



Neuropsychological Rehabilitation Special Interest Group of the WFNR

12th NR-SIG-WFNR Conference

Monday 6th & Tuesday 7th July 2015

Conference Program



Lovers Cove, Daydream Island, Whitsundays, Australia



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The Encephalitis Society
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INVITATION TO GLASGOW – One of the World’s top ten ‘must see’ cities	Back Cover

WELCOME



On behalf of Barbara Wilson, the NR-SIG-WFNR Executive Committee, the local organising Committee and the Scientific Committee I would like to welcome you to Daydream Island Resort and

Spa in the Whitsundays, Australia for the 12th Neuropsychological Rehabilitation Conference.

This is a multidisciplinary conference incorporating all rehabilitation disciplines including Neuropsychology, Clinical Psychology, Occupational Therapy, Speech and Language Therapy, Physiotherapy, Social Work, Medicine and Nursing. The primary focus of the conference is rehabilitation of neuropsychological consequences of acquired brain impairment.

The conference includes sessions on Paediatric Rehabilitation, New measures in community rehabilitation, Assessment and rehabilitation in multiple sclerosis, Adult and older adult

rehabilitation, ABI & Stroke Rehabilitation, Methods and measurement, Single case and case series, Social cognition, self-awareness and social participation, Psychosocial issues in rehabilitation, Mood and emotional adjustment in neurological conditions, Post-traumatic amnesia and injury outcomes in TBI.

I would like to thank Slater Gordon Lawyers our Corporate Partners for their support and the Encephalitis Society, WFNR, ASSBI, Viatour Travel and Cambridge Scholars Publishing for their support of the conference. I would also like to thank all the staff on Daydream Island Resort and Spa and last but not least Margaret Eagers-Rickit from MERS Events for managing the conference.

I hope you enjoy the conference!

Catherine Haslam
Conference Convenor

COMMITTEES

Executive Committee

Barbara Wilson – President, UK
Jim Malec – Treasurer, USA
Robyn Tate – Secretary, Australia
Anna Adlam, UK
Jon Evans, UK
Tamara Ownsworth, Australia
Michael Perdices, Australia
Jennie Ponsford, Australia

Local Organising Committee

Catherine Haslam – Australia, Convenor & Chair of the Local Organising Committee which included:
Jacinta Douglas
Suncica Lah
Gail Robinson

Conference Organiser (PCO) & EO of the NR-SIG-WFNR

Margaret Eagers-Rickit – MERS Events, Australia

Scientific Committee

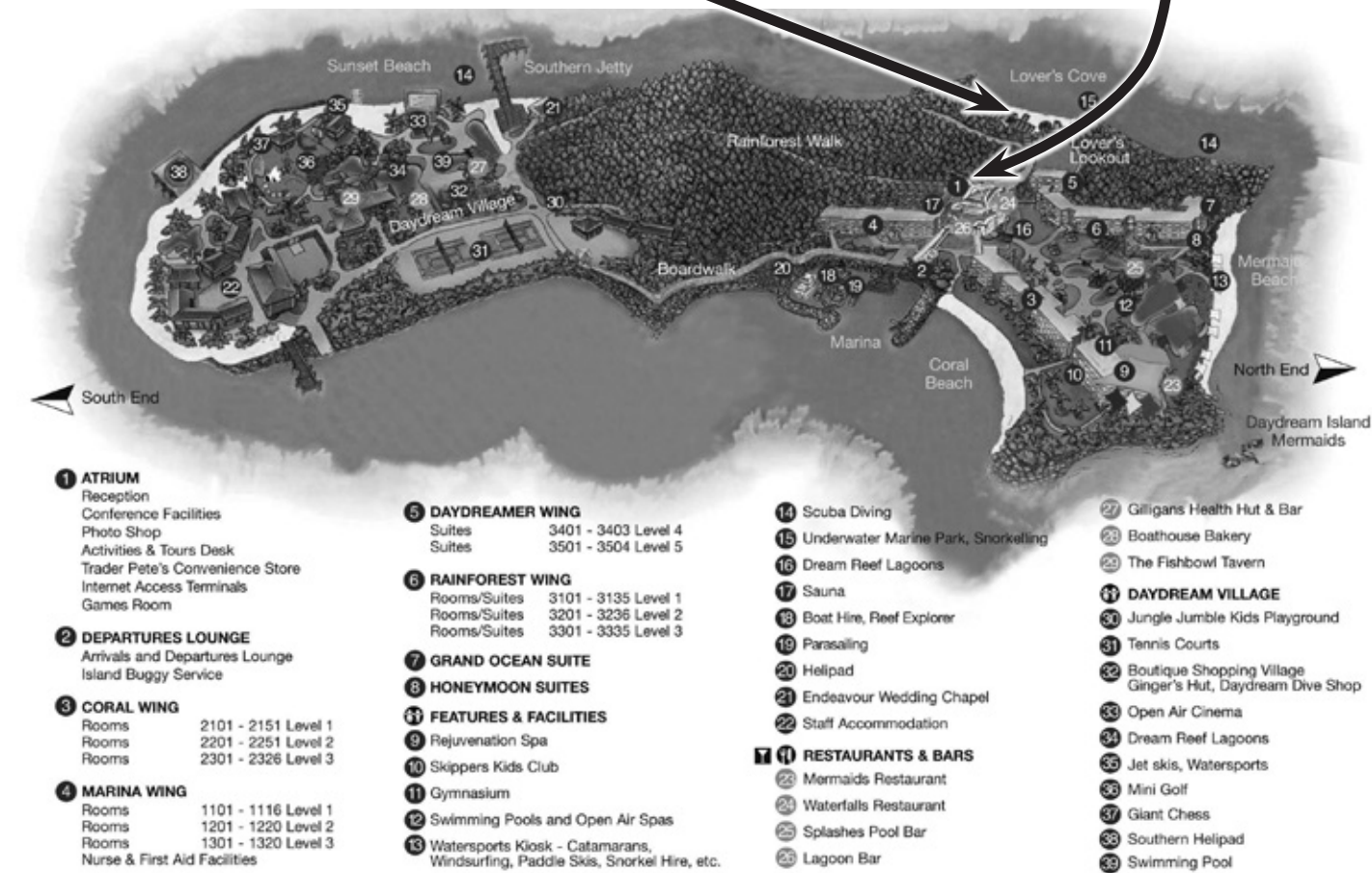
Andrew Bateman, UK
Mathilde Chevignard, France
Fofi Constantinidou, Cyprus
Fergus Gracey, UK
Ashok Jansari, UK
Caroline van Heugten, Netherlands
Huw Williams (UK)

Student Volunteers

Flora Minsun Suh
Sally Romary

Daydream Island Map

The conference will be held in the ATRIUM (1 on the map)
The conference room is the Great Barrier Reef Room which is located on the 3rd floor
The Exhibitors and Posters will be in the Sunlover Room and Terrace also located on the 3rd floor
Morning / Afternoon Tea and Poster Sessions 1 and 2 in Sunlover Room
Lunch will be held in the Restaurant on the ground floor
The Meet and Greet will be held on the Sunlover Terrace
The Slater Gordon Conference Dinner will be held on the beach at Lovers Cove



Conference *Programme* at a glance – MONDAY

7.30	Arrival, Registration and Dropping Posters at Registration Desk	
8.30	Welcome and Introduction- Catherine Haslam (Program Chair)	CHAIR
8.40	Professor Barbara Wilson – Opening Address <i>Understanding Topographical Disorientation</i>	Catherine Haslam
9.10	Session 1: Paediatric Rehabilitation 9.10–10.10 Anna Adlam: Working memory training (Cogmed) in children who have survived brain injury: Acceptability and feasibility Natalie Phillips: Working memory and its relationship to academic skills following paediatric traumatic brain injury Ashok Jansari: It’s my party: Investigating executive impairment in children with atypical development using novel ecologically valid assessment of executive functions	Suncica Lah
9.30		
9.50		
10.10	Session 2: New measures in community rehabilitation 10.10-10.50 Maria Hennessy: Measuring participant engagement in community rehabilitation with PERQy Cynthia Honan: Piloting a new measure of social disinhibition: A failure to inhibit or produce favourable responses?	Jennie Ponsford
10.30		
10.50-11.20	Morning tea and Posters	
11.20	Session 3: Paediatric Rehabilitation – Datablitz 11.20-11.50 Kelly Jones: Acceptability and satisfaction with an innovative online problem solving intervention for adolescents following brain injury sustained traumatic brain injuries in Cape Town South Africa (DB1) Sally Romary: Use of learning principles in memory rehabilitation improves self-efficacy in children following acquired brain injury (DB2) Andrew James: The jungle book of neuropsychology: Disentangling the influence of feral childhood from adult brain injury in order to provide effective rehabilitation (DB3) Marie-Claire Reville: Predictors of cognitive flexibility in young girls with anorexia nervosa, and healthy controls (DB4) Anna Adlam: Validating a parent-rated working memory questionnaire for children (DB5)	Huw Williams
11.25		
11.30		
11.35		
11.40		
11.50	Session 4: Assessment and rehabilitation in multiple sclerosis 11.50-12.30 Hannah Gullo: Sensitivity of the Behavioural Assessment of the Dysexecutive Syndrome in multiple sclerosis and association with daily functioning Wendy Longley: Randomized controlled trial of neuropsychological assessment with feedback as a therapeutic intervention in multiple sclerosis patients and caregivers	Michael Perdices
12.10		
12.30	LUNCH POSTERS	
1.30	Session 5: Adult and older adult rehabilitation – Datablitz 1.30-2.00 Linda Sigmundsdottir: Computerised cognitive training in acquired brain injury: A behind-the-megabytes systematic review of the methods, measures and meaningful outcomes (DB6) Zoe Thayer: Does group size influence the ability of people with acquired neurological disorders to benefit from a memory training program? (DB7) Sarah Prescott: Exploring factors related to participation in client centred goal planning (DB8) Kerryn Pike: Memory training in subjective memory decline: How does office-based training translate into everyday situations? (DB9) Anita Rose: I can’t find my way: A pilot study of anterograde disorientation (DB10)	Gail Robinson
1.35		
1.40		
1.45		
1.50		

2.00	Session 6: ABI Rehabilitation 2.00-3.20 Petrea Cornwell: Achieving greater engagement in meaningful activities for people with hypoxic brain injury: A preliminary investigation of a goal directed intervention	Jon Evans
2.20	Breda Cullen: Positive PsychoTherapy in ABI Rehab (PoPsTAR): A pilot randomized controlled trial	
2.40	Brian O'Neill: Development and efficacy of assistive technology for cognition in scaffolding performance and learning of activities of daily living in people with impaired memory and executive function	
3.00	Matthew Jamieson: The useability of Smartphone reminder software for adults with acquired brain injury	
3.20	Poster Session 1 Afternoon Tea	
4.20	Session 7: Stroke Rehabilitation 4.20-5.40 Rene J. Stolwyk: Characterising neurobehavioural disability following stroke	Ashok Jansari
4.40	David Copland: Investigating the effect of treatment intensity in a comprehensive aphasia program	
5.00	Ronelle Hewetson: Cognitive communication deficits, access to rehabilitation and functional outcomes following a right hemisphere stroke	
5.20	Fergus Gracey: Exploring the HeART of stroke: Protocol ad preliminary findings of a randomized controlled feasibility study of an Arts for Health group to support self-confidence following stroke	
6.30	Slater Gordon Conference Dinner at Lovers Cove	

POSTERS – MONDAY

#	Author	Title
1	Leander Mitchell	Rehabilitation in dementia: Can't see the trees for the forest?
2	Maggie Murphy	Exploring ethical dilemmas in a community rehabilitation setting
3	Marie-Claire Reville	Clusters analysis from the ravello profile scores for an Anorexia Nervosa and a healthy sample of young girls
4	Kristen Kiong	Cross language effects in aphasia therapy for English-Mandarin bilinguals
5	Sara Da Silva Ramos	The development of an occupational therapy assessment of functional skills
6	Sara Da Silva Ramos	The use of mental rehearsal to promote achievement of functional rehabilitation goals following acquired brain injury (ABI)
7	Deborah Fortescue	Brain injury and offending: The development of a Linkworker intervention
8	Breda Cullen	Post-traumatic growth in adult survivors of brain injury: A qualitative study of participants completing the PoPsTAR trial of brief positive psychotherapy
9	Breda Cullen	A comparison of post-traumatic growth after acquired brain injury or myocardial infarction
10	Suzanne Barker-Collo	Neuropsychological outcome and its correlates in the first year after mild traumatic brain injury: A population based New Zealand study
11	Suzanne Barker-Collo	Maori experiences of neuropsychological assessment
12	Janet Leathem	Smartphones as prospective memory aids after traumatic brain injury
13	Rima Salame	Improving Quality of Life through Cognitive and Compensatory Strategies: A Case Study
14	Tasha Kvelde	Collaboration in cognitive rehabilitation in an Australian public hospital setting: challenges and rewards
15	Erik Hessen	Goal Attainment in cognitive MS Rehabilitation is achieved and maintained regardless of executive capability, neurological disability, depression and general cognitive ability
16	Aniko Bartfai	Predictive factors for cognitive rehabilitation after acquired brain injury (ABI)
17	Anna Adlam	Investigation into the frontal lobe functioning of young offenders with and without a head injury
18	Anna Adlam	Ecological Assessment of the Supervisory Attentional System in People with Intellectual Disabilities

POSTERS – TUESDAY

#	Author	Title
1	Nathan Hughes	Understanding disrupting pathways to serious and persistent offending following childhood brain injury to
2	Wendy Longley	The role of self-perceived cognitive impairment in multiple sclerosis: subgroups with different profiles and potentially useful “yellow flags”
3	Jessica Barnes	Can EBIQ identify change in ability to make friends?
4	Phil Howard	Can a cognitive prosthesis assist people with face-naming
5	Jill Winegardner	“Fatigue is part of who I am and the life I want to lead”: Implementing a clinical model to guide intervention and evaluate outcomes
6	Bronwyn Moorhouse	ABI, Aggression and Art Therapy - Group Art Therapy in a Brain Disorders Unit and the Impact on Rates of Aggression: A Pilot Study
7	Barbara Wilson	From the vegetative state to meaningful life: Rehabilitation through music therapy; one man’s journey
8	Barbara Wilson	Patterns of Recovery from Severe Brain Injury as Measured by The Wessex Head Injury Matrix (WHIM)
9	Barbara Wilson	Delayed recovery from the Vegetative and Minimally Conscious States
10	Janet Hodgson	Improving access to neuropsychological support for people with Encephalitis
11	Michael Perdices and Robyn Tate	Perceived Quality of Life many years after a severe brain injury
12	Chiharu Niki	Cognitive status and quality of life in glioma patients
13	Heather Francis	Heart rate variability in response to an anger provocation can be attenuated by a single session of biofeedback
14	Matt Thomas	Proposal to trial and evaluate a multi-disciplinary approach to cognitive rehabilitation in inpatients with schizophrenia
15	Amea Baird	Self deception and self-awareness after acquired brain injury: two contrasting cases
16	Amea Baird	Marrying memories: Collaboration with an intimate partner facilitates retrograde episodic memory after acquired brain injury
17	Brian O’Neill	Effect of an orientation clock on orientation for time and place in people with acquired brain injury

Conference Programme at a glance - TUESDAY

8:00	Arrival – Drop Posters at Registration Desk 8.00-8.30	CHAIR
8.30	Session 8: Methods and measurement 8.30-8.30 Robyn L. Tate: The clarity of describing single case research in the neurorehabilitation literature: Evidence suggests there is room for improvement Michael Perdices: Reliability of the reliable change index in the analysis of neurorehabilitation outcomes Catherine Haslam: “Don’t remind me of my age!”: Quantifying the negative effects of age stereotypes on test performance	Jacinta Douglas
9.10	Session 9: Single case and case series – Datablitz 9.30-10.05 Michael Perdices: An unusual case of number agnosia (DB1) Jill Winegardner: Perspectives group: An innovative approach to treating hostility bias in a brain injury population (DB2) Jenny Fleming: A metacognitive skills training program to enhance compensatory strategy training for prospective memory impairment following traumatic brain injury (DB3) Karen Croot: Lexical retrieval treatment for functionally-relevant vocabulary in primary progressive aphasia: Investigating generalization to a structured interview (DB44) Gail Robinson: Effectiveness of a strategy intervention to overcome suppression failure in two brain tumour cases (DB5) Janet Leatham: Evaluation of rehabilitation for the cognitive effects of aging (DB6)	Robyn Tate
10.05	Morning tea and Posters	
10.30	Session 10: Social cognition, self-awareness and social participation 10.30-11.30 Skye McDonald: Problems understanding diplomacy after severe TBI Caroline van Heugten: Changes in impaired self-awareness after acquired brain injury in patients with intensive outpatient neuropsychological rehabilitation Jacinta Douglas: “I don’t have many friends – well I don’t have any actually” Exploring the source and quality of social relationships experienced by adults several years after traumatic brain injury	Tamara Ownsworth
11.30	Session 11: Psychosocial issues in rehabilitation – Datablitz 11.30-12.00 Helen Harrington: The essential components of rehabilitation: Science and compassion (DB7) Anita Rose: Caregiver burden in traumatic brain injury: The experience of formal caregivers working in an inpatient rehabilitation centre (DB8) Caroline van Heugten: Reducing challenging behaviour after brain injury: effects of the ABC-method (DB9) Huw Williams: The epidemic that is no longer silent: Role of TBI in crime and the promise of neurorehabilitation (DB10) Elizabeth Beadle: Desired versus actual occupational participation following severe TBI (DB11)	Jenny Fleming
12.00	Lunch Posters	

	Session 12: Mood and emotional adjustment in neurological conditions 1.00-2.20	Caroline van Heugten
1.00	Jill Winegardner: An exploration of compassion focused therapy following brain injury	
1.20	Hannah Gullo: Perceived impact of MS predicts poorer community participation: What roles do anxiety and depression play?	
1.40	Paul Gertler: Behaviour activation therapy to improve participation and mood of people with depression following brain injury	
2.00	Fergus Gracey: Self-discrepancy and selective attention to threat in emotional adjustment following acquired brain injury	
2.20	Afternoon tea Poster Session 2	
	Session 13: Post-traumatic amnesia and injury outcomes in TBI 3.20-4.40	Fergus Gracey
3.20	Jennie Ponsford: Using post-traumatic amnesia to predict outcome following brain injury	
3.40	Adam McKay: Agitation during post-traumatic amnesia and its association with disorientation impairments in memory	
4.00	Anna Adlam: Exploring the impact of traumatic brain injury on moral reasoning and how this relates to executive functioning, empathy and emotion-based decision making	
4.20	Cassandra Shields: A transdiagnostic investigation of emotional distress after traumatic brain injury	
4.40	Conference close: Professor Barbara Wilson	
5.10	AGM of the NR-SIG-WFNR	

MONDAY ABSTRACTS are in presentation order

Opening Address:

Understanding Topographical Disorientation

Wilson, Barbara A¹

¹Oliver Zangwell Centre, UK

Aguirre and D’Esposito (1999) described four kinds of topographical disorders: landmark agnosia; egocentric disorientation; heading disorientation and anterograde disorientation. To find our way about we need to be able to recognise landmarks in the environment, represent our (egocentric) position with respect to any present landmark, use more abstract (exocentric) representations to create an idea of the particular direction to follow in order to get to a particular goal, and learn and update information in response to new or changed environments. Impairment of each of these abilities leads, respectively, to landmark agnosia, egocentric disorientation, heading disorientation, and anterograde disorientation. In landmark agnosia the main deficit is an inability to recognise prominent, meaningful environmental features, so landmarks cannot be used for orientation. The lingual and fusiform gyri is involved in landmark recognition. Patients with egocentric disorientation have bilateral or right parietal lobe damage and have been traditionally labelled as having topographical disorientation. People with heading disorientation recognise landmarks but cannot derive directional information from these landmarks. They appear to have lost a sense of exocentric direction or ‘heading’ within their environment. Very few of these patients have been described and observations are tentative. The anatomical area involved is believed to be the right posterior cingulate region. The last type is anterograde disorientation whereby the problems are primarily to do with novel environments. Environments known for at least 6 months before brain damage should cause no difficulties. The area responsible appears to be the parahippocampal region. We describe patients with each of these problems.

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Session 1: Paediatric Rehabilitation

Working memory training (Cogmed) in children who have survived a brain injury: acceptability and feasibility

Adlam, Anna-Lynne R^{1,2,3}; Dunning, Darren L^{2,3,4}; Westgate, Briony³; Holmes, Joni⁴; Gracey, Fergus^{2,3}; Shepstone, Lee³; Wilson, Edward^{3,5} and Gathercole, Susan⁴

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³Norwich Medical School, University of East Anglia, Norwich, UK

⁴Cognition and Brain Sciences Unit, Medical Research Council, Cambridge, UK

⁵Cambridge Centre for Health Services Research, Institute of Public Health, University of Cambridge, Cambridge, UK

Background and aims: Working memory (WM) is essential for new learning and difficulties in childhood can result in a failure to engage in education, participate in meaningful activities, and achieve future employment. Impairments in WM are common following paediatric acquired brain injury (pABI). Research has demonstrated that children can show WM gains following computerised training (Cogmed). To date, no studies have investigated whether children with pABI benefit from Cogmed. The current study aimed to assess the feasibility and acceptability of delivering Cogmed to children with pABI, aged 8-16 years.

Methods: Twenty-six children were randomised to either adaptive (n=12) or non-adaptive (n=14) home-based Cogmed training. Parents and children completed acceptability questionnaires. The criterion for sufficient treatment completion was defined as completing 20 or more training sessions.

Results: The groups were comparable at baseline for age, IQ, sex, and SES. It took on average 9-weeks to complete adaptive training, with 75% of children reaching treatment completion criterion (only 50% of children reached treatment completion in the non-adaptive control condition over 7-weeks). Parents and children gave high ratings for satisfaction and ease-of-use, and parents found it easier to motivate their child at the beginning compared to the end of training.

Conclusion: Children with pABI and their parents found Cogmed acceptable and accessible. Findings suggest that children with pABI might require Cogmed to be delivered over a longer period than the standard 5-weeks protocol to complete treatment. Future RCTs might benefit from enhanced motivational features to maintain engagement in the non-adaptive control condition.

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Working memory and its relationship with academic skills following paediatric traumatic brain injury (TBI)

Phillips, Natalie^{1,2}; Mandalis, Anna⁴; Benson, Suzanne⁵; Parry, Louise^{3,4}; Epps, Adrienne^{3,4}; Morrow, Angie⁵ and Lah, Suncica^{1,2}

¹School of Psychology, The University of Sydney, Sydney, Australia

²ARC Centre of Excellence in Cognition and its Disorders, Sydney, Australia

³Brain Injury Rehabilitation Program, Sydney Children's Hospital, Sydney, Australia

⁴Department of Psychology, Sydney Children's Hospital, Sydney, Australia

⁵Kids Rehab, The Children's Hospital at Westmead, Sydney, Australia

Background and aims: Children who sustain traumatic brain injury (TBI) are at risk of deficits in working memory (WM; comprising a central executive [CE], and two slave systems: phonological loop [PL] and visuo-spatial sketchpad [VSSP]) and academic skills. This study sought to examine whether WM outcomes relate to reading and mathematics in this patient population.

Method: Twenty eight children with moderate-severe TBI and 28 typically developing control (TDC) children matched on age and sex participated. WM was assessed using the Automated Working Memory Assessment (AWMA) that contains subtests measuring CE, PL and VSSP. Academic skills (reading accuracy and comprehension, and number skills) were assessed using the Wechsler Individual Achievement Test–Second Edition (WIAT-II).

Results: Children with TBI obtained significantly lower scores compared to TDC children on the AWMA tests of CE [$t(54)=3.01$, $p=0.004$] and PL [$t(54)=2.31$, $p=0.03$]. The groups did not differ on tests of VSSP. On the WIAT-II, performance of children with TBI was reduced relative to controls on tests of reading accuracy [$t(54)=2.18$, $p=0.03$] and reading comprehension [$t(54)=3.20$, $p=0.002$], but not number skills [$t(54)=1.91$, $p=0.06$]. In the TBI group, correlation analyses indicated that poorer PL performance was associated with reduced performance on all three measures of academic skills ($p<.05$). In contrast, no significant correlations were found between visuo-spatial CE and academic skills.

Conclusions: Results from this study indicate that reduced PL capacity is associated with poorer reading and mathematical skills in children with TBI. Our findings suggest that treatments targeting PL may be particularly important in this patient population. Future studies should examine the impact of interventions for remediation of PL deficits on academic skills in this at-risk population.

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It's my party! Investigating Executive Impairments in Children with Atypical development (ASD & ADHD) Using a Novel Ecologically-valid Assessment of Executive Functions.

Jansari, Ashok¹ and Jefferies, Victoria²

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²School of Psychology, University of East London, London, UK

Background and Aims: We aimed to evaluate the ability of a new ecologically-valid assessment, the Jansari assessment of Executive Functions for Children (JEF-C©) for discriminating between typically developing children (TD) and those with Autistic Spectrum Disorder (ASD) or Attention Deficit Hyperactivity Disorder (ADHD).

Method: We used an experimental design with children in three age-matched groups: TD (N=64), ASD (N=18) and ADHD (N=11). JEF-C© involves the child running a make-believe party in a virtual-reality computer-based environment resembling a game mimicking aspects of the Multiple Errands Task (MET). It concurrently evaluates eight constructs central to executive function: Planning, Prioritisation, Selective-Thinking, Creative-Thinking, Adaptive-Thinking, Action-Based Prospective Memory (PM), Event-Based PM and Time-Based PM. In addition to JEF-C©, participants completed the Six Parts test of the Behavioural Assessment of Dysexecutive Syndrome in Children (BADS-C) and parents completed the Behaviour Rating Inventory of Executive Functions (BRIEF).

Results: A one-way MANOVA on the compound JEF-C© performance revealed a main effect of group ($F(18,164)=1.971$, $p=0.014$, Wilks = 0.676 (2 of 0.178) with the power to detect the effect high (.970)). The TD group outperformed both the ASD and ADHD groups. JEF-C© was more sensitive at discriminating between the three groups than the BADS-C and revealed a pattern that paralleled the subjective BRIEF parent evaluations.

Conclusions: JEF-C© shows great potential for becoming a standard assessment of childhood executive functions and for assessing difficulties associated with atypical development. Since the assessment provides performance on eight measures, future research aims to evaluate how the profiles can be used to develop individualised support programmes to help the children.

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Session 2: New measures in community rehabilitation

Measuring Participant Engagement in Community Rehabilitation with PERQy

Hennessy, Maria^{1,2}; Birtles, Eliza²; Hunt, Nicole²; Morris, Kayla² and McMillan, Claire²

¹Department of Psychology, College of Healthcare Sciences, James Cook University

²Community Rehabilitation North Queensland, Townsville-Mackay Medicare Local

Background and aims: The level that an individual actively engages in their own recovery journey during rehabilitation can have a significant impact on the positive outcomes of such programs. This active participation and cooperation is fundamental to person-centred care, and is important for enhanced individual outcomes as well as supporting quality improvement processes for a service. However, few measures exist that adequately measure an individual's level of engagement in their rehabilitation care. The aim of this research was to develop a reliable and valid measure of participant engagement that could be easily used within an interprofessional community rehabilitation setting.

Method: The reliability and validity of Lindberg et al.'s (2013) scale was examined in $n=127$ individuals in a community rehabilitation facility. Item content of the original 22 item scale was revised for readability and cultural language differences.

Results: Principal axis factor analysis with oblique rotation indicated an 18 item scale with six factors that accounted for 68% of the sample variance. The revised Participant Engagement in Rehabilitation Questionnaire (PERQy) measures six factors of Motivation and Encouragement, Involvement of Family, Respect, Decision Making, Information, and Expectations.

Conclusions: The ability to accurately measure participant engagement has significant implications not only for improving individual participant recovery, but also for improving program effectiveness and building cost-effective and evidence-based rehabilitation pathways.

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Piloting a new measure of social disinhibition: A failure to inhibit or produce favourable responses?

Honan, Cynthia^{1,2}; McDonald, Skye^{1,2}; Fisher, Alana¹; and Osborne-Crowley, Katie¹

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² National Health and Medical Research Council (NHMRC) Moving Ahead Centre for Research Excellence in Brain Recovery, Australia

Background and aims: Common to many neurological conditions involving frontal lobe dysfunction are deficits in social disinhibition, a failure to inhibit automatic responses in favour of producing more socially acceptable responses. Measures of inhibition or interference control (such as the Haylings Sentence Completion test or the Stroop test), are often undertaken in clinical practice to infer difficulties in behaviour and emotion regulation. However, these measures may not be tapping into the type of difficulties that occur in social settings. This study aimed to develop and pilot a new clinical measure of social disinhibition.

Method: Participants included 19 moderate-to-severe TBI and 14 healthy controls. They viewed scenes of complex social situations, and were asked to describe a character in them (Part A), describe a character while inhibiting inappropriate or negative responses (Part B), and describe a character while not only inhibiting negative responses, but also providing positive utterances (Part C).

Results: While TBI individuals and healthy control participants were both inherently negative in their responding in Part A, when asked to inhibit this negative responding in Part B, TBI individuals were significantly impaired. There was a trend towards TBI individuals in Part C being impaired in their ability to produce positive and more socially acceptable responses.

Conclusions: This pilot study makes an important contribution toward meeting the need for a well-validated clinical assessment tool that is capable of assessing social disinhibition deficits in those with frontal lobe dysfunction.

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Session 3: Paediatric Rehabilitation - Datablitz

Acceptability and satisfaction with an innovative online problem solving intervention for adolescents following traumatic brain injury

Jones, Kelly¹; Wade, Shari²; Fletcher, Danielle³; Barker-Collo, Suzanne⁴; Parmar, Priya¹; Theadom, Alice¹; and Feigin, Valery¹

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²Department of Pediatric Rehabilitation, Cincinnati Children's Hospital Medical Center, Ohio, USA

³Department of Psychology, University of Bath, Bath, England

⁴Department of Psychology, The University of Auckland, Auckland, New Zealand

Background and aims: Traumatic brain injury during adolescence is a leading cause of long-

term morbidity resulting in executive dysfunction, behavioural difficulties and reduced social competence. Treatment availability for adolescents and support for their families may be improved by the provision of online telehealth interventions. We report findings from an evaluation of the American Teen Online Problem Solving (TOPS) program.

Method: Six adolescents who sustained TBI in the previous 24 months, their families, and two TBI health professionals completed the TOPS program. This intervention consists of 10-14 online modules providing education and interactive training in self-regulation, social skills, and problem solving. All participants completed measures of usability and programme satisfaction. Focus groups gathered additional feedback on the appropriateness of developing a New Zealand (NZ) version of TOPS.

Results: The majority of participants were comfortable using the technology (93%), felt that TOPS would help teenagers with TBI to feel less stressed (86%), perform better at school (79%), and plan for handling future problems (93%). Most participants felt the program would lead to positive changes in the family (92%). Increasing visual appeal, localising to the NZ context, and addressing technical difficulties were suggested.

Conclusions: The TOPS programme shows potential for good acceptability by teenagers, their families, and health professionals in NZ. Following development, further research is required to determine the effectiveness of TOPS in facilitating adolescent recovery and family functioning.

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Use of learning principles in memory rehabilitation improves self-efficacy in children with acquired brain injury

Romary, Sally¹ and Haslam, Catherine¹

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Background and aims: There are few studies investigating both the efficacy of learning principles and their impact on the self-efficacy and self-esteem of young people with acquired brain injury (ABI). The present research addresses this gap in two ways. First, it aims to determine the relative efficacy of using errorless learning and spaced retrieval- through the medium of Skype, and second, it investigates the general effect that involvement in such learning programmes has on perceptions of self-efficacy and -esteem.

Method: Nineteen children with ABI aged between 8 to 16 years took part in the study. All learned novel age-appropriate science and social science facts under three conditions: errorless learning (EL), spaced retrieval (SR), and trial-and-error learning (T&E). Memory for these facts was then tested after

5 minutes, 30 minutes, 60 minutes and 24 hours. Prior to, and on completion of the three learning conditions, participants completed measures that tapped various components of self-esteem and self-efficacy.

Results: Analysis revealed no effect of learning condition, with all found to be equally effective. However, there was a main effect of time, with some loss of information after an hour delay, but no further decline after 24 hours. Most striking was the significant increase in multiple domains of self-efficacy – notably, academic, memory and emotional – and personal self-esteem in response to a relatively brief learning intervention.

Conclusions: The present findings highlight the value that engagement in memory rehabilitation focusing on learning, has on young people’s sense of self-efficacy. We also discuss the implications of the failure to find no effect of learning condition on recommendations for use of EL and SR.

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The Jungle Book of neuropsychology: disentangling the influence of feral childhood from adult brain injury in order to provide effective rehabilitation

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Background and aims: This paper considers the complexities of neuropsychological assessment and rehabilitation in brain injury when the client has no formal education, is from a foreign culture with English as a second language, and has atypical developmental experiences prior to injury.

Method: MC is a 63 year old woman with a diagnosis of St Louis encephalitis who was referred for neuropsychological rehabilitation. The initial hospital assessments were reported to show global cognitive impairment. In formulating her clinical presentation, consideration was given to a documented history of feral childhood living with monkeys in the Columbian jungle, as well as subsequent physical and emotional abuse following her “rescue”. MC participated in comprehensive neuropsychological assessment and then targeted rehabilitation.

Results: Neuroimaging documented relatively focal damage in the right temporal lobe. MC’s family described her as “the same but worse”; assessment and formulation indicated an exacerbation of attentional, pragmatic, arousal and executive weaknesses but with new visuospatial, memory and social cognition impairments. Rehabilitation techniques for communication and executive difficulties were successful despite the complexities of the case.

Conclusions: The importance of considered assessment and formulation in understanding MC’s presentation is discussed. To the authors’ knowledge, this is the only case of neuropsychological assessment and rehabilitation in brain injury involving a history of feral childhood.

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Predictors of cognitive flexibility in young girls with anorexia nervosa and healthy controls

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Background and aims: Cognitive flexibility describes a property which results from an effective interaction of a range of cognitive and perceptual mechanisms. This property has been researched with respect to eating disorders; however it is unclear which mechanisms are limiting deficits identified with this property.

Method: Anonymous data from 170 healthy female participants and 253 participants with anorexia nervosa aged 9-18 inclusive who met the inclusion criteria was collated. Data included scores from Delis-Kaplin Executive Function System on inhibition, cognitive flexibility, switching, psychomotor speed and a trail making task to measure control functions such as attention and working memory. Additionally measures of BMI centile, eating disorder symptomology, IQ, depression, anxiety and obsessions and compulsions were used. Two regression analyses were carried out for the control and AN group investigating which tasks predicted outcome on the cognitive flexibility task.

Results: Scores on the inhibition tasks were a significant predictor of cognitive flexibility for both the control and patient population. However, additionally, IQ significantly predicted cognitive flexibility in the control sample.

Conclusions: The results indicate that inhibition is an important mechanism in cognitive flexibility in both healthy adolescent females, but also adolescent females with anorexia nervosa. Notably, switching was not a significant predictor of cognitive flexibility. The results of this study call for cognitive flexibility to be explored as a super-system rather than as a fractionated ‘switching’ function.

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Validating a parent-rated working memory questionnaire for children

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Background and aims: Working memory (WM) deficits in childhood can have adverse consequences for education and home/everyday life. To date, there is no well-known ecological measure that examines WM in the home/everyday context. The current three studies aimed to explore the functionality of a newly developed parent-rating of WM for children.

Methods: The parent-rated WM questionnaire (WMQ-P) was developed and tested on 51 typically developing children (Study 1 & 2) and 21 children with acquired brain injury (ABI; Study 3). Responses on the WMQ-P were correlated against two well-known parent-rated measures of executive function (EF; BRIEF) and attention (CRS-R; Study 1 & 3), a teacher-rated measure of WM (WMRS; Study 1), and a standardised computerised assessment of WM (AWMA; Study 1 & 3). Test-retest reliability of the WMQ-P was also assessed over a two-week period for typically developing children (Study 2).

Results: The WMQ-parent significantly correlated with measures of EF, attention, and WM in typically developing children; it also showed a high level of test-retest reliability. In children with ABI the measure showed correlations with parent-ratings of EF and attention, but did not correlate with a standardised computerised assessment of WM.

Conclusions: Findings indicate that the WMQ-P is a reliable and valid indicator of WM in typically developing children in the home-context. In children with ABI it is possible that the measure may act as a better indicator of EF, rather than WM specifically. This hypothesis needs to be tested with a larger sample and objective measures of EF.

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Session 4: Assessment and rehabilitation in multiple sclerosis

Sensitivity of the Behavioural Assessment of Dysexecutive Syndrome (BADS) in multiple sclerosis and association with daily functioning
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Background and aims: The nature and impact of executive dysfunction for people with multiple sclerosis (PwMS) is not fully understood with traditional neuropsychological measures lacking sensitivity to detect milder cognitive problems and few ecologically valid tools available. This study explored the sensitivity of the Behavioural Assessment of the Dysexecutive Syndrome (BADS) for classifying executive dysfunction in PwMS and its ability to predict impact on daily functioning.

Methods: Performance on the BADS was compared between PwMS (n = 67) and healthy controls (n = 67) using independent t-tests. Correlational analysis was used to determine whether performance on the BADS was associated with functional impacts on Instrumental Activities of Daily Living (IADL) using the Frenchay Activities Index.

Results: 19.4% of PwMS were categorised as “impaired” on the BADS. There were significant differences between groups on overall BADS performance ($p < 0.001$) and for all subtests ($ps < .01$), except Temporal Judgment. Executive dysfunction was significantly associated with poorer everyday functioning in outdoor ($r = .43$), leisure ($r = .46$), and domestic activities ($r = .26$).

Conclusions: Performance of PwMS was significantly poorer on tasks requiring cognitive flexibility, planning, problem solving, behaviour regulation, monitoring and organisation, but not self-awareness. BADS performance was associated with engagement in IADL, supporting the validity and usefulness of the BADS as an assessment tool for PwMS.

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Randomised controlled trial of neuropsychological assessment with feedback as a therapeutic intervention in multiple sclerosis patients and caregivers

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Background and aims: Cognitive impairment is common in multiple sclerosis (MS), and many patients are referred for neuropsychological assessment. This study aimed to investigate the benefits of neuropsychological assessment with feedback as a therapeutic intervention.

Method: This was a two-arm, randomised controlled trial (RCT). MS patients were randomly allocated to either neuropsychological assessment or delayed treatment control. A range of psychological outcome measures (e.g. DASS-21, MS Self Efficacy Scale, Caregiving Tasks in MS) were administered by a blind assessor before and after the intervention.

Results: The sample comprised 71 patients: 68% female, aged M=45.0 years (SD=12.2), diagnosed M=10.4 years (SD=9.7); plus 53 caregivers: 59% spouses & 26% parents, 58% female, aged M=48.4 years (SD=15.7), caregiving M=8.1 years (SD=8.5). Between-group analysis showed that the intervention tended to improve social confidence ($F=3.8$, $p=.05$) and reduce level of distress ($F=2.9$, $p=.09$) in the patients. It significantly reduced caregivers’ need to provide psychological support to patients ($F=4.3$, $p=.04$).

Conclusions: Results from this RCT showed positive trends regarding the benefits of neuropsychological assessment as a therapeutic intervention in MS. A strength of the study was that the intervention was delivered by expert clinical neuropsychologists working within a multi-disciplinary team setting, thus it contributed to a holistic approach to MS self-management. However, the sample size was relatively small and the effect sizes were small. It is likely that subgroups of patients with different initial perceptions of their level of cognitive impairment responded differently to the intervention, and this impacted on the overall group outcomes.

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Session 5: Adult and older adult rehabilitation – Datablitz

Computerised cognitive training in acquired brain injury: A behind-the-megabytes systematic review of the methods, measures and meaningful outcomes

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Background and aims: In our increasingly computer-dependent lives, computerised cognitive training (CCT) presents as an appealing remedy for people experiencing cognitive symptoms. This review aimed to systematically evaluate the evidence for CCT in adults with acquired brain injury (ABI), with a focus on how outcome measures used reflect efficacy across components of the International Classification of Functioning, Disability and Health.

Methods: Studies were identified through PsycBITE, which catalogues peer-reviewed publications on non-pharmacological interventions in ABI from six source electronic databases. Included were studies evaluating CCT to treat cognitive symptoms in adult ABI. Scientific quality was rated using the PEDro-P and RoBiNT Scales.

Results: Eighty-two studies met criteria. 67% were controlled group designs, but 13% were RCTs of strong methodological quality. Outcome measures reflecting Body Functions (e.g., performance on cognitive tests) were most common, with studies in multiple sclerosis more consistently showing treatment effects than in other ABI groups. Activities/Participation outcomes were utilised in only 44% of studies, and measures commonly relied on subjective cognitive experiences. Examining CCT in the context of changes in Body Structures (e.g., neuroimaging) is a newly emerging area, with potential to increase understanding of mechanisms of action for CCT and neuroplasticity in ABI.

Conclusions: The CCT literature is currently characterised by great heterogeneity. There are some positive findings, especially regarding training of attention/working memory, but evidence is largely limited to Body Function outcomes. The routine use of Activity/Participation measures in CCT research would provide more meaningful evidence for its efficacy in ABI.

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Does group size influence the ability of people with acquired neurological disorders to benefit from a memory training program?

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Background and aims: Radford et al.(2011, 2012), showed that neurological patients who complain of everyday memory problems benefit from a 6-week, group-based, manualised, strategy training course (Radford et al., 2010). The present study sought to re-evaluate this memory training program (MTP) when delivered to very small groups. We wanted to examine if benefits from MTP are different for those

in the original large group (LG) (10-15) compared to those in small group (SG) (1-3) settings. Small groups, if beneficial, have the potential for greater flexibility and tailoring to the needs of the individual. Method: 85 patients with neurological disorders and memory complaints (79 in LGs, 6 in SGs) completed the 6-week MTP and pre- and post-training assessments. The training program involved 2-hour weekly meetings in which mental and compensatory strategies, neurological and lifestyle factors that influence memory were taught. Assessment scores included (1) number correct on an identity association memory task; (2) total learning and delayed recall on the Rey Auditory Verbal Learning Test; (3) total number of strategies reported; (4) self-report on the Comprehensive Assessment of Prospective memory; (5) self-report on the Everyday Memory Questionnaire. T-tests compared participants in the LG vs the SG for pre- to post-training change.

Results: Both small and large groups showed improved scores on all measures, t tests revealed no significant differences between the two groups. We noted SG participants reported more gains in strategy use than the LG, yet showed less improvement on objective memory measures. Conclusions: This preliminary study indicates that training gains are similar for neurological patients irrespective of whether a 6 week memory rehabilitation program is administered in small or larger group settings. Once more data are collected we will re-evaluate the trend indicating that improving strategy use may be easier in smaller groups.

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Exploring factors related to participation in client-centred goal planning

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Background and aims: Client-centred goal planning includes clients as participants in decision making to establish goals of importance and meaning to clients. Establishing goals that are clear, understood by the client and relevant to their everyday lives can engage and motivate participation in rehabilitation. Engaging people with brain injury in goal planning can be challenging, particularly when self-awareness and motivation are impaired. The therapeutic relationship is also integral to developing client-centred goals. The Client-Centeredness of Goal Setting (C-COGS) scale was developed to measure client’s perceived

participation in goal planning and importance and relevance of their goals. This study aimed to explore relationships between C-COGS scores and self-awareness, motivation and therapeutic alliance, and describe characteristics of goals perceived as important to clients.

Method: The C-COGS scale, the Awareness Questionnaire (AQ), the Motivation for Traumatic Brain Injury Questionnaire (MOT-Q) and the Helping Alliance Questionnaire (HAQ-II) were administered to 42 participants with ABI after rehabilitation goals were established. Relationships between C-COGS scores and AQ discrepancy, MOT-Q and HAQ-II scores were explored using correlations.

Results: There were significant positive correlations between C-COGS and helping alliance and motivation, however correlations between self-awareness and C-COGS were not significant. Non-jargonistic and participation focused goals were considered important to clients.

Conclusion: Goal planning is mediated by motivation and therapeutic alliance. The presence of self-awareness impairment is not necessarily related to client participation in goal planning.

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Memory training in Subjective Memory Decline: How does office-based training translate to everyday situations?

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Background and aims: Subjective memory decline (SMD) in older adults is increasingly recognised as a risk factor and possible preclinical stage of Alzheimer's disease, and thus an ideal phase for memory training. Most memory training research is conducted within an office based setting, however, and applicability to everyday settings is unknown. Our aim was to examine whether people with SMD benefitted from memory training to the same degree as healthy older adults (HOAs), in both an office based and an everyday setting.

Method: Participants 60 years and over were recruited from the community and defined using the MAC-Q as 123 HOAs and 64 people with SMD. They were randomised to one of three conditions: Spaced Retrieval, Semantic Association, or No Training. Following training, all participants completed a face-name associative learning task, and delayed recall was assessed (office setting). 91 HOAs and 49 SMD completed booster training and attended a morning tea, where the effect of training was assessed in an everyday setting by learning the names of attendees

at the morning tea.

Results: In the office setting, a two-way ANOVA demonstrated significant differences between training groups, $F(2, 181) = 5.46$, $p = .005$, but no differences between SMD and HOA, and importantly no interaction effect. Post-hoc analyses using the Tukey HSD test revealed that Spaced Retrieval was superior to No Training, but Semantic Association did not differ from either of the other groups. In contrast, in the everyday setting, the training effect was not significant (nor was the interaction or SMD effect).

Conclusions: People with SMD benefit from Spaced Retrieval on office based face-name associative tasks as much as HOAs. Translation to everyday memory tasks is not straightforward. The contribution of other factors including demographics, cognitive performance, existing memory strategies, adherence to the trained strategy, and amount of practice will be discussed.

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“I cannot find my way”: a pilot study of anterograde disorientation

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Background: Topographical disorientation and route finding difficulties are common consequences of acquired brain injury yet there is still a paucity of research around these deficits. Aguirre and D'Esposito (1999) described four kinds of topographical disorders: landmark agnosia; egocentric disorientation; heading disorientation and anterograde disorientation. The latter involves difficulty learning novel environments

Aims: First we wanted to identify at least one patient with anterograde disorientation; second we wanted to show that other patients with brain injury could learn a novel route and third we wanted to show that controls could easily learn a novel route.

Method: We tested 13 patients with acquired brain injury (including one patient with the amnesic syndrome following a right hemisphere stroke and an ischemic attack) and 6 controls on a standardised new route comprising 9 “landmarks” which participants had to “visit” in order. Up to ten learning trials were administered plus one delayed trial. The correct number of places visited and the correct order were scored.

Results: One severely amnesic patient was unable to learn the route after ten trials and after a delay could recall nothing of the route. The other brain injured patients learned the route after one to eight trials. All control participants learned the route within 2 trials and recalled the route correctly after a delay.

Conclusions: We have confirmed one part of Aguirre and D'Esposito's taxonomy of anterograde disorientation for a patient with the amnesic syndrome. We have also shown that other brain injured patients and control participants can learn novel routes.

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Session 6: ABI Rehabilitation

Achieving greater engagement in meaningful activities for people with hypoxic brain injury: A preliminary investigation of a goal-directed intervention

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Background: Long-term outcomes for people with hypoxic brain injury (HBI) include loss of independent living skills, social isolation, and an inability to return to work or leisure activities. This study describes the findings of a community-based, goal-directed rehabilitation program focused on increasing meaningful activity levels in three individuals with HBI.

Method: An ABA case study time-series design with multiple baselines evaluated the effectiveness of a goal-directed intervention. Participants were at least 1-year post HBI and living in the community. The 8-week program was based on theories of goal-setting and occupational performance. Intervention effectiveness was evaluated using Goal Attainment Scaling (GAS), Sydney Psychosocial Reintegration Scale (SPRS-2) and World Health Organisation Quality of life measures (WHOQoL-BREF) immediately post and 4-weeks post-treatment. Baseline functional (Mayo Portland Adaptability Inventory, MPAI-4) and cognitive (attention, memory, executive function) status were also assessed.

Results: Three individuals aged 38 to 57 years with mild-to-moderate functional impairment (MPAI T-scores: 41-46) and varying cognitive and social support profiles participated. Each participant identified at least four therapy goals (baseline GAS T-score range: 28.2 - 31.9). Two participants achieved and/or exceeded their goals immediately post-treatment (P1-66.7%; P3-54.5%), with continued improvement at follow-up (P1-83.3%;

P3-81.1%). P2 achieved only one goal (25%).

Goal attainment by P1 and P3 didn't generalise to improved community integration, however P3 reported improved quality of life.

Conclusions: Individuals with HBI have the potential to benefit from this goal-directed intervention, although generalisation to broader measures of community integration and quality of life is equivocal. Cognitive and social profiles of each participant may have influenced their response to treatment, and requires further examination.

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Positive PsychoTherapy in ABI Rehab (PoPsTAR): A pilot randomised controlled trial

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Background and aims: Psychological distress is common following acquired brain injury (ABI), but the evidence base for psychotherapeutic interventions in this population is small and equivocal. Positive psychotherapy aims to foster personal growth by increasing experiences of pleasure, engagement and meaning. We believe there is a strong rationale to apply this intervention to reduce psychological distress after ABI. This study investigated the feasibility and acceptability of brief positive psychotherapy in adults with ABI.

Method: Parallel group, single-blind pilot randomised controlled trial (RCT). ABI survivors with emotional distress were assessed and randomly assigned to receive brief positive psychotherapy as well as usual treatment from their clinical services, or to receive usual treatment only. Brief positive psychotherapy was delivered individually over eight sessions. All participants were assessed using the Depression Anxiety Stress Scales (DASS-21) and Authentic Happiness Inventory (AHI) at five, nine and 20 weeks post-baseline. Those who received the study intervention were also asked to give detailed feedback on their experiences.

Results: Of n=27 participants (median age 57;

63% male; median 5.7 months post-injury), n=14 were assigned to positive psychotherapy, of whom n=8 completed treatment. Feedback on treatment experience was positive. Retention to 20-week follow-up was 63% overall. The group difference in change scores between baseline and week 20 for DASS-21 Depression was $d=0.73$ (95% CI -0.34, 1.80; positive d favours intervention). A full-scale trial would require n=39 per group to detect a significant difference in change scores of 7 points (two-tailed $\alpha=0.05$, power=0.80). Trial designs including an active control arm would require larger sample sizes. **Conclusions:** Brief positive psychotherapy is feasible and acceptable to deliver in a randomised trial context with ABI survivors. A full-scale RCT to investigate efficacy is warranted. **Correspondence:** Breda Cullen; breda.cullen@glasgow.ac.uk

Development and efficacy of an assistive technology for cognition in scaffolding performance and learning of activities of daily living in people with impaired memory and executive function

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Background and aims: Difficulties sequencing actions to achieve goals typify executive dysfunction in brain injury. Guide is an interactive audio prompting system that emulates questioning and prompting by carers. We aimed to clinically trial Guide to scaffold the sequences of the morning routine and laundry.

Research questions: How can we map the problem space of behavioural sequences? Does interactive verbal scaffolding improve task performance? And does interactive verbal scaffolding facilitate learning task sequences?

Method: Support worker/ service user interactions (n=6) were audiorecorded for 32 trials and qualitatively analysed (nVivo 8). n=40 participants with severe acquired brain injury (73% traumatic brain injury) were randomised to Guide or neurobehavioural rehabilitation as usual. Outcomes were study specific sequence performance scales which recorded numbers of (1) support worker interventions, (2) errors made, (3) sequence deviations and (4) user satisfaction.

Results: Participants had average premorbid IQ; borderline language and visuospatial function; and extremely low range memory and executive function. For the morning routine, in test, the Guide group required fewer support worker prompts ($z=1.96$, $p=0.050$); made fewer errors per trial

($z=3.097$, $p=0.002$) and made fewer deviations from the sequence ($z=2.256$, $p=0.024$). For the laundry task, unequal baselines led to an underpowered comparison. There was a tendency for a learning effect on this novel task with Guide users tending to make fewer errors at return to baseline ($z=1.734$, $p=0.083$). Satisfaction with support dropped after return to baseline for Guide users.

Conclusions: The study allowed development of an efficacious rehabilitation tool. Study methods have applicability to other rehabilitation studies. Translation of software from prototype to Android compatible systems allows sharing. Studies of support of other behavioural sequences and in different populations are warranted.

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The Usability of Smartphone Reminder Software for Adults with Acquired Brain Injury

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Background and aims: Smartphone reminder applications (apps) have the potential to help people with memory impairment after acquired brain injury (ABI) to perform everyday tasks. However the majority of current apps are not designed for, and may be unsuited to, the particular needs of this group. The issues impacting the usability of smartphone reminder apps for people with ABI are diverse and poorly understood.

Method: To address this, three focus groups (N=12) were held with adults with memory impairments after an ABI and professional and family caregivers of adults with ABI. Participants were asked about issues which, in their experience, influence the usability of reminding technology. The Google Calendar smartphone app was used as an example to encourage critical thinking about interface design and reminder app functions.

Results: Qualitative analysis revealed six key themes which were combined into a conceptual framework of issues which impact usability of reminder apps for this user group; *Perceived Need, Social Acceptability, Experience and Expectation, Desired Content and Functions, Cognitive Accessibility and Sensory and Motor Accessibility*.

Conclusions: We will discuss how this conceptual framework can be used to guide the development and evaluation of smartphone reminding software

which would be suitable for adults with memory impairment following ABI.

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Session 7: Stroke Rehabilitation

Characterising neurobehavioural disability following stroke

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Background and aims: There have been many investigations of challenging behaviour following acquired brain injury, but few on the broader construct of neurobehavioural disability (NBD) following stroke. This study aimed to (i) characterise the frequency of NBD within a subacute inpatient stroke sample; (ii) identify demographic and disease variables associated with NBD; and (iii) investigate the impact of NBD on clinician burden.

Method: Ninety two participants who suffered either ischaemic or haemorrhagic stroke were consecutively recruited during their rehabilitation admission. For each patient, nursing staff completed the St Andrews –Swansea Neurobehavioural Outcome Scale (SASNOS) and a measure of nursing burden.

Results: Nurses reported that behavioural difficulties following stroke were common: 42% related to interpersonal relationships; 48% related to cognition; 7% with inhibition; 6% with aggression; and 6% with communication. The presence of NBD was significantly (all $p < 0.05$) correlated (Spearman's ρ) with cognitive impairment (0.25), lower functional ability (0.37), self-reported anxiety (0.42) and depression (0.36). NBD was not significantly correlated with demographic (age, gender, education) or stroke (severity, lesion location, time since) variables (all $p > 0.05$). The presence of NBD was strongly correlated with nursing care burden (Spearman's ρ range 0.44 - 0.55, all $p < 0.05$)

Conclusions: NBD is common within a subacute stroke inpatient population, particularly interpersonal and cognitive difficulties. Furthermore, NBD is associated with patient psychological disturbance and clinician burden. There is a need to identify effective rehabilitation interventions for NBD following stroke, and to educate and provide resources to clinicians to better manage stroke-related NBD.

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Investigating the effect of treatment intensity in a comprehensive aphasia program

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Background and aims: Delivery of aphasia therapy in an intensive schedule is often recommended, however, evidence for the benefits of intensity is lacking. Most studies comparing different levels of aphasia treatment intensity have not controlled the dosage of therapy provided. This study investigated the effect of a dosage-controlled, aphasia therapy program, Aphasia Language, Impairment and Functioning Therapy (Aphasia LIFT) when delivered in an intensive versus distributed schedule on communication outcomes in adults with aphasia.

Method: A parallel-groups, pre/post-test design was employed. Thirty-four adults with chronic, post-stroke aphasia participated in an intensive (n = 16, 16h per week, 3 weeks) versus distributed (n = 18, 6h per week, 8 weeks) therapy program. Treatment included impairment, functional, computer and group-based aphasia therapy.

Results: Distributed therapy resulted in significantly greater gains on the Boston Naming Test compared with intensive therapy at post-treatment ($p = .032$) and 1 month follow-up ($p = .002$). Furthermore, distributed therapy resulted in significantly greater gains on the Communicative Effectiveness Index at post-therapy ($p = .049$).

Conclusions: Aphasia LIFT resulted in superior language impairment and functional communication gains when delivered in a distributed versus intensive schedule. These findings have important implications for service delivery models in aphasia rehabilitation.

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Cognitive-communication deficits, access to rehabilitation and functional outcomes following a right hemisphere stroke.

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Background and aims: Cognitive-communication deficits after right hemisphere (RH) stroke may restrict communication-based participation; however the influence of severity of impairment on participation remains unclear. This study describes the presence and severity of cognitive-communication deficits, access to rehabilitation and functional outcomes at hospital discharge.

Method: A 12-month retrospective chart review from a tertiary hospital examined patients with first onset RH stroke without concomitant psychiatric or dementia diagnoses. Cognitive-communication deficits, access to rehabilitation, and outcome measures (viz. Australian Therapy Outcomes Measures, Functional Independence Measure) were analysed.

Results: Of 185 admissions, 55 met the inclusion criteria. Average age was 71.04 years ($SD=15$), 24% were employed pre-stroke, and 86% were living independently. Mean length of hospital stay was 28 days ($SD=23$), and 78% ($n=42$) received in-patient rehabilitation. The majority of patients (89%) were seen by speech pathology and 60% were diagnosed with a cognitive-communication disorder (CCD). Severity of CCD was often mild (67%, $n=22$); with lexical-semantics (85%) and aprosodia (52%) the most commonly reported deficits. Frequently reported cognitive deficits were neglect, reasoning and problem solving. Longer admissions and loss of independent living were found in those with more severe CCD. Initial AustOM (cognitive-communication scale) and FIM (cognition subscale) scores were strongly correlated ($rs=.718$), however this relationship weakened at discharge ($rs=.552$). **Conclusions:** CCD is prevalent after RH stroke, with CCD severity initially strongly related to level of activity limitation. Those with more severe CCD appear to require longer rehabilitation stays and may be less likely to return to independent living. Further research is needed on long term outcomes for those with CCD post RH stroke; and if outcome measures can identify rehabilitation need.

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Exploring the HeART of Stroke: Protocol and preliminary findings of a randomised controlled feasibility study of an Arts for Health group to support self-confidence following stroke

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Background and aims: A stroke can alter sense of self, resulting in poor emotional outcomes. Arts for Health groups provide accessible means for self-expression, opportunity for sharing 'liminal experience' of identity transition, and have some evidence for improving well-being. We describe our protocol and initial findings from a randomised controlled feasibility trial comparing An Arts for Health group ('HeART of Stroke'; HoS) with usual care (UC).

Method: Recruitment target is 64 participants <2 years post-stroke. After baseline assessments, participants are randomised to either HoS plus UC or UC only, stratified by stroke severity, 6-8 participants / arm over 4 iterations. The group comprises 10 sessions over 14 weeks, with measures of wellbeing, emotional and social outcomes collected at the start and after 4 months. Protocol and intervention acceptability, and reflection on art created in HoS, is explored by qualitative interviews with participants.

Results: Once iteration is complete, and qualitative feedback gathered. 16 participants have been recruited (12 men; 4 women), mean age 72 years (range 46-87, SD 11.64), 15 mild and 1 moderate/severe stroke severity. Recruitment rate was 10%; 12 completed all measures; 4 withdrew. Participants described a positive experience of HoS. Examples of HoS participants' art illustrate their sharing of liminal experience.

Conclusions: Preliminary data suggest HoS is acceptable to stroke survivors despite physical and communication problems, and feasibility of a future full trial is supported. Recruitment rate was lower than anticipated. Engagement in creative activity may allow development within identity transitions post stroke so improving emotional outcomes.

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Poster Abstracts - Monday

Rehabilitation in dementia: Can't see the trees for the forest?

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Background and aims: Rehabilitation encompasses the idea that the individual's level of functioning is returned to original levels, or as close to in the patient's given medical context (although admittedly this definition is simplistic and the literature uses the term in broad and varied ways). Efforts of rehabilitation within the context of dementia are supported by research, however broader consideration of a change in philosophy may be warranted within this, and similar progressive neurocognitive conditions, to ensure achievable outcomes that not only contribute at a practical level to wellbeing and life satisfaction but embrace, rather than minimise, the process of deterioration. Enablement has been offered as one such alternate philosophy and has been touted as a viable strategy in helping people with dementia stay at home longer. This study reviews the enablement literature to date and considers future directions, specifically in the context of dementia.

Method: The databases CINAHL, Medline, and Scopus were searched using the key terms 'dementia' and 'enablement' in any field.

Results: Fifty-three articles were found, with seven identified as relevant to this review. A search of reference lists, as well as cited by records available via Google Scholar contributed an additional six articles.

Conclusions: Preliminary data is supportive of a philosophy of enablement within the context of dementia, however much more research is needed in the area, particularly where consideration is given to the effectiveness and utility of enablement in different environments (e.g., the home, aged care facility, respite care, etc...).

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Exploring ethical dilemmas in a community neurorehabilitation setting

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Background and aims: Community neurorehabilitation teams face a range of ethical dilemmas which may constitute a significant source of work-related stress. In the absence of clear interdisciplinary guidance, clinicians may rely, in an

ad-hoc manner, on previous experience of similar cases, theoretical knowledge, and the advice of others, to inform decision-making. This may result in inconsistent and suboptimal resolution of ethical dilemmas. An interdisciplinary ethical framework to guide practice is indicated. The aim of this study was to identify the ethical dilemmas causing concern to clinicians within a single community neurorehabilitation service (CNRS) in England, and to explore the ethical principles and approaches that may be used to guide clinicians in the resolution of such dilemmas.

Method: Ethical dilemmas were defined as situations characterised by novelty, complexity or partial information, evoking conflict, either within an individual clinician or between colleagues (McGrath, 2007). Ethical dilemmas encountered between 1 October 2012 and 30 September 2013 by a CNRS were gathered retrospectively. The service lead compiled an initial list from her email, supervision, and the weekly team meeting records. Client and clinician identifiable data were removed. In a subsequent team meeting, further ethical dilemmas were added until no further examples could be generated. Key categories were identified, divided into themes, and prioritised (on the basis of frequency and causing significant concern to the clinicians involved) by consensus in two further team meetings.

The prioritised categories and themes were then explored in the light of relevant literature relating to healthcare ethics.

Results: Sixteen ethical dilemma categories were identified and divided into three themes: the first relating to resource constraints (service overwhelmed by high priority referrals); and the second two relating to difficulties within the therapeutic alliance (clients with little apparent potential to make progress; and clients with apparent potential but obstacles impede progress). Two categories emerged as the most problematic (in terms of both frequency of occurrence and causing greatest concern): deciding which, of many, high priority cases should be seen first; and, deciding how to approach clients who were deemed to have unrealistic goals, including those who were unwilling to be discharged.

Conclusions: This study has methodological shortcomings; in particular, the small sample size. However, the findings suggest that, within a community neurorehabilitation setting, ethical dilemmas present a frequent and serious challenge to clinicians, and that resource constraints are a significant contributory factor. Further investigation is warranted to address a dearth of literature, and to provide interdisciplinary guidance in this area.

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Clusters analysis from the ravello profile scores for an Anorexia Nervosa and a healthy sample of young girls

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Background and aims: The neuropsychological assessment battery for anorexia nervosa (The Ravello Profile) has been used for research and clinical use to identify deficits in functioning of patients with anorexia nervosa. Recent research has also identified distinct profiles of functioning based on this battery. However it is unclear whether these profiles are specific to patients with anorexia nervosa or are a feature of developing females.

Method: One hundred and seventy healthy females aged 9-18 (inclusive) from the UK and Germany completed the Ravello battery, IQ tasks, measures of eating disorder pathology, depression, anxiety and obsessions and compulsions. Data were converted to Z scales for direct comparison across tasks. A two-step cluster analysis was conducted with a hierarchical cluster analysis using Ward's method of minimum variance with a squared Euclidean distance measure, and a *k*-means cluster analysis to assign cluster membership.

Results: Analysis revealed a two cluster solution, similar to two of the clusters previously identified in an anorexia nervosa sample. The similar clusters are the neuropsychologically average cluster and the verbal/visuo-spatial discrepancy cluster.

Conclusions: This study identifies that it can be 'normal' for a proportion of adolescent females to have weaker visuo-spatial skills and stronger verbal skills. This study also promotes caution for using standard scores to interpret deficits in clinical populations and supports the use of control groups when exploring neuropsychological scores of clinical populations to identify areas of deficits.

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Cross-language effects in aphasia therapy for English-Mandarin bilinguals

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Background and aims: Most research on cross-language transfer for bilinguals with aphasia has focused on cognate alphabetic European languages with similar phonology. However, demonstrating that cross-language effects occur between dissimilar, non-cognate languages would provide stronger evidence that non-target language gains are not simply attributable to the activation of words common to both languages. The aim of this study was to investigate whether cross-language transfer is observable as a result of Semantic Feature Therapy (SFA) in bilinguals with aphasia who use Mandarin and English; languages with almost no cognates.

Method: Two Mandarin-English bilinguals with left-sided lesions and aphasia at least six-months post-stroke, were assessed in both languages on picture naming, picture identification and semantic matching at two baselines (Week 1 and 3), after therapy in their dominant language (Week 9), and less-dominant language (Week 15), and at the maintenance stage (Week 18). Therapy consisted of twice-weekly 1-hour sessions of SFA therapy (Boyle & Coelho, 1995), five weeks per language.

Results: Item-specific therapy gains were found in both Mandarin and English as the target language following SFA therapy. However, gains in Mandarin-treated items were not maintained over more than five weeks, and cross-language transfer effects were present only with treatment in the dominant language (i.e., gains were seen in the non-treated non-dominant language when treatment was provided in the dominant language).

Conclusion: The results have important theoretical implications for models of bilingual representation, as well as clinical applications. Treatment in the patient's dominant language could have positive effects on both languages.

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The development of an Occupational Therapy (OT) assessment of functional skills

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Background and aims: Standardised measures of functional skills are scarce and often limited in the range of functional abilities they cover. Some are expensive to purchase and require training, which has to be regularly renewed. This means that those who know a client well (carer or rehabilitation support

worker) are not able to gather information about their functional ability in a systematic way. The aim of this paper is to present a new behavioural assessment of functional skills that enables Occupational Therapists to plan and implement individual skills training programmes. The new measure is objective and easy to score, provides quantitative results which can be tracked over time and reflects difficulties arising from cognitive impairment, as well as motor and sensory impairment.

Method: An informal survey of OTs guided the development of the new measure. This comprises two parts: an Independence Checklist, which can be used at initial interview with a client and a carer. The aim of this part of the assessment is to provide an overview of a client's abilities and indicate which functional skills might require further assessment and training. The second part of the measure consists of structured forms for detailed task analysis.

Results: Data from a pilot sample of 15 individuals, illustrate how the two parts of the assessment can be used in research and clinical practice to assess a range of functional skills, plan interventions and monitor progress. They also highlighted the potential use of this tool to provide a holistic prescription of technology to support independent living.

Conclusions: Pilot testing and qualitative feedback from practicing OTs suggest that the new behavioural assessment of functional skills has many useful features. Future studies will focus on establishing its psychometric properties in a larger sample of individuals.

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The use of mental rehearsal (MR) to promote achievement of functional rehabilitation goals following acquired brain injury (ABI)

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Background and aims: Goals are a key component in neuropsychological rehabilitation programmes. However, rehabilitation goals often remain incomplete for a number of reasons, including cognitive and planning deficits associated with some types of acquired brain injury (ABI), and problems associated with actual behaviour (e. g. poor motor control, low energy). Mental rehearsal (MR) may offer a means of addressing some of these difficulties. It involves carrying out short, flexible, mental exercises, where one can 'play out' a variety of possible scenarios. MR has been shown to regulate current and future behaviour, and to have beneficial effects

for re-learning daily living tasks when compared with standard functional retraining. The main aim of the present study was to test the effects of MR on goal achievement, in individuals with ABI of different aetiologies at the post-acute phase of recovery.

Method: The project adopted a within-participant multiple-baseline design in which several functional rehabilitation goals were selected. Two participants received standard rehabilitation procedures for all of their goals, and also engaged in MR for half of the goals. Goals were identified by the clinical team and service user, and were not restricted to a specific domain. The primary outcome measure was objective and specific, but varied with individual goals. For example, the time taken to swim five pool lengths was the measure for a goal of completing this within 10 minutes.

Results: Nonoverlap of All Pairs (NAP) statistics show better outcomes from MR than standard rehabilitation for some but not all of the goals.

Conclusions: MR may be a useful technique in post-acute rehabilitation, but further research is needed to clarify how and when it should be used. This may depend on the specific difficulties of the individual, type of goal, and other factors affecting the rehabilitation process.

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Brain injury and offending: The development of a Linkworker intervention

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Background and aims: There is an accumulating body of evidence suggesting a higher prevalence of traumatic brain injury amongst offender populations than in the general population. There are also suggestions that the prevalence may vary within the offender population, depending on the type of offence. This leads to a variety of questions concerning implications for intervention. This paper presents the development of a cost-effective brain injury Linkworker intervention, designed to support prisoners who report a significant brain injury or multiple mild traumatic brain injuries, and addressing the question of how offenders with a history of brain injury are rehabilitated.

Method: The service model and the first two years of operation are described and case studies are presented as 'proof of concept'.

Results: Initial outcomes confirm the presence of a significant prevalence of brain injury amongst prisoners and demonstrate that a 'light-touch' intervention may be used to address brain injury-related problems with positive effects.

Conclusions: The initial findings justify a formal scientific study of efficacy of this service.
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Post-traumatic growth in adult survivors of brain injury: A qualitative study of participants completing the PoPsTAR trial of brief positive psychotherapy
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Background and aims: Post-traumatic growth (PTG) can occur following acquired brain injury (ABI). It has been argued that people experiencing psychological distress following ABI may benefit from a positive psychotherapy intervention (PPT) aimed at increasing their wellbeing; PPT may also influence PTG. The present study aimed to investigate PTG experiences in participants in the PoPsTAR positive psychotherapy trial.

Method: ABI survivors who had received PPT or treatment as usual (TAU) were interviewed after the end of the trial. Data were gathered via individual semi-structured interviews including open-ended questions derived from literature on PTG. Thematic analysis was used to code the transcripts, providing for known themes from PTG literature as well as newly emerging themes.

Results: Four participants (age=46-62; n=3 male; months since injury=11-20) from the PPT group and three (age=58-74; n=2 male; months since injury=9.5-22) from the TAU group were interviewed. The results showed five themes that were shared by both PPT and TAU participants: *Personal Strength, Appreciation of Life, Relating to Others, Positive Attitude, and Feeling Fortunate Compared to Others*. Three additional themes were expressed by the PPT participants only: *Positive Psychology/ Psychotherapy, Lifestyle Improvements, and New Possibilities*. Four of the themes corresponded to factors from the Posttraumatic Growth Inventory questionnaire. PPT participants focused on positive changes following the injury and the opportunities it brought to their lives, whereas TAU participants focused more on acceptance of the situation.

Conclusions: There is potential for PTG experiences following ABI to be influenced through psychological therapy; this merits further investigation in larger samples. A greater understanding of this process may help therapists to promote better adjustment to life after brain injury by focusing on clients' potential for positive change and enhancing their capacity for growth.

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A comparison of post-traumatic growth after acquired brain injury or myocardial infarction
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Background and aims: Post-traumatic growth (PTG) is known to occur following acquired brain injury (ABI). It is not yet known how PTG in ABI survivors may be related specifically to the neurological nature of their injury, or more generally to illness/ injury experiences that are shared with other patient groups. This study aimed to compare PTG between ABI survivors and a group that has experienced a similar acute medical event but which does not have a primary neurological element.

Method: ABI survivors and myocardial infarction (MI) survivors completed a written survey including the Posttraumatic Growth Inventory (PTGI). PTGI scores in the two groups were compared using *t*-tests. Open-ended comments were analysed using thematic analysis.

Results: n=33 ABI survivors (age=51.6±12.4 years; 52% male; years since injury=5.5±5.3) and n=47 MI survivors (age=66.4±9.9 years; 79% male; years since injury=9.9±8.6) took part. There were no significant group differences on PTGI total score (ABI=54.0±19.6, MI=54.6±23.6; *d*=-0.03, 95% CI -0.47, 0.42), or on any of the five subscale scores. Comments from ABI participants highlighted the importance of having a positive attitude, while MI participants focused on lifestyle improvements.

Conclusions: PTGI scores in ABI survivors were very similar to scores reported in previous ABI research, and were not different from MI survivors' scores. Differences in experiences between the ABI and MI groups (as suggested by open-ended comments) may not be captured by the PTGI, which was not designed for medical groups. Future studies should use larger samples and consider using a different PTG measure.

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Neuropsychological outcome and its correlates in the first year after adult mild traumatic brain injury: A population based New Zealand study
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Background & Aim: The relationship between moderate/severe traumatic brain injury (TBI) and cognitive deficits is well known. The nature, duration and predictors of cognitive difficulties post-mild TBI remain unclear. This study examined cognitive, mood, and post-concussive outcomes of mild TBI over 1-year post-injury.

Method: Adults (>15 years) with mild TBI (N=260) completed neuropsychological (CNS-Vital Signs, Behavioural Dyscontrol Scale), mood (Hospital Anxiety Depression Scale), and behavioural assessments (Cognitive Failures Questionnaire, Rivermead Post-Concussive Questionnaire) at baseline, 1, 6, and 12-months post-injury.

Results: Over the 12-months post injury self-reported cognition (*p*=.027), post concussive symptoms (*p*<.001), depression (*p*<.001), anxiety (*p*<.001), and dyscontrol (*p*=.025) improved significantly; as did memory, processing speed, executive function, psychomotor speed/reaction time, complex attention and flexibility. At baseline >20% of individuals produced very low scores on executive ability, complex attention and cognitive flexibility. At 1 and 6-month follow-ups >20% of participants were very low for complex attention, with 16.3% remaining so at 12-months. Executive abilities and speed were related to PCS, mood and self-reported cognition at 12-months.

Conclusion: Whilst significant improvements were noted across measures over time, a significant proportion of individuals still perform poorly on neuropsychological measures 12-months after mild TBI; and these were linked to PCS, mood and self-reported cognitive outcomes.

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Māori experiences of neuropsychological assessment
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Background and aims: Cultural identity is an important variable that should be factored into the neuropsychological assessment process. Knowledge of the client's cultural identity not only guides how the assessment should be conducted in a culturally appropriate manner but it also enables the neuropsychologist to make recommendations for rehabilitation that are relevant to the client. Method: Each participant was interviewed using a semi-structured framework. The age range of the participants was 16 years to 64 years. The study was conducted in the north island of Aotearoa, New Zealand. Data was analysed using thematic analysis. Results: Four themes arose from the data. They were:

1. Positive Experiences: Generally the participants found the clinicians to be friendly and competent clinicians.
2. No choice: Participants felt devalued because of the lack of choices afforded them concerning processes of the assessment.
3. Cultural Invisibility: There was an overwhelming lack of questions around cultural identity and how being Māori impacted on their everyday life. Only one participant was asked his Iwi (tribal) affiliation.
4. Preferred practises: Most participants would have preferred to be assessed by a Māori clinician. Most participants indicated a strong need to have more cultural presence in all aspects of the neuropsychological assessment including test content and test environment.

Conclusions: This study found that despite the evidence demonstrating culture as an influencing factor on neuropsychological performance, and its important role in the rehabilitation process, the cultural identity of most of the Māori participants was entirely overlooked throughout their neuropsychological assessment. Correspondence: Margaret Dudley; mdudley@aut.ac.nz

Smartphones as prospective memory aids after traumatic brain injury
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Background and aims: Individuals living with traumatic brain injury commonly have difficulties with prospective memory. Traditionally a memory notebook has been recommended as a compensatory memory aid. Electronic devices have the advantage of providing a cue at the appropriate

time to remind participants to refer to the memory aid and complete tasks suggesting potential benefit in neurorehabilitation. This study aimed to investigate the efficacy of a memory notebook and specifically a smartphone as a compensatory memory aid.

Method: A single case series design was used to assess seven participants. A no-intervention baseline was followed by training and intervention with either the smartphone alone, or a memory notebook and later the smartphone. Memory was assessed with weekly assigned memory tasks. Qualitative data were compiled from clinical interview and observations.

Results: Participants using a smartphone showed improvements in their ability to complete assigned memory tasks accurately and within the assigned time periods. Use of a smartphone provided additional benefits over and above those already seen for those who received a memory notebook. Data driven recommendations were developed to guide clinicians in implementation of memory aids.

Conclusions: Smartphones have the potential to be a useful and cost effective tool in neurorehabilitation practice.

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Improving Quality of Life through Cognitive and Compensatory Strategies: A Case Study

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Background and Aims: This study aimed to improve the quality of life for a 59 year old gentleman who had an ABI resulting from a car accident when he was 16 years old by means of a combination of cognitive training and compensatory strategies based on the principles of person centred planning, positive behaviour support, cognitive rehabilitation therapy and neuroplasticity. The gentleman had received immediate traditional rehabilitation and support following the accident but continued to experience sadness, isolation and working memory difficulties forty years later.

Method: Cogmed working memory computerized training of 36 minutes per session were delivered 4 days per week over a period of 8 weeks. This was followed by followed by 8 months of the Extension Program and an array of compensatory visual, social and communication strategies.

Results: The intervention results in a Cogmed Training Improvement Index of 12 and a 59% improvement in following instructions. The most

prominent training effects were improvements in recalling events, engaging in extended conversations and remembering people as well as a decrease in “brain fog” and frustrations with distractions.

Conclusions: The combination of Cognitive Training and compensatory strategies significantly improved MS’s quality of life, even though they were implemented 40 years post injury.

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Collaboration in cognitive rehabilitation in an Australian public hospital setting: Challenges and rewards

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Background and aims: For many allied health practitioners working in public hospital inpatient rehabilitation, cognitive rehabilitation tends to be de-emphasised as the focus is on assisting patients to regain their physical function so that they can return to independent living as soon as possible. The aim of this paper is to describe a more multidisciplinary approach to cognitive rehabilitation undertaken at Prince of Wales Hospital in outpatients presenting with a range of cognitive deficits.

Method: Several case studies are presented where a multidisciplinary approach to cognitive rehabilitation was used with patients who had specific goals; generally involving return to work or study. A description of the methods including compensatory strategies and techniques are presented as are the challenges and rewards of working as a team.

Results: Case one is a young man with a developmental dyspraxia of speech and social anxiety who has been able to return to his studies. Case two is a young woman who underwent removal of a pineal gland tumour, complicated by a thalamic infarct and significant memory impairment, who is in the process of returning to her previous position as a newspaper editor. Case three is a young woman who suffered a stroke with hemiplegia who is working towards her goal of independence and Case four describes an older lady and the challenges she faces in her attempts to return to work in a large retail firm.

Conclusions: Cognitive rehabilitation in a public hospital setting can be challenging.

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Goal Attainment in cognitive MS Rehabilitation is achieved and maintained regardless of executive capability, neurological disability, depression and general cognitive ability

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Background: The aim of the study was to investigate the predictive value of important disease related variables on goal attainment, in cognitive MS-rehabilitation.

Methods: The possible predictive value of executive functions, neurological disability, depression and general cognitive ability was assessed, employing Goal Attainment Scaling (GAS). Fifty-seven MS-patients were recruited and their executive functions, neurological disability, depression and general cognitive ability was assessed. They were then guided through the process of formulating GAS-goals for coping with cognitive challenges in everyday life during a four week long inpatient, cognitive rehabilitation program. GAS-goal attainment was scored during biweekly follow up-calls in the three first months past discharge from the rehabilitation center, and finally at seven months following the commencement of the rehabilitation.

Results: Consistent with the first study hypothesis MS-patients succeeded in formulating and achieving GAS goals for coping with cognitive problems in everyday life. The patients were able to maintain a satisfactory level of goal attainment from the first measurement point after six weeks to seven months follow-up. However, contrary to the second hypothesis, attainment of GAS goals was not predicted by executive functioning. Neither was it predicted by neurological disability, depression or general cognitive ability.

Conclusions: The findings suggest that GAS may be a practical and robust method in cognitive MS-rehabilitation, regardless of important disease-related characteristics.

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Predictive factors for cognitive rehabilitation after acquired brain injury (ABI)

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Background and aims: There is a need for more detailed inspection concerning differential effects of cognitive rehabilitation. Earlier results in our RTC study on attention training within the first 4 months

after ABI (Bartfai et al, 2014) indicated differing effects depending on initial level of attention and type of intervention (Bartfai et al, 2015). The aim of the present study was to examine the role of premorbid factors, injury/illness characteristics and other cognitive variables on the training program.

Method: 59 in- and out-patients with mild to moderate ABI acquired in the last 4 months received 20 hours of attention training; either with Attention Process Training (APT), (Sohlberg & Mateer, 1987) or by customary training of attention in activity for approximately 5 weeks. The primary outcome variable was performance on the Paced Auditory Serial Addition Test, version A (PASAT A, Lezak et al, 2012) monitored at baseline, after every third hour of intervention and post intervention. Variability in improvement and statistical control limits were explored with statistical process control (SPC) (Wheeler, 2004). Individual cluster analysis techniques (Bouveyron & Brunet-Saumard, 2014) applying and the K-means algorithm were used to identify homogenous patient groups. Logistic regression was then conducted.

Results: Cluster analysis revealed different trajectories for recovery in the first stage after ABI independent from type of treatment and an interaction between initial level of attention and type of treatment. Preliminary analyses showed differences in treatment effect as a function of type of treatment, but not of age and diagnosis (stroke or traumatic brain injury, TBI). There was only a limited influence of premorbid cognitive functioning.

Conclusions: The results highlight the behavioral complexity of the recovery process after ABI and the interaction between types of rehabilitation provided. Further, the results corroborate the need for improvement in methodology for further studies in the early phase of brain injury rehabilitation.

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Investigation into the frontal lobe functioning of young offenders with and without a head injury

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Background and aims: Recent research has established a high prevalence of head injuries in the adult and youth offending populations. Offenders often have difficulties with tasks assessing frontal lobe functioning compared to non-offenders, but research has often failed to control for the effect of head injury. This research aimed to investigate whether young offenders in the community, with

self-reported traumatic brain injury (TBI), perform differently to young offenders without a TBI on tasks assessing frontal lobe functioning.

Method: Participants completed a battery of assessment measures that related to four aspects of frontal lobe functioning. In addition measures of mood, socio-economic status (SES) and IQ were taken to determine their possible influence as confounding factors. A total of 20 participants were recruited in the TBI group and 15 in the non-TBI group. Participants were aged between 12-17 years and had past/current involvement with Youth Offending Services.

Results: The TBI group had significantly lower IQ and SES than the non-TBI group but similar levels of self-reported depression. The TBI group were more impulsive on an inhibition task and were poorer at intuitive emotion-based decision making, and reading emotions from the eyes. There were no significant differences between the groups on reaction time tests.

Conclusions: The study concluded that within this sample of young offenders, those with a self-reported head injury had poorer performance on some tasks associated with frontal lobe functioning, but not others. The findings are considered in the context of theoretical and clinical implications with suggestions for further research.

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Ecological Assessment of the Supervisory Attentional System in People with Intellectual Disabilities

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Background and Aims: The aims of the current study were to adapt a version of the Multiple Errands Test for people with intellectual disabilities (IDs) and assess its ecological and construct validity.

Methods: Forty participants with IDs were invited to complete a battery of neuropsychological assessments, including the modified Multiple Errands Test for Intellectual Disabilities (mMET-IDs).

Results: Task completion on the mMET-IDs correlated significantly the Tower of London Test and the Six Parts Test. These findings suggest that the mMET-IDs has construct validity. The findings, however, also showed that the relationship between the mMET-IDs and the Six Parts Test could be accounted for by Verbal IQ and receptive vocabulary. Also, the mMET-IDs failed to correlate with the DEX-IR and its subscales.

Conclusions: The mMET-IDs can be successfully used with people with IDs, but further research is needed to improve ecological validity.

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TUESDAY ABSTRACTS are in presentation order

Session 8: Methods and measurement

The clarity of describing single-case research in the neurorehabilitation literature: Evidence suggests there is room for improvement

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Background and aims: Neurorehabilitation interventions using single-case methods are commonly reported (e.g., 30% of 4,500 records on the PsycBITE database, www.psycbite.com). Single-case methods comprise a wide variety of design options, yet concerns have been raised about the clarity and accuracy with which they are described in published reports. The aim of the present study was to evaluate the clarity of single-case design descriptions in the neurorehabilitation literature.

Method: All reports using a single participant published between 2004 and 2013 were retrieved from PsycBITE (n=687). A 30% random sample was selected (n=206), but seven reports did not meet eligibility criteria, leaving n=199. The design was classified using the taxonomy of Tate et al. (2013).

Results: Fifty-six percent (n=111) of reports provided no/vague description of the design. Examination of the full-text paper revealed that only 35% (n=70) used an experimental design, the most common of which was the multiple-baseline design. The majority (n=129, 65%) used designs with no experimental control, the pre-intervention/post-intervention design being the most common. In general, there was poor correspondence between the description of the design in the report and our classification.

Conclusions: An advantage of single-case methods is the opportunity they provide to directly translate research findings at the individual patient level and maximise evidence-based practice. But this advantage is compromised if clinicians/researchers use inappropriate designs without experimental control or if reports contain incomplete or inaccurate description. These results highlight an urgent need for education of single-case researchers, clinicians, reviewers and journal editors in single-case design.

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Reliability of the Reliable Change index (RCI) in the analysis of neurorehabilitation outcomes

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Background: When neurorehabilitation outcomes are evaluated with pre-post measures using standardised tests or scales, the Reliable Change index (RCI) can be used to determine whether intervention effects are real or due to measurement error. RCI computations, however, use parameters derived from interval/ratio data which assume linearity and are, arguably, incompatible with analysis of ordinal data. Yet, many tests and scales used in clinical assessment yield ordinal data. Can the RCI correctly determine reliable differences in ordinal scale data?

Method: Data for 150 individuals with traumatic brain injury on a standardised rating scale (Sydney Psychosocial Reintegration Scale-2; SPRS-2) were used. Logit scores, derived from Rasch analysis of SPRS-2 raw data, were also available. They provided linear measures of the construct underlying the (ordinal) Scale. The RCI was used to derive minimum reliable difference criteria expressed as either Total Raw Scores (MRDTRS, reflecting ordinal scale data), or logit scores (MRDLS, reflecting interval scale data). Test-retest differences, in both raw and logit scores, were generated across the Scale range, and then evaluated using each criterion.

Results: Raw score differences meeting MRDTRS criterion (11 points) also met MRDLS criterion at the extremes, but not the middle of the SPRS-2 range. Increments in raw scores meeting MRDLS criterion (14 points) were smaller at the extremes (2-10 points) than the middle of the SPRS-2 range (11-16 points).

Conclusion: RCI analysis may not reliably ascertain effectiveness of neurorehabilitation when outcomes of intervention effectiveness are assessed with measures that yield ordinal scale data.

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“Don’t remind me of my age!”: Quantifying the negative effects of age stereotypes on test performance

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Background and aims: Research has shown that increasing one’s awareness of head injury diagnosis reduces test performance. Similar findings have

been reported in older adults, in the context of questioning memory capacity. The challenge for clinicians is determining the extent to which this affects interpretation of a client’s performance when planning and evaluating the outcome of intervention. This issue is investigated in a study with older adults that aimed to document the degree to which making one’s age and cognitive capacity salient affected performance on standard tests.

Method: 68 older adults were recruited to an experimental study in which their self-perception as Younger or Older, and expectations that aging involved a specific memory decline or generalized cognitive decline, was manipulated. Participants were randomly assigned to one of these conditions prior to undergoing baseline cognitive assessment. Age and deficit expectations were then primed before tests of memory and general ability, typically used in dementia screening, were administered.

Results: Perceiving oneself as Older resulted in a significant reduction in performance, but the measure on which this effect emerged depended on deficit expectations. Participants who felt Older and expected memory to decline, performed worse on memory tests. Conversely, participants who felt Older and expected widespread decline, performed worse on the general ability test; and state anxiety had a significant influence on this group. The clinical implications for the latter group were profound, as 70% met the diagnostic criterion for dementia, compared to an average of 14% in other conditions. **Conclusions:** The implications for test interpretation are discussed with recommendations provided to manage underperformance when conducting assessments in rehabilitation contexts. Drawing on other data, this includes discussion about the ways we can help patients resist age and diagnostic stereotype effects.

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Session 9: Single case and case series – Datablitz

An unusual case of number agnosia
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Background: Deficits in the comprehension, production and manipulation of numbers have been documented in the literature. They may co-occur in different combinations and include dyscalculia, impaired number reading/ writing, transcoding deficits, difficulty recognising numbers in the context

of apperceptive agnosia. This paper reports on an individual presenting with an unusual and profound impairment of number processing.

Method: WL was a 62 year old male with a 3 year history of headache, subjective left facial/limb weakness, loss of left peripheral vision and apparent acalculia. Neurological examination, EEG and MRI-brain revealed no abnormality. WL was referred for neuropsychological assessment.

Results: Assessment revealed variable, mild-to-moderate impairment of immediate attention, verbal new learning and delayed recall, planning, judgement, abstraction, conceptual flexibility and working memory. WL was also totally unable to: recite automatic number sequences, identify written single-digit numerals, determine which of two groups contained more/less objects, determine which of two spoken numbers was bigger/smaller, perform mental or written calculations. By contrast, he had no difficulties: copying written single or multi-digit numerals, reading number words (e.g., nine), identifying written numbers as same/different on the basis of shape without knowing what the number was. There was no evidence of dysgraphia, dyslexia, left-right confusion or constructional dyspraxia.

Conclusion: WL’s profound difficulty processing numbers was not attributable to impairment in other cognitive domains. It suggested category-specific associative agnosia reflecting loss of, or inability to, access stored knowledge of the basic concept of number, its functions and attributes, which does not seem to have been reported in the literature.

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Perspectives Group: An innovative approach to treating hostility bias in a brain injury population
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Background: Emotion dysregulation manifested by increased aggression is a common consequence of ABI and has a powerful impact on survivors and their families. Underlying hostility bias (tendency to assume negative motives in others in ambiguous situations) may increase the number of situations provoking angry responses.

Method: We ran a six-week Perspectives Group one hour/week with two adult male clients, both many years post-ABI, who experienced severe interpersonal dysfunction resulting from hostility bias and emotional dysregulation. The protocol involved the application of cognitive strategies to both videotaped and role played hypothetical and real-life situations and perceptual positioning to influence negative attributions of motive. The single subject multiple baseline design included measures

taken at initial assessment, prior to intervention, and post-intervention. Primary measures were the Buss and Perry Aggression Questionnaire (BPAQ) and the Interpersonal Reactivity Index (IRI) (measure of empathy). Subjects and their partners also completed mood and communication measures and participated in a semi-structured qualitative interview.

Results: Both subjects showed remarkable reduction in BPAQ scores and little change on the IRI. Qualitative interviews supported questionnaire measures suggesting both subjects reduced their aggressive behaviours and increased their perspective-taking. We suggest that subjects learned to cognitively evaluate circumstances as possibly being non-hostile (a new perspective) and therefore adapted their responses accordingly, without changing their level of emotional reactivity.

Conclusions: A novel intervention addressing hostility bias via perspective-taking was extremely useful in reducing anger behaviour. We suggest that cognitive re-appraisal led to fewer situations being assessed as worthy of anger.

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A metacognitive skills training approach to enhance compensatory strategy training for prospective memory impairment following traumatic brain injury (TBI)
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Background and aims: Impairment of prospective memory (PM), or memory for intentions, impacts negatively on psychosocial outcomes after TBI. Training in compensatory strategy use (e.g. diary, alarms) has been found effective for improving performance on PM testing, however gains may not generalise to everyday PM activities. We propose that compensatory strategy training may be enhanced by including a metacognitive training component which focuses on developing self-awareness of PM impairment. The aim of the study was to demonstrate the effectiveness of a metacognitive approach to compensatory PM training in an individual with TBI.

Method: Single-case experimental (ABA) design incorporating a 2-week baseline, 3-week intervention phase and 4-week maintenance phase with an 8-month follow-up. The participant was a 22 year old male who sustained a severe TBI 55 months

earlier. Therapy sessions incorporated training in mobile phone calendar and timetable use, family member involvement, feedback, self-prediction and self-evaluation of performance. Primary outcome measures were the number of spontaneous mobile phone and timetable entries and number of PM failures in everyday life recorded in a memory diary by a family member. Other measures were the Awareness Questionnaire, Self-Awareness of Deficits Interview, and Depression Anxiety and Stress Scales.

Results: Gains in strategy use and everyday PM performance were demonstrated during the intervention and maintenance phases and remained greater than baseline at 8-month follow-up. Level of self-awareness was stable throughout all phases but emotional status improved.

Conclusions: A metacognitive approach to PM strategy training shows promise for improving generalisation to everyday memory performance after TBI.

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Lexical retrieval treatment for functionally-relevant vocabulary in primary progressive aphasia: Investigating generalisation to a structured interview
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Background and aims: Anomia is a core symptom in primary progressive aphasia (PPA). There is evidence for the efficacy of anomia interventions in PPA, but limited information about whether improvements transfer to connected speech. Benefits of lexical retrieval treatment for connected speech in acute-onset aphasia have been found inconsistently using a variety of linguistic analyses. This single-blind single-case series investigated

whether a computer-based home treatment programme improved retrieval of functionally important words in confrontation naming and a structured interview in six people with non-fluent, logopenic or mixed PPA.

Method: Words related to two topics that were personally relevant for conversation were identified for each participant, and half the words from one topic were treated. While viewing a picture of each treatment item, participants used repetition and/or reading to produce the name, once per day, for 10 days over 2 weeks. Participants completed three baseline and two post-test measures of picture naming and a structured interview.

Results: After treatment, five of the six participants showed significantly better confrontation naming for treated than untreated items, generalising to untreated depictions of treated items, but there was no increase in use of treated words in the structured interview. We will further analyse the structured interviews, to determine whether there were more nuanced benefits of treatment.

Conclusions: Improved lexical retrieval in naming was consistent with previous findings. The study will provide valuable information about the limits and/or the potential of word retrieval treatments to improve connected speech in both acute-onset and progressive aphasia.

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Effectiveness of a strategy intervention to overcome a suppression failure in two brain tumour cases
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Background and aims: Suppression of prepotent responses is crucial for appropriate behaviour across different settings. Initiation and suppression difficulties are well documented following frontal damage, although task differences have limited our understanding. The Hayling Sentence Completion Test was designed to assess verbal initiation and suppression within the same task. This study investigates the ability of two patients with large left frontal tumours to use a strategy to overcome profound suppression failures on the Hayling Test.

Method: Patients KI and MIK completed baseline cognitive tests, including the Hayling Test, and two experimental tasks: (1) a Selection Sentence Completion task containing high and low constraint sentence frames that varied selection demands (high and low); and (2) the Hayling Strategy Trials

task comprising four strategies aimed to override a suppression failure and facilitate production of an unconnected completion word.

Results: On the standard Hayling Test, KI and MIK were able to initiate responses to complete sentences high in constraint, in contrast to their impaired ability to suppress responses in order to produce an unconnected word. KI was also impaired when initiating responses to complete low constraint sentences, consistent with a selection deficit, and he was virtually unable to benefit from a strategy to overcome a suppression failure. MIK, however, was unimpaired when initiating responses to complete low constraint sentences and was able to implement each strategy to overcome a suppression failure.

Conclusion: KI and MIK presented with a suppression failure but KI also had a selection deficit and was unable to implement a strategy. By contrast, MIK's selection ability was intact and her deficit was in generating rather than implementing a strategy. The differential performance of KI and MIK provides insights into verbal initiation, suppression, selection and strategy mechanisms, which has implications for neurorehabilitation.

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Evaluation of rehabilitation for the cognitive effects of normal aging
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Background and aims: Normal aging is associated with decreases in some cognitive domains (e.g., information processing speed, attention, new learning and executive function) but not others (e.g., language). These changes can impact negatively on work and everyday functioning, especially for older adults who may mistake the changes as the symptoms of dementia. This study examined the relationship between neuropsychological test results and work related difficulties and the effect on coping of post-assessment feedback and use of cognitive strategies. Such an investigation is important because the percentage of the escalating number of older adults in the general population who chose to stay on at work after 65 years is steadily increasing.

Method: 10 older adults in full-time employment referred with complaints of memory difficulty but who subsequently were found to be functioning normally on formal assessment, were provided with feedback and advice about how to deal with their reported work related difficulties.

Results: Data were examined as a series of case studies and analyzed collectively. Psycho-education about normal aging leading to reduction in worry about dementia, accounted more for improved

coping than compensatory strategies for dealing with the cognitive changes themselves.

Conclusion: Feedback after neuropsychological assessment regarding cognitive changes associated with aging and relating personal strengths and weaknesses to specific work difficulties more than specific strategies to deal with difficulties assists older adults to stay at work.

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Session 10: Social cognition, self-awareness and social participation

Problems understanding diplomacy after severe TBI
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Background: Severe traumatic brain injury (TBI) can cause difficulties negotiating social situations especially when language is used indirectly. Indeed, substantial research shows that people with TBI have difficulty understanding sarcasm where a speaker says one thing but means the opposite. Hinting is another form of non-literal language where the speaker alludes to what they mean by statements that are indirectly linked to their intended meaning. One way people make sense of such indirectness is by reading the emotional demeanour of the speaker. Given many people with TBI have difficulty with, not only indirect language but also identifying emotional expressions, this study aimed to explore their ability to understand hints with and without emotional cues.

Methods: 31 adults (22 males) with severe TBI and 31 demographically matched healthy adults took part. They watched 12 video vignettes in which one speaker hinted to the other what they wanted. After the first "hint" in the vignette, the participant was asked what was meant. If they failed, the segment was played to the next more explicit hint and they were asked again. If they failed again they were shown a third explicit hint and asked again. The first six videos showed actors in a neutral state followed by six in which the actors were overtly emotional.

Results: The TBI group performed similarly to the control group with the important exception that, unlike the controls, they did not improve in their accuracy when hints were emotionally laden compared to neutral. Poor performance on neutral hints was associated with deficits in cognitive flexibility and reasoning as well as social cognition (TASIT). Performance on emotional hints was

associated with social cognition alone.

Conclusion: This study suggests that problems understanding hints also arises as a result of TBI and are, to some extent, associated with poor social cognition.

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Changes in impaired self-awareness after acquired brain injury in patients following intensive outpatient neuropsychological rehabilitation
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Background & aims: Better awareness of deficits at the start of rehabilitation is associated with more favorable outcomes. Therefore, it is relevant to improve awareness of deficits in ABI patients. In the current study we investigated changes in impairments in self-awareness in ABI patients and the effect these changes have on treatment outcome.

Methods: This longitudinal study, with pre (T1)-post (T2) measurements and one year follow-up (T3), include 78 patients with acquired brain injury (8.3 years post injury) who followed an intensive outpatient neuropsychological rehabilitation program. The main measures comprised awareness (measured by the discrepancy in answers between patients and significant others), depressive symptoms, psychological and physical dysfunction, and health related quality of life (HRQOL).

Results: Patients were divided into three awareness groups: underestimation, accurate estimation, and overestimation of competencies. Most patients, who underestimated their competencies at the start of treatment, accurately estimated their competencies directly after (9 out of 11). These patients also showed the largest treatment effects on depressive symptoms, psychological and physical dysfunction, and HRQOL. Most patients with impaired self-awareness (i.e. overestimation of competencies) at the start of treatment kept overestimating their competencies after treatment (10 out of 14). These patients showed a significant decrease in depressive symptoms, but no other treatment effects.

Conclusions: The exploratory results indicate that changes in outcome are related to changes

in awareness and they underline the importance of taking into account different awareness groups with respect to treatment effects.

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“I don’t have many friends – well I don’t have any actually.” Exploring the source and quality of friendships experienced by adults several years after severe traumatic brain injury

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Injury Psychosocial Rehabilitation

Background and aims: Close relationships make an important contribution to well-being and the maintenance of a positive sense of self-worth. For those who sustain traumatic brain injury (TBI), life is frequently characterised by declining interpersonal relationships and increasing social isolation. The aim of this study was to understand the post injury experience of friendship from the perspective of adults with severe TBI.

Method: Twenty-three adults who had sustained severe TBI participated in this project. On average 10 years had elapsed since the injury and the majority of participants were between 25 and 45 years old. They all lived in the community with family or paid support. The experience of friendships, particularly their source and quality, was explored using mixed methods (quantitative measures and in-depth interviews). Qualitative analysis of interview transcripts moved through a process of data-driven open and focused coding to reveal emergent themes and categories.

Results: Friendship was primarily characterised through three themes: the experience of loss, lack of understanding and a desire to share. Participants nominated a mean of 3.35 (SD 2.19) friends. When paid carers and family members were not included, the mean dropped to 1.52 (SD 1.38). Eight participants (35%) described having no friends and only three participants (13%) had maintained preinjury friendships. Postinjury enduring friendships had been developed during rehabilitation, through work and leisure activities and as a result of shared living arrangements.

Conclusions: Participants’ stories clearly illustrated how rehabilitation can focus on friendship by supporting already established relationships through education and facilitating access to chosen activities that bring with them new interpersonal encounters and opportunities to share experiences.

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Session 11: Psychosocial issues in rehabilitation – Datablitz

The essentials components for rehabilitation: Science and compassion

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Background and aims: The efficacy of rehabilitation treatment models for persons with acquired brain injury (ABI) has evolved over the past decades. The models are informed by the researched evidence of the outcomes for persons with ABI. In more recent years research of rehabilitation therapy methods gives guidance for therapists providing treatment to aid the person’s recovery and improve the person’s functioning. Despite the increased knowledge of evidence based therapy, the therapists’ skills required to provide the therapy is often overlooked in the research and within the rehabilitation models. Underpinning the success of therapy is not only the provided therapy but the qualities of the therapist providing the therapy. This paper aims to explore the evidence regarding the therapists’ qualities used in providing therapy aiming to maximise the outcomes for persons with ABI and provide a revised foundation of ABI rehabilitation models.

Methods: A literature review investigating the qualities of rehabilitation therapists was completed. The review expanded to include the counselling literature exploring in the therapeutic relationship resulting in improved client outcomes. The review results were enriched by the reflections of therapists working in ABI rehabilitation. These reflections are based upon a semi structured interview completed with therapists of 1-4 years, 4-10 years and 10 years and more experience in ABI rehabilitation.

Results: The results display limited focus on the therapists’ qualities providing therapy in the ABI literature. The counselling literature highlights therapists portraying warmth contributes to improving client’s outcomes. The interviewed therapists describe an interest in the science of therapy and having an emotional connection to their work. Embedded in the therapists’ description is the value of compassion each brought to their role providing therapy.

Conclusions: An effective rehabilitation model requires careful implementation of evidence based practice. It is proposed therapists providing treatment within a compassionate framework provides more effective treatment. But can we be brave enough to suggest an essential component of providing effective rehabilitation is compassion?

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Caregiver Burden in Traumatic Brain Injury: the experience of formal caregivers working in an inpatient rehabilitation centre

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Background and aims: Studies show that family caregivers of people who have suffered a traumatic brain injury (TBI) may experience feelings of burden, stress, anxiety, and depression and also experience an impact on general wellbeing. However there is a paucity of studies considering the impact of carer burden, emotional health and general wellbeing on formal caregivers (i.e. paid carers) working in inpatient settings with TBI patients. The aim of this study was to explore the frequency, extent and relationship of carer burden, emotional distress and general wellbeing in formal caregivers of TBI patients in an inpatient setting.

Method: Care staff at an in-patient neurorehabilitation centre were asked to complete a number of standardised measures; Depression, Anxiety and Stress Scale (DASS), The General Health Questionnaire (GHQ) and the Burden Interview (BI). Demographic information was also gathered. To date 16 staff members have completed the measures.

Results: Over half of the staff reported above moderate levels of carer burden as measured by the Burden Interview. One third scored above cutoff for depression, anxiety and stress and reported reduced wellbeing as measured by the GHQ. There were significant correlations between Carer Burden and reduced wellbeing ($r=.79$, $p<.05$) and between Carer Burden and depression ($r=.86$, $p<.05$). Results show a relationship between high stress and reduced wellbeing ($r=.50$, $p<.05$). No relationship was found between anxiety, stress and carer burden or between depression, anxiety and general wellbeing.

Conclusions: This study is still continuing but the preliminary data analysis suggests the experience of family caregivers is mirrored in that of formal paid caregivers. Findings highlight the importance of further research to consider which factors are most predictive of caregiver burden in order devise appropriate support and interventions for formal caregivers working in in-patient settings.

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Reducing challenging behavior after brain injury: effects of the ABC-method

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Background & aims: After brain injury many patients experience challenging behavior such as agitation or aggression, which puts a high burden on the patient, the patient’s family and on health care professionals. One of the therapeutic approaches to reduce disrupting behavior is behavioral modification. The ABC method is a basic and simplified form of behavioral modification therapy for use by nurses. ABC refers to the identification of Antecedent events, target Behaviors, and Consequent events.

Methods: In the present study we evaluated the effectiveness of the ABC-method in a group of 56 patients with brain injury admitted to neuropsychiatric rehabilitation. Effectiveness was measured in terms of reduction of neuropsychiatric problems and aggression and apathy in particular. We performed double baseline measurements and a post-treatment and follow up measurement.

Results: The results show a significant reduction in aggression, but not in apathy or overall neuropsychiatric problem behavior. The reduction is however most prominent during the baseline period and not as a result of treatment. Ten patients were followed more closely in a single case experimental design. Only one of these patients showed a significant reduction in verbal aggression after treatment.

Conclusions: The present study did not show effectiveness of the ABC-method in this sample of patients. There does seem to be an anticipatory effect of paying more attention and therefore reducing the disrupting behavior during the baseline period. From interviews with the nurses who were trained to use the method in their daily clinical practice we know however that it was not implemented in their daily routines which may have influenced our data. For future studies we recommend putting more effort in implementation in addition to training the nursing staff in using new techniques.

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The Epidemic that is no longer silent: Role of TBI in Crime and the promise of neurorehabilitation

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Background and Objectives: Traumatic brain injury (TBI) is a leading cause of death and disability in children and young adults. TBI poses major global health and social challenges. Of particular concern is the increased evidence of TBI being associated with criminal behaviour. Children with TBI are likely to go enter the criminal justice and TBI is very high in offender groups. TBI in offenders is linked to psychiatric disturbance – particularly self-harm - and behavioural problems, such as aggression and violence. Further there appears to be a “double hazard” - those with social disadvantage who experience a TBI are at increased risk of worst outcomes.

Methods and Results: We provide a health economic analysis of large scale populations (such as total population data from Sweden on TBI and crime) to indicate cost savings for such changes. Costs of offending to society in adolescence are at about £1 Million to £1.5 Million per offender. TBI increases chances of offending twofold.

Conclusions: In this paper we argue that screening for, and managing, the effects of TBI more broadly in society to enable children with TBI to stay in school and for innovative approaches for integrating forensic and neuro- rehabilitation of young offenders in community and secure systems. And that this will save money and lives.

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Desired versus actual occupational participation following severe TBI

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Background and aims: Severe traumatic brain injury (TBI) often leads to major changes in activity participation. This study aimed to investigate “occupational gaps” or differences in desired versus actual engagement in everyday activities. Associations between occupational participation, social reintegration, cognitive functioning, awareness of deficits and emotional status were also examined.

Methods: Participants were 33 adults (79% males) with severe TBI aged 18 – 64 years ($M= 35.94$, $SD= 14.21$) living in the community. The Occupational Gaps Questionnaire was administered to measure current and desired participation in 30 everyday

activities. Participants were also administered a neuropsychological test battery and measures of social reintegration (Sydney Psychosocial Reintegration Scale), awareness of deficits (Awareness Questionnaire) and emotional distress (Depression Anxiety and Stress Scale).

Results: High levels of current occupational participation (>75%) were reported for visiting relatives/friends, cleaning, and watching TV, and low levels (<25%) were reported for working, studying, and volunteering. Significant gaps were found between actual and desired participation for 10 of the 30 activities (e.g., working, sports, managing personal finances, and supporting others). Current activity participation was significantly related to cognitive ability ($rs = .41 - .59$, $p<.05$), social reintegration ($r = .61$, $p< .001$), emotional distress (depression $r = -.41$; anxiety $r = -.36$, $p< .05$), but not awareness of deficits ($p>.05$).

Conclusions: The findings indicate that occupational gaps are commonly experienced after severe TBI and that current occupational participation is related to cognitive ability and emotional status. Future research needs to focus on the personal meaning or importance of occupational gaps to guide client-centred rehabilitation.

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Session 12: Mood and emotional adjustment in neurological conditions

Talk to be given by Jill Winegardner

An Exploration of Compassion Focused Therapy following Brain Injury

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Background and aims: Anxiety and depression are significant after acquired brain injury (ABI), yet the evidence base for treatment options is relatively limited. Self-criticism and shame can be common experiences associated with depression and anxiety following brain injury. Compassion Focused Therapy (CFT) was developed to target shame and self-criticism. This paper will describe how psychological problems following brain injury, underpinned by shame and self-criticism, can be alleviated through CFT.

Methods: A mixed-methods design of 12

participants attending holistic neuropsychological rehabilitation will be presented. CFT was integrated into the holistic rehabilitation programme. The Hospital Anxiety and Depression Scale (HADS) and the Forms of Self-Criticising and Self-Attacking Scale (FSCRS) were administered before and after intervention and at 3 months follow-up. The aims were to decrease self-criticism and symptoms of anxiety and depression as well as increase participants’ capacity to be self-compassionate. After follow-up, interviews were conducted with six participants and analysed using interpretative phenomenological analysis to gain a richer understanding of the role of CFT.

Results: Scores on the HADS and FSCRS changed significantly from start to the end of the programme and were maintained at 3 months follow-up, indicating positive change. Qualitative analysis mirrored quantitative results and highlighted beneficial elements of CFT in the change process.

Discussion and Conclusions: Preliminary findings suggest CFT can be used to alleviate depression and anxiety associated with self-criticism and shame following ABI. Additionally, CFT works well in the context of a holistic rehabilitation programme.

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Perceived impact of multiple sclerosis predicts poorer community participation: What roles do anxiety and depression play?

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Background and aims: Despite community participation being an important goal of rehabilitation for people with neurological conditions, there has been limited exploration of modifiable factors that can be targeted during therapy to promote its achievement for people with Multiple Sclerosis (PwMS). This study examined whether perceived impact of MS and associated distress predicted community participation, and tested whether anxiety and/or depression mediate this relationship.

Method: 73 community-dwelling PwMS completed the Community Integration Questionnaire, Perceived Impact of Problem Profile and Hospital Anxiety and Depression Scale. The relationship of perceived impact and distress with community participation was analysed using linear regressions. The mediation models were tested using the *Joint Significance* procedure and distribution of the product method.

Results: Greater perceived impact of MS on self-care, psychological well-being, participation, mobility and particularly relationships predicted poorer community

participation. Anxiety partially mediated the mobility and relationships impact models. No mediating effect was found for depression.

Conclusions: The findings enhance understanding of the link between perceived impact of MS and community participation, whilst highlighting the influential role of anxiety on outcomes. However, this relationship is complex. Further research is recommended to determine whether psychosocial interventions targeting perceived impact and anxiety would improve community participation outcomes for those living with neurological conditions.

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Behaviour Activation Therapy to improve participation and mood of people with depression following brain injury

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Background and aims: Depression is common after brain injury, yet currently there are few studies that demonstrate effective psychological treatment approaches for depression (Gertler, Tate and Cameron, 2015). Behaviour Activation Therapy (BAT) is a promising treatment as it has demonstrated effectiveness in non-brain injured samples and is not cognitively demanding.

Methods: The benefit of BAT for mood and participation was investigated with a single-case experimental design (SCED), using a multiple-baseline across behaviours. Three participants (aged 26 to 41) with a diagnosis of depression following brain injury (two traumatic, one acquired brain injury) underwent a course of BAT. Treatment consisted of 10 to 14 weekly sessions of 30 to 90 minutes duration, delivered by a clinical psychologist. The three target behaviours were exercise, social activity and functional independence. Participants recorded target behaviours and mood on a daily basis through an online form.

Results: There were mixed findings in relation to increases in participation. All participants demonstrated a statistically significant increase in participation in exercise and social activity. There was no change in participation in functional independence activities. Only one participant demonstrated any significant findings in relation to mood.

Conclusions: The study found mixed results in support of BAT, suggesting that BAT is more effective for increasing participation when the activity is intrinsically rewarding and convenient. Two participants reported significant reduction in reported symptoms of depression on the DASS21 inventory.

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Self-discrepancy and selective attention to threat in emotional adjustment following acquired brain injury (ABI)

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Background and aims: Emotional distress following acquired brain injury (ABI) is positively correlated with discrepancy between pre-injury and current self. Self-regulation theories suggest emotions arise from current discrepancy between, progress towards, or threat to future (not past) desired goals. Selective attention to threatening versus neutral stimuli is common across emotional disorders in non-ABI populations but hitherto remains unexamined following ABI. This study tested the contribution to anxiety and depression of current-ideal self-discrepancy following ABI, and we predicted higher levels of self-discrepancy are correlated with selective attention to threat.

Method: 35 participants (6 female; 14 traumatic brain injury; mean age 46 years, range 24-69 years; mean time post 3 years, range 0.5-15 years) were administered neuropsychological, mood and self-discrepancy measures and an established experimental paradigm that determines selective attention to threat through response times to neutral and threat stimuli ('dot probe' task).

Results: Pearson's product-moment correlations (n=34) were significant for pre-current self-discrepancy and anxiety (r=-.49, p = .008), depression (r = -.67, p = .000), and current-ideal self-discrepancy and anxiety (r = -.62, p = .000), depression (r = -.71, p = .000). Partial correlations (n=32) revealed no significant relationship between self-discrepancy and dot probe selective attention to evaluative threat (r = -0.25, p = .170).

Conclusions: Discrepancies between current and ideal, as well as pre-injury, selves should be a focus in future research, in keeping with self-regulation theories. Self-discrepancy might contribute to emotional outcome independently of selective attention to threat, although sample characteristics may limit conclusions.

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Session 13: Post-traumatic amnesia and injury outcomes in TBI

Using post-traumatic amnesia to predict outcome following traumatic brain injury

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Background and Aims: Duration of post-traumatic amnesia (PTA) has emerged as a strong measure of injury severity following traumatic brain injury (TBI). Duration of PTA has traditionally been segmented into intervals in an attempt to characterise injury severity. Despite the growing international adoption of this measure, there remains a lack of consistency in the way PTA duration is used to classify severity of injury. This study aimed to establish the classification of PTA that would best predict functional or productivity outcomes.

Methods: A cohort of 1041 individuals was recruited from inpatient admission to a TBI rehabilitation centre between 1985 and 2013. Participants had a primary diagnosis of TBI, emerged from PTA prior to discharge from inpatient hospital, and engaged in productive activities prior to injury. We evaluated eight classification models, six based on the literature and two that were statistically-driven. Models were assessed using area under the receiver operating characteristic curve as well as model-based Akaike Information Criterion and Bayesian Information Criterion statistics.

Results: All categorisation models showed longer PTA to be associated with a greater likelihood of being nonproductive at one year following TBI. Classification systems with greater number of categories performed better than two-category systems. The dimensional (continuous) form of PTA, resulted in the greatest AUC, and lowest AIC as well as BIC, of the classification systems examined.

Conclusions: Greatest accuracy in prognosis is likely to be achieved using PTA as a continuous variable, enabling productive outcomes to be estimated with far greater precision than that possible using a classification system. Categorising PTA to classify severity of injury may be reducing the precision with which clinicians can plan the management of patients following TBI.

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Agitation during post traumatic amnesia and its association with disorientation and impairments in memory

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Background and objectives: Agitation is considered a common feature of post traumatic amnesia (PTA) after TBI, however, reported frequencies range from 7-70%. Few studies have prospectively examined agitation during PTA using a standardised measure, or examined the course of agitation during PTA and its relationship to the coinciding cognitive impairments. The aims of this study were to: 1) examine the frequency and nature of agitation during PTA using daily prospective measurement; and 2) examine the relationship between agitation levels and the cognitive impairments (orientation and memory) during PTA.

Method: Daily assessments of agitation (Agitated Behavior Scale, ABS) and orientation/memory (Westmead PTA Scale) were conducted in 23 patients during the PTA phase after severe TBI.

Results: Based on commonly used criteria (ABS score>21 for 2 or more consecutive days), agitation was present in 22% of patients. Distractibility (78.3% of patients) and impulsivity (73.9%) were the most common forms of agitated behavior, while violence was relatively rare (8.7%). A mixed effects regression model found that a quadratic relationship best explained the association between agitation and severity of cognitive impairment such that agitation initially increased as orientation and memory function was improving, but reached a peak and then declined as PTA emergence drew nearer.

Conclusions: Agitated behaviour was relatively common during PTA and most commonly involved behavioural manifestations of cognitive impairment rather than aggression and violence. Agitation levels were related to the degree of orientation and memory impairment suggesting that management to improve cognitive function during PTA may help to manage agitation.

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Exploring the impact of traumatic brain injury on moral reasoning and how this relates to executive functioning, empathy and emotion-based decision making

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Background and Aims: Traumatic brain injury (TBI) leads to cognitive, behaviour, and social functioning difficulties, and is associated with increased risk of offending behaviour. Fronto-temporal brain regions are commonly affected in TBI and these regions are considered important for moral reasoning. Moral reasoning is important for upholding social function and preventing delinquent behaviour. Studies to date have indicated that there are greater difficulties in moral reasoning following a childhood TBI than adulthood TBI. The current study aimed to: i) examine the impact of childhood TBI on moral reasoning in early adulthood; ii) explore the neurocognitive processes underpinning moral reasoning in young adults with TBI.

Methods: Twenty survivors of TBI aged 17-25 years and 34 age-matched non-brain injured participants completed the Sociomoral Reflection Measure - Short Form (SRM-SF, Gibbs, Basinger & Fuller, 1992). The relationships between moral reasoning and executive functions, cognitive flexibility, inhibition, empathy, and emotion-based decision making were also explored.

Results: The healthy comparison group demonstrated significantly higher moral reasoning. This was maintained when the groups were matched on age, sex, socioeconomic status and when intellectual functioning was controlled. Significant relationships were found between moral reasoning and cognitive flexibility, inhibition, executive function difficulties and empathy in the healthy comparison group. Only one significant correlation was revealed in the TBI group: between cognitive flexibility and moral reasoning. This was attributed to insufficient power to detect other significant findings.

Conclusions: TBI sustained during childhood does disrupt moral development. Executive processes and empathy may be involved in moral reasoning.

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A Transdiagnostic Investigation of Emotional Distress after Traumatic Brain Injury

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Background and Aims: The transdiagnostic approach endeavours to understand and/or treat processes associated with multiple psychological disorders. Advocates of this approach suggest that there are common factors underlying anxiety and depression, and that these disorders may be part of the same fundamental emotional syndrome. This perspective may be highly relevant to the TBI population, as emotional distress post-TBI often presents as a range of neurobehavioural and emotional reactions. The main aim of this study was to identify psychological processes common to depression, anxiety and global distress after TBI. The psychological variables considered included: threat appraisals, avoidance, self-discrepancy, difficulties with emotion regulation, repetitive negative thinking and negative self-focused attention.

Method: Fifty adult participants with mild to severe TBI (chronicity: 12-65 months) were recruited from the community. Participants completed the Appraisal of Threat and Avoidance Questionnaire, Head Injury Semantic Differential Scale, Difficulties in Emotion Regulation Scale, Penn State Worry Questionnaire, Self-Focus Sentence Completion task, as well as measures of depression, anxiety and global distress.

Results: Significant correlations were found among the proposed transdiagnostic variables ($r_s = .29-.82$, $p < .05$). A principal components analysis revealed two underlying factors; 1) threats to self and 2) emotion dysregulation. Only the emotion dysregulation factor accounted for significant unique variance in levels of depression, anxiety and global distress ($sr2 = .12-.17$).

Discussion: Overall, the study provided some support for the transdiagnostic framework with both unique and shared component processes identified. Namely, the emotion dysregulation factor was independently related to levels of depression, anxiety and global distress. The threats to self-factor were independently related to depression and global distress, but not anxiety.

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Poster Session 2: Tuesday

Understanding and disrupting pathways to serious and persistent offending following childhood traumatic brain injury

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Background and aims: A recent systematic review evidenced a disproportionately high prevalence of experiences of childhood traumatic brain injury (CTBI) among young people in youth justice custodial institutions in comparison to the general population. This evidence suggests a failure of the current policies and practices of various nation states to support young people following CTBI and promotes a radical rethinking of the approaches of the youth justice system, and of policy and services more generally.

Methods: This paper seeks to contribute to such rethinking through an examination of a disparate range of literature from various academic disciplines, so as to understand the complex pathways into serious and persistent offending following CBTI and the potential policy and practice response.

Results: Three distinct, though inter-related sets of factors explaining the high prevalence of CTBI among young people in custody are identified: cognitive or emotional deficits that directly influence antisocial or aggressive behavioural traits; increased exposure to social and environmental risk for offending (including educational disengagement and challenges to parenting practices) and disabling and criminalising processes that include the criminal justice system.

Conclusions: Analysis of these inter-related explanations suggest a range of implications for policy and practice responses to young people who have experienced CTBI, including: more robust screening and assessment of CTBI; greater investment in family support and educational support services; tailored and responsive criminal justice interventions; and training and awareness raising among a range of professionals and practitioners in schools, family support, health, and criminal justice services.

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The role of self-perceived cognitive impairment in multiple sclerosis: Subgroups with different profiles and potentially useful ‘yellow flags’

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Background and aims: Cognitive impairment is common in multiple sclerosis (MS), yet self-reported cognitive impairment has been shown to be a poor predictor of outcome on objective neuropsychological assessment and MS patients are often considered to have diminished insight into their impairments. Our clinical experience suggests otherwise, so we sought to explore these factors.

Method: This study is part of a larger research project. A range of demographic and psychological outcome measures (e.g. age, type of MS, self-rated level of cognitive impairment, MS Neuropsychological Questionnaire, Memory Compensation Questionnaire, DASS-21) were administered to patients before and after neuropsychological assessment with feedback by a research assistant uninvolved in delivering the service. Patients were classified into 4 groups according to their self-reported level of cognitive impairment before formal assessment in comparison to the neuropsychologists’ rating after assessment.

Results: The sample comprised 71 community-dwelling patients. As a group, prior to the assessment patients’ self-ratings of their level of impairment did not correlate with the neuropsychologists’ (rsp= .12, $p = .48$). However, subgroup analysis showed that 47% had self-ratings that were congruent with the neuropsychologists’ (23% nil-mild, 24% moderate-severe impairment), 36% over-estimated their level of impairment, whilst only 17% under-estimated their level of impairment. Subgroups had different profiles on demographic and psycho-social outcome measures.

Conclusions: Many people with MS do, in fact, have good insight into their level of cognitive impairment. Those whose self-ratings are not congruent with the neuropsychologists’ have profiles that could potentially serve as psycho-social ‘yellow flags’ to service providers and caregivers.

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Can EBIQ identify change in ability to make friends?

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Background and aims: Friendships may be disrupted by disability. Often people living with brain injury present difficulties in fostering and maintaining relationships. This research aimed to investigate the usefulness of European Brain Injury Questionnaire (EBIQ) as a measurement of ability to participate in friendships after completing a neurorehabilitation programme.

Method: Eight items of the 66 questions, were selected as related to the concept of friendship (6, 8, 12, 17, 19, 30, 39 & 40). Eighty-two adults participated (mean age = 36.25, SD = 11.54). The means of pre (T1) and post (T2) measures were compared using a T-test; the difference between T1 and T2 was calculated; and the frequency in which each value occurred was verified (range -2 to 3, negative numbers mean decline).

Results: There was a significant difference between T1 and T2 mean scores ($t(81)=40.08$, $p < .000$). Analysing each question, we found high frequency of improvement on Q30 (feeling lonely) 48.9%, Q6 (others do not understand your problems) 45.6%, and Q8 (being unable to plan activities) 44.4%. Q17 (hiding your feelings from others) showed the lowest percentage of change (30% improved). Q39 (thinking only of self) showed 53.3% reported no change at all.

Conclusions: Results suggest EBIQ may provide a subscale which could be a useful measurement of ability to participate in friendships after completing a neurorehabilitation programme. Reported changes appear to be associated with participation in the neurorehabilitation programme.

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Can a cognitive prosthesis assist people with face-naming difficulties?

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Background and aims: This study investigated if a custom multi-touch smartphone application could improve functional face-naming ability in people with acquired brain injury, who had been identified as having face-name recall difficulties. It was hypothesized that use of the application would not only improve functional face-naming, but also result

in improvements in social interactions and wellbeing. **Method:** To test these hypotheses a single case AB design was employed with six participants, all of who had been identified as having face-name recall difficulties. Participants were each issued with an Apple iPhone running the face-name application which had been developed for this research. **Results:** Of the five participants who ultimately completed the study, the face-name application produced unequivocal improvement in face-naming on the famous faces test developed for this research. Participants also indicated that the application was also helpful in “real-world” situations. In this small trial there were mixed results regarding the hypothesis that improvements in face-name recall would result in improvements in social interactions and wellbeing. **Conclusions:** How often the face-name application was used by participants was found to predict 85% of their observed change in overall self-reported wellbeing. One interpretation of this strong correlation is that this may represent evidence for a dose-response relationship. **Correspondence:** Janet Leathem; J.M.Leathem@massey.ac.nz

“Fatigue is part of who I am and the life I want to lead”: Implementing a clinical model to guide intervention and evaluate outcomes
Jill Winegardner will present poster Malley, Donna¹
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Background: Fatigue is a common consequence of traumatic brain injury (TBI) and impacts rehabilitation outcomes, social participation and quality of life. Development and evaluation of clinical resources to support self-management is required. Application of a model (Malley, Cooper & Gracey, 2014) may create a shared understanding, guide clinical reasoning, facilitate self-management and potentially evaluate intervention.
Method: Two women (aged 28 and 30) with TBI (sustained between 2 and 4 years prior to intervention) self-reporting fatigue impacting their life completed 7 group sessions. A shared understanding of their appraisals of fatigue was developed through creating personalised formulations, structured around the model.
Results: Both participants reported i) increased awareness of factors influencing their fatigue; ii) improved ability to manage their fatigue; iii) increased sense of control over their fatigue and iv) reduced impact of fatigue on daily activities. These items appeared to better represent their needs and valued outcomes compared to the Fatigue Severity Scale, which did not reach cut off for fatigue at outset (3.2

& 5.5). Participants endorsed the model as helpful in terms of validating their experience and developing awareness of factors affecting their fatigue and helpful ways to learn to live with it. **Conclusions:** Application of a model of fatigue has value in facilitating individualised self-management following TBI. Intervention requires personalisation in terms of timing, content and evaluation of outcomes. Evaluating outcomes remains complicated because no one measure truly captures the complexity and subjective experience of fatigue following TBI. A phenomenological action research approach is recommended. **Correspondence:** Donna Malley; donna.malley@ozc.nhs.uk

ABI, Aggression and Art Therapy - Group Art Therapy in a Brain Disorders Unit and the Impact on Rates of Aggression: A Pilot Study
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Background and aims: The prevalence of aggression in those with Acquired Brain Injury (ABI) is well known and is often correlated with neurocognitive impairment, communication difficulties and deficits in awareness and insight. This paper describes promising early success of a pilot art therapy group in a unit for individuals living with significant chronic ABI compounded by unacceptable levels of aggressive behaviour. **Method:** The group ran over four consecutive weeks facilitated by a student Art Therapist and supported by a Speech Pathologist, a Neuropsychologist and other staff. Residents had varying levels/types of neurocognitive impairment including difficulty with communication and socially appropriate group interactions. As such, the group was carefully designed to maximise feelings of safety and minimise sensory overload. Residents were invited to start their own art project or simply to provide direction to staff already engaged in art work. Each week had a different theme involving use of varied art materials. Episodes of aggression documented in file entries were systematically audited using the Overt Aggression Scale - Modified for Neurorehabilitation. The audit covered equivalent periods before and after group commencement. **Results:** Time phase comparisons revealed lower aggression rates whilst the art group was running, compared to a pre-art group baseline. Individual responses to the group, relative to neurocognitive impairments and positive changes in social communication were also examined.

Conclusions: Both quantitative data and qualitative observation provide preliminary evidence of the efficacy of art therapy in this milieu. Extension of this brief pilot study over a longer time period would be valuable. It would allow exploration of how a regular weekly art therapy program on the unit could further benefit communication, socialisation and mood to facilitate positive change in the lives of individuals experiencing high levels of distress. **Correspondence:** Bronwyn Moorhouse – bronwyn.moorhouse@austin.org.au

From The Vegetative State to Meaningful Life: Rehabilitation Through Music Therapy: One Man’s Journey
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Background and aims: Music therapy can increase alertness in survivors of brain injury and promote emotional well-being. We wanted to see whether this occurred for I.J, a survivor of an assault when he was 28 years old, leaving him in a minimally conscious state for 19 months. **Method:** I.J had weekly sessions of music therapy. Sessions lasted for 30 minutes and began five months after the assault. Live and recorded familiar songs were played to him and his hands were moved over accessible instruments such as the drum, guitar and wind chimes. Responses were measured through eye opening, eye gaze, breathing and changes in facial expression. Following return to consciousness, therapy changed to song singing, guitar playing and song writing. **Results:** I.J became increasingly alert, was able to stay awake for longer and made eye contact when the music therapist spoke to him. He often kept his head lowered until the therapist sang songs to him while playing the guitar. Then he would raise his head and look in the direction of the instrument. Later he began nodding his head to the music and singing words to songs. He started smiling and laughing during singing. He progressed to playing the guitar and learning chords. Three years post-injury, he is writing a song about his journey through rehabilitation **Conclusions:** Music therapy appeared to increase I.J’s alertness during his low awareness state. In the latter stages, he expressed enjoyment in the therapy sessions and was able to actively participate in music making. **Correspondence:** Barbara Wilson; barbara.wilson00@gmail.com

Patterns of Recovery from Severe Brain Injury as Measured by The Wessex Head Injury Matrix (WHIM)
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Background and aims: In 1999, using the WHIM, Shiel identified five different patterns of recovery in survivors of severe brain injury: 1) little evidence of change 2) slow steady progress 3) rapid progress with quick a plateau 4) initial rapid recovery, then slow progress and 5) little if any progress at first, then steady progress for a long period. These patients, however, were in the acute stage. What about patients who remain unaware for many months? This study aimed to determine if the same patterns of recovery emerged in chronic patients using the same measures as Shiel (1999) **Method:** Twenty nine patients surviving severe brain injury and who were in a Vegetative State (VS) or a Minimally Conscious State (MCS) for several months were assessed regularly with the WHIM. **Results:** Three patients died. Of the remaining patients, 17 showed little evidence of change (Shiel’s group 1). Three showed gradual improvement over time (Shiel’s group 2). Two patients improved and then plateaued early (Shiel’s group 3). Only 1 patient rapidly improved (Shiel’s group 4). The final three patients were slow to start and then showed a marked improvement (similar to Shiel’s group 5). **Conclusions:** The taxonomy suggested by Shiel (1999) also appears to apply to patients in the chronic phase but with a delayed start of several months. The findings need to be replicated with a larger group of patients. **Correspondence:** Samira K. Dhamapurkar; samaira_sagi@yahoo.co.in

Delayed recovery from the Vegetative and Minimally Conscious States
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Background and aims: Severity of brain injury is determined by the depth and duration of coma. Most patients who recover from coma open their eyes by four weeks post injury. They are then no longer in coma. They may have recovered full consciousness or they may still have reduced awareness/a disorder of consciousness (DOC). There is disagreement as to the percentage of patients who remain with a DOC after several months and then show some recovery. The study had several aims: 1) to identify patients who made a delayed recovery 12 or more months after remaining with a DOC, and 2) to see if recovery

was more likely for those who survived traumatic brain injury (TBI) and those who survived from other causes (mainly hypoxia).

Method: All patients (N=26) with a disorder of consciousness, admitted to a rehabilitation centre over a three year period, were assessed with the Wessex Head Injury Matrix (WHIM) and the Disability Rating Scale (DRS) to determine if they had emerged from a DOC.

Results: Three patients with hypoxic brain injury died. Eighteen patients remained with a DOC for 12 or more months (14 in the Vegetative State and 4 in the Minimally Conscious State. Five patients (19%) emerged from a DOC (showed delayed recovery). Of these 4 had sustained a TBI and 1 had hypoxic damage.

Conclusion: We found that 19% of people who had a DOC for 12 or more month's recovered consciousness and those survivors of a TBI were more likely to show delayed recovery than non TBI patients.

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Improving access to neuropsychological support for people with Encephalitis
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Background and aims: Throughout the UK, people with Encephalitis have variable access to neuropsychological support. In some regions they are excluded from generalist services by referral criteria that have a bias toward treating more commonly occurring acquired brain injuries (e.g., traumatic brain injury). Living remotely, cognitive and physical problems, as well as financial limitations pose further barriers. This presentation outlines a plan to develop and trial an innovative national service for improving access to neuropsychological support for people with Encephalitis in the UK.

Method: A qualitative description of the development of the neuropsychology service is provided. A pilot of the service will begin in February 2015 and by the time of the conference we hope to share some preliminary statistics from outcome measures assessing the efficacy of the service, as well as qualitative reports from service-users.

Results: It is suggested that a voluntary sector organisation can improve access to neuropsychological support for people with Encephalitis by embracing new technologies (e.g., Skype) and supplementing services provided by the statutory sector, thereby promoting psychological health.

Conclusions: There is a need to think more creatively about the way in which people with neurological conditions can be supported so as to

promote rehabilitation, recovery and longer-term outcomes. Facilitating access to existing statutory services and applying new technologies potentially allows for improved access to services and better outcomes.

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Perceived Quality of Life many years after a severe brain injury
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Background and aims: Quality of Life (QoL) is now a commonly used expression found in different areas of our society, and that has become increasingly the focus of person centered planning, outcome assessment, and improvement quality (Schalock, 2004; Verdugo 2002). In recent years it has been studied in numerous pathologies, in correlation with health and life satisfaction. There are many definitions of the term. According to the group of CV of the OMS, a patient's QoL is defined as "an individual's perception of their position in life in the context of culture and value systems in which they live, in relation to their goals, expectations , standards and concerns". We wanted to highlight in our study CV chronic phase, since many studies but very few have addressed the chronic phase of brain damage. The aim of this study is to explore factors associated with perceived quality of life 7 years after a severe brain injury.

Method: 20 participants with a brain damage participated. Most participants had sustained moderate or severe TBI, with an average of 7 years post injury at the beginning of treatment. For the study we have analyzed the subscales that are part of the Qolibri scale. Part I: Satisfaction Items (Cognition, Self, Daily life and Autonomy, Socials Relation) and Part II: Feeling Bothered Items (Emotions and Physical Problems).

Results: The study shows that the level of autonomy and social relations was the strongest contributor of to loss of quality of life. While their degree of satisfaction with the cognitive and emotional deficits in chronic phase are stronger. Permanent disabilities in physical, cognitive, psychosocial, and/or behavioral functioning that will ultimately influence

their quality of life (QOL).

Conclusions: The interrelationships between psychosocial and physical variables are important when examining quality of life. Interventions are recommended targeting psychosocial variables and functional independence in efforts to improve quality of life. The study has allowed us to see the importance of introducing programs to improve psychosocial adjustment and perceptions of patient autonomy (which do not necessarily correlate with their actual level). Perceived satisfaction with emotional and cognitive deficits does not appear to interfere with the adaptation process. A twist on our programs that address psychosocial adjustment will increase the quality of life.

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Cognitive status and quality of life in glioma patients
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Background and aims: It is suggested that although cognitive state after glioma resective operation affects Quality of Life (QOL), little is unknown how cognitive state relates to QOL of glioma patients. In this study, we administered cognitive tasks to glioma patients who have undergone a resective operation and examined their QOL.

Method: 39 glioma patients participated (21 in the left hemisphere glioma patients, 18 in the right, mean age=40.9). Six cognitive tasks were administered: Visual verbal learning task, Digit span (forward, backward) task, Letter-digit substitution task, Verbal fluency task, Stroop color-word task, and Concept shifting task at six months after their respective operation. We also administered the European Organization for Research and Treatment of Cancer QLQ-C30 (EORTC QLQ-C30) and The European Organization for Research and Treatment of Cancer Brain Cancer Module QLQ-BN20 (EORTC QLQ-BN20).

Results: We calculated the average performance on all the six cognitive tasks, and refer to this as the mean value "cognitive score". Next, correlational analysis was used to measure the association between cognitive score and ratings of EORTC QLQ-C30 and EORTC QLQ-BN20. Results show that the cognitive score and functional scales of EORTC QLQ-C30 were positively correlated in the glioma patients. The cognitive score and symptom scales

of EORTC QLQ-C30 were negatively correlated. In EORTC QLQ-BN20, high cognitive scores were associated with lower scores in anxiety and leg-weakness.

Conclusions: In this study, we showed relevance between cognitive state and QOL of glioma patients after operation.

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Heart rate variability in response to an anger provocation can be attenuated by a single session of biofeedback
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Background and aims: Research suggests that heart rate variability is a physiological indicator of the flexibility of the autonomic nervous system, and therefore can provide an objective measure of an individual's ability to appropriately match emotional responses to environmental demands. HRV is reduced in conditions characterized by poor emotion regulation, including those with high trait aggression. The present study investigated whether emotional response to anger provocation could be attenuated using a single session of biofeedback in a healthy adult population, and in individuals with high trait aggression.

Method: In total, 58 participants received HRV biofeedback (n=29) or an active control condition (n=29). HRV was recorded across three sessions: resting state, treatment and anger induction.

Results: The anger induction procedure resulted in increased self-rated anger, which was accompanied by physiological changes measured using HRV. For those individuals with high trait aggression (n=18), a single session of HRV biofeedback resulted in attenuation of HRV during anger induction, whereas those with normal trait aggression showed no such effect.

Conclusions: These results provide support for HRV as an index of emotion regulation and further suggest that HRV biofeedback may be a useful tool in improving emotion regulation in response to stressors.

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Proposal to trial and evaluate a multi-disciplinary approach to cognitive rehabilitation in inpatients with schizophrenia
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Background and aims: People with schizophrenia

have impairments in an array of cognitive functions, which contribute to functional disability, problems with participation in the community and poor quality of life. The aims of this proposed project are to develop, implement and evaluate a best practice approach to cognitive rehabilitation for inpatients with schizophrenia.

Method: Two project sub-teams will be separately tasked with (1) development and implementation of the therapy approach and (2) development and implementation of the evaluation. The project will use an action research approach to support the development of a multi-disciplinary approach to cognitive rehabilitation. The therapy team will include valuable input from clinical staff in the hospitals’ psychiatry, psychology and occupational therapy departments. The evaluation team will be supervised by research staff from Charles Sturt University. Evaluation of therapy will involve a series of single case designs, focused on changes in patients’ cognitive capabilities, as well as aspects of independent activities of daily living.

Results: We anticipate reporting the evaluation of the outcomes of both the development of the proposed therapy programmes and a series of single case designs. The latter may be conducted by postgraduate clinical psychology students, under supervision.

Conclusion: A multi-disciplinary approach to cognitive rehabilitation has the potential to improve the functioning and quality of life of inpatients with schizophrenia. We welcome any input from those with experience in this area and look forward to reporting the results of our evaluations in due course.

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Self-deception and self-awareness after acquired brain injury: Two contrasting cases

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Background and aims: Impaired self-awareness after acquired brain injury (ABI) can be underpinned by psychological and/or neurological factors. Defensive denial, or ‘self-deception’ is one such psychological factor, Our aim was to investigate patterns of self-awareness and self-deception in two patients with severe ABI compared with an age matched healthy control.

Methods: Two males with severe ABI (both approximately 5 years post injury) and one healthy male (all 29 years old) completed an 18 item self-report questionnaire measure of self-deception, the Positive Illusions Questionnaire (PIQ), which includes unrealistically positive self-evaluations about one’s self and the future. Participants are asked to rate themselves on a scale of 0-100%, relative to their ‘peers’, for each item. The two patients with ABI also completed the Self Awareness of Deficits Interview.

Results: Patient A demonstrated severely and globally impaired self-awareness on the SADI and his mean score on the PIQ was in keeping with the healthy control (both 75%). In contrast, Patient B displayed intact self-awareness on the SADI and a lower score on the PIQ (58%) compared to both Patient A and the healthy control. Patient A showed a much higher mean score for items relating to optimism about the future (94%) compared with the control (76%) and Patient B (52%).

Conclusions: Self-deception in the form of unrealistic optimism for the future was evident in our patient with impaired self-awareness, but his overall score on a questionnaire measure of self-deception was no different to a healthy age matched control. In contrast, our patient with intact self-awareness did not show evidence of self-deception. These findings suggest that a lack of defensiveness may contribute to greater self-awareness after ABI.

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Marrying memories: Collaboration with an intimate partner facilitates retrograde episodic memory after acquired brain injury

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Background and aims: Couples can support and cue each other’s memory. We investigated how this occurs in the face of retrograde memory impairment after acquired brain injury (ABI). We examined the immediate and long-term effects of collaboration with an intimate partner on retrograde memory (episodic and semantic) in a man with a severe ABI.

Methods: AA is a 64 year old man with a severe ABI and associated retrograde amnesia extending back to childhood. He completed three experimental autobiographical memory tasks; (1) describing how he met his wife, (2) listing the holidays they had taken together and (3) viewing a photo of a shared holiday. These tasks were completed on 3 occasions each one week apart, (1) individually, (2) in collaboration with his wife and (3) individually post collaboration.

The interviews were transcribed and details recalled were scored by two raters as: specific episodic, extended episodic, repeated episodic, lifetime period, or semantic information.

Results: Collaboration facilitated episodic but not semantic memory, particularly for the episodic memory task (i.e. describing first meeting). In his pre-collaborative interview, AA was unable to recall any specific information about first meeting his wife, instead producing general details such as lifetime period: “Well it would have been back then, university days”. However, during collaboration both AA and his wife recalled specific details of their first meeting and early courtship – their collaborative recall included 15 specific episodic details of which AA himself produced 8 distinct details. Importantly, this beneficial effect persisted one week later in the individual post collaboration session – AA recalled 5 distinct episodic details compared to none prior to collaboration.

Conclusion: This is the first study of collaborative memory in ABI. Collaboration with an intimate partner has immediate and long-term benefits for retrograde episodic memory function.

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Effect of an orientation clock on orientation for time and place in people with acquired brain injury

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Background and aims: After brain injury difficulties can arise in orientation to place and time. Disorientation can prevent engagement in rehabilitation. An Orientation Clock was designed to attract attention to orientation information presented as analogue clock, digital clock, text and images on an electronic display. We aimed to improve orientation to temporal and location information in a group of service users against baseline. Research question: Can an orientation clock designed to attract attention to relevant information improve orientation to place and time?

Method: A sample of convenience of current service users (n=5) participants with severe acquired brain injury (60% traumatic brain injury) were recruited and completed orientation questions at baseline phase, during intervention and after return to baseline. Outcome was scored on an orientation measure recording: day of the week, date, month, year, and season, name of the building, town and country.

Results: Average orientation score at baseline was 6.7 (s.d. 1.30); 7.7 (0.45) during the intervention and 7.4 (1.08) in return to baseline. A randomization test of the prediction that scores on orientation questions would improve after the implementation of an

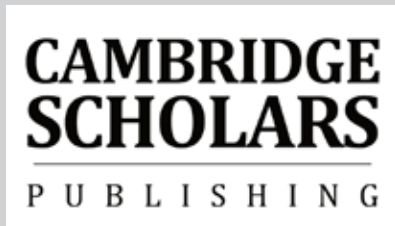
environmental assistive technology was significant at the p<0.05. The small sample size meant using conventional within subject analysis were underpowered to reject the null hypothesis.

Conclusions: The study allowed testing of a possibly efficacious rehabilitation tool. Replication of analysis with larger sample size and non-parametric tests would allow more valid interpretation of intervention efficacy.

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As convenor of the 13th Neuropsychological Rehabilitation Conference in 2015 I want to invite you to historic Glasgow in Scotland, UK on 11th and 12th July 2016. Margaret

will have the call for abstracts out soon so put the dates in your diary and join us in Scotland for the NR-SIG-WFNR conference. Glasgow has been voted one of the World's top ten 'must see' cities by Fodor's and Rough Guide. Glasgow is Scotland's cultural hub, with more than 20 museums and galleries, over 3000 amazing and eclectic restaurants and cafés, more than 300 pubs and cosy bars, and over 130 music events every week. The conference venue is in the heart of the West End of Glasgow, home to one of the oldest universities in the World, as well as fine



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Jon Evans, Convenor