conventional paper-and-pencil neuropsychological assessment (NPA) often fails to capture the cognitive difficulties patients encounter. A digital NPA allows the development of novel outcome measures (e.g., fluctuations in performance) that are possibly more related to daily life than the traditional outcome measures (e.g., accuracy, total time). We assessed the relation between cognitive complaints as measured with the *Cognitive Complaints – Participation inventory* (CoCo-P) and underlying cognitive impairments as measured with a conventional NPA (traditional outcome measures). Novel outcome measures were developed for the digital NPA.

Method: We recruited 44 (former) outpatients with ABI who received either a conventional NPA ($n = 22$) or a digital NPA ($n = 22$). The CoCo-P was administered in all patients.

Results: All patients reported complaints regarding memory (89%), attention (98%), and executive functions (93%), but only a small percentage showed impairments regarding memory (33%), attention (28%), and executive function (12%) based on the traditional outcome measures. We found no relation between the reported complaints and the traditional outcomes measures. Some patients, who received a digital NPA, showed fluctuations through their performance for particular tasks indicating an inconsistency in working speed and accuracy.

Conclusions: Traditional outcome measures are not sensitive enough to capture cognitive difficulties in daily life. Novel outcome measures give more detailed information about fluctuations in

cognitive performance. Preliminary results showed that individual differences are large. Future research requires the development of normative data.

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Session 10: Datablitz

Working memory and hot executive functions in psychotic patients

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Background: The deficiencies of patients with psychosis in the executive socio-emotional functions (hot EEFF), could be related to deficits in cognitive components (cool EEFF) such as working memory (WM).

Objective: To study in a sample of psychotic patients the relation between the updating capacity of the WM and three components of the hot EEFF.

Method: 33 psychotic patients with a predominance of negative symptoms between 18 and 58 years old. To obtain the measure of WM, a 2-back task was used, and to obtain the measures of the hot EEFF, a computerized version of the Baron-Cohen face test was used, a version of the Iowa Gambling Task -IGT-, and the Spanish adaptation of the Hinting Task. For the 2-back task, the nonparametric sensitivity index A' was calculated according to the theory of signal detection. To analyse the relationship between the WM and the hot EEFF, correlation analyses were performed.

Results: Patients who showed a better performance in the 2-back task were those who obtained better scores in the

ToM test ($r = .64$; $p < .001$), and a lower percentage of errors in the task of recognition of emotional expressions through faces ($r = -.545$, $p < .01$). No significant correlation was found with the scores obtained in the decision-making task. **Conclusions:** These results suggest that in psychotic patients with a predominance of negative symptoms, deficiencies in WM could be interfering in the adequate processing of emotional information affecting the recognition of facial expressions and the capacity for mentalization.

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A scoping review of prospective memory self-report and informant-report assessment tools

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Background and aims: Self-report and informant-report prospective memory (PM) questionnaires are commonly used to assess subjective perceptions of the frequency and importance of PM failures. However, the extent to which responses on these subjective PM questionnaires reflect performance on PM task is unclear, as is the validity of these questionnaires for detecting PM impairments and monitoring intervention outcomes. We aimed to review the use of self-report and informant-report PM questionnaires as assessment tools in research and clinical settings.

Method: A scoping review methodology was used to search for studies published up to December 2017 that used self or informant versions of the Prospective Memory Questionnaire (PMQ), Prospective and Retrospective Memory Questionnaire (PRMQ), Comprehensive Assessment of PM (CAPM), and Brief Assessment of PM (BAPM). Studies were identified through database searches and hand searching reference lists.

Results: Self-report PM questionnaires were used in 273 studies, whilst informant-versions were used in nine studies. In these studies, self- and informant-report PM questionnaires had weak- to moderate strength relationships with performance-based PM measures. Some evidence of self-report and informant-report PM questionnaires being able to detect PM impairments and monitor interventions was found in the limited studies available.

Conclusions: The findings suggested that the weak relationships between self- and informant-report PM measures and performance-based PM measures may be attributed to methodological differences across studies and memory self-awareness issues. It is recommended that these subjective PM questionnaires are used alongside performance-based measures to provide a comprehensive assessment of individuals' PM capabilities and concerns.

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Are negative trials really negative? Analyzing the data of a randomized controlled trial from an individual perspective

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Background and aims: People with acquired brain injury (ABI) frequently suffer from anxiety and depressive symptoms. To this day there is no evidence-based treatment for this patient population. Randomized Controlled Trials (RCTs) investigating the effectiveness of interventions for anxiety and depression

following ABI are often negative. Can this be contributed to the treatments or are we examining the data from the wrong perspective? In these trials mean differences are used to investigate the differences between groups while the groups are often very heterogeneous. Therefore, we propose to analyze the data of these RCTs from a more individual perspective.

Method: In this study we are using the data from a published RCT (Kootker et al., 2017) with negative results. In the RCT stroke patients with depressive symptoms were randomly allocated to either augmented cognitive behavioral therapy or computerized cognitive training. The depression scale of the Hospital Anxiety Depression Scale (HADS) was the primary outcome measure, and measures of participation and quality of life were secondary outcomes. Outcome measurements were performed at baseline, immediately post treatment, and at 4- and 8-month follow-up. Effectiveness was established using mixed model analyses.

Result and conclusion: A number of alternative methods will be presented to interpret the data of this RCT such as a prognostic index for treatment outcome, visual data inspection, proportion improvement, reliable change index, and clinical significant improvement. Negative trials may not be negative when adopting another perspective which is highly informative for future studies.

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Applicability of 9-Hole Peg Test as a tool to improve insight in Huntington's disease

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Background and aims: Huntington's disease (HD) patients underestimate the impact of chorea on their functioning. This study aims to assess the impact of completing the 9-Hole Peg test (9-HPT) on the level of insight together with its general applicability in HD and association with other clinical measures.

Methods: Twenty patients (age 60.1 ± 8.72 , UHDRS-TFC 8.1 ± 2.4 , stages I-III) performed 9-HPT. For each hand, completion times (dominant - DH-C, non-dominant - NDH-C) were recorded. Before and after each test, awareness of the interference of symptoms with the task completion was assessed on three 11-point subscales: involuntary movements, motor slowing and coordination. Association of the 9-HPT scores with Unified Huntington's Disease Rating Scale (UHDRS), Symbol Digit Modalities Test (SDMT), Stroop test and Work Productivity and Activity Impairment (WPAI-Q6) was investigated. Spearman's correlation, Shapiro-Wilk W, Student's t, and Mann-Whitney's U tests were used where appropriate with $\alpha=0.05$.

Results: 75% of participants showed an increase in ≥ 1 awareness subscales. In summarised awareness (SA) scores, an increase was observed in 45% and 35% participants (DH and NDH respectively). All SA scores showed consistent positive correlation ($\rho=0.5$) with WPAI-Q6. Increase in those measures was associated with higher scores in clinical measures, with only significant difference in SDMT. DH-C and NDH-C correlated strongly ($\rho \geq 0.70$) with UHDRS total motor, oculomotor and TFC scores as well as SDMT and Stroop test scores.

Conclusions: 9-HPT shows a potential as a tool in assessment and rehabilitation of HD patients as its application can increase

insight and its scores are highly associated with measures commonly used in HD.

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MyWordTrainer: App-based word retraining in semantic variant Primary Progressive Aphasia

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Background and aims: Language skills central to everyday living are significantly impacted in primary progressive aphasia (PPA). While benefits of word retraining have been demonstrated in previous studies, these programs are not yet easily accessible. This study aimed to convert an existing, experimental approach into an app and explore its usability in people with semantic variant PPA (sv-PPA).

Method: The program used by Savage et al (JAD 2014; 40, 309-317) was recoded as an Android app and made available to 2 people with sv-PPA. For each participant, two tailored lists of target words were created. Over a 6-week period, participants used the app to complete 2 x 3-week blocks of word practice, with weekly tests to monitor learning success. After this period, participants and their families were invited to share their experiences of using the app, rate its usefulness and provide suggestions for improvement. A final naming test was administered 5 months after ceasing practice to measure retention.

Results: All features of the original program were successfully translated into the app. Sessions took approximately 30-45 minutes and were completed up to 5 times per week for 6 weeks. Both participants considered the app useful. Analysis of naming performance pre- to post-training confirmed significant

improvements in word retrieval (McNemar's Test, $p < .001$). While certain words relearned were retained 5 months later, the result was no longer significant.

Conclusions: App-based word retraining appears a feasible option for people with PPA. Future research is needed to test definitively the effectiveness of this treatment.

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Subjective visual complaints in patients with multiple sclerosis

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Background and aims: While care for patients with multiple sclerosis is improving, vision problems may be underestimated and patients do not always receive appropriate care for these complaints. This is striking as vision problems may have a vast impact on quality of life and as vision is perceived by multiple sclerosis patients as extremely valuable. The aim of this study is to map the prevalence, nature and severity of subjective visual complaints. A better understanding of these complaints will improve rehabilitation for people with multiple sclerosis.

Method: We developed a 19-item questionnaire to screen for subjective visual complaints, which was administered to 255 patients with multiple sclerosis in two Dutch hospitals.

Results: Almost 90% of patients reported to have one or more visual complaints. The most common complaints were blurry vision, having difficulty focusing and photophobia, which were all experienced by more than half of the patients. In addition, needing more time to perceive visual information, having difficulty with reading or adapting to light or darkness and a reduced contrast sensitivity were commonly experienced. The two least common complaints were having difficulty finding and searching and experiencing a distorted image but were nevertheless experienced by at least 10% of the patients.

Conclusions: Visual complaints are very common among multiple sclerosis patients and a wide range of visual complaints is experienced. Recognition and knowledge of these visual complaints can facilitate high quality rehabilitation that can be specially designed for these patients.

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Session 11: New findings in neuropsychological profiles of different populations

Pattern of neuropsychological impairment and clinical correlates in relapsing-remitting multiple sclerosis

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Background and Aims: This study specifically aimed at characterizing the profile of neuropsychological impairment and determining the relative importance of standard clinical variables in predicting specific cognitive dysfunction profile in a

cohort of relapsing-remitting multiple sclerosis (RRMS) patients of the south of Spain.

Methods: Ninety-one patients with clinically definite RRMS underwent neurological examination and a comprehensive neuropsychological test-battery. Depression and anxiety symptoms were also assessed. A residual score of 1.5 SD as cut-off point was used to diagnose cognitive impairment. Regression modelling tested the relative association between all clinical variables and neuropsychological performance.

Results: In our sample emerged that 78% were affected by some degree of cognitive deficit and that 53% had cognitive impairment in at least two neuropsychological test.

Semantic verbal fluency ('Animals') were the most frequently impaired area (63%) followed by working memory and/or information-processing speed (PASAT-3: 43%; SDMT: 34%), and memory (WMS: 22%). EDSS, mean age, depressive symptoms (BDI) and disease duration were variables selected in the final model ($R^2=0.40$; $P<0.01$) to predict SDMT performance, while that disease duration and STAI-E were retained in regression model predicting PASAT-3 performance ($R^2=0.29$, $P<0.01$). Educational level, mean age, and BDI demonstrated the strongest associations on the WMS ($R^2=0.301$, $P<0.01$) and 'Animals' ($R^2=0.23$, $P<0.01$) performance.

Conclusions: In addition to information processing speed and working memory and semantic fluency deficits may also be an important marker of cognitive impairment in RRMS patients. Our findings reinforce the importance of quantify clinical and neuropsychiatric symptoms to predict the subsequent cognitive performance in MS disease.

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Use it or lose it? How engagement in mentally stimulating activities relates to markers of neurodegeneration in

individuals with mild cognitive impairment

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Background and aims: Participation in mentally stimulating activities is thought to contribute to cognitive reserve and thus protect against cognitive decline; yet its association with clinical markers of neurodegeneration is not well established. We sought to determine the clinical value of a cognitively stimulating activities (CSA) questionnaire in relation to markers of cognitive decline in older people.

Method: A community sample of adults over 50 years ($n=267$) met criteria for Mild Cognitive Impairment (MCI) of amnesic (aMCI) or non-amnesic (naMCI) type. Participants completed a 13-item self-report CSA questionnaire, and weighted dimensions of intensity, mental engagement and social engagement were calculated via a panel of 23 raters. CSA mean and weighted dimensions were examined in relation to: (a) demographics, (b) traditional cognitive reserve proxies (education, pre-morbid IQ), (c) depression, (d) neuropsychological markers (processing speed, learning, memory, executive function, language), and (e) hippocampal volume. Correlational analyses were conducted for all MCI, aMCI and naMCI.

Results: CSA mean was found to have concurrent validity with traditional

cognitive reserve proxies. A clear pattern of associations emerged for naMCI between CSA mean and hippocampal volume, processing speed and executive functioning. Hippocampal correlations strengthened for CSA weighted dimensions, while the equivalent results for aMCI were non-significant.

Conclusions: Engagement in mentally stimulating activities may be particularly beneficial for individuals with naMCI, both in terms of hippocampal integrity and cognitive functioning. CSA shows considerable promise as a clinically valuable tool in the investigation of protective factors for late-life cognitive decline. Further psychometric and longitudinal validation is now warranted.

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The effects of treatment adherence on different neurological conditions, cognitive impairment and depressive symptomatology in adults with Atrial Fibrillation and Silent Brain Infarcts

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Background and aims: Atrial Fibrillation (AF) is the most frequent arrhythmia. Silent brain infarcts (SBI) are defined as asymptomatic cerebral infarcts that are observed in neuroimaging. Patients with AF are treated with antithrombotic therapy to prevent stroke. We aimed to analyze the difference in neurological

conditions, cognitive impairment and depressive symptoms in adults with AF and SBI and how the adherence to treatment affects on those variables.

Method: We selected 81 patients with AF. A MRI was performed to identify SBI and other lesions (microbleeds, white matter hyperintensities (WMH) and perivascular spaces). Cognitive impairment was evaluated with MoCA test, depressive symptoms with PHQ-9 and the treatment adherence with Morisky-Green test. After MRI we divided patients in groups depending on the presence of SBI and treatment adherence. Results were analyzed with U-Mann Whitney test.

Results: The group without adherence to treatment and SBI presented more lesions on MRI (periventricular WM lesions ($p<0.05$), number of WM lesions) and less punctuation on orientation subtest from Moca ($p<0.05$). The group with treatment adherence there was difference in depressive symptomatology ($p<0.05$) depending on SBI.

Conclusions: Subjects with SBI who didn't show treatment adherence had more WM lesions and more severe periventricular WM lesions than subjects without SBI. In addition, they had more cognitive impairment, specifically in orientation. In group with treatment adherence, subjects without SBI had more depressive symptoms than people with SBI. Treatment adherence in adults with AF and SBI can prevent other cerebrovascular disease and as a result, can protect against cognitive decline.

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Tactile perception, motor cognition, inhibitory control and cognitive impulsivity in children with attention-deficit/hyperactivity disorder

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Background and aim: The study of attention-deficit/hyperactivity disorder (ADHD) has traditionally focused on lack of inhibitory control. However, the pathophysiology of ADHD has also been associated with motor and somatosensory issues. The aim of this study was to determine whether children with ADHD present with tactile perception and motor cognition deficits and how aspects are related to inhibitory control and cognitive impulsivity.

Method: The study sample comprised 74 children aged 7 to 11 years who were divided into two groups: 43 with neurotypical development and 31 with ADHD. All participants completed standardized tests.

Results: Significant differences were found between groups in finger recognition, graphesthesia and motor cognition. Furthermore, cognitive impulsivity and inhibition showed a moderate correlation with Finger Identification and Hand-Movement tests.

Conclusions: The children with ADHD performed worse on measures of finger recognition, graphesthesia, sequence motor, figure copying and hand

movements, all of which could increase difficulty in learning and performing tasks requiring fine motor skills such as writing and other motor activities. The motor hyperactivity observed in these children could be a compensation mechanism to increase the low tactile registration and thus be able to show adaptive behavior. These findings open a new line of research that may have repercussions on its future treatment.

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Sensorimotor outcomes of children exposed to foetal zika virus infection during the first or second trimester of gestation

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Aims: Theory posits that some stages in the foetal-development of the human nervous system are more vulnerable than others. Microencephaly is typically

associated with events arising at 6-to-16 weeks gestation. Head-circumference is a predictor of later neuropsychological and adaptive function in children. In 2015 the world saw marked increase in babies with microencephaly associated with Zika which has infected over million Brazilians in the last two years. More severe consequences, particularly microencephaly are reported in neonates after maternal Zika infection during pregnancy. Our aim was to establish distinctions between the level of gross motor function in infants infected by Zika virus in the first and second trimesters of pregnancy.

Method: 31 foetal-exposed children (18 girls and 13 boys, aged 6 to 18 months) were recruited from Recife and Arcoverde areas of Brazil. Tests included the Alberta Infant Motor Scale (AIMS - prone, supine, sitting, standing, total score and corresponding percentile) and Gross Motor Function Measure (GMFM, A: lying/rolling and B: sitting).

Results: Children with microcephaly at birth, whose mothers had Zika virus infection in the first or second gestation trimester, showed poor sensory and motor outcomes (impaired muscle tone and antigravity postural control). Children whose mothers were affected in the first trimester had lower head circumference measures than children whose mothers were affected in the second trimester.

Conclusions in relation to informing theory implications for practice and monitoring are discussed, together with the challenges of researching such conditions in developing world settings.

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Session 12: Effectiveness of peer-befriending and interventions for ADL, attention and memory

Efficacy of activities of daily living retraining during posttraumatic amnesia
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Background and aims: Patients in posttraumatic amnesia (PTA) may receive limited rehabilitation due to the risk of overstimulation and agitation. This assumption has not been tested. This study examined the efficacy of providing activities of daily living (ADL) retraining while in PTA.

Method: 104 participants with severe TBI, admitted to inpatient rehabilitation, in PTA>7 days were randomised to receive treatment as usual (TAU) with daily ADL retraining (treatment), or TAU alone (physiotherapy, necessary speech therapy), during PTA. ADL retraining during PTA followed errorless and procedural learning principles and the manual included strategies for therapy engagement during PTA. Primary outcome was Functional Independence Measure (FIM) assessed at PTA emergence, discharge, and 2-month follow-up. Secondary outcomes included PTA duration, length of inpatient stay, Agitated Behaviour Scale scores, and Community Integration Questionnaire (CIQ) scores at 2-month follow-up.

Results: TAU and treatment groups did not differ significantly in age, education, GCS, time post-injury, sex or injury cause. Random effects regressions revealed a significant interaction of group and time ($p<0.01$). The treatment group had greater improvement than TAU in FIM total change scores from baseline to PTA emergence, maintained at hospital discharge, although not at two-month follow-up. Groups showed no significant differences in agitation. The TAU group showed a trend toward longer length of stay ($M=78.59$, $SD=93.39$) than treatment condition ($M=63.12$, $SD=42.20$), and

longer PTA (M=53.14, SD=77.18) than the treatment group (M=44.23, SD=32.52). Groups did not differ on CIQ scores at follow-up.

Conclusion: Results suggest individuals in PTA can benefit from skill retraining during PTA. **Correspondence:** Jennie Ponsford ; jennie.ponsford@monash.edu

When practice does not make perfect – examining the impact of word retraining on untrained words in Semantic Dementia

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Background and aims: Word retraining techniques can improve picture naming of treated items in people with Semantic Dementia (SD). The utility of this, however, has been questioned given the propensity for under- and over-generalisation errors in naming in SD. Few studies have investigated the occurrence of such errors. This study aimed to determine: 1) does misuse of words increase following word retraining?; 2) does training result in reduced clarity of communication when target words are not retrieved?

Method: Naming data from nine participants with SD who completed a word retraining program were analysed.

For each participant, performance on trained and untrained words from final baseline and immediate post-intervention assessments were examined. Responses were: 1) coded to identify instances of misuse, where a word from the training list was used to refer to an untrained item; and 2) scored for clarity, using a scale from -1 (clearly incorrect) through to +1 (correct).

Results: No significant increase in misuse of words was found in any participant, for trained or untrained words (all $p > .05$), with such errors occurring rarely (1-4% of responses per individual). While clarity scores increased from baseline to post-intervention for trained words (all $p < .038$), only one of the nine participants showed decline in untrained words (J1: $p = .038$), while two participants improved (S2: $p = .01$; G1: $p = .025$).

Conclusion: No negative impacts were observed following word retraining on untrained vocabulary. This provides further evidence of the benefit of these programs for patients with SD.

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Effectiveness of a rehabilitation system on attentional functions through multiplay competitive tasks: clinical and neurophysiological study in patients with acquired brain injury

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Introduction: Competition leads to an increase in both motivation and intensity when carrying out a task.

Objectives: To assess the effectiveness of a competitive intervention aimed at improving attention processes in patients

with Acquired Brain Injury (ABI). To evaluate the possible neurobiological mechanisms resulting from this intervention through a bioelectrical signal analysis and cognitive potentials.

Material and methods: A cross-sectional randomized clinical trial of patients (n = 25) with ABI undergoing rehabilitation to improve attentional functions was carried out using conventional techniques versus competitive ones.

Evaluation: We analysed; 1) Total psychometric improvement (Global Index) and the improvement divided into five indexes (z-score): Work Memory, Processing Speed, Sustained and Alternating Attention and Inhibition; 2) Degree of motivation; 3) Usability of the virtual system and 4) Individual's and family's perception of improvement.

Results: Repeated measures ANOVAs showed a beneficial effect of the intervention in both groups at the end of the treatment ($p < 0.001$). The improvement in Global Index (Z score) after the competitive intervention was higher than that experienced after conventional treatment (0.4 ± 0.3 vs 0.05 ± 0.3 , $p < 0.01$), mainly at the expense of improvements in areas such as Work Memory, Processing Speed and Inhibition. The perception of improvement, the amusement capacity measured with the Motivation Inventory and the degree of Usability (SUS) of the system were excellent (83.1 ± 10.8).

Conclusions: Competitive strategies can help us to rehabilitate the attentional functions of patients with ABI who are still in chronic phases in an enjoyable and effective way.

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Supporting wellbeing through PEer-Befriending (SUPERB) trial: An exploration of fidelity in peer-befriending for people with aphasia

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Background and aims: Peer-befriending involves people with experience of the condition providing support to those who have recently had a stroke and aphasia. This paper will report on fidelity of a trial peer befriending intervention for people with aphasia post-stroke. Aims: (1) to investigate the adherence to the protocol of peer befriending visits, training and supervision of peer befrienders; and (2) explore the inter- and intra-rater reliability of fidelity checklists.

Methods: The current study compares peer-befriending with usual care for people with aphasia post-stroke. Ten befrienders attended training and group supervision sessions. Each participant randomised to the peer-befriending arm of the trial received 6-visits (over 3-months) from a befriender. All training and supervision sessions and one (of six) visits were videotaped and rated using a fidelity checklist. Adherence was evaluated by calculating a per-cent fidelity score and kappa statistics for inter- and intra-rater reliability.

Results: Preliminary results show high treatment fidelity scores for training workshops (93.8%), group supervision sessions (92.9%-100%) and intervention visits (87.5%-100%). Inter-rater reliability for the supervision sessions was excellent ($k = 0.76-1.0$) and fair-to-excellent for the intervention visits ($k = 0.45-0.77$). Intra-rater reliability was good-to-excellent for the supervision sessions ($k = 0.61-1.0$) and intervention visits ($k = 0.60 - 1.00$).

Conclusions: Early fidelity results

demonstrate that training and supervision of befrienders are being delivered as intended in the intervention trial.

Variation in the reliability of the checklists to detect the presence (or absence) of behaviours suggests that further training and/or refinement of the checklists may be warranted.

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Accessibility and Acceptability of Voice-Activated Personal Assistants for People with Cognitive Impairments due to Acquired Brain Injury

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Background and aims: Voice-Activated Personal Assistants (VAPAs) like Amazon's Alexa and Apple's Siri offer a promising ecosystem for the development of assistive applications for people with Acquired Brain Injury (ABI), due to their hands-free, non-visual interaction, integration with smart devices and intuitive user interface which requires little training. However, interaction with VAPAs can often be problematic, and speech-only interaction can affect memory and cognitive load. The purpose of this study is to examine the use of VAPAs by people with cognitive impairments due to ABI, and to present a set of use cases and guidelines for the design and development of assistive applications.

Method: An online survey (n=112) for people with ABI, a set of focus groups (n=29) with ABI survivors and neuropsychologists, and a set of online interviews (n=14) with people with ABI who are regular users of VAPAs.

Results: VAPAs can be beneficial for people with ABI for: giving prompts to support memory and task completion,

self-monitoring and remote assistance by therapists and care providers, and easier access to scheduling applications. To be acceptable by ABI survivors, VAPA applications should be customisable and personalisable to support users with different cognitive skills, friendly and intimate to be perceived as trustworthy, and simple/straight-forward to reduce cognitive demand.

Conclusions: There are several ways that VAPAs can be beneficial for people with ABI; their current functionality and design, however, can make their use cumbersome and frustrating. Further research on interaction design can provide ways to improve their usability and efficiency.

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FRIDAY POSTERS

Investigating the effect of psychoeducation interventions in improving misconceptions of traumatic brain injury (TBI) among first year university students

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Background and aims: A number of studies explore the misconceptions of traumatic brain injury (TBI) in various geographical regions, but few have focused on what can be done to improve the knowledge amongst different populations. This study will attempt to explore low cost psychoeducation interventions around misconceptions, which can hinder TBI-related prevention and recovery.

Methods: This study includes both quantitative and qualitative components. The study is divided into three parts: *Part*

A: the pre-test component, which it seeks to measure TBI knowledge and misconceptions through survey format.

Part B: the implementation of different types of psychoeducation interventions delivered through a lecture, video or pamphlet. It also includes the re-administration of the survey (post-test).

Part C: a focus group in which participants discuss the experiences within each of the interventions. All first-year students enrolled in the first year psychology PSY1005/7S courses at the University of Cape Town (UCT) will be invited to participate through the use of convenience sampling. Statistical analyses includes descriptive statistics, one-way and repeated measures ANOVAs, and thematic analyses of transcribed narratives, related to parts A-C of the study, respectively.

Results: Results suggest that psychoeducation interventions are important in terms of dispelling common misconceptions around TBI and further studies will be informed by the feedback received in the focus group session.

Conclusion: Adequate awareness, knowledge and understanding of TBI is paramount to the prevention and recovery of trauma-related brain injuries, which is particularly relevant in countries with (probable) high rates of TBI, such as South Africa.

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Multidisciplinary neuropsychological group rehabilitation for elderly stroke patients in Turku City Hospital

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Background: In Finland, 25 000 people are annually affected by stroke. Age is the biggest risk factor. Around 50% of stroke patients manifest deficits in cognitive functioning three months post stroke.

These symptoms can remain permanent and thus markedly decrease everyday life functioning. Cognitive rehabilitation has been shown to support the performance of stroke patients. Yet, it hasn't been available for elderly stroke patients in Finland. We present a model of multidisciplinary neuropsychological group rehabilitation for elderly stroke patients in Turku City Hospital.

Intervention: Our main goal is to support the patients' awareness of cognitive symptoms and their adjustment to changes in performance. The group intervention consists of 5-6 meetings supervised by a clinical psychologist and an occupational therapist. The themes of the meetings are memory and attention deficits, pain, fatigue, depression and psychological adjustment. Methods include education, practice and peer discussion about finding compensatory skills. A home visit and a group session for participants' family members are included. The participants are in the subacute or chronic phase post stroke and have mild to moderate cognitive deficits. Sufficient communication skills and motivation are required for participation.

Conclusions: The group participants report education and peer support as main benefits of the intervention. According to clinical observations the intervention seems to support the participants' awareness of their cognitive deficits and the learning of compensatory skills for everyday life functioning. We conclude that neuropsychological rehabilitation should be an essential part of the rehabilitation of elderly stroke patients.

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A meta-analytic review of prospection deficits in Parkinson's disease.

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Background and aims: While Parkinson's disease (PD) is associated with prominent motor deficits, neurocognitive impairment is also common and can contribute greatly to disease burden. The aim of this study was to gain a clearer understanding of how PD affects one of the most functionally important cognitive domains: prospection.

Method: Meta-analytic methodology was used to quantify the magnitude of PD-related deficits across the two prospection domains of planning and prospective memory. Thirty-nine studies involving data from 1404 people with PD and 1382 controls contributed to the analyses.

Results: The results indicated that, relative to controls, PD is associated with a large deficit in planning ($g = -0.82$) and a moderate-sized deficit in prospective memory ($g = -0.58$). Prospective memory sub-analyses indicated that these deficits are evident for both time and event-based tasks, as well as for tasks that vary in their level of ecological validity. Significant impairment was also evident for both medicated and non-medicated PD sub-groups, but for planning, these deficits were substantially greater in the unmedicated sub-group.

Conclusions: The results suggest that prospection related deficits in PD should be considered when tailoring rehabilitative therapies to be within the scope of available cognitive abilities. Further, these data speak to the importance of reassessing prospection as the disease progresses, due to the potential influence of dopaminergic medication. Finally, this study highlights future research directions that may inform clinical interventions and assist

people with this disorder as well as their families to make adjustments regarding their expectations of the disease's course.

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Evaluating the Feasibility of a Family Intervention following Traumatic Injury: Preliminary Experiences

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Background and aims: Traumatic injury to the spinal cord (tSCI) or brain (TBI) constitutes a severe life change for not only the individual acquiring the injury, but the whole family. Few interventions have tried to address the changes in the family following traumatic injury including both the patient and the surrounding family. The current study investigates the feasibility of a newly developed family intervention consisting of 8 manualized sessions including the whole family. The study aimed at assessing the initial experiences of two families completing the intervention, more specifically aimed at investigating 1) attendance and completion of assigned home work, and 2) the families' feedback regarding the content of the intervention each of the eight sessions and the cultural appropriateness of the intervention.

Methods: Two families participated in semi-structured interviews. Both participating families were couples living together, and who had acquired the injury within 18 months. The TBI family were in their 20s and currently unemployed, and the tSCI family was in 70s and both retired.

Results: Both families completed all 8 sessions and completed all homework assignments. The TBI family expressed a significant interest and pleasure in working with the assignments at home. The tSCI family also completed all home assignments, however they expressed that the amount of homework was excessive. The TBI family found the intervention concrete, feasible and very applicable in their daily life. Only few examples were given pointing to cultural inappropriateness.

Conclusions: Based on the responses of the families, the intervention seemed feasible and applicable for the families in their daily life.

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A Study of Empathic Skills and the Recognition of Facial Expressions in People Diagnosed with Alzheimer's Disease

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Background and Aims: Empathy and the recognition of emotional expressions through the gaze are two factors of social cognition, responsible for social interactions.

Method. A sample of 60 participants, 30 people diagnosed with Alzheimer's disease (AD) and 30 healthy controls was selected. He was administered the Personal Reactivity Index (IRI) and the Mirada test (RMET).

Results. People with AD obtained a lower performance on the RMET test. However, in the empathy scale, no statistically significant differences were found between the groups, except for a higher score in the subscale personal affliction in people with AD. Regarding the influence of the sex variable, only differences were found in the IRI in the group of people with AD, with women obtaining the highest scores.

Conclusions: Alterations in these capacities can be an impediment in the interpersonal relationships of people with AD. These results could be considered in the intervention of the disease.

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Preliminary validity evidences for the Spanish version of the BENCI Battery

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Background and aims: The BENCI (Computerized battery for children's neuropsychological assessment) Battery was developed in the University of Granada as an assessment tool for the domains of processing speed, visual-motor coordination, attention, language, memory, and executive function in children. Its computerized design facilitates and standardizes its administration and data recording (correct responses, errors, reaction time). This battery has been previously validated in children from Morocco and Ecuador but there is not available data in Spanish children. The objective of the present research was to show the preliminary validity evidences in Spanish population.

Method: The study included 44 Spanish-speaking schoolchildren from Alicante

(Spain). The range of age varied from 9 to 11 years old. They completed the BENCI and a set of neuropsychological test including: Stroop test, Trial Making Test, Digits and Toni-2 (for abstract reasoning). Bivariate correlations were performed to test the relationship between the classical tasks and the tasks from the BENCI.

Results: Statistically significant relationships were found between the BENCI tests and the corresponding tasks of abstract reasoning, cognitive flexibility and working memory.

Conclusions: The Spanish adaptation of the BENCI battery seems to have adequate indicators of validity, in line with the previous versions of the tool.

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Self-identity reconstruction in Veterans and military service members after traumatic brain injury

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Background and aims: Over 361,000 American military service members (MSMs) have returned from Operations Enduring Freedom (OEF) and Iraqi Freedom (OIF) with traumatic brain injury (TBI) (Defense and Veterans Brain Injury Center [DVBIC], 2017). Changes in abilities and life roles as a sequelae of TBI result in changes in self-identity (Kelly, McDonald, & Kellett, 2013). Discrepancy between previous and current self-identity can lead to inability to function and maladaptive behaviors such as addiction and homelessness. Self-identity reconstruction (SIR) involves acceptance of new limitations and a focus on new abilities, which empower a person to orchestrate their own successful, long-term recovery from TBI. Numerous SIR studies have been conducted in the civilian population, but little is known how findings from those studies translate to

Veteran and MSMs' (VMSMs) experiences and needs.

Method: The study was a one-year qualitative study using semi-structured interviews of 20 VMSMs with moderate to severe TBI who received inpatient rehabilitation program in the Veterans Health Administration (VHA).

Results: Findings suggest SIR is an extended, individualized process. SIR starts with recognition and acceptance of changed identity. Time to reflect on experiences is essential. Rehabilitation experiences influence SIR. Personal connections facilitate SIR. Supportive environments are important to exploring possibilities.

Conclusions: These results suggest previous models of self-identity reconstruction can be extended to the unique American VMSM population. Future research focused on relationship-based communication styles between providers and people with TBI may improve SIR and long-term recovery outcomes.

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Challenges of providing cognitive rehabilitation services in Palestine

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Background and aims: Little is known about the cognitive rehabilitation services in Palestine. However, cognitive rehabilitation services are not well developed. Therefore, this study aims to identify challenges faced by professionals in the field of cognitive rehabilitation.

Methods: A cross sectional survey was conducted on 48 Palestinian occupational therapists in order to investigate challenges faced by them in providing cognitive rehabilitation. Furthermore, literature published before 2018 in

Palestine was reviewed to examine the psychometric properties of the available cognitive tests in Palestine.

Results: This study highlighted many challenges of providing cognitive rehabilitation services. Specifically, Palestine faces a notable lack of cognitive rehabilitation services since it is provided by only 5 rehabilitation centers of around 200 beds around the West Bank and the Gaza Strip. This also indicates the limited number of specialists providing those services which is restricted to occupational therapy and psychologist. Additionally, sociocultural considerations are reported to affect the process of cognitive rehabilitation where occupational therapists, for instance, are expected to prioritize physical rehabilitation over cognitive rehabilitation. In addition to the limited number of available cognitive tests, the cultural and linguistic variables are also deemed to affect the validity of the outcome measures used with the Palestinian population.

Conclusion: Further investigations are required to study and address the adapted tools to use with cognitive dysfunction in Palestinian context. Hence, cross-cultural research is needed to identify the appropriate adaptations for the best practices.

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Discourse analysis for Japanese people with TBI: Why their communications are incomprehensible?

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Background and aims: Limitation of syntagmatic structure in discourse of the Japanese language is more moderate than in the Indo-European language such as

English and French. However, the communication of Japanese people with traumatic brain injury (TBI) is poor and difficult to comprehend, although does not deviate from syntactic rules. The purpose of this study is to investigate the communicative features of Japanese people with TBI by discourse analysis.

Method: Participants were 5 individuals with TBI and 5 neurologically healthy controls, all were Japanese speakers. The assessment of speech production ability, story grammar, rate of necessary words were performed using 4 picture-story test. In addition, all propositions were divided into appropriate proposition which connects sentences adequately (e.g., semantic relationships, linking lexical items) and inappropriate proposition which does not connect sentences adequately because of unnecessary information as well as inappropriate anaphoric reference.

Results: In TBI patients, the speech production ability, story grammar, necessary words and appropriate propositions were significant less, on the other hand, inappropriate propositions were significant more than in controls ($p < 0.05$).

Conclusions: This study suggests that communication difficulties following TBI are caused by lack of necessary expression to explain things, or addition of irrelevant expression to topics, even though limitation of syntagmatic structure in discourse is moderate like Japanese language.

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Numeric input operation in electronic devices among clients with Unilateral Spatial Neglect

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Background and aims: The modern electronic devices are required that users carries out operation of button while viewing the display. We focused on ability in numeric input operation among clients with USN.

Method: Seven clients with mild left USN were deemed medically stable. The control group were seven clients with memory deficits and eleven healthy persons. We developed application software to judge difficulty of operating electronic devices for tablet-type device. Participants were instructed to input a digit sequence of 4, 7 and 11 digits into a tablet.

Results: The neuropsychological data that involve visuospatial function were lower for the USN group than the amnesia group. In numeric input task, the USN group required longer time and more times of error than other two control groups. In investigation of qualitative of the error, there were the following two categories. (1) error of output (2) error in the preattentive process (e.g. they left out a digit sequence). The errors in the preattentive process for the USN group were the higher appearance compared to other two control groups. In detail, the USN group often left out the sequence of the middle not neglecting the left-sided sequence.

Conclusions: The mild USN group are likely to face difficulties for the use of the modern electronic devices. These results were caused by forgetting where they input to the digit-sequence during the numeric input operation. It is not the neglect on the left side of displayed sequence and button array of device at the time of input.

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Learning compensatory strategies and the improvement of visuoconstructive skills in people with hemispatial neglect from Acquired Brain Injury following a multimodal intervention program

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Background: The experience of hemispatial neglect is a frequent consequence years after acquiring the brain injury which can lead to difficulties in an individual's performance of activities of daily living.

Aim: We analyse the effectiveness of an intervention in patients with hemispatial neglect implementing a multimodal rehabilitation program.

Method: Quasi-experimental study using a pre-post design with six patients experiencing hemispatial neglect more than 5 years post brain injury.

In the assessment The Line Bisection Test, Visual Attention Test, Copy of Images and the Baking Tray Test were administered. The program consisted of 8 sessions (2 times a week). Each session was 1 hour in duration: 45 minutes in top-down tasks (paper and pencil and computerised tasks: NeuronUp and Stimulus), and 15 minutes of training in bottom-up exercises (forced trunk rotation, sensory stimulation of the affected limb, mirror therapy and training with Wii fit). All the activities were carried out with glasses adapted with the Right Hemifield Eye Patching technique.

Results: After the intervention, no changes in visual-perceptual abilities were observed. However, five of the patients showed the acquisition of functional compensatory strategies for their hemispatial neglect, and improvement in their visuoconstructive abilities.

Conclusions: Multimodal intervention programs can be useful for the rehabilitation of patients with hemispatial neglect. In particular, the results suggest possible benefits in the patient's awareness of their affected side, the development of compensatory strategies and improvement in the performance of visuoconstructive tasks related to activities of daily living.

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Quality of life and functional autonomy of patients with developmental disorder and refractory epilepsy. A single case study

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Background: Refractory epilepsy refers to patients whose seizures persist even when using proper antiepileptic drugs and entails consequences on quality of life(QoL).

Aim: We analyze how seizures impact on the patients' QoL and autonomy when there is also a developmental disorder associated.

Methodology: A cross-sectional single-case-study on a 27-years-old patient with a developmental disorder who presents Plurimorphic-refractory-epilepsy that include variable morphology since she was 15 years old with an average of 5.26 crisis/month in the last two years. A clinical interview and the Quality of life in epilepsy-QOLIE-31, WHO-Quality of life-BREF and the Instrumental activities of daily living(Lawton-Brody) were administrated.

Results: The patient showed total dependence for daily-life-activities (Lawton and Brody:1point). Furthermore, an impact in all the scales assessed in QOLIE-31 was observed: Seizure Worry

(T:28), Emotional Well-Being (T:18), Energy/Fatigue(T:25), Social Function (T:26), Cognitive Function(T:28), Medication Effects (T:32) and Overall Quality of Life (33-34). By other side, even if subjective satisfaction with the overall health and quality of life was described as normal by the patient, it was found a negative impact on all four domains of the WHOQOL-BREF: physical health(PC:31), Psychological health(PC:56), Social relationships(PC:0) and Environment(PC:69).

The questions are categorized into four domains that separately assess different items related to: "physical health, psychological health, social relationships and environment". It also includes two independent questions that quantify the individuals' subjective satisfaction with their overall QOL and health status

Conclusions: Seizures in refractory-epilepsy play an important role in QoL and autonomy. Dependency on daily-life-activities, fears relating to seizure occurrence and concern for the personal situation seem to be variables involved.

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Applying the principles of neuropsychological rehabilitation to build a holistic vocation-focused day program for cancer survivors

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Background and aims: Substantial findings have accumulated on cancer-related neuropsychological complaints and their broad influence on functioning and well-being after recovery. We developed a holistic vocational rehabilitation day program, grounded in intervention for acquired brain injury (ABI) and adapted to address the specific needs of cancer survivors.

Method: A pilot group was opened for 5

women (mean age: 40.2) with breast cancer in remission. All had lost jobs and were unable to reintegrate into employment. The 6-month day program, up to 5 days/week for 5 hours/day, is held in a specially designed wing of a long-standing community-based ABI rehabilitation center. Interventions include: individual and group psychotherapy and cognitive rehabilitation, psychoeducation, yoga and creative therapy (art and writing), and job training, placement, and support services.

Results: Neuropsychological assessments at program start revealed minor but significant deficits among all participants in attention, executive functions, and memory. One month in, participation and adherence were high overall, with greater motivation for emotionally-focused interventions. Notable improvements in fatigue and mood were observed, as were post-traumatic responses and high anxiety related to disease recurrence, with loss of fertility as a key source of emotional distress. Quantitative within-subject analyses (pre-post) will be available for presentation.

Conclusions: Initial evidence supports the need for and potential benefit of post-cancer neuropsychological rehabilitation day programs with a vocational focus. Adherence rates and initial observational data are encouraging and suggest value in the group setting that goes beyond individual therapy. These and further data collected as the program progresses will be discussed.

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“Help me find a girlfriend”: A single-case experimental design of a dating intervention for a person with traumatic brain injury.

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Background and aims: People with brain injury consider relationships and finding someone to love as important to them in their lives post-injury. However, helping a person find love is not often a goal set by rehabilitation professionals. Earlier studies have examined dating behaviours and interventions for people with and without disabilities, but dating has not been explored in-depth with people with brain injury. This paper presents a single-case study of a dating intervention for a person with TBI.

Methods: A 27-year old male who sustained a TBI was treated over a one-year period by a multidisciplinary team. The man had identified finding a girlfriend as his main rehabilitation goal. Measures taken included quality of life, social participation, perceived communicative ability and ratings of social behaviour. Treatment involved practice dating, on-line social media platforms, metacognitive skills training, role-play and reflection. Pre-post questionnaire data was obtained with sampling of social behaviour throughout.

Results: Increased dating opportunities, improvements in quality of life and participation with a reduction in inappropriate social behaviours were observed. The patient had successful dates with several women and the support workers were better able to manage his expectations of dating.

Conclusions: The findings from this single case study are only preliminary. However, the case provided some guidance as to the treatment strategies most feasible to implement and acceptable to the person with TBI and his support team. Further work to understand what people with TBI want, intervention methods, and outcome measures in this area is needed.

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Exploring the Factors that Affect the Neurocognitive Performance of Ecuadorian Preschoolers: A Preliminary Study

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Background and aim: The quality of cognitive training received during childhood and future performance are closely related (Boivin et al., 2015; Young, 2002). Considering that the factors that affect the cognitive performance of children are being analyzed in Ecuador, the objective of this study was to explore the performance in working memory of Ecuadorian children who belong to public and private preschools.

Method: The Localization and Recognition tests (WPPSI-IV: Escala de Inteligencia de Wechsler para preescolar y primaria; Weschler, 2014) were administered to a sample composed of 42 Ecuadorian preschoolers aged 50-61 months ($M = 55.12$; $SD = 2.898$), of which 8 boys and 8 girls belong to a public preschool ($M = 55.63$; $SD = 3.263$) and 10 boys and 16 girls to a private preschool ($M = 54.81$; $SD = 2.669$).

Results: No statistically significant differences were found between the scores of both groups in Localization ($p = .552$) and Recognition ($p = .361$).

Conclusion: Given that the findings suggest that the type of preschool does not have a determining effect on the performance of preschoolers in working memory, the analyzes should focus on other specific factors such as the socioeconomic status, nutritional status, education of the educators, and the quality of the methodological strategies that are applied in the Ecuadorian preschools.

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Three New Tools to Assess Working Memory in Preschoolers: A Preliminary Study of Their Psychometric Properties

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Background and objective: Taking into account both the development of the nervous system in early childhood and the interaction of cognitive processes, the specific measurement of executive functions such as flexibility, inhibitory control, and working memory is somewhat complex (D'Esposito and Postle, 2015; Diamond, 2013). The aim of this study was to analyze the concurrent validity of three tests (T1, T2, and T3) designed to measure working memory in preschoolers. These tools (each of them possesses a predominant load of visual-spatial working memory, visual working memory, and verbal and visual-spatial working memory respectively) use a set of animal figures and have an administration procedure of 5-7 minutes.

Method: T1, T2, and T3 were administered together with the *Localización* and *Reconocimiento* tests (WPPSI-IV; Weschler, 2014) to a sample of 69 Ecuadorian children aged 41-61 months ($M = 53.52$; $SD = 5.147$). Three sub-samples were formed to study the concurrent validity of the three tests and a sub-sample to identify the correlations between them.

Results: Only T3 correlated significantly ($p < .001$) with *Localización* ($r = .712$) and *Reconocimiento* ($r = .646$). Moreover, T3 obtained significant correlations ($p < .001$) with T1 ($r = .603$) and T2 ($r = .602$).

Conclusions: Taking into account that the findings suggest that P3 adequately measures the working memory construct, it is convenient to extend the

psychometric studies of this test to contrast its usefulness in the preschool population.

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Measuring cognition on the spectrum from test to daily life

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Background and aims: After brain injury, many people experience cognitive deficits, which can be measured in a variety of ways. Neuropsychological tests are used to assess cognitive functioning on the level of functions/deficits, but these tests have low ecological validity.

Questionnaires are used to measure cognitive complaints from the perspective of the patient, which may differ from the test results. Currently, there is no consensus on how to objectively measure cognitive problems in daily life, also known as functional cognition. In this project we aim to review instruments measuring cognition in daily life, usable by both clinicians and researchers.

Methods: A literature study was conducted to identify the types of assessment of cognitive functioning and associated instruments. Two expert meetings were organised to discuss the concept of measuring cognition and review the available instruments for functional cognition.

Results: Seven dimensions of measuring cognition were identified and placed on a continuum, ranging from test situations assessing one cognitive domain to daily

life functioning. In the first meeting, the panel agreed on the need for an instrument to observe cognitive functioning in a natural setting, as opposed to deriving cognitive functioning from performance on assigned tasks, which is the case for many occupational therapy measures. In the second meeting, the continuum was finalised. No suitable measurement instrument that fit the requirements was identified.

Conclusion: A need for a widely usable measure of functional cognition remains. A continuum of measuring cognition was formulated. Experts stress the importance of a multidimensional approach of measuring cognition after brain injury.

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Does fear and catastrophizing about mental activities lead to performing less mental activities?

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Background and aims: A uniform explanation for delayed recovery after mild traumatic brain injury (mTBI) is still lacking. Recent studies showed the potential of the fear-avoidance model

explaining delayed recovery as a result of catastrophizing about post-concussion symptoms and fear-avoidance behaviour towards mental activities. The aim of this experimental study was to investigate whether high levels of catastrophizing and fear-avoidance thoughts would lead to behavioural avoidance of mental activities.

Method: A randomized crossover within-subject design with two measurements including healthy participants. On each testing day, post-concussion symptoms, levels of catastrophizing, fear-avoidance, disuse, depression and state and trait anxiety were assessed by questionnaires. Participants were exposed to three cognitive challenging tasks (cognitive condition) or their simplified version (control condition). Avoidance of mental activities was assessed by the time participants chose to spend on the tasks.

Results: Preliminary results from the first 43 of the total of 80 healthy participants showed that catastrophizing was more related to avoidance of mental activities, whereas fear-avoidance was more related to a decreased performance.

Furthermore, significant correlations as suggested by the fear-avoidance model were found. The results of the entire sample will be available at the conference.

Conclusions: This study provides evidence that high levels of catastrophizing and fear-avoidance are related to avoidance and performance of mental activities in healthy adults. The results support the applicability of the fear-avoidance model in the mTBI population, explaining the disease process by catastrophizing about post-concussion symptoms and avoidance of mental activities.

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Bespoke cognitive and psychological follow-up after surviving an out-of-hospital cardiac arrest – the CARE (Care After REsuscitation) clinic model

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Background and aims: Survivors of out of hospital cardiac arrest (OHCA) are at heightened risk of developing cognitive difficulties and psychosocial morbidity, with the latter also affecting family members. Although European Resuscitation guidelines recommend a cognitive/psychological screen for OHCA survivors, no dedicated service has been described yet. We present the results of a small pilot clinic, run by a Clinical Psychologist and Arrhythmia Nurse, specifically focussed on investigating and addressing cognitive and psychosocial recovery.

Method: OHCA survivors were offered a short cognitive/mood screen before discharge, in addition to bespoke leaflets and online resources. Family members were seen as appropriate within the limits of the service. More detailed cognitive testing and a review of the psychological adjustment of the survivor/family member was offered 3 months after discharge. Signposting to relevant services was completed as appropriate.

Results: 87 patients were admitted between November 2017 and October 2018, with 54 surviving to hospital discharge. 38 were assessed around the time of discharge due to limited service capacity, with 70% showing difficulties in at least one cognitive domain. Twelve patients accepted a 3-month review during this period, with 50% showing significant difficulties in at least one cognitive domain. Incidence of PTSD symptoms was high in family members pre-discharge (47%) and at 3-month

(44%), but low in survivors (8.3 % at follow-up)

Conclusions: Cognitive difficulties are common in OHCA survivors but often unidentified. Psychosocial morbidity is also high for their family members. Our clinic allows early identification of these problems and signposting to relevant services.

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Study of a case of attentional syndrome and visuospatial dyspraxia in a 10 year old girl with convulsive syndrome

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Background and aims:

Neuropsychological dysfunction in children with a history of convulsive syndromes is a problem that is increasingly studied in neuropsychological exploration and intervention. Current studies in neurosciences support the correlation of cognitive stimulation and brain plasticity as a basis for neuropsychological rehabilitation. The objective of this study is to perform the neuropsychological analysis of a 10 year old girl with a history of convulsive syndrome, based on the evaluation and intervention of a neuropsychological stimulation program.

Method: The methodology is a unique and applied case design, descriptive. The Neuropsychological Maturity Questionnaire for schoolchildren "CUMANES" and the behavioral observation record were used.

Results: The findings show a difference in the results obtained in the "CUMANES" questionnaire in the pre-test evaluation (IDN = 79, low level) in relation to the post-test evaluation (IDN = 86, medium level), in relation to the subtest that they assess attention and visuospatial skills, as well as better scores on behavioral record cards (from a moderate to a regular and

average grade) in the areas of sustained attention and visuospatial skills.

Conclusions: The neuropsychological intervention program, based on the integration of different approaches such as restoration techniques, cognitive - behavioral techniques (self instructions), modeling technique (parents and teacher), behavioral techniques (behavioral modification, tab economy), show effectiveness in the intervention of children with neuropsychological immaturity in attention and visuospatial dyspraxia.

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Evaluating the effectiveness of a group intervention for inpatients with acquired brain injuries

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Background and Aims:

Group interventions are common in brain injury rehabilitation (Patterson, Fleming, & Doig, 2016), and can be a cost-effective means of providing greater intensity therapy than would otherwise be received (Duncombe & Howe, 1995; Howe & Schwartzberg, 2001). Group-based interventions demonstrate benefits across a range of domains, (Patterson et al., 2016). and have been recommended in clinical practice guidelines (Bayley et al., 2014), although the body of research remains sparse, particularly with regard to post-acute settings. Within these environments, developing insight is often the first stage of intervention; necessary for both engagement and improved long-term outcomes (Sohlberg & Mateer, 2001). The literature notes a particular dearth of evidence relating to the effectiveness of groups addressing adjustment, insight-raising, and goal attainment with post-acute populations.

This presentation will describe the (re)development of a multidisciplinary group brain injury education program and will consider the means of evaluating outcomes in this population.

Method: Participants have a range of complex physical, cognitive, emotional, and communication impairments as a result of an acquired brain injury. The group program includes sessions on fatigue management, cognition, communication, and emotional adjustment. The identification of values and sharing of narratives is a key part of the group, and patients are supported by the facilitators to set individualised goals. The group includes a project component to promote contextualised application of the skills acquired, as well as experiential learning.

Results and Conclusions: We will present the outcomes of the group, reflect on successes and challenges, and consider future research directions.

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Some delayed improvement in a patient with Locked-In Syndrome (LIS)

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Background and Aims: T.O sustained a mid brain stroke in January 2008 probably because of dissection of the basilar artery through hyperflexion of her neck while performing gymnastics. This resulted in a LIS. She was assessed in detail in 2010 and her cognitive functioning was, for the most part, good. She was seen recently after a period of four years; to determine if there had been any recovery.

Method: T.O was seen and followed in her residential home: her mobility, facial

expressions and vocalisations were observed.

Results: With regard to mobility there were noticeable changes. T.O can now manoeuvre her electric wheelchair with her head and has an environmental control system for switching on the television, opening the door and so forth. From an expressionless and motionless face, T.O now has a very mobile face, she can smile, laugh and express surprise. Despite the fact that most of her communications are with her eyes, she has some vocalisations. She can say “hello” and “thank you” but with difficulty.

Conclusions: We know from other studies that recovery does occur for some LIS patients. The majority, however, have permanent impairments despite some minor improvements. T.O would fit into this category; she has made improvements but remains with a LIS. The chief evidence for this is that her main communication is with her eyes. What is not clear is how much more recovery could be achieved with more intensive rehabilitation.

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What are the characteristics of the supplementary motor area syndrome (SMAS) and what is the prognosis for people who have this syndrome?

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Background and Aims: The *Supplementary Motor Area* (SMA) is adjacent to the primary motor cortex. It is required to start internally generated movements. After surgery near the SMA patients can develop problems with movement; this is called the SMAS. The aim of this paper is to describe the characteristics of the SMAS, consider the prognosis of people with the syndrome and to illustrate the process of recovery with one patient seen at our rehabilitation centre.

Method: A literature search was carried out to provide descriptions of the SMAS and to consider prognosis of people with this syndrome. In addition, one patient is described with a severe form of SMAS who, following rehabilitation, recovered well.

Results: SMAS frequently occurs after surgery to remove tumours. Characteristics include reduction of spontaneous movements and difficulty in performing voluntary motor acts to command. This happens despite muscle tone in the limbs being maintained or increased. Speech deficits may or may not be seen. Other features include unilateral neglect and dyspraxia involving the contralateral limbs. Most patients recover these functions. The patient at our centre also did well. She regained speech and voluntary control of her limbs but remains with a slight problem with alternating bimanual movements.

Conclusion: SMAS is a little understood condition. The prognosis for people with this condition, however, is, for the most part, good.

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The role of neurocognition and social cognition with functional outcomes in schizophrenia.

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Background: Schizophrenia is a chronic disorder that compromises functional outcome of patients. An accurate evaluation of the functionality status is necessary to plan effective interventions. Despite of the variety of different instruments and explicative models, there's not much evidence about the relation between neurocognition and functional outcomes. Several studies have suggested social cognition may serve as a mediator between neurocognition and functional impairment in schizophrenia.

Aim: Acknowledge the relationship between functional outcome, neurocognition and social cognition in schizophrenia patients

Method: Data were collected from N = 53 with inclusion criterial F.20.0 (ICD-10).

The relationship between social cognition, neurocognition and functionality is evaluated by linear regression analysis.

Materials: a) Neurocognition: Consensus Cognitive Battery; b) Psycopatology: The Brief Psychiatric Rating Scale; c)

Functional Outcome: The University of California, San Diego Performance-Based Skills Assessment; d) Social Cognition: Hinting Task.

Results: The sample is distributed in 72% men, age (Mean = 42.6, SD = 11.70), level of education (Mean = 11.60, SD = 5.205), time of evolution of the disease (Mean = 17, 89; SD = 10,748), clinical situation (Mean = 17.89, SD = 10.748), social cognition (Mean = 7.00, SD = 3.082), neurocognition (Mean = 2.740, SD = 6.6391). The results of the model are the following: R² = 0.584 (F = 13.179, p <0.001).

Conclusions: Social cognition, specifically theory of the mind (TOM) domain, provides greater explanation to functionality impairments, than other items classically used as control variables.

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Profile of the patient with cognitive deterioration and mild dementia and their caregivers

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Background and objectives: To determine the neuropsychological profile in patients with cognitive knowledge and mild dementia and caregivers.

Method: Multicenter study in primary and specialized care centers. Patients: 364, ≥55 years. Variables: Cognitive function (MMSE), quality of life (QoL-AD and EuroQoL-5D-5L), Depression (GDS), Functional capacity (IADL), Sociodemographic and medical data. Caregivers: Caregiver overload (Zarit), Quality of life (EuroQoL5D-5L) and Patient functional capacity (IADL)

Results: PWD: women (58.5%), age 73.41 (95%CI, 72.64-74.18) years, primary studies (71.3%), married (65.3%) and living in a couple (59.8%). A 47.8% diagnosed of dementia and 35% take specific medication: anticholinesterase (23.2%) and memantine (5.2%). Comorbidities: diabetes (25.1%), cardiovascular disease (52.5%). Mean score MMSE: 25.5 (95% CI, 25.28-25.77), GDS: 71.7% normal and 20.6% mild depression. QoL-AD: 33.82 (IC95%, 33.48-34.16), EuroQoL: mobility problems (they do not have 69.4%), problems of self-care (they do not have 92.1%), problems in daily activities (they do not have 80.6%), pain / discomfort (they do not have 47.8%), anxiety/depression (64.8%), EuroQoL-EVA 68.03 (IC95%, 65.97-70.09). IADL: 60.15% independent.

Caregiver: women (69.2%), age 57.99 (95% CI, 56.43-59.45), primary studies (40.7%), married (73.8%) and living with a

partner (58.7%), the majority coexist with the patient (40.7%) and father-son relationship (36.9%). Zarit 16% intense overload. QoL-AD: 32.47 (IC95%, 31.65-33.29). EuroQoL: mobility problems (they do not have 81%), problems of self-care (they do not have 94.2%), problems in daily activities (they do not have 85.7%), pain/discomfort (they do not have 53.4%), anxiety/depression (66.9%), EuroQoL-EVA 73.31 (IC95%, 71.34-75.28).

Conclusions: Patients: married, low educational level, half have a diagnosis, a third takes medication for dementia and little impact on quality of life.

Caregiver: most coexist with the patient and have little overload due to their care.

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Cognitive neuropsychological rehabilitation of numeracy skills in an adolescent with acalculia and severe visual and motor deficits due to ABI

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Background and aims: Acalculia is a disorder of number processing and calculation skills, which is common following a brain injury. Successful neuropsychological rehabilitation of children means that they could continue their education. Acalculia prevents their successful return to school. Existing methods of rehabilitation of acalculia tend to focus on cognitive interventions allowing visual and tactile depiction of numbers by using real objects, pictorial materials or fingers. Such interventions are not applicable to patients who have both visual and motor deficits.

Methods: Here we address this gap by reporting our success in remediating acalculia in an adolescent with a hypoxic brain injury who had severe visual and motor deficits. She was believed to be in a comatose state for 2 days (GCS=3) following resuscitation after 3 cardiac

arrests after a mine blast injury. We present a single case study using a mental imagery intervention technique focused on reducing calculation problems in this patient.

Results: The preliminary data for a 16 week period are presented with 5 weeks of active intervention. A single case pre/post-intervention design was used to evaluate the efficacy of the training program. This study indicates that visualization techniques are useful in adolescents with acalculia with severe visual and motor deficits.

Conclusion: The study reveals the need for the development of suitable assessment and rehabilitation measures for acalculia in physically impaired patients. The case also highlights specific and successful interventions for numeracy difficulties applied to increase participation in meaningful activities as part of the integrated rehabilitation program.

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Neuropsychological evaluation of children in low consciousness state after severe traumatic brain injury

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Introduction: The conventional neuropsychological examination implies verbal contact with patients. In case of prolonged low consciousness state, it is necessary to change the tactics of neuropsychological work. The primary tasks is shifted to fixing the basic components of various behavioral

manifestations which indicate the presence of consciousness. The aim of this research was to study the patterns of the dynamics of mental recovery and to formulate principles according Luria's neuropsychological approach in children aged 6-17 years after traumatic brain injury.

Materials and methods: Seventeen children with sTBI (GCS ≤ 8) were evaluated. The methodology of neuropsychological evaluation of children in low consciousness states is based on Luria's model of the functional units of the brain and on the syndromic (factorial) analysis of the high mental functions disorders.

Results: The study results based on the neuropsychological approach, allowed us to formulate the main principles for evaluating children in low consciousness state and to describe the patterns of dynamics of mental recovery after severe traumatic brain injury based on the combined assessment by factors.

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Autism and Theory of mind: proposal of a development trajectory model

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The main alterations observed in ASD are associated with the development and functioning of executive functions (EF). In this context, theory of mind (ToM) is the most studied FE, defined as the ability to divide my mind in two (Baron-Cohen, 2014), i.e., refers to the ability of human beings to know our own beliefs and intentions, as well as those of another. The transit of ToM development is based on the capacity of imitation, which is initiated through the behavioral observation of and with another. People with ASD not only have ToM functioning

difficulties, but also imitation difficulties. The aim of this study is to review the development trajectory of ToM. The current thesis proposes that it would be the difficulty of inhibitory control FE that is responsible for the deficiency in the development and functioning of ToM in people with ASD, however, how is it possible that one behavior is inhibited in pursuit of another, when there is no capacity, functional and structural, to be able to consider that other? The aim of the investigation it is to review the development trajectory of ToM. The present study develops a new theoretical model of understanding of development and functioning of ToM, in people with ASD, understanding the alteration of ToM as a result of the difficulty of neurocognitive imitation, based on the altered functioning of the mirror neuron circuit. PRISMA method was used for the bibliographic review.

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Interference of dissociation in the processes of attention and perception
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Background and aims: Attention is a mechanism that triggers the processes involved in processing information, participating and facilitating the work of all cognitive processes, regulating and exercising control over them. Perception refers to the way sensory information is organized, interpreted, and consciously experienced. According to a number of influential theories, dissociation negatively impacts cognitive performance. In this study, we analyze the differences between participants with or without dissociative symptoms (DS) concerning attentional function and perception.

Method: The total sample includes 90 participants with mental disorder of which 45 have DS. With an observational cross-sectional, the mean scores of the d2 Test of Attention (d2), Trail Making Test (TMT) A and B, and Toulouse-Pieron Test (TP) were compared in participants with or without DS. We applied Student's *t*-test and Cohen's *d*-test for comparison of samples.

Results: The results show statistically significant differences between participants: d2 ($t=9.896$, $p<.000$), TMT-A ($t=8.635$, $p<.000$), TMT-B ($t=9.973$, $p<.000$) and TP ($t=10.754$, $p<.000$). The measure of effect size showed that these differences were large: d2 ($d=1.11$, $r=0.48$), TMT-A ($d=0.98$, $r=0.44$), TMT-B ($d=1.04$, $r=0.46$), TP ($d=0.87$, $r=0.40$).

Conclusions: Participants with DS performed significantly worse in all tests than those without DS. A lower average of hits, longer execution time and lower perceptual skills (quickness and perceptive acuity), respectively. Measurement of speed of information processing was used as an indicator of the difficulties of executive control. Dissociation adversely affects several aspects of attention and perception. These findings support that attention, perception and awareness could be dissociated due to a cognitive-emotional impact, which is proposed for future studies.

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Effectivity of a multi-disciplinary rehabilitation program for acquired brain injury (ABI) and the influence of time interval from brain injury to rehabilitation start

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Background and aims: Acquired Brain Injury (ABI) people present diverse functional difficulties at different levels (physic, cognitive and/or emotional). Rehabilitation programs are effective improving the distinct affected areas, however, scant studies have analyze their effectivity in the Spanish population. Therefore, this research aims to study the effectivity of a multi-disciplinary rehabilitation program for ABI people and the influence of time interval from brain injury to rehabilitation start.

Method: 50 ABI patients from the National Public Health System were referred to UNER clinic, of which 40% (n=20) were women, with mean age 50.34 years (SD=15.74). Participants completed a 6-month rehabilitation program composed of 5 weekly multidisciplinary sessions of neuropsychology, occupational, speech and physical therapy. Program effectivity was analyzed assessing patients' functional level before and after intervention through the Functional Independence and Assessment Measure (FimFam). Likewise, FimFam scores were compared between patients with Early Rehabilitation Start (ERS; ≤ 3 moths post-injury) and Late Start (LRS; > 3 moths post-injury).

Results: Statistical significant differences were found in FimFam scores before (M=129.28) and after intervention (M=155.52) with large effect size ($r=0.61$), where greater changes were observed for cognitive functioning. Moreover, ERS patients had significant superior FimFam scores after intervention (M=174.55) than LRS patients (M=142.83; $r=0.39$).

Conclusions: This multi-disciplinary rehabilitation program seems to be effective improving ABI patients' functioning, emphasizing cognitive factor performance. Furthermore, these results support the existence of a critic period of early rehabilitation start of up

to 3 months that could optimized ABI recovery. Future experimental studies with larger samples are needed to corroborate these results.

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Whole-body vibration therapy to improve spasticity in hemiplegic stroke patients: a systematic review

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Background and aims: Stroke is the main cause of disability in adulthood. In the last decade, the use of whole-body vibration therapy has proven to be effective for spasticity treatment, due to it produces changes in the viscoelastic properties of muscle tissue. The present study aimed to evaluate the effectiveness of whole-body vibration therapy on spasticity in hemiplegic stroke patients.

Method: A systematic review was conducted during April 2018 in the following databases: Pubmed, PEDro, and Cochrane Central Register of Controlled Trials. The inclusion criteria were: (i) Randomised controlled trials; (ii) Hemiplegic stroke patients with muscle spasticity; (iii) Whole-body vibration therapy. PEDro scale was used to measure the methodology quality.

Results: A total of 6 randomised clinical trials with a total of 244 patients (control group n=122 intervention group n=122) were included in the systematic review. PEDro scores showed a good methodological quality of the studies (ranged from 7 to 9). Patients age ranged from 54,9 to 65,3 years. All the studies used whole-body vibration therapy in

addition to conventional therapy and measured spasticity through Modified Ashworth Scale (3 studies in lower limbs, 1 study in upper limbs, and 2 in both lower and upper limbs). All the studies showed improvements in spasticity after whole-body vibration therapy, but only 3 obtained significant differences compared with conventional therapy.

Conclusions: The use of whole-body vibration therapy in hemiplegic stroke patients seems to contribute to the decrease in muscle spasticity. However, further research is necessary to establish treatment protocols.

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Physical therapy interventions to improve postural balance and balance confidence in Parkinson's Disease: a meta-analysis of randomized controlled trials

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Background and aims: Parkinson's Disease is the second most common neurodegenerative disorder. The present study aimed to evaluate the effectiveness of physical therapy interventions on postural balance and balance confidence in Parkinson patients.

Method: A systematic review and a meta-analysis of randomized controlled trials (RCT) were conducted during October-December 2017 in the following databases: PubMed, PEDro, Web of Science, Scopus and Scielo. The inclusion criteria were: (i) RCTs; (ii) English articles published between 2013-2018; (iii) Physical therapy interventions. PEDro

scale was used to measure the methodology quality.

Results: A total of 5 randomized clinical trials with a total of 167 patients (intervention group n=77; control group n=90;) were included in the meta-analysis. PEDro scores showed a good methodological quality of the studies (ranged from 6 to 8). Two types of interventions were included: hydrotherapy and dancing exercises. Statistical analysis showed favourable results for hydrotherapy on the level of balance confidence measured by Activities-specific Balance Confidence Scale [Standardized mean difference (SMD)=2,35; CI95%:(0,05;4,65)], but not on fear of falling measured by Falls Efficacy Scale and dynamic balance measured by Timed Up and Go and Berg Balance Scale. Favourable results were obtained for dancing exercises on dynamic balance [Timed Up and Go: SMD=-1,93; CI95%:(-3,39;-0,47); and Berg Balance Scale: SMD=2,75; CI95%:(1,23;4,26)].

Conclusions: The results obtained seem to confirm that interventions based on dancing exercises are effective to recover balance in Parkinson patients. Hydrotherapy seems to improve balance confidence. Due to the limited number of trials, the results should be treated with caution.

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Combined effects of high definition tDCS and behavioral therapy in a verbal STM impaired patient

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Neuropsychological rehabilitation is in need of taking advantage of new tools that may improve the effects of behavioral therapies. One promising tool is transcranial direct current stimulation (tDCS), a noninvasive technique which

enables electrical stimulation of the cortex via electrodes placed on the subject's head.

In this poster we present the effects of an intervention program aimed to improve the verbal short term memory (STM) of an aphasic patient with a marked impairment in her working memory. STM training was combined with high definition transcranial Direct Current Stimulation (HD-tDCS). Stimulation involved seven electrodes and was designed to activate right hemisphere Broca's and Wernicke's areas. The rehabilitation program was applied during two consecutive weeks (10 days).

Three evaluations were performed with the aim of testing the benefits of the treatment: a pre-treatment evaluation, and two post-treatment evaluations, one at the end of the program and one ten days later aimed to explore the consolidation of the results

The combined effects of both techniques seem to improve the STM and the receptive and productive skills of our patient.

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Long term effects of a neuropsychological intervention with transcranial direct current stimulation (tDCS) in anomic aphasia

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Background and aims: The aftermath of Acquired Brain Injury (ABI) often includes language difficulties, frequently manifested as a disrupted ability to recall the name of objects (anomia) that can hinder an effortless interaction with the surroundings.

Method: With a single case study design, the aim of the present study was to

explore the effect of transcranial direct current stimulation (tDCS) on the ability to name objects of a patient with anomic aphasia. The intervention took place in 8 sessions of 20-minute cathodal stimulation over left frontotemporal areas (F7 and T3). The tDCS protocol was paired with visual confrontation with the stimuli and the repetition of their name as well as a procedure based on Semantic Feature Analysis (SFA). This last procedure prompted the patient to evoke other sensorial features of the objects – so as to strengthen the connections towards the words and, potentially, the access paths towards them. Denomination was tested at baseline, after the intervention and 8 months later.

Results: The results showed a highly improved naming ability of the used stimuli; with a sum of hits collapsed over all categories as follows: 44 at base line, 78 right after the intervention and 86 in the 8-month follow up.

Conclusions: Not only do these results highlight the potential of a method of intervention in anomia through neuromodulation, but also the possibility to reap long lasting effects from it. This study serves as an exploratory approach to stimulate further and more meticulously designed research in this area.

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Behavioural couples therapy within IDT rehabilitation after stroke: using themes focussing on meaningful roles reduced risk by increasing insight and engagement in rehabilitation

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Background and aims: Neurobehavioural disturbance following stroke is common. Making rehabilitation goals meaningful can be challenging, particularly where

there is risk to others. Interventions for treating neurobehavioural disturbances can take different forms. Behavioural Couples Therapy (BCT) can help develop meaningful positive ways of couples interacting, thus decreasing risk. Using themes can make strategies relevant and meaningful, allowing progress in other aspects of rehabilitation.

Method: A 44 year old man with a pontine infarct presented to specialist rehabilitation services with emotional lability, anger, and other physical and cognitive problems. The anger directed towards wife and children was concerning and the family was in crisis. He received regular BCT with his wife, rather than traditional CBT for anger management. The themes used focused on meaningful roles. **Results:** The couple learnt new ways of interacting and supporting each other to promote positive experiences as a couple and family unit, and reduced risk. BCT helped him gain insight and awareness of his behaviour and aided engagement in other areas of rehabilitation, in a way that the IDT felt would not have been achieved with less meaningful context.

Conclusions: This case illustrates the benefits BCT can have following stroke in providing a rich and meaningful context for treatment. The IDT working in an integrated way to understand the relationship, roles, and context was key. It is predicted the intervention will prevent further involvement from external services for the family. It may be beneficial for more clients to have access to BCT not just those in receipt of Step 3 psychological intervention.

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**Meconium Aspiration Syndrome:
Cognitive consequences in adulthood**
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Introduction: The presence of meconium in the amniotic fluid occurs in 13% of births. In these cases, 7% suffer the meconium aspiration syndrome (MAS) (Meritano, Abraham, Pietro, Fernández & Gerez, 2010). This pathology is highly related to fetal distress and acute respiratory failure in the newborn (Calderón-Cedeño, 2018). As a consequence of this oxygen deprivation in childbirth, it is known that developmental difficulties may appear that can be maintained in the long term (Semrud-Clikeman & Teeter-Ellison, 2011).

Objective: Present the cognitive impairments in an untreated adult patient with suffer MAS in the childbirth. A neuropsychological intervention proposal

Methods: *Case study* (n=1). 42-year-old male patient, lefty, primary education, kitchen assistant. MAS with fetal distress. Diagnosis of dyslexia. Cognitive impairments without assessment. Academic and work impact. Sleep apnea. Materials: neuropsychological assessment protocol of Centro Avanza. Procedure: initial neuropsychological assessment and intervention proposal.

Results: Impairment of focused and selective attention. Deficit in processing speed and working memory. Episodic declarative memory characterized by linear memory curve. Difficulties in reading and writing skills. Planning problems, cognitive rigidity and impulsivity.

Conclusions: Mild cognitive disorders not treated in childhood can be maintained in adulthood, causing complications in academic and professional development.

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**Cognitive disorders and facial emotion
recognition deficits: A correlational study**

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Introduction: The studies have found facial emotion recognition deficits in MCI

(Dorado-Ramirez, 2017) and propose to include training programs (García-Casal, 2017). The same difficulties frequently occur in ABI (Rosenberg, McDonald, Dethier, Kessels, & Westbrook, 2014).
Objective: Describe the facial emotion recognition in participants with ABI and MCI and the correlation between different cognitive functions.

Methods: *Participants:* 12 (Age: 67.01 ± 16.11) (Sex: Men 4, Women 8) (Pathology: ABI: 5, MCI: 7). *Materials:* PERE; Evaluation protocol Centro Avanza. *Procedure:* descriptive correlational study without control group. Statistical analysis: general descriptive frequencies; *Spearman's correlation* coefficient.

Results: Happiness was the emotion with more correct answers (94.8%) and Fear was the less (33.3%). The most significant correlations for the cognitive subtest and items of the PERE test were: Fear: EFs ($r_s = 0.933$, $p < 0.05$); language ($r_s = -0.850$, $p < 0.05$); Anger: attention ($r_s = -0.870$, $p < 0.05$); memory ($r_s = -0.871$, $p < 0.05$); praxias ($r_s = -0.818$, $p < 0.05$); EFs ($r_s = 0.878$, $p < 0.05$); language ($r_s = -0.875$, $p < 0.05$); Neutral: language ($r_s = -0.850$, $p < 0.05$); Surprise: EFs ($r_s = 0.878$, $p < 0.05$); language ($r_s = -0.807$, $p < 0.05$); Disgust: attention ($r_s = -0.853$, $p < 0.05$); praxis ($r_s = -0.839$, $p < 0.05$); EFs ($r_s = 0.933$, $p < 0.05$); language ($r_s = -0.807$, $p < 0.05$).

Conclusions: The mistakes in facial emotion recognition agree with the studies show. Significant correlations have been found among the rest of cognitive functions. Due to the limitations of the study we must interpret those results cautiously.

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Communication and emotions – a group treatment trial for TBI patients

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Background and aims: Cognitive-communicative disorders are common and persistent after traumatic brain injuries (TBI). Emotion processing and perception is an important part of communication and social cognition. Being able to judge the emotional state of the communication partner is important when deciding what to say and how to say it. Including emotion processing and perception plays an essential role in group treatment of communication disorders.

The main goal in our group intervention was to support participation and social integration. One important part of the intervention was emotion processing.

Method: The group had six participants (3 male and 3 female) with moderate to severe TBI, age 23-38 years. There was 15 group meetings and five individual meetings for guidance. One fundamental aspect of the group treatment was emotion processing. This trial included art and music as a catalyst to process emotions and conversations. One art therapy session included drawing pictures that had emotional value for them. The group visited several art exhibitions. In one group session the participants selected songs that they had emotional relationship with. Conversation and detailed analysis of experienced and perceived emotions was included in all activities. The conversations included aspects of cognitive therapy. Other group meetings focused on finding compensatory skills for challenging social situations.

Results and conclusions: According to our clinical observations activities that included art and music helped the participants to process their emotions. The participants themselves reported that they enjoyed these activities and found new ways to experience and express their emotions.

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Neuropsychological and speech therapy in neurodevelopmental disorder: an evidence based study

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Background. An interdisciplinary neuropsychological intervention is presented in neurodevelopmental disorder of multiple causes etiology, of an evidence-based study with mild intellectual disability, comorbid with genetic alterations, epilepsy and with motor disorders of coordination, attention deficit and school difficulties.

Aims. 1. Rehabilitate the executive functions affected 2. Promote the maturation of dysfunctional brain areas of the Central Nervous System. 3. Train mental skills for learning. 4. Improve behavioral control.

Method. Single case design (n = 1). Participant: 8 year old girl. Place: AVANZA Psychology Center (Málaga), father, mother and 2 therapists, clinical neuropsychologist and speech therapist. Phases of the rehabilitation program: 1. Evaluation and obtaining of the neurocognitive profile, including in it the speech therapy assessment. 2. Test application: PLON-R, CUMANIN, CARAS-R, EPC. 3. Intervention has been directed to activate dysfunctional brain areas such as: prefrontal cortex for attention; motor and orofacial praxias due to dysfunction of the cerebellum, frontal cortex and posterior parietal areas; precentral sulcus areas for the articulatory language alterations; parietal cortex to strengthen spatial

structuring and Wernicke's area and Broca's area for reading and writing. The applied techniques are based on a systematic training of the executive functions affected starting from the executive functions preserved.

Results and conclusions. Progress was observed in the performance of cognitive, communicative and behavioral self-management skills, suggesting the effectiveness of the joint treatment of neuropsychology and speech therapy as predictors of the success of this multiple causes neurodevelopmental disorder intervention.

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Neuropsychology of Creativity Applied in Children with ADHD. Intervention Program

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Background: Neuroimaging studies have found neurobiological correlates in ADHD in fronto-subcortical dysfunctions, at a structural and functional level in neuropsychological tasks that measure executive function, showing that biological treatment can improve them. In addition, research in the neuropsychology of creativity suggests intervening in ADHD through divergent thinking to strengthen deficit neuronal connections.

Aims: 1. Develop creative and emotional thinking in children with ADHD. 2. Train mental skills, interpersonal and intrapersonal, emotional and academic. **METHOD.** Application of the AVANZA Method for 9 months. Participants: 15 Children 7-15 years old, 10 parents and 2 therapists. In: AVANZA Psychology Center (Málaga).

Phases: 1. Initial evaluation: Pre-Test Imagination Creativity PIC-N (Primary) / PCI-J (ESO). 2. Design of the neurocreative profile. 3. Systematic training with ingenious tasks aimed at making people think and be ingenious. Visualization of

images, with attention games and active listening. Motivation, with situations to practice the creative potential. Experiential teaching, connecting ideas and action. 4. Final evaluation: Post-Test PIC-N / PCI-J.

Results: In mental and academic skills: increased attention, fluency of ideas and flexibility of thought. In emotional skills: decrease in frustration behaviors and increase interest in learning.

Conclusions: Addressing ADHD from the neuropsychology of creativity in children results in complex clinical practice, but it seems to be useful because they learn by having fun and experiencing what they think, demonstrating that the systematic is compatible with the playful and creative. It is important to develop new treatments that benefit the integral development of the child with ADHD.

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The efficacy of eye movement desensitization and reprocessing for posttraumatic stress-disorder in patients with acquired brain injury: a multiple baseline single-case experimental design

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Background and aims: Acquired brain injury (ABI) is often accompanied by posttraumatic stress-disorder (PTSD) which further increases the burden for the ABI-patient. There are, to our knowledge, no controlled studies on the efficacy of Eye Movement Desensitization and Reprocessing (EMDR) as a treatment for PTSD in patients with brain injury, whereas substantial support has been found in controlled studies for the efficacy

of EMDR in treating PTSD in the general population. Therefore, we are currently conducting a study to examine the efficacy of EMDR as treatment for PTSD in individuals with ABI.

Method: Non-concurrent multiple baseline single-case experimental design (A-B) with randomization of baseline length (2, 3 or 4 weeks). The study will include 6 outpatients with PTSD and ABI (>6 months post injury), aged 18-65 years. Treatment will include a maximum of 10 weekly sessions of EMDR. PTSD will be measured with a short self-report questionnaire on PTSD complaints (daily measure on a smartphone), the Impact of Event Scale (weekly), and the Clinician-Administered PTSD Scale for the DSM-5 (at baseline, post-treatment and follow-up). Secondary measures (at baseline and post-treatment) are: Outcome Questionnaire 45 and neuropsychological measures: Stroop test, Trailmaking test, California Verbal Learning Test, Location Learning Test, WAIS-IV-Digit Span. Data analyses will include both visual and statistical analyses appropriate for SCED data.

Results: Enrollment is ongoing. Data on treatment efficacy for 2-3 patients will be available at the time of the conference.

Conclusions: A first qualitative judgement of both the study design and the intervention show promising results.

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A multidisciplinary approach exploring use of CardioWall® within an inpatient neurorehabilitation setting

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Background and aims: CardioWall® (an electronic target-cancellation sports-wall

challenging balance and scanning abilities) has been explored internationally within a range of ages and conditions including neurodegenerative, chronic pain, autism, physical and learning disability. Settings include gyms, schools, orthopaedic and rehabilitation centres. Positive findings are reported in balance, core stability, grip strength and general mobility, in addition to improvements in co-ordination, motivation and problem-solving. Qualitative reports of enjoyment and increased sociability are described. The aim was to audit use of CardioWall® within an inpatient neurorehabilitation setting for adults with acquired brain injury. Results focus on standard measures repeated during the CardioWall® phase, in addition to qualitative reports and acceptability.

Method: Consenting participants use CardioWall® 3 sessions per week. Exercise programmes last 60 seconds and participants choose overall engagement time (averaging 3-6 minutes each session). Baseline routine measures included sustained attention (Test of Everyday Attention-elevator counting), visual scanning/neglect (star/letter cancellation, line bisection), balance (Berg balance scale), grip strength, and functional balance/gait (timed movement). Assessments were repeated randomly during the CardioWall® intervention. CardioWall® scores and overall participation time were also recorded.

Results: Preliminary uptake of CardioWall® indicates data will be reported on minimum of 15 individuals exploring change in the measures described above compared to those who abstain from participation, in addition to qualitative information regarding experience using the CardioWall®.

Conclusions: This audit reports on use of the CardioWall® as an adjunct to neurorehabilitation. Physical and cognitive outcomes are explored, in addition to qualitative information from participants and reflections by the multidisciplinary team.

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Building the evidence base in neurorehabilitation in syndromic craniosynostosis. Psychoeducational programs

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Background: Syndromic Craniosynostosis is a group of more than 160 syndromes characterized by premature closure of the sutures of the skull. They are genetic and chronic health conditions and are accompanied by other craniofacial malformations, hands or feet as well as functional alterations (hearing, eye problems, neuropsychological alterations and mental health that cause learning difficulties, emotional and behavioral problems among others). As a rare diseases, we find a gap between research and clinical intervention, in our case neurorehabilitation. There is also a lack of research and scientific evidence on psychoeducational programs in families, which have already demonstrated their efficacy for other pathologies and profiles. How to proceed then when there is no evidence bases practice? Building it.

Method: Analyzing the different levels of evidence for intervention, from systematic review, SCEDS and RCTS study to case reporting, identifying clinical uncertainty and constructing the PICO(s) question, we present a mixed quantitative and qualitative study of psychoeducation in families of people with syndromic craniosynostosis.

Results: We present the structure of the mixed research intervention study, feasibility study and its components. Sociodemographic data and baseline of participating families and data related to

outcomes are presented. We also describe the components related to social and health innovation provided by our project, as well as the use of the gender perspective in research.

Conclusion: Given the development of the project we can begin the description of the components and outcomes of it that are beneficiaries in the construction of evidence base in neurorehabilitation in syndromic craniosinostosis.

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Neuropsychology of Breast Cancer: A Review System

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Over last years, the apply sciences relative to oncology breast cancer processes have been focus on rise the survival rate and develop more efficient and less detrimental treatments for patients. These days, the high chance of surviving breast cancer led us to discover the impact of treatments on survivors. An important adverse effect of cancer treatment has been appeared about to cognitive functions. Increasingly, breast cancer survivors reveal cognitive impairment related to working memory, attention and memory processes and executive functions. The present work has the object of review the literature to expose the evidence of the incidence of cognitive adverse effects as well as how importance is the neuropsychology rehabilitation and the work we have left to do from neuropsychology in collaboration to oncology and other fields to increase quality of life.

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A new test for assessment of simultanagnosia in patients with acquired brain injury

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Dorsal simultanagnosia is a disturbance of visual attention that is characterized by the inability of a patient to perceive a visual scene as a whole, despite being able to perceive and recognize the individual elements of the scene (Rizzo & Vecera, 2002). Since there is a shortage of adequate and standardized assessment methods for simultanagnosia, validity of research findings is hard to establish. Many clinicians and researchers consider a qualitative interpretation of a patient's description of a complex picture the golden standard. In many cases, the Cooky Theft Picture, originally part of the Boston Diagnostic Aphasia Examination (Goodglass & Kaplan, 1983), is used to this end, despite lack of specific guidelines for the use and scoring and other shortcomings that limit its utility in this context.

We developed a new complex picture for the assessment of simultanagnosia. It contains a balanced presentation of events with respect to their location and provides clear instructions for administration and scoring.

First psychometric investigations of this complex drawing in patients with acquired brain injury (n = 504) and a healthy control group (n = 194) appear promising. Psychometric properties that are

presented include associations with descriptive, medical, and neuropsychological characteristics, sensitivity analyses in patients with different etiologies of acquired brain injury and diagnostic accuracies of patients likely having simultanagnosia.

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Effectiveness of a stimulation program with Brain Trainer in working memory and processing speed

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Background and aims: This article describes the main findings of the study on the effectiveness of a program of cognitive stimulation in working memory (MT) and processing speed (VP) of information through a software or platform.

Method: experimental pretest - posttest group. Transversal type, with quantitative measurement method, involving sociodemographic variables, age, sex, schooling, and performance coefficients in working memory and processing speed in between ranges 70 and 89 obtained through the Wisc IV scale. The study was developed by intentional sampling to a population consisting of 10 children between 7 and 12 years of age, with schooling between 2 and 5 of primary school, belonging to the Metropolitan University Hospital Foundation (FHUM)

Results: The application of neurocognitive stimulation strategies increased the clinical performance indexes from 6 to 7 points between the measurements obtained in the Pretest and the Posttest, indicating an improvement in the performance of the cognitive areas affected after the development of cognitive stimulation.

Conclusions: There is a need to apply cognitive stimulation with software on

neurocognitive disorders whose etiology is due to development or neuronal connections. Cognitive stimulation continues through software, can present a high degree of effectiveness. The generation of a standardized, replicable and reliable protocol in multiple contexts would encompass a greater population and intervention of variables, technifying in a specific way, the way of working on the alterations in cognitive processes.

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The potential of comprehensive treatment of acquired brain injury based on immersive virtual reality

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Introduction: The development and use of new technologies in the neurorehabilitation of patients with acquired brain injury (ABI) is a growing line, being necessary the evaluation of its real effectiveness in the treatment of patients with this profile. The aim of this study is to evaluate the efficacy of immersive virtual reality (IVR) as a potential support tool for the treatment and maintenance of patients with ABI.

Method: A comprehensive assessment protocol was developed in a single-case pre-post design in a middle-aged male who presented left frontotemporal stroke injury for 10 years, resulting in right hemiplegia, in which a motor training strategy was implemented by IVR through PC games.

Results: After a quantitative-qualitative analysis of the data, improvements were observed at the motor and tone levels, as

well as the involvement of the hemiparetic member in bimanual tasks after training by IVR, with an improvement in the speed of information processing.

Conclusion: In general, this case provides support to the idea of the efficacy of the implementation in neurorehabilitation of strategies based on the use of IVR, due to the increase in functionality and improvements in patient motivation and increased adherence to treatment, It is necessary to devise future studies that will continue evaluating the efficacy, generalization of the use of techniques based on the IVR and the protocolization of the treatments.

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Building Resilience in Families after Brain Injury: A Pilot Group Intervention

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Background and Aims: There is substantial evidence that brain injury affects the wider social and family network. Carer burden and distress post-brain injury is not dependent upon the severity of injury or level of functional impairment post-injury. Resilience is a dynamic process that encompasses positive adaptations in the face of adversity. Understanding how to build carer/social network resilience is key, but there is limited evidence about what factors are helpful in promoting this. A group was set up to provide support for family/friends of patients with brain injury currently receiving inpatient neurorehabilitation, and to seek feedback from families about what was helpful in promoting resilience.

Method: A six-session group for families/friends of those with brain injury was run. The group was psychoeducational and provided time and space for attendees to raise issues. Phase

1 group attendees gave qualitative feedback in a focus group. Phase 2 is ongoing and attendees will give both qualitative and quantitative feedback.

Results: The group was effective in providing a space for families/friends to explore their own challenging emotions (e.g. fear, pain) whilst removing the worry of these becoming a burden to the person with brain injury. Family members described how the group helped them to manage their own expectations of the future and understand what recovery might look like in the community.

Conclusion: The group was effective in promoting factors that are associated with resilience. Further research is needed to establish how best to support families and friends in building resilience after brain injury.

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Assessment and treatment for Cognitive Communication Disorder (CCD) across the pathway from acute to community

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Background: There is growing evidence for SLT's assessment and treatment for people with CCD across the pathway from acute services, inpatient rehab and into community services. The INCOG guidelines (2015) summarised the evidence base currently available.

Aim: This project aims to investigate "everyday clinical practice" in the field of CCD and to compare it to the INCOG guidelines (2015) across the pathway in two NHS trusts.

Method: nominal group technique was used to gain views on 2 core questions from a team of SLTs working across the pathway in a London NHS trust. "1) How do you assess people with CCD in this service, 2) how do you treat people with CCD in your setting?"

This methodology will be repeated in a second trust and data analysed further.

Results 1: Analysis of the data from the first NHS trust revealed that SLTs ranked informal assessment methods over formal methods across the pathway. Brain injury education, insight raising and conversation partner training were ranked as priority interventions across the pathway. Data also revealed that assessment and therapy practice largely matched the evidence base from the incog guidelines.

2: Further analysis of data from the second NHS trust will be included in the results section.

The data collection took 90 minutes and analysis took 6 hours. This is an efficient way to review service provision and identify areas for development or further research.

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Including friends in conversation partner training (CPT) with people with cognitive communication disorder (CCD)

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Background and aims: A CPT group based on the “TBI express” programme was used to provide therapy for 2 couples where one person presented with CCD following ABI. The outcomes for one case study will be presented.

Aim: to demonstrate the effectiveness of CPT for someone with CCD and their friend

Method: Baseline measures taken were the la trobe questionnaire, a video baseline of natural conversation and the Conversation Analysis Profile for People with Cognitive Impairment (CAPPCI) interview.

Intervention: 7 sessions were provided using the TBI express programme as a

basis for the session plans. These sessions were run by 2 experienced SLTs

1 additional session was provided with 1 couple and their 4 friends in the home setting.

Outcome measures were completed at the end of therapy.

Results and conclusion:

significant results were demonstrated on the la trobe questionnaire, goals were achieved and examples of strategies used were seen on the videos of conversation. The patient, husband and friends reported additional benefits for the sessions in terms of reconnecting with friends. The importance of “collaboration” as a central theme for CPT will be discussed. The importance and challenges of involving friends in CPT sessions will be discussed. Implication for future research into friendship after brain injury will be considered.

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