NEUROPSYCHOLOGICAL REHABILITATION SPECIAL INTEREST GROUP OF THE WFNR

15th NR-SIG-WFNR Conference

Sunday 15th & Monday 16th July 2018

GrandioR Hotel, Prague, Czech Republic

Conference Programme

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WELCOME

On behalf of Barbara Wilson, the NR-SIG-WFNR Executive Committee and the Scientific Committee I would like to welcome you to the GrandioR Hotel, Prague, Czech Republic for the 15th 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 will start with an opening address by Professor Barbara A. Wilson entitled "*Paradoxical Findings in Brain Injury Rehabilitation*" and will include sessions on: Perceptual Dysfunction, Assessment and Evidence Standards, Mood, Affect and Emotion, Awareness and Disorders of Consciousness, Psychological Issues, Instrumental ADLs and Assistive Devices and Tele-Rehabilitation.

I would like to thank the Executive Committee for their help and support. The WFNR for their ongoing support, our sponsors The Encephalitis Society, The Australasian Society for the Study of Brain Impairment (ASSBI), Routledge (Taylor & Francis Group) and The Raphael Hospital. Drake Medox who provided the satchels. Satchel Insert Sponsors Cambridge Scholars Publishing for their support of the conference. We would also like to thank all the staff at the GrandoR Hotel, Margaret Eagers for managing the conference and Jade for helping at the registration desk and with the posters. Last but not least I'd like to thank all the delegates who have come from across the world to attend this conference once again this year.

I hope you enjoy the conference!

Michael Perdices
Conference Chair

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Margaret Eagers – MERS Events, AU

Conference Venue The GrandioR Hotel, Na Poříčí 42, 110 00 Prague 1, Czech Republic. The Grandior Hotel is situated in the city centre of Prague. Attractions of the historic Prague Old Town, like Astronomical Clock on the Old Town Hall, Municipal House on Square of Republic or Charles Bridge, Powder Tower, Music Theatre Karlin and many others are in the immediate walking vicinity of the hotel.

Guests enjoy easy access to public transport and the central train station. Subway (Station Florenc, metro line B + C) or tram stops are just around the corner and parking is right in our place.

Dining – Bistro & Café Grandior
The Bistro & Cafe Grandior offers Czech and international cuisine specialties. They use only high quality fresh ingredients mainly from domestic suppliers to prepare their dishes.
With a total capacity of 80 seats and space variability, the Bistro & Cafe Grandior is an ideal place for your business lunch, romantic dinner or family celebration. In addition to the à la carte menu, they also offer very popular buffets from their Executive Chef, served menu and they can also arrange a cocktail reception. For more information about menu and hotel´s restaurant, please, visit the webside www.bistro-grandior.cz.
Open Monday - Sunday 11:00 - 23:00

Lobby Bar, is a modern space which offers more than just a fresh cup of coffee in the morning, you can enjoy delicious cocktails, a glass of good wine and other drinks throughout the day. Homemade snacks and sandwiches can be ordered from the menu.
Open Monday - Friday 09:00 - 01:00
Saturday - Sunday 10:00 - 01:00

Saturday Evening – 7pm – 8pm
The Routledge Welcome Reception in the Conference Foyer (upper ground level) from 7pm – 8pm – ALL WELCOME

Conference Dinner (brought to you by the Encephalitis Society) - Sunday
Will be held in the Grandor Hotel's Dialog Room - upper ground level.

Speaker Information:

- **PLATFORM and DATABLITZ** presentations should be loaded onto the computer first thing in the morning after you register or at the end of lunch
- **ALL POSTERS** go to the table next to the registration desk on Sunday morning and see Margaret who will help you out.

Delegate Information

- The registration desk is located in the Conference Foyer and will be open from 7.30am until 3.30pm both days
- The conference will be held in
- ALL posters and Exhibitors will be in the Foyer
- Lunch will be held in the Bistro & Café Grandior on the same floor
- Please wear your name badge at all times
- If you require any help please ask at the registration desk
- Those who indicated special dietary requirements please speak with one of the catering staff as these have been ordered for you
- Tea/Coffee on arrival and Morning/ Afternoon tea will be served in the Exhibition/Poster area on both days
- **Exhibitors have put a lot of time, effort and money into supporting the conference and the committee encourage you to take some time to talk with them while you are on your breaks**

Insurance and Disclaimer:
Information on Insurance and Disclaimer was provided on the registration website and agreed to by all delegates when registering
Delegates and other invitees must observe the requests or directions of MERS staff and Grandior Hotel staff

Included in Registration Fees:

- An interesting and varied program of speakers and poster presentations
- Drinks on Saturday evening
- Morning tea, lunch and afternoon tea
- A Smartphone App
- Information from our Sponsors
- Flyers for future conferences

This program contains a Program at a Glance with speakers' names and titles of presentations. Abstracts are printed in the back of the program in the order of appearance and a list of delegates that a) agreed to have their names printed and b) had registered by the time we went to print.

The Grandior Hotel Room Plans

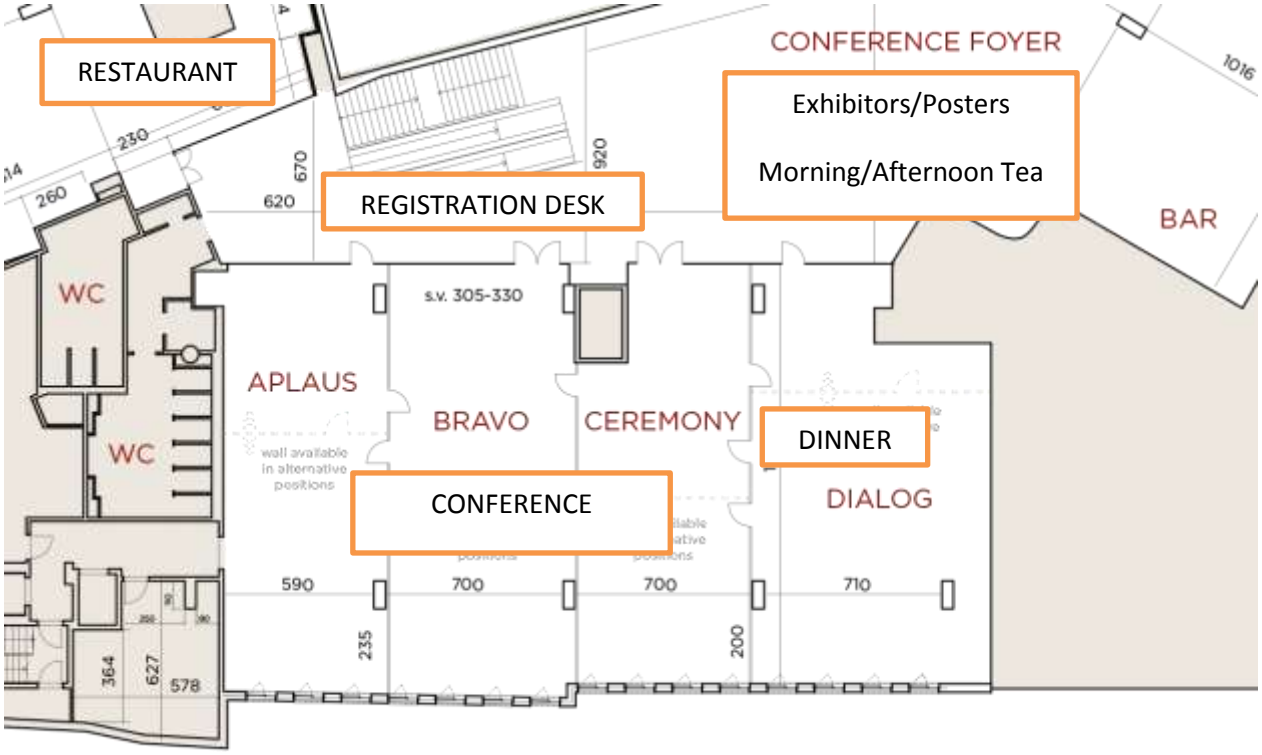
The Routledge Welcome Reception will be held in the Conference Foyer

The conference room is Aplaus, Bravo and Ceremony which are located on the Upper Ground level

Registration Desk and Poster drop will be in the Foyer

Morning/Afternoon Tea, Exhibitors, Datablitz Posters and Posters will be in the Conference Foyer

PLAN OF ROOMS



Conference Programme at a glance – SUNDAY

7.30	Arrival, Registration and Dropping Posters at Registration Desk
8.30	Welcome and Introduction- Michael Perdices (Program Chair)
8.45	**Chair: Michael Perdices** **Professor Barbara Wilson – Opening Address** *Paradoxical Findings in Brain Injury Rehabilitation*
	Session 1: Perceptual Dysfunction - 9.15-10.45 **Chair: Michael Perdices & Jessica Fish**
9.15	**Barbara Wilson;** *An investigation into person recognition across different Modalities*
9.30	**Joost Heuting;** *Screening for visual perceptual disorders in rehabilitation practice: the DiaNAH test battery*
9.45	**Jacinta Douglas;** *Olfactory impairment following traumatic brain injury: Consequences for everyday life*
10.00	**Ten Brink Antonia;** *No effects of prism adaptation on neglect in ADL - a large randomized controlled trial*
10.15	**Anita Rose;** *Treating Environmental Dependency Syndrome in a person with an Acquired Brain Injury: An ABAB Design*
10.30	**Panel Discussion**
10.45	Morning tea
	Session 2: Datablitz 11.15-11.45 **Chair: Jill Winegardner**
11.15	**Daan Verberne;** *Psychological Interventions for Treating Neuropsychiatric Consequences of Acquired Brain Injury: A systematic review (Datablitz 1)*
11.20	**Sharon Buckland;** *Role changes in family relationships and loss after acquired brain injury (ABI) and the impact on the adjustment process for family members: A mixed methods enquiry (Datablitz 2)*
11.25	**Fergus Gracey;** *Does providing person-to-person education/ information to caregivers, during post-stroke rehabilitation, reduce their depressive symptoms? A systematic review of evidence (Datablitz 3)*
11.30	**Natasha Yasmin;** *Predictors of marital relationship discontinuity post brain injury (Datablitz 4)*
11.35	**Alinka Fisher;** *Supporting families with behavioural changes following brain injury: The development of the FAB Positive Behaviour Support (FAB-PBS) program (Datablitz 5)*
11.40	**Lucy Knox;** *"It's not our job to hold people back": Strategies to support decision-making participation after acquired brain injury (Datablitz 6)*
	Session 3: Assessment and Evidence Standards 11.45-1.15 **Chair: Jon Evans & Tessa Hart**
11.45	**Robyn Tate;** *Standards of evidence for evaluating psychometric studies*
12.00	**Anne-Fleur Domensino;** *Defining the content of a minimal dataset for acquired brain injury: a Delphi technique*
12.15	**Bert Lenaert;** *Gaining insight in daily life symptoms after brain injury: The Experience Sampling Method*
12.30	**Pieter Du Toit;** *Involving clients in the design and implementation of an individualised outcome-monitoring framework*
12.45	**Michael Perdices;** *Evaluating the effectiveness of rehabilitation interventions: to p or not to p, that is the question*
1.00	**Panel Discussion**
1.15	Poster Session 1
1.30	Lunch - Bistro & Café Grandior
	Session 4: Mood, Affect and Emotion - 2.15-3.45 **Chair: Jennie Ponsford & Satu Baylan**
2.15	**Tessa Hart;** *SMS-based treatment for depression/ anxiety in TBI: Two routes to the same outcomes?*
2.30	**Travis Wearne;** *Regulating emotion following traumatic brain injury: Preliminary results from a repeated biofeedback treatment study*

2.45	**Caroline van Heugten;** *Effectiveness of a Multicomponent Self-Management Intervention for Adults with Epilepsy (ZMILE study): results of a Randomized Controlled Trial*
3.00	**Fergus Gracey;** *People's experiences of 'personally important moments' following an Acquired Brain Injury (ABI), the meanings they attach to them and the influence they have on their post-ABI journey: A qualitative study*
3.15	**Melloney Wijenberg;** *Does the fear avoidance model explain persistent symptoms after traumatic brain injury?*
3.30	**Panel Discussion**
	Session 5: Datablitz - 3.45-4.15
	Chair: Fergus Gracey
3.50	**Barbara Wilson;** *Improving the understanding of dysarthric speech: a controlled case study (Datablitz 7)*
3.55	**Cynthia Honan;** *An examination of cognitive fatigue in MS: Do self-reports correspond with performance? (Datablitz 8)*
4.00	**Travis Wearne;** *It takes two to tango: Physiological responding during dyadic conversations (Datablitz 9)*
4.05	**Jessica Bruijel;** *The Psychomotor Vigilance Task: a measure of objective fatigue following acquired brain injury? (Datablitz 10)*
4.10	**Gera De Haan***; Effects of low visual acuity on neuropsychological assessment (Datablitz 11)*
4.15	Afternoon Tea
	Session 6: Awareness and Disorders of Consciousness - 4.45-6.00
	Chair: Barbara Wilson & Tessa Hart
4.45	**Samira Dhamapurkar;** *Assessment and treatment of patients with prolonged disorders of consciousness: a summary of three studies*
5.00	**Lesley Murphy;** *Brain and Cognition Interplay in Disorders of Consciousness: A multiple case study*
5.15	**Samira Dhamapurkar;** *Does a regular Wessex Head Injury Matrix assessment identify early signs of infections in people with prolonged disorders of consciousness?*
5.30	**Tamara Ownsworth;** *Self-awareness following paediatric brain injury: Relationship to mental health and adaptive functioning*
5.45	**Panel Discussion**
6.00	**Close of Day 1**
7.30	Conference Dinner

Conference Programme at a glance - MONDAY

8:00	Arrival – Drop Posters at Registration Desk
	Session 7: Psychological Issues - 8.30-10.00
	Chair: Tessa Hart & Tamara Ownsworth
8.30	**Skye McDonald;** *This Way Ahead. Resources for families of people with Traumatic Brain Injuries and challenging behaviour*
8.45	**Jessica Fish and Jill Winegardner;** *"Finding the confidence to crack on with things": A qualitative study of client reflections on holistic neuropsychological rehabilitation several years post-programme*
9.00	
9.15	**Caroline van Heugten;** *Social Cognition Impairments in the Long Term after Stroke*
9.30	**Herma J. Westerhof-Evers;** *The impact of impairments in social cognition, executive function and behavior on social and vocational participation after traumatic brain injury*
9.45	**Fergus Gracey;** *Transcutaneous Vagal Nerve Stimulation (tVNS) for episodic aggression in acquired or developmental neurodisability: Preliminary findings from a feasibility and single case experimental design pilot study*
	Panel Discussion

	Session 8: Datablitz - 10.00-10.30
	Chair: Tamara Ownsworth
10.00	**Jodie Chapman;** *Comparing face-to-face and videoconference delivery of neuropsychological assessment following stroke (Datablitz 12)*
10.05	**Jon Evans;** *Developing ApplTree; A Smartphone Reminding App for People with Acquired Brain Injury (Datablitz 13)*
10.10	**Isabel Gosselt;** *Virtual reality (VR) in cognitive rehabilitation: feasibility and preference of immersive VR compared to non-immersive VR in stroke patients (Datablitz 14)*
10.15	**Lauriane Spreij;** *Novel inventory for cognitive complaints after acquired brain injury (Datablitz 15)*
10.20	**Abiola De Mojeed;** *Use of baseline cognitive profiles to inform and guide appropriate Cognitive Remediation and Functional skills interventions to address deficits in occupational performance in patients with schizophrenia (Datablitz 16)*
10.30	Morning tea
	Session 9: Rehabilitation of Memory Dysfunction – 11.00-12.15
	Chair: Robyn Tate & Anna Adlam
11.00	**Roshan das Nair;** *Memory rehabilitation plus usual care versus usual care alone in traumatic brain injury (ReMemBrIn): a multicentre, pragmatic cluster randomised controlled trial*
11.15	**Anna Adlam;** *Computerised training of working memory (Cogmed RM) in children who have survived an acquired brain injury: A phase II randomised controlled trial*
11.30	**Dana Wong;** *Increasing access to memory rehabilitation after stroke: Clinical and cost effectiveness of implementing memory skills groups into public health services*
11.45	**Christine Resch;** *Searching for effective components of cognitive rehabilitation for children and adolescents with acquired brain injury: A systematic review*
12.00	**Panel Discussion**
	Session 10: Datablitz - 12.15-12.45
	Chair: Andrew Bateman
12.15	**Miriam Cohen;** *Cognitive bias modification for incarcerated young people with aggressive behaviour: assessing avenues for intervention (Datablitz 17)*
12.20	**Jamie Berry;** *A one-hour group psychoeducation session increases cognitive compensatory strategy use in an alcohol and other drug treatment setting (Datablitz 18)*
12.25	**Suzane Vassallo;** *Re-positioning the visual scan path to emotional facial expressions following severe traumatic brain injury: Evaluation of a training intervention using a single case experimental design (Datablitz 19)*
12.30	**Ieke Winkens;** *Socratic feedback to increase awareness of deficits in patients with acquired brain injury: pilot results and design of a randomized controlled trial (Datablitz 20)*
12.35	***Sara Da Silva Ramos;*** *Is there a negative effect of early discharge from rehabilitation following acquired brain injury? (Datablitz 21)*
12.40	**Maia Zucco;** *Strategy training results in better self-reported executive functioning than computerised cognitive training in a residential alcohol and other drug rehabilitation setting (Datablitz 22)*
12.45	Poster Session 2
1.00	Lunch - Bistro & Café Grandior
	Session 11: Instrumental ADLs and Assistive Devices – 2.00-3.15
	Chair: Caroline van Heugten & Tamara Ownsworth
2.00	**Claire McGoldrick;** *A Single Case Experimental Design Study of a Reminder System for People with Dementia*
2.15	**Igor Bombin;** *Neuropsychological assessment and driving simulator as predictors of ability to drive in acquired brain injury patients*
2.30	**Lauriane Spreij;** *Simulated driving: the added value of dynamic testing in the assessment of visuo-spatial neglect after stroke*
2.45	**Jade Kettlewell;** *Acquired brain injury management using Brain-in-Hand to improve functional outcomes and independence: qualitative results from a series of case studies*
3.00	**Panel Discussion**
3.15	Afternoon tea

	Posters
	Session 12: Tele-Rehabilitation – 3.45-4.30 **Chair: Andrew Bateman & Jill Winegardner**
3.45	**Jennie Ponsford;** *Cognitive rehabilitation following traumatic brain injury: A survey of current practice in Australia and internationally*
4.00	**David Lawson;** *Telehealth delivery of memory rehabilitation following stroke: Is it as effective as face-to-face programs?*
4.15	**Rene Stolwyk;** *Utilising telehealth to deliver neuropsychological rehabilitation services to rural patients with stroke: development and evaluation of a novel pilot program*
4.30	**Panel Discussion**
4.45	Conference close: Professor Barbara Wilson
5.15	Meeting of the NR-SIG-WFNR

Datablitz and Posters – SUNDAY

Number	Author	Title
Session 2: Datablitz 11.15-11.45		
Datablitz 1	Daan Verberne	*Psychological Interventions for Treating Neuropsychiatric Consequences of Acquired Brain Injury: A systematic review*
Datablitz 2	Sharon Buckland	*Role changes in family relationships and loss after acquired brain injury (ABI) and the impact on the adjustment process for family members: A mixed methods enquiry*
Datablitz 3	Fergus Gracey	*Does providing person-to-person education/ information to caregivers, during post-stroke rehabilitation, reduce their depressive symptoms? A systematic review of evidence*
Datablitz 4	Natasha Yasmin	*Predictors of marital relationship discontinuity post brain injury*
Datablitz 5	Alinka Fisher	*Supporting families with behavioural changes following brain injury: The development of the FAB Positive Behaviour Support (FAB-PBS) program*
Datablitz 6	Lucy Knox	*"It's not our job to hold people back": Strategies to support decision-making participation after acquired brain injury*
Session 5: Datablitz -3.45-4.15		
Datablitz 7	Barbara Wilson	*Improving the understanding of dysarthric speech: a controlled case study*
Datablitz 8	Cynthia Honan	*An examination of cognitive fatigue in MS: Do self-reports correspond with performance?*
Datablitz 9	Travis Wearne	*It takes two to tango: Physiological responding during dyadic conversations*
Datablitz 10	Jessica Bruijel	*The Psychomotor Vigilance Task: a measure of objective fatigue following acquired brain injury?*
Datablitz 11	Gera De Haan	*Effects of low visual acuity on neuropsychological assessment*
Poster Session: 1		
Poster 1	Dirk Bertens	*A mobile game for training selective attention in individuals with brain injury.*
Poster 2	Nimisha Mistry	*Augmentative and alternative communication devices to enhance communicative competence in patients presenting with ataxic dysarthria following a brain injury and the story of Brian.*
Poster 3	Alfonso Carucuel	*Online cognitive training with virtra-el (virtual training in the elderly) improves long-term verbal memory.*
Poster 4	Takeshi Hatta	*Relation between cognitive and cerebello-thalamo-cortical functions in healthy elderly people: Evidence from the Yakumo Study.*
Poster 5	Andreia Geraldo	*Characteristics of the ICT-based neurocognitive rehabilitation programs to Acquired Brain Injury (ABI).*
Poster 6	Adam Burnel	*Methylphenidate as a treatment for executive dysfunction following severe traumatic brain injury: A case study.*

Poster 7	Patricia Bustos-Valenzuela	*Autistic spectrum disorder and gratification delay: the value of the affective bond.*
Poster 8	Emma Ashcroft	*Visualising the words: interventions for specific subtypes of dyslexia.*
Poster 9	Leora Cherney	*Changes in Attention Following a Computer-Based Treatment for Aphasia.*
Poster 10	Nicholas Behn	*Blinding participants and assessors in a feasibility randomised controlled trial of peer befriending for people with aphasia post-stroke.*
Poster 11	Janelle Griffin	*Behavioural and cognitive processes that underlie on-road driving assessment performance of people with traumatic brain injury.*
Poster 12	Janelle Griffin	*Outcomes from a driving remediation program following acquired brain injury.*
Poster 13	Ieke Winkens	*Measuring Self-Awareness of Deficits after Acquired Brain Injury: Validity, reliability and feasibility of the Assessment of Self-Awareness of Deficits (AS-AD) scale.*
Poster 14	Ieke Winkens	*Psychometric evaluation of the Self-Awareness in Daily Life-3 (SADL-3), a tool for the assessment of self-awareness of deficits in the chronic phase after acquired brain injury.*
Poster 15	Andrea Kusec	*What do we need to improve social interactions? A closer look at behavioural activation theory in acquired brain injury.*
Poster 16	Melanie Porter	*Longitudinal tracking of social abilities and a social intervention for a woman with Williams syndrome who later developed co-morbid Schizophrenia.*

Datablitz and Posters – MONDAY

Number	Author	Title
Session 8: 10.00-10.30		
Datablitz 12	Jodie Chapman	Comparing face-to-face and videoconference delivery of neuropsychological assessment following stroke
Datablitz 13	Jon Evans	Developing ApplTree; A Smartphone Reminding App for People with Acquired Brain Injury
Datablitz 14	Isabel Gosselt	Virtual reality (VR) in cognitive rehabilitation: feasibility and preference of immersive VR compared to non-immersive VR in stroke patients
Datablitz 15	Lauriane Spreij	Novel inventory for cognitive complaints after acquired brain injury
Datablitz 16	Abiola De Mojeed	Use of baseline cognitive profiles to inform and guide appropriate Cognitive Remediation and Functional skills interventions to address deficits in occupational performance in patients with schizophrenia
Session 10: 12.15-12.45		
Datablitz 17	Miriam Cohen	Cognitive bias modification for incarcerated young people with aggressive behaviour: assessing avenues for intervention
Datablitz 18	Jamie Berry	A one-hour group psychoeducation session increases cognitive compensatory strategy use in an alcohol and other drug treatment setting
Datablitz 19	Suzane Vassallo	Re-positioning the visual scan path to emotional facial expressions following severe traumatic brain injury: Evaluation of a training intervention using a single case experimental design
Datablitz 20	Ieke Winkens	Socratic feedback to increase awareness of deficits in patients with acquired brain injury: pilot results and design of a randomized controlled trial
Datablitz 21	Sara Da Silva Ramos	Is there a negative effect of early discharge from rehabilitation following acquired brain injury?

Datablitz 22	Maia Zucco	Strategy training results in better self-reported executive functioning than computerised cognitive training in a residential alcohol and other drug rehabilitation setting
Poster Session: 2		
Poster 17	Chiharu Niki	*Cognitive impairments after glioma resection and associated brain regions: evidence from VLSM.*
Poster 18	Nicholas Behn	*Adjustment post-stroke and aphasia: protocol for the SUpporting well-being through PEeR-Befriending (SUPERB trial).*
Poster 19	Caroline van Heugten	*The role of early intervention in improving the level of activities and participation in youths after mild traumatic brain injury: a scoping review.*
Poster 20	Renerus Stolwyk	*Understanding the Experience of Compensatory Rehabilitation and Computerised-Cognitive Memory Training: A Qualitative Study of Stroke Survivors.*
Poster 21	Fergus Gracey	*The impact of executive functioning on attention to threat in an adult traumatic brain injury population: an experimental group design.*
Poster 22	Annemarie Stiekema	*Finding a new balance in life: identifying (health) care needs in the chronic phase following acquired brain injury.*
Poster 23	Johanne Rauwenhoff	*Acceptance and Commitment Therapy adapted for people with acquired brain injury.*
Poster 24	Miranda Moodley	*Moderating variables in medical help-seeking following traumatic brain injuries.*
Poster 25	Denise O'Dwyer	*Twenty First Century Recovery: Exploring self management via Wellness Recovery Action Planning (WRAP) with Acquired Brain Injury and Mental Health cohorts.*
Poster 26	Anita Rose	*P.O.P! – Power Over Pain: Pain Management Pilot Study of Patients with Moderate to Severe Brain Injuries and Neurological Conditions.*
Poster 27	Fergus Gracey	*'Putting a New Perspective on Life': A Qualitative Grounded Theory of Posttraumatic Growth Following Acquired Brain Injury.*
Poster 28	Anita Rose	*Adapting assessment procedures for a difficult to test man with unilateral neglect.*
Poster 29	Tobias Loetscher	*Need for spatial exploration training in Cervical Dystonia?*

ABSTRACTS - SUNDAY

Paradoxical Findings in Brain Injury Rehabilitation

Wilson, Barbara A.[1]
[1]The Oliver Zangwill Centre and The Raphael Hospital, United Kingdom

This talk addresses some of the paradoxical findings seen in brain injury rehabilitation. Patients may develop artistic talent following a stroke; aphasic patients are better able to judge body language and facial expressions. Stephen Hawking, the renowned scientist, diagnosed with motor neurone disease taught himself to think in a visual way thus enhancing his career. Paradox comes from two Greek words *para* meaning contrary or opposed and *doxos* meaning opinion (Kapur et al 2011). Influenced by Kapur, this presentation is concerned with two contrasting situations. The first is where circumstances that normally hinder performance turn out to help; and the second is where circumstances that normally help turn out to hinder. Looking at the former, we consider three patients or situations: first, a man whose traumatic brain injury led his family to believe he was a better person; second, a woman whose mental health improved following a self inflicted gun shot wound to the head; and third, studies showing that distracting noises can reduce unilateral spatial neglect (USN). Turning to conditions in which people are hindered by events when we would expect them to do better, we first consider studies whereby general stimulation can *increase* unilateral spatial neglect. Second is a report on a patient with a disorder of consciousness who developed behaviour problems following sensory stimulation. Third, a man with Balint's Syndrome is described who was made worse by attempts to bring his movements under voluntary control. Paradoxes in brain injury rehabilitation may help us find solutions to problems.

SESSION 1

An investigation into person recognition across different modalities

Tunnard, Catherine[1]; Wilson, Barbara[2]; King, John[3] and Mole Joseph[4]
[1]Secondary Care Psychological Services, East London Foundation Trust NHS, UK
[2]Oliver Zangwill Centre, UK
[3]University College London, UK
[4]Oxford Health NHS Foundation Trust, UK

Aims: This study aimed, firstly, to systematically investigate whether a person (VO) with impaired face recognition was also impaired across different modalities (face, name, voice), i.e. whether she has prosopagnosia or a multimodal recognition problem. Second, we investigated her ability to make familiarity judgements about people and to retrieve person-specific semantic knowledge when accessed through different modalities. A final aim was to determine whether VO's performance differed on recognition tests of celebrities, compared to personally known people (i.e. friends and relatives).
Method: A single-case control design was used. VO's performance on tests of famous people was compared to six participants with acquired brain injury and 11 healthy controls. VO's performance on tests of personally known people was compared to that of her husband.
Results: Results suggest that VO has difficulties recognising people across multiple modalities, as opposed to a pure prosopagnosia. VO was somewhat better at retrieving information from names than either faces or voices. VO performed better on tests involving personally known people compared to celebrities, on both familiarity and semantic judgements.
Conclusion: The findings are discussed in relation to current theoretical and anatomical models of person recognition. Study limitations and possible rehabilitative avenues are also considered.
Correspondence: Catherine Tunnard; ctunauk@gmail.com

Screening for visual perceptual disorders in rehabilition practice: the DiaNAH test battery

Heutink, Joost[1,2]; de Vries, Stefanie[1]; Melis-Dankers, Bart[2]; Vrijling, Anne[2]; Cornelissen, Frans[3] and Tucha, Oliver[1]
[1]Department of Clinical and Developmental Neuropsychology, University of Groningen, Groningen, The Netherlands
[2]Royal Dutch Visio, Centre of Expertise for Blind and Partially Sighted People, Huizen, The Netherlands
[3]Laboratory of Experimental Ophthalmology, University of Groningen, University Medical Center Groningen, Groningen, The Netherlands.

Background and aims: We developed the DiaNAH test battery for the screening of mid-level and higher-order visual perceptual disorders in clinical practice. The DiaNAH battery comprises 11 different tests and can be administered in 30-60 minutes. Important feature of the DiaNAH battery is that it is administered on a 24" tablet, connected to a laptop. This allows dual screen technology, enabling the assessor to follow the patient's activities on the tablet. The tablet can be used with a wireless, battery-free electronic pen, which imitates paper and pencil administration. The software (DiagnosIS, developed by Metrisquare; www.diagnoseis.com) processes performance online and generates a clinical report (including comparison to normative data) and a scientific report.
Methods: The DiaNAH test battery was implemented in 19 rehabilitation centers of Royal Dutch Visio in the Netherlands. We performed a validation study, a normative study and a simulation (malingering) study, including healthy controls (n=600) and patients with visual problems after neurological disease (n=600). Anonymized data of the scientific reports are linked to independent variables such as age, sex, visual field deficits and type of neurological disease.
Results and conclusions: Evidence suggests that the DiaNAH test battery is of added value for the assessment of visual perceptual disorders in clinical practice. It gives quick insight into the likelihood that a patient has perceptual disorders. It provides information about the possible nature and severity or the perceptual problem (e.g. mid-level, spatial, object-based) and may give direction to additional perceptual and neuropsychological assessment.
Correspondence: Joost Heutink; j.h.c.heutink@rug.nl

Olfactory impairment following traumatic brain injury: Consequences for everyday life

Drummond, Melanie[1,2,3]; Douglas, Jacinta[1,4,5] and Olver, John[2,3]
[1]College of Science, Health and Engineering, La Trobe University, Victoria, Australia
[2]Epworth Monash Rehabilitation Medicine Unit, Melbourne Australia
[3]Epworth Rehabilitation, Epworth HealthCare, Melbourne, Australia
[4]NHMRC Centre of Research Excellence in Brain Recovery, Sydney, Australia
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Background and aims: Olfactory impairment (OI) is an established consequence of traumatic brain injury (TBI). This presentation shares the findings of a longitudinal study that investigated the incidence, natural progression and lived experience of OI after TBI. The experience of OI was explored from the perspective of those who continued to deal with the everyday impact of OI over a 12-month period.
Method: Participants (n=134) were recruited via a consecutive admission series to the Epworth Acquired Brain Injury Unit. The presence and severity of OI was assessed using the University of Pennsylvania Smell Identification Test (UPSIT). Individuals assessed as having OI were invited to participate in 6 and 12-month follow-up assessments. Open-ended interviews were conducted at both follow-up points. Interviews

were thematically analysed to characterise the everyday impact of OI.
Results: 89 (66.42%) of the participants were assessed as having OI on initial assessment. At 6 months 74% of the participants (n=47) had persisting OI and at 12 months this increased to 86% (n=35). All individuals identified everyday problems regardless of the severity of the OI and TBI. OI was shown to impact on widespread areas of life including personal safety, eating and enjoyment of food, personal hygiene, leisure activities, work, relationships and caring roles.
Conclusions: OI post TBI is enduring and can have substantial consequences for those who experience it and also their significant others. It is imperative that clinicians understand the widespread implications and ensure the individuals they work with receive assessment, comprehensive management and targeted education.
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No effects of prism adaptation on neglect in ADL - a large randomized controlled trial
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Background and aims Patients with neglect ignore or respond slower to contralesional stimuli. Neglect negatively influences independence in activities of daily living (ADL). Prism adaptation (PA) is one of the most frequently studied treatments, yet there is little evidence regarding positive effects on neglect behaviour in ADL. We assessed whether PA in the subacute phase ameliorates neglect in situations of varying complexity.
Method A total of 70 neglect patients admitted for inpatient stroke rehabilitation received either PA or sham adaptation (SA) for 2 weeks, with full access to standard treatment. There were 7 time-dependent measurements (baseline and 1-4, 6, and 14 weeks after start of treatment). The primary outcome was change of neglect as observed during basic ADL with the Catherine Bergego Scale (CBS). Secondary outcomes were changes in performance on a dynamic multitask (Mobility Assessment Course [MAC]) and a static paper-and-pencil task (shape cancellation [SC]).
Results In all, 34 patients received PA and 35 SA. There were significant time-dependent improvements in performance as measured with the CBS, MAC, and SC (all F>15.57; P<.001). There was no significant difference in magnitude of improvement between groups (i.e., PA/SA) on the CBS, MAC, and SC (all F<2.54; P>.113].
Conclusions No beneficial effects of PA over SA in the subacute phase post-stroke were observed, which was comparable for situations of varying complexity. Heterogeneity of the syndrome, time post–stroke onset, and the content of treatment as usual are discussed. Basic knowledge on subtypes and recovery patterns would aid the development of tailored treatment.
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Treating Environmental Dependency Syndrome in a person with an Acquired Brain Injury: An ABAB Design
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Background and aims: Environmental dependency syndrome denotes a patient's tendency to grasp out and automatically start using objects within their visual environment. This behaviour is typically inappropriate to the situation and task and in the context of rehabilitation affects attention to task. Using a Single Case Experimental Design method this study aimed to investigate whether the frequency of a patient, with an ABI (KI), grasping objects in his environment could be reduced using a simple intervention.
Method: The study employed an ABAB design. The 1st baseline (A) consisted of observations of KI's environmental dependency in a clinic situation over 8 occasions. The 1st treatment phase (B) involved providing KI with a 12 sided "fiddle toy" during clinic sessions. This treatment phase was conducted over 11 sessions. During the 2nd baseline (A) the fiddle toy was removed and KI. The 2nd treatment (B) phase was the same as the first.
Results: During the first baseline the average number of grasping behaviours observed was 16.9. When KI was provided with the fiddle toy the average number was 1.2. Compared to the first baseline the second baseline reduced to and average of 8.8 observed grasping behaviours and in the second intervention the number of grasps observed reduced to its lowest level, an average of 1.0.
Conclusions: Providing a patient who presents with environmental dependency with a fiddle toy is a simple, cheap and effective way of reducing such behaviours and increasing attention to rehabilitation tasks.
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SESSION 2

Psychological Interventions for Treating Neuropsychiatric Consequences of Acquired Brain Injury: A systematic review.
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Background and aim: Anxiety, aggression/agitation, apathy, and disinhibition are common neuropsychiatric consequences of acquired brain injury (ABI); these consequences can cause functional impairment and lead to reduced social integration. This systematic review aimed to provide an examination of the current evidence on psychological interventions for treating these consequences.
Method: Two reviewers selected potential relevant articles, retrieved from five literature databases. Methodological quality was assessed and appraised.
Results: A total of 5207 studies were found, of which 43 were included: 21 studies for anxiety, 18 for aggression, two studies for apathy, and six for disinhibition. Three studies addressed multiple consequences. Four high-quality (i.e. Class I and II) studies showed significant decreases in anxiety after cognitive behavioural therapy (CBT). In total, 14 studies consistently showed significant decreases in aggression/agitation after behavioural management techniques or anger management sessions. Substantial variability existed in the examined interventions and in their effects on apathy and disinhibition.
Conclusions: Unfortunately, firm conclusions and recommendations for clinical practice are considered premature, due to concerns about the methodology used. However, this review yielded new evidence on the effectiveness of CBT for anxiety symptoms post-ABI and there has been some response to the ongoing call for studies with high methodological quality.
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Role changes in family relationships and loss after acquired brain injury (ABI) and the impact on the adjustment process for family members: A mixed methods enquiry

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Background and aims: The impact a patient's brain injury can have on the family as a whole is widely known but not necessarily understood (Degeneffe, 2001). This study aims to investigate how family functioning is affected after injury and the impact this has on family adjustment.
Method: We employed a convergent mixed method design. Seven family members were interviewed to explore family interactions and loss after family member ABI, analysed using thematic analysis. The Family Assessment Device (FAD) and Brain Injury Grief Inventory (BIGI) were also administered. Quantitative and Qualitative Data was combined using side-by-side comparisons.
Results: We report interim data on seven interviews. Emerging trends found two main themes relating to family changes; Relationship imbalance (subtheme increased responsibility) and Protectiveness (subtheme loss of confidence). These themes only related to spouses. Parents elicited one main theme relating to family changes; increased closeness (subtheme openly affectionate). FAD results showed impaired levels on the role scale for 5 out of the 7 interviewees. Spouses qualitatively reported 'loss' of the future, whereby parents experienced loss of the past, even though low levels of loss and high levels of adjustment were reported on the BIGI. Data collection to be completed by June 2018.
Conclusions: Impairment on the FAD 'roles' scale, along with the expressed experiences of spouses, suggests this may be an area of importance when working with families. The discrepancy between qualitative and quantitative data highlights how mixed methods approaches can provide new insight into how loss is being experienced within family relationships.
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Does providing person-to-person education/information to caregivers, during post-stroke rehabilitation, reduce their depressive symptoms? A systematic review of evidence

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Background and aims: Following stroke, the demands of caregiving can negatively affect well-being and increase risk of mental health problems such as depression. There have been a number of trials of interventions to support caregivers, but none have focused on mental health outcomes. The aim of this systematic review was to evaluate and summarise the evidence that providing person-to-person information and education during post-stroke rehabilitation is effective in reducing caregiver depressive symptoms.
Method: A systematic review and narrative synthesis of randomised controlled trials was conducted using electronic databases (SCOPUS, MEDline, PsychINFO and CINAHL) and a manual search of relevant reference lists. After applying the eligibility criteria 12 studies were included, rated for methodological quality (PEDRO scale) and data extracted.
Results: Nine studies were rated as having good methodological quality, two were moderate and two were rated as weak. Results from seven of the studies yielded significant findings in favour of the interventions reducing caregiver depression. Findings suggest that interventions of nine weeks or longer, comprising tailored problem solving and support,

including those delivered by telephone, may be effective at reducing caregiver depressive symptoms with medium to large effect sizes at primary outcome, and small to medium effect sizes at follow-up.
Conclusions: Providing caregivers with person-to-person information and education during post-stroke rehabilitation may reduce depressive symptoms. Methodological issues and confounding of intervention type, and duration, limit conclusions. Future studies should detail or manualise intervention contents, and compare against active control conditions.
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Predictors of marital relationship discontinuity post brain injury
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Background and aims: Severity and a varied array of impairments like aggression and social disconnectedness post brain injury play an important role in marital stress (Marsh et al., 1998; Bracy & Douglas, 2005). Thus, the purpose of the study was to assess how various impairments arising from the brain injury are related to the general quality of the marital relationship.
Method: A battery of 6 carer-report questionnaires measuring various impairments post brain injury (depression, somatic complaints, memory/attention, aggression, motor problems, communication, care for partners and functional abilities) and the Birmingham Relationship Continuity Measure were administered to a group of 74 carers, who were husbands/wife of someone with a brain injury and were recruited from various brain injury rehabilitation centres and carer groups across UK.
Results: The study examined the combined and individual effects of the different impairments on relationship continuity as perceived by the partners. Correlation and multiple linear regression showed that relationship discontinuity was significantly predicted by behavioural and emotional difficulties and the reduced ability to complete overall daily living skills, in comparison to cognitive and physical disabilities.
Conclusions: The observed associations have implications for understanding which areas of disabilities post brain injury predict relationship quality in partners turned caregivers. The findings have practical implications for services to support spousal caregivers individually and as a couple to maintain a sense of continuity by forming specific intervention strategies, and to help carers manage a smooth transition in their relationship post-injury.
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Supporting families with behavioural changes following brain injury: The development of the FAB Positive Behaviour Support (FAB-PBS) program
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Background and aims: Families have reported behaviour support as the highest unmet need following brain injury, and service providers are unable to meet neurobehavioural support demands in community settings. The aim of this study was to examine how to enhance the capability of family caregivers in supporting behavioural changes following brain injury, addressing unmet support needs and reducing families' dependency on specialised services.
Methods: A multi-phase mixed methods approach was utilised, consisting of: (1) a systematic review of the literature examining family involvement in behavioural interventions following brain injury (Fisher et al., 2015); (2) a Delphi study seeking feedback from key stakeholders regarding best practices; and (3) a pilot study (n=2) examining the feasibility and acceptability of the FAB-PBS program.
Results: Results from study one and two informed the design of the FAB-PBS program, which is based on a PBS framework and principles of family-directed intervention (Fisher et al., 2017). The two family caregivers who completed the pilot study reported a reduction in the frequency and intensity of Behaviours of Concern (BOC), high satisfaction regarding participation, and increased confidence in identifying strategies and responding to BOC. The FAB-PBS program was further refined according to participant feedback. The program consists of a four-week education phase, followed by four individualised sessions and two group follow-up sessions.
Conclusions: The FAB-PBS program may be an acceptable approach to increasing the capability of family caregivers in supporting behaviour changes following brain injury. Larger studies are now required to examine the effectiveness of the program.
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"It's not our job to hold people back": Strategies to support decision-making participation after acquired brain injury
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Background and Aims: The right to exercise choice and control underpins contemporary models of rehabilitation and disability service provision. For people with acquired brain injury (ABI), decision-

making participation requires not only having this right acknowledged and upheld, but also having access to support and strategies to maximise participation. Drawing on the experiences of adults with ABI, their close others and paid professionals, this study aimed to identify strategies used by participants to support decision-making participation.
Method: A qualitative research design underpinned by a constructivist paradigm was adopted. Data consisted of 57 interviews with individuals with ABI, their close others, and community-based brain injury professionals, drawn from two studies exploring decision-making participation after injury. Strategies described by participants were identified, coded and categorised using thematic analysis.
Results: Participants described a range of strategies that sought to address (1) the decisional context, (2) the relational context, and (3) the person's cognitive profile. The overarching finding to emerge from the data was the relational and dynamic nature of decision-making participation for adults with ABI. As such, effective support was characterised by a flexible and responsive approach to strategy selection that reflected a deep knowledge of the person and their social context.
Conclusions: This study is the first to explore both the experiences of adults with TBI and those around them in making decisions about life after injury. The findings highlight a range of strategies that can maximise decision-making participation for adults with ABI for both family members and rehabilitation clinicians.
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SESSION 3

Standards of evidence for evaluating psychometric studies
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Background: Thousands of health outcome instruments are available, but not all instruments are of good quality. Frameworks are available to guide the development of psychometrically sound instruments, and the critical appraisal of an instrument against criteria of the frameworks assists in identifying good quality measures. Perusal of the neurorehabilitation literature, however, reveals that such frameworks are used infrequently.
Aims: To describe two instruments providing standards of psychometric study design and statistical outcome criteria.
Methods: Recommended instruments from our recent review include the Consensus-based standards for the selection of health status Measurement INstruments (COSMIN; Mokkink et al., 2010), the Terwee tool (Terwee et al., 2007), and the Schellingerhout et al. (2012) approach to synthesising evidence across publications.
Results: The COSMIN assesses methodological design of a psychometric study. It contains 114 items, of which 96 items in nine domains are relevant to psychometric studies. Items are rated from 'excellent' to 'poor'. The modified Terwee tool complements the COSMIN. It focuses on statistical outcomes, providing cut-off scores for seven measurement properties. Responses categories comprise 'positive', 'negative', 'indeterminant', 'not assessed'. The combined COSMIN and Terwee evaluations permit classification of the findings of the psychometric properties into levels of evidence.
Conclusions: The COSMIN and Terwee tools provide a comprehensive and empirically-based evaluation of the adequacy of a psychometric instrument. Investigators developing health outcome measures, and reviewers of the tools, should consult the COSMIN and Terwee criteria when designing and evaluating the psychometric properties of such instruments.
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Defining the content of a minimal dataset for acquired brain injury: a Delphi technique
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Background and aims: The lack of consistency in outcome measurement within the field of acquired brain injury (ABI) leads to incomparability of collected data and, consequently, reduced generalisation of findings. We aim to develop a set of standardised measures used to obtain the minimum amount of data that is necessary to get a global image of ABI-patients across all healthcare sectors and disciplines and in every stage of recovery; an ABI-specific minimal dataset (MDS-ABI). The current research objective was to determine the content of the MDS-ABI.
Method: A Delphi study was conducted among Dutch experts (n=48) on measurement instruments used with ABI-patients. Respondents completed three iterative web-based surveys on what outcome domains should be included in the MDS-ABI, based on

the International Classification of Functioning, Disability and Health (ICF) framework. Moreover, participants rated and ranked proposed measurement instruments that covered the selected domains on suitability for the MDS-ABI.
Results: Response rates were high (89% - 100%). After three rounds, the expert panel reached consensus (≥51%) on the inclusion of 12 outcome domains (demographics, injury characteristics, comorbidity, cognitive functioning, emotional functioning, energy, mobility, self-care, communication, participation, social support and quality of life) within all chapters of the ICF. Furthermore, the Delphi panel made recommendations on suitable measurement instruments.
Conclusions: This study achieved consensus on the content of a minimal dataset for patients with ABI. The MDS-ABI, which resulted from this Delphi procedure, will be presented at the conference.
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Gaining insight in daily life symptoms after brain injury: The Experience Sampling Method
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Background and aims: The experience Sampling Method (ESM) consists of repeated measurements in real world settings of clinical relevant experiences, such as symptoms, mood and behavior. Measuring real-time patient experiences guarantees ecologically valid data that capture symptoms in the flow of daily life, as well as their temporal and contextual antecedents. As such, ESM constitutes a powerful addition to retrospective and cross-sectional research methods.
Method: Using the *mHealth* application 'PsyMate', we assessed the feasibility of this methodology in brain injury patients (*N*=17) and the usability of ESM data for clinicians to provide personalized patient feedback. The PsyMate device provided patients with ten signals (beeps) per day during six consecutive days. Each beep was followed by a digital questionnaire assessing mood, location, activities, social context, and physical well-being (e.g., fatigue, pain).
Results: Results demonstrated high feasibility, with no drop-outs and patients completing on average 43 of the total of 60 beeps they received (71%), comparable to response rates in non-clinical populations. ESM was experienced as user-friendly while generating understandable and easy-to-use graphical feedback that can be applied in clinical practice.
Conclusions: ESM represents a feasible and ecologically valid way of assessing clinical phenomena after brain injury. ESM data allow clinicians and scientists to capture the complexity of patient experiences in a film rather than in a single snapshot of daily life. Finally, novel data from a recently finished study (*N*=30) investigating the relation between momentary mood and fatigue after brain injury and self-reported physical activity levels will also be discussed.
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Involving clients in the design and implementation of an individualised outcome-monitoring framework
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Background and aims: Neuropsychological rehabilitation (NR) has a strong tradition of rigorous outcome measurement. However, anecdotal evidence suggests that clients, relatives, and staff teams alike are often dissatisfied with standard protocols, and there is a need for outcome measurement to play a greater role in guiding intervention. Here we report findings from a programme of service-based research aiming to design and implement a bespoke client-centred outcome-monitoring framework.
Method: An initial retrospective analysis examined goals from 82 consecutive NR clients, and a focus group was held with former clients. An outcome framework was produced, intended to track client-identified goals and outcomes throughout rehabilitation. The framework was implemented with two rehabilitation cohorts, and clients and relatives were interviewed.
Results: The retrospective analysis identified that the most frequently set goals concerned understanding brain injury, addressing mood difficulties, and improving communication. A thematic analysis of focus group data revealed that clients want more feedback on the measures completed, for this feedback to be shared with relatives, and for it to be concrete and visual in format. The interview data suggested that the framework was effective in fostering awareness and enhancing motivation to progress towards goals.
Conclusion: These results indicate that clients value feedback perhaps more than previously thought, and give helpful indictors about the format in which feedback should be given. Preliminary evidence suggests the new framework is a simple and cost-effective tool to increase clients' and relatives' awareness of their rehabilitation progress, and to identify factors leading to 'stuckness' that can impede progress.
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Evaluating the effectiveness of rehabilitation interventions: to p or not to p, that is the question

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Introduction: Evaluation of the effectiveness of neurorehabilitation interventions is undertaken using one of two methodologies: between-group comparisons or single-case studies. The approach to data analysis has been Null Hypothesis Significance Testing (NHST). The "holy grail" of this approach has been to obtain significant *p*-values demonstrating that the intervention has been effective.
Method: The aim of this paper is to review the problems and limitations of NHST and discuss alternative approaches.
Results: An overarching problem with NHST is that it does not do what we want it to do: p-values reflect the probability of obtaining the observed data if there is no intervention effect (i.e., the null hypothesis, H_0, is true). What we need to know is the probability that there is no intervention effect (i.e., H_0 is true) given the observed data. The two are not the same. Many other misconceptions about NHST abound (e.g., Vallecillos, 2001). In 1999 the American Psychological Association (APA) recommended that if NHST was used in data analysis, then effect sizes (ESs) and their confident intervals (CIs) as well as *p*-values should also be reported. ESs suitable for analysis of between-group (*d*-family and *r*-family) and single-participant data (e.g., Tau-U) are discussed.
Conclusion: *P*-values reflect statistical significance and provide information about the probability that there is no intervention effect, given the obtained data. In neurorehabilitation, however, it is more important to determine the intervention effect magnitude and whether or not it is clinically significant. ESs, and their CIs can provide that information, *p*-values do not.
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SESSION 4

SMS-based treatment for depression/anxiety in TBI: Two routes to the same outcomes?

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Background and aims: Depression/ anxiety are common and debilitating after moderate/ severe traumatic brain injury (TBI). Given the association between mood disorders and reduced activity post TBI, we designed a treatment based on a single session of Behavioral Activation (BA) supplemented by text (SMS) messages to remind participants of plans for increased activity, in the form of implementation intentions (II).
Method: Sixty people ≥6 months post TBI with depression/ anxiety were randomized 2:1 into (1) BA plus daily II-based text messages x 8 wk, or (2) an attention control using a single session focusing on motivation, followed by daily motivational SMS (selected from menu) x 8 wk. Outcomes measured at baseline, 4 wk, and 8 wk included the BSI-18 GSI, and constructs hypothesized to be related to the mechanisms of action of BA, e.g., exposure to environmental reward and degree of avoidance.
Results: Both groups improved significantly on measures related to mood, including BA-related measures, with no group x time interactions. Within-group data suggested slightly faster response for BA-II. De-briefing interviews suggested that gains were achieved in different ways per condition. Many more BA-II participants reported increased levels of pleasurable/ meaningful activity (87% vs. 41% for Motivation), whereas many more Motivation participants reported increased motivation, optimism, and other positive affects (71% vs. 23% for BA-II).
Conclusions: Treatment response may be achieved via disparate routes. Treatments designed as attention controls may contain ingredients that, if discovered to be active, could lead to new treatment models or enrichment of existing ones.
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Regulating emotion following traumatic brain injury: Preliminary results from a repeated biofeedback treatment study

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Background and aims: While difficulties regulating emotion are almost ubiquitous after traumatic brain injury (TBI), remediation techniques are limited. Heart-rate variability (HRV) is a physiological measure of an individual's response to environmental demands and can be modified using biofeedback training. We have previously found that biofeedback can mediate response to anger-inducing stimuli in healthy controls and individuals with TBI respond similarly to biofeedback as healthy controls. The aim of the current study was to evaluate the efficacy of repeated biofeedback training for improving emotion regulation following TBI.
Method: A total of 28 adults with severe TBI were randomly allocated to receive either active biofeedback treatment or to waitlist-control. Treatment consisted of 6 x 1.5-hour biofeedback training sessions whereby participants were taught to breathe at their resonant frequency. Outcomes consisted of changes in HRV-related physiological responses to an anger-induction procedure together

with self-reported symptoms of depresson, anxiety and sleep disturbances.
Results: Controlling for baseline performance, participants in the active biofeedback treatment reported significantly fewer symptoms of sleep disturbances and depression following treatment. There was also a trend for significantly reduced anxiety following repeated biofeedback training. Changes to objective and subjective markers of emotion regulation to anger elicitation are currently being analysed.
Conclusion: Our preliminary findings suggest that HRV biofeedback training is a feasible technique following TBI, with biofeedback generalising to improved symptoms of psychological distress and sleep disturbances. HRV Biofeedback training may therefore represent a novel technique for mediating emotional difficulties following injury.
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Effectiveness of a Multicomponent Self-Management Intervention for Adults with Epilepsy (ZMILE study): results of a Randomized Controlled Trial

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Background: The objective of the ZMILE study was to compare the effectiveness of a multicomponent self-management intervention (MCI) to care as usual (CAU) in adult patients with epilepsy (PWE) over a six-month period.
Methods: Participants (PWE & relative) were randomized into intervention or CAU groups. Self-report questionnaires were used to measure disease-specific self-efficacy as the primary outcome measure and general self-efficacy, adherence, seizure severity, emotional functioning, quality of life, proactive coping and side-effects of anti epileptic drugs (AED) as secondary outcome measures. Multi-level analyses were performed and baseline differences were corrected by inclusion of covariates in the analyses.
Results: In total, 102 PWE were included in the study, 52 of whom in the intervention group. Self-efficacy showed no significant differences between the MCI and the CAU group. On the side-effect Scale (SIDAED) and on three of the quality of life subscales QOLIE-31P, a significantly better result was found ($p< 0.5$) in the intervention group. None of the other outcome measures showed any significant difference between the two groups.
Discussion*:* Although no statistically significant difference was found in the primary outcome measure, disease-specific self-efficacy, this MCI could prove promising. The process evaluation and the economic evaluation showed a more favourable outcome for the MCI. Additionally, we found improvement in some domains of quality of life and a decrease in AED side-effects in the MCI group compared to the CAU group.
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People's experiences of 'personally important moments' following an Acquired Brain Injury (ABI), the meanings they attach to them and the influence they have on their post ABI journey: A qualitative study

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Background and aims: The aim of this study was to discover what specific experiences people have following an ABI that they consider to be 'personally important moments', in what context these moments occur, the subjective meaning individuals attach to these moments, and the influence they have on their post-injury journey.
Method: Ten individuals with an ABI (8 TBI; 5 Male; mean age 47.7 years; range 24-71; Mean years post injury 6.3, range 1-20 years) were interviewed individually. Constructionist grounded theory methodology was used to develop the topic focus and analyse the interviews. This resulted in a theoretical model describing personally important moments and related processes of meaning making and post-ABI adjustment.
Results: Three broad types of important moments were identified: **"**Moments that contribute to a coherent sense of self", "Moments of social interaction" and "Moments of disempowerment". The process of subjective meaning-making of types of moments resulted in an increased awareness of the post-injury self. Affirmation of coherence or continuity of self supported "Ability to work within own reality" after ABI. Negative or disempowering moments led

some to find constructive new ways to work with their own reality, whilst others resigned themselves to "What will be will be".
Conclusions: Different types of adjustment story arose from subjective meaning-making of personally important moments, and of changes in awareness of self, in the context of social influences. Although generalisation is limited due to a small sample, these findings are consistent with, and add to existing models of identity and adjustment post ABI.
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Does the fear avoidance model explain persistent symptoms after traumatic brain injury?
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Background and aims. A minority of patients with mild traumatic brain injury (mTBI) experience a persistent symptom complex also known as post-concussion syndrome. Explanations and treatment rationale for this syndrome are still lacking. The current study investigates if the fear avoidance model, including catastrophizing thoughts and fear avoidance behaviour, poses a new possible biopsychological explanation for lingering symptoms and delay in recovery after traumatic brain injury (TBI) with special focus on mTBI.
Method. Cross sectional study including 48 patients with TBI, of which 31 patients with mTBI, experiencing persistent symptoms; 92% of the entire sample fulfilled the criteria for post-concussion syndrome. Mean time since injury was 48.2 months. Outcome variables were catastrophizing, fear-avoidance, depression and post-concussion symptoms.
Results. High levels of catastrophizing were found in 10% of the patients and high levels of fear avoidance behaviour were found in 35% of the patients. Catastrophizing, fear avoidance behaviour, depressive symptoms and post-concussion symptoms correlated significantly with each other ($p < 0.05$).
Conclusions. The fear-avoidance model proposes a possible explanation for persistent symptoms and rationale for treatment. Validation and normative data are needed for suitable measures of catastrophizing and fear avoidance of post-concussion symptoms after TBI. Longitudinal prospective cohort studies are needed to establish its causal and explanatory nature. Our research group is currently conducting such a large scale multicentre cohort study.
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SESSION 5

Improving the understanding of dysarthric speech: a controlled case study
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Background and aims: At a meeting in Cape Town in 2017, Dilys Jones presented a study proposing it was possible to improve a person's understanding of dysarthric speech. This was achieved by frequently listening to dysarthric patients reading the same passage. As we were working with a severely dysarthric man at the time, our aim was to see if Jones's method worked for our patient, DJ.
Method: Two passages of equal length and difficulty were selected. One of the co-authors was blinded to one of the passages and it served as a baseline. The second passage was the treatment piece. Following four baselines, treatment began. DJ read the treatment passage three times in weekly sessions for a period of 4 weeks. It was hoped this would enable the listener to become familiar with DJ's speaking. Baselines were then repeated, followed by two further weekly treatment sessions, this was repeated once more and two final baselines completed.
Results: Treatment resulted in better understanding of the unseen passage. Improvement ranged from 3.52% in the first set of baselines to 33.3% to 46.7% to 65.5% in the final baselines.
Conclusions: Although still difficult to understand, there was definitely a better grasp of this man's speech after listening to him read several times.
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An examination of cognitive fatigue in MS: Do self-reports correspond with performance?
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Background and aims: The experience of cognitive fatigue may be differentiated from the experience of physical fatigue in individuals with multiple sclerosis (MS). However, the concept of cognitive fatigue and how it is appraised is poorly understood. While prior research indicates a lack of association between self-reported cognitive fatigue and actual cognitive performance, these studies have some methodological limitations. This study aims to more thoroughly examine the relationship between self-reported fatigue and changes in cognitive performance over a single testing session to further our understanding of MS-related cognitive fatigue.
Method: Forty-seven participants with MS and 36 matched healthy control participants completed the Modified Fatigue Impact Scale (mFIS) and were assessed twice on the Brief Repeatable Neuropsychological Battery (BRNB) and Conners Continuous Performance test (CPT) over a 2.5 hour testing session. A visual analogue scale for fatigue (VAS-F) was administered at baseline, and immediately following the first and second CPT administration.
Results: MS participants performed more poorly than healthy participants on most psychological tests. Practice effects were evident on most BRNB with no group interaction present. However, whereas CPT performance declined over the session in MS participants, there was trending improvement in healthy participants. MFIS scores were not correlated with neuropsychological performance, but there were moderate-to-large correlations with the VAS-F in MS individuals.
Conclusions: The results provide support for a temporal fatigue hypothesis in explaining MS-related fatigue. It also indicates that online, but not intellectual, self-reports of cognitive fatigue in people with MS do correspond with poorer levels of cognitive functioning.
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It takes two to tango: Physiological responding during dyadic conversations
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Aims: The aim of this study was to investigate physiological regulation to conversational behaviours within a natural social interaction. This study also aimed to investigate emotional empathy as a moderator of this physiological responding.
Method: Participants were asked to have an unrestricted thirty-minute conversation. Following this, videos of these conversations were coded for eight behavioural variables, namely, floor holding, listening, unfloored overlapping speech, unfloored silences, own smiling, other's smiling, own laughter, and other's laughter. Skin conductance level and heart rate correlates of these behaviours were analysed with an exploratory time-series analysis.
Results: There was physiological regulation across time found within conversations, such that floor holding was associated with increased heart rate, listening was associated with decreased skin conductance level, and positive affect was associated with an increase in heart rate and skin conductance level for self and other. Furthermore, there is some evidence to suggest that emotional empathy is positively associated with physiological changes. That is, as emotional empathy increases, changes in heart rate associated with unfloored silences, and viewing another's laughter increases.
Conclusions: This study furthered a scarce area of research on physiological correlates of conversational components, and further developed a systematic way of quantifying conversations. This study was the first to utilise multiple autonomic measures in a micro-analytic and individual-difference approach to conversations. The results suggest that there is a physiological regulation to the sending and receiving of social cues throughout a conversation, and given its novelty, has a wide scope for future directions.
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The Psychomotor Vigilance Task: a measure of objective fatigue following acquired brain injury?
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Background and aims: The Psychomotor Vigilance Test (PVT) is a well-known test for examining sleep-related deficits in sustained attention. Despite the common reports of PVT in the field of sleep and fatigue research, its use in Acquired Brain Injury (ABI) research is limited. ABI patients experience highly prevalent secondary symptoms, such as fatigue, sleep disturbance and mood changes. The aim of this study was to examine the psychometric properties of the PVT to quantify fatigue in ABI patients and compare the PVT outcome measures to non-ABI controls.
Methods: At the moment 22 ABI patients completed the visual PVT, momentary fatigue measures (Visual Analogue scale for fatigue (VAS-f)) before and after the PVT and self-reported measures of general fatigue, sleep quality, daytime sleepiness and mood (more data is still being collected). Non-ABI controls (N=27) completed the visual PVT and self-reported measures of sleep quality.

Results: Preliminary results show a significant correlation between the fatigue measures and the different outcome measures of the PVT (reciprocal transformed reaction time (RT), median RT, slowest 10% of the transformed RT). ABI patients showed deficits in PVT measures compared to controls, indicated by slower RT, median RT and more lapses.
Conclusion: These preliminary findings suggest that reaction times on the PVT are slower in ABI patients and are related to subjective feelings of fatigue in ABI patients. Therefore, the PVT could be considered an objective measure of fatigue in the ABI population. The final results of this study will be presented at the conference.
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Effects of low visual acuity on neuropsychological assessment
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Background and aims: Norm data of most neuropsychological tests do not correct for the potential influence of visual disorders. Therefore, current neuropsychological assessment for elderly with visual disorders, which is a relatively large population, is non-optimal quality. For a number of commonly used neuropsychological tests, it is examined to what extent low vision influences test performance.
Method: In 241 healthy elderly without visual or neurological disorders, simulation glasses were used to simulate low visual acuity. Participants in group A (n=119, average age 65) performed the MMSE, Balloons Test and Complex Figure of Rey with simulation glasses, and the Trailmaking Test and VOSP with normal vision. Participants in group B (n=122, average age 65) performed the Trailmaking Test and VOSP with simulation glasses and the other tests with normal vision.
Results: Low visual acuity had a negative impact on the Trailmaking Test, Complex Figure of Rey (copy score) and VOSP subtest 3, but not on the MMSE and Balloons Test. For some tests, the negative impact of low visual acuity increased with age.
Conclusions: When administering the Trailmaking Test, Complex Figure of Rey (copy score) and VOSP subtest 3 to older people with low visual acuity, low test scores should be interpreted with great caution. Low test scores on the MMSE and Balloons Test are not likely to be caused by low visual acuity and are more likely to reflect actual cognitive impairment. These results have important implications for the use of neuropsychological tests in the visually impaired population.
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SESSION 6

Assessment and treatment of patients with prolonged disorders of consciousness: A summary of three studies
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Background and aims: We look at patients with a prolonged disorder of consciousness (PDOC); both those in a vegetative state (VS) and those in a minimally conscious state (MCS). Our patients included those who had sustained a traumatic brain injury (TBI) and those with other diagnoses (NTBI). We report on three studies. First, can people who have been in VS for more than one year, improve? Second, does a pharmacological agent, modafinil, improve functioning and is this different for VS versus MCS patients? Third, do repeated assessments with the Wessex Head Injury Matrix (WHIM) predict the onset of an infection and does this differ for TBI and NTBI patients?
Method: Repeated assessments of the WHIM and the JFK Coma Recovery Scale-Revised were used to answer these questions.
Results: 1) Continuing improvement and/or delayed recovery is possible after a prolonged period of impaired consciousness.2) Modafinil appears to enhance cognition in PDOC patients. Traumatically brain injured patients (n=11) benefited more than non-traumatically injured brain injury patients (n=6).3) Prior to an infection, the total WHIM score dropped in all MCS patients both with and without a TBI (N=12). VS patients with NTBI (n=7) showed no changes in level of consciousness when compared to their baseline scores.
Conclusions: This study suggests that continuing improvement is possible in survivors of severe brain injury. MCS patients showed more favourable outcomes relative to patients diagnosed with VS and those with a TBI did better than those with NTBI.
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Brain and cognition interplay in disorders of consciousness: a multiple case study
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Background and aims: Patients with disorders of consciousness (DoC) after severe brain injury may present residual behavioral and cognitive functions. Bedside assessment of these functions is compromised by patients' multiple impairments.
Method: Five patients in minimally conscious state (MCS) or emerging from the MCS (EMCS) are presented. Their cognitive profiles, derived from the Coma Recovery Scale-Revised (CRS-R) and the Cognitive Assessment by Visual Election (CAVE), are presented alongside their neuroimaging results using structural and functional magnetic resonance imaging (MRI) and fluorodeoxyglucose positron emission tomography (FDG-PET)
Results: Scores on the CAVE and CRS-R decreased as level of brain injury, as detected by neuroimaging, increased. Structural and functional abnormalities were consistent with cognitive profiles obtained on CAVE and CRS-R.
Conclusions: Results suggest that brain-behaviour relationships may be observed even in very severely brain-injured patients. The importance of developing new tools in order to assess residual cognition and language in MCS and EMCS patients is highlighted. Evaluations of cognitive profiles in such patients will be helpful in preparation of rehabilitation programs and daily routines.
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Does a regular Wessex Head Injury Matrix assessment identify early signs of infections in people with prolonged disorders of consciousness?
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Background & Objective: Brain injury survivors are at high risk for infections. Although infection and cognitive deterioration is established for people with dementia, this has not been conducted for patients with a prolonged disorder of consciousness (PDOC). This study examines whether regular Wessex Head Injury Matrix (WHIM) assessments can identify early signs of infections in PDOC patients.
Method: Retrospective and prospective approaches were used to look at WHIM scores of 21 (in the retrospective study) and 22 (in the prospective study) PDOC patients.
Results: WHIM total scores decreased due to infections in 17 of the 21 infection cases ($p<0.001$) in the retrospective study and 15 ($p=0.001$) of the 22 prospective infection cases. Patients in a Minimally Conscious State showed a bigger proportion of change between their baseline score and the scores taken at the pre-infection stage in both the retrospective and prospective studies when compared to the patients in a vegetative state.
Conclusion: The findings suggest the importance of serial WHIM assessments throughout the period of recovery, not only to measure cognitive changes but also to highlight underlying physical changes such as infections that will impact on response to rehabilitation and recovery.
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Self-awareness following paediatric brain injury: Relationship to mental health and adaptive functioning
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Background and Objectives: Self-awareness has been found to influence mental health and functional outcomes following acquired brain injury (ABI) in adulthood, but has received little attention after paediatric ABI. This study investigated the relationship between self-awareness, mental health and adaptive functioning after paediatric ABI.
Method: 109 children with ABI (58% male) aged 8-16 years were consecutively recruited from a statewide paediatric rehabilitation service and administered the Paediatric Awareness Questionnaire (PAQ) and depression, anxiety and self-concept scales of the Beck Youth Inventories (BYI-II). Parents completed the PAQ and Adaptive Behaviour Assessment System (ABAS-III). Larger negative discrepancy scores on the PAQ (parent minus child scores) were interpreted as less accurate or lower self-awareness.
Results: Children's self-awareness did not vary according to cause of ABI (i.e., trauma, stroke, infection, tumour). Higher self-awareness was significantly related to older age at onset ($r = .37$), lower self-concept ($r = -.33$) and better adaptive functioning ($r = .53$). After controlling for age at onset, self-concept significantly moderated the relationship between self-awareness and adaptive functioning ($p = .005$). The positive relationship between self-awareness and adaptive functioning was most pronounced for those with higher self-concept; children with a combination of high self-awareness and high self-concept had the more favourable functional outcomes. Low self-awareness was related to poorer adaptive functioning irrespective of self-concept.
Conclusions: Children injured at a younger age may perceive their functional abilities less accurately than those injured at an older age. Self-awareness is related to better functional outcomes, particularly for children with a more positive self-concept.

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POSTERS – SUNDAY

A mobile game for training selective attention in individuals with brain injury

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Background and aims: Many brain-injured patients referred for outpatient rehabilitation experience problems with selective attention caused by sensory overstimulation. A new mobile game was designed in which participants with brain injury learn to focus on relevant stimuli and ignore irrelevant distractors. The objective of this ongoing study is to investigate whether this experimental game contributes to improvements in selective attention and subjective complaints.
Methods: In this pilot study patients with acquired brain injury referred for outpatient rehabilitation played the newly designed game 15 minutes per day for 4 weeks on their own smartphones. At baseline and after the 4 weeks a neuropsychological assessment, several questionnaires and a semi-structured interview were administered. Main outcome measure was an adapted and computerized version of the Bourdon Wiersma test for selective attention, in which distractors were added.
Results: So far 6 participants completed the study (5 males, mean age: 37.3 (sd= 12.0), mean years of education: 13.0 (sd= 1.3)). Preliminary results did not reveal improvement on the adapted Bourdon Wiersma test, after playing the game ((t(5) = -.87, p = .79, Cohen's d = -.36) nor on other neuropsychological tests. Four of the participants reported improvements in subjective selective attention in everyday life.
Conclusions: The present findings do not indicate that the experimental mobile game improves objective selective attention. However, on a subjective level, patients experience a decrease in sensory overload in daily life. Investigating the game in a larger group, using a controlled design, is indicated.
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Augmentative and alternative communication devices to enhance communicative competence in patients presenting with ataxic dysarthria following a brain injury and the story of Brian.

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Background and aims: Augmentative and alternative communication (AAC) approaches supplement or become the dominant method of spoken or written communication, for patients with speech or language impairments. AAC is an umbrella term encompassing an array of communication methods and technologies. Optimising communicative function is one of many benefits associated with AAC; social inclusion, development of personal growth and decision making contribute towards improving communicative competence. Research has highlighted the positive impact AAC has on augmenting the communication skills of patients and their communication partners.
Method: We present the case of Brian, 68 years old, admitted following a posterior cranial fossa haemorrhage. A CT scan at the time showed posterior fossa bleeding and recurrent cerebral bleeding with brainstem compression, following emergency posterior fossa craniotomy. Brian presented with a cognitive communication impairment and ataxic dysarthria. His presentation of ataxic dysarthria was characterised as: slow rate of speech, irregular articulatory breakdown, prosodic changes and harsh voice quality with excessive loudness and vocal tremor.
Results: Conversational speech was marked with poor intelligibility, exacerbated by cognitive impairments with reduced awareness and insight of conversation breakdown. A Lightwriter enabled Brian to converse at length by typing out messages, supporting his independence and efficiency of communicative exchange.
Conclusion: Based on speech and language therapy and neuropsychology assessments carried out with Brian, we discuss the extent of functional therapy vs AAC approaches on promoting communicative autonomy following a TBI and how AAC enabled Brian to achieve his personal goal of delivering a speech at his daughter's wedding.
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Online Cognitive Training with *VIRTRA-EL* (*VIRtual TRAining in the ELderly*) Improves Long-Term Verbal Memory

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Background and Aims: Computerized cognitive training is raising in the elderly. Aim: to determine effectiveness of *VIRTRA-EL* for improving verbal memory in older people.
Method: 90 community-dwelling older people (mean age 71 years old, 80% women) attended 14 group-based sessions (45 minutes, twice a week) using the online platform for cognitive training *VIRTRA-EL* (http://www.virtrael.everyware.es). Participants were supervised and supported by a neuropsychologist. A, B and C forms of the Hopkins Verbal Learning Test were administered in three moments (pre, post and 3

months follow-up). *VIRTRA-EL* contains exercises for attention, memory (none of them use a list of words) and executive functions training. One-way ANOVA for repeated measured were applied.
Results: We found significant improvement in performance between pre and post moments in three main variables: last trial of learning phase and delayed recall (both, free and cued). Comparing to the post-moment, performance declined at the follow-up, but improvement between pre- and follow-up moment continued being significant. There were no significant improvements for recognition trials.
Conclusions: Online cognitive training with *VIRTRA-EL* is associated with improvements in the main components of log-term verbal memory, such as learning words and spontaneous and cued delayed recall. Although performance decreased after ending the training, improvements lasted at least 3 months. Enhances of performance could be seen in coding, storage and retrieval processes. Effectiveness *VIRTRA-EL* are clinically relevant because it is a free tool that can be used from any place by any older person, independently or supported by relatives or therapists.
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Relation between cognitive and cerebello-thalamo-cortical functions in healthy elderly people: Evidence from the Yakumo Study
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Objective: Relations between cognitive and cerebello-thalamo-cortical functions in healthy elderly people (65-75 years old) were examined by the longitudinal behavioural data
Method: Based on the individually calculated cognitive decline ratio in D-CAT (digit cancellation test) and LMT (Logical Memory Test) during the period of 11 years, participants were classified into the *Decline* and the *Maintain* groups and compared group differences in the postural tremor measures.
Results: Significant group differences were shown in the postural tremor measure (Quotient of Romberg: *QR*) in D-CAT reflecting prefrontal function, but it was not the case in LMT.
Discussion and Conclusion: These results strengthened our previous findings that suggest a strong relation between the cerebello-thalamo-cortical function and the prefrontal cortex function. Findings provide evidence that physical exercise is effective for slowing cognitive decline with age.
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Characteristics of the ICT-based neurocognitive rehabilitation programs to Acquired Brain Injury (ABI)
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Background and aims: Neurocognitive rehabilitation programs (NRPs) started to use techniques supported on new information and communication technologies (ICT), which enabled the customization of rehabilitation processes to the functional profile of each person. Considering the relevance of ICT-based NRPs to the rehabilitation of impairments caused by ABI, we aimed to explore and synthetize the characteristics of these programs that can have a positive influence on the outcomes.
Method: We conducted a systematic review in the EBSCOhost and Web of Science databases. Thirty-one papers were analyzed according to recommendations from PRISMA-P and Cochrane Collaboration.
Results: Twenty-two NRPs used online-computerized programs or platforms, eight used virtual reality, one used a driving simulator, one used a mobile device application, and one used a videogame. The duration and length of NRPs varied between two and 12 weeks, with 40 to 60 sessions of 20 to 120 minutes each, and a frequency of one to five times a week. The majority of NRPs targeted more than one cognitive function, mainly attention, memory and executive function. Additionally, the tools used in NRPs automatically adjusted the tasks' difficulty to the outcome of the patients, and provided them constant feedback about it.
Conclusions: A growing concern was observed with the customization of the rehabilitation programs, and the motivational aspects and ecological validity of the tasks used in ICT-based NRPs. Despite that, the high heterogeneity of NRPs characteristics difficult the establishment of evidence-based guidelines to rehabilitation of ABI patients, which highlights the urgent need of developing multicentric research projects.
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Methylphenidate as a treatment for executive dysfunction following severe traumatic brain injury: A case study
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Background and aims: A 32-year-old male presented with severe memory impairment and executive

dysfunction following a severe traumatic brain injury. He had a premorbid history of panic disorder. He was disorientated and lacked insight which heightened his level of anxiety leading to verbal and physical aggression. Traumatic brain injury is associated with decreased dopamine activity and executive function is a dopamine-dependent cognitive function. Methylphenidate promotes release of stored dopamine. Evidence exists supporting the use of methylphenidate to improve cognitive function across several domains, including executive function. The aim of the case study was to evaluate the effects of methylphenidate on cognitive function and behaviour.
Methods: Baseline cognitive assessment was undertaken. Behaviour was recorded using the Overt Behaviour Scale (OBS). Methylphenidate was prescribed. Orientation was assessed daily using the Galveston Orientation and Amnesia Test (GOAT). Criterion for repeat cognitive assessment was five consecutive days scoring >76/100 on the GOAT. Cognitive assessment was repeated.
Results: Severe memory impairment at baseline was mediated by executive dysfunction and contributed to the manifestation of challenging behaviour. One month post Methylphenidate, criterion on the GOAT was reached and there was a significant reduction in challenging behaviour. Repeat cognitive assessment revealed improved attention and working memory, however anterograde memory impairment and executive dysfunction remained.
Conclusions: Methylphenidate improved cognition, including a significant improvement in orientation and insight. This, in turn, reduced anxiety and subsequent challenging behaviour. Attention and working memory improved allowing the patient to actively participate and benefit from rehabilitation.
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Autistic spectrum disorder and gratification delay: the value of the affective bond

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Background and aims: The investigations about autism spectrum disorder (ASD) have not only been oriented to his understanding, but also to the development of intervention technique. The study of ASD has focused on inhibitory control, given the theoretical proposal that indicates that this function would be responsible for the alteration of theory of mind (ToM), through the ASD delaying gratification difficulty, in the pursuit of social interaction. The aim of this investigation was to prove that the affective bond contributes to the functioning improvement of inhibitory control, through the stimulation of the personal interests.
Method: It has been used a quantitative methodology, an experimental design, of a single case, of masculine gender, his age was 5 years. For the measurement of inhibitory control functioning, under pre/post test, the Infant Neuropsychological Evaluation Test (TENI) was used. The data analysis was performed by SPSS.
Results: The results indicated that, effectively, affective bond that is facilitated through the consideration of interests, abilities and needs that a child could manifest, promotes and improve development and functioning of inhibitory control. It was observed an exponential statistical advance.
Conclusions: This represents an important element to consider in the therapies that are used in children with ASD, i.e., to adapt the interventions to the interests of a child with ASD, being affective bonding the basis of it. This last element it is important, by its neurobiological basis: nucleus accumbens, which it is not only involved in affective aspects, but also executive, attentional and cognitive processing.
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Visualising the words: interventions for specific subtypes of dyslexia

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Background and aims: Although dyslexia is a heterogeneous disorder, most research has focused on cases with underlying phonological impairments and not cases where the difficulties at a whole-word level. It has been suggested that these individuals may have limited visual attention spans. We investigated whether these two profiles respond preferentially to different interventions. We contrast the effectiveness of a Grapheme-Phoneme Conversion (GPC) training primarily aimed at “phonological” cases with a visual training primarily aimed at “whole-word” cases.
Method: Six secondary school students with significant reading deficits fitting either profile participated. Using an alternative treatment design, participants received both GPC and visual trainings. During the GPC training, emphasis was put on the sound of common letter pairs. The visual training - involving making, braking and moving words - used longer letter redundancies (e.g. “ation”) in an effort to reduce the load on visual attention.
Results: For “phonological” cases, GPC and not visual training significantly improved trained word accuracy and reading latencies. For “whole-word” cases, both visual and GPC training significantly improved trained word accuracy and reading latencies; however, the visual training produced larger effects. No generalisation effects to non-trained stimuli were found.
Conclusion: In dyslexia, tailoring interventions to an individual’s specific profile appears to enhance treatment effectiveness. This perhaps further supports the notion that visual attention span deficits are specific to whole-word impairments.
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Changes in Attention Following a Computer-Based Treatment for Aphasia

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Background and aims: It has been argued that impaired attentional processes underlie the language difficulties associated with aphasia (McNeil, Odell, & Tseng, 1991). However, few studies have investigated whether attentional processes improve during aphasia treatment. The aim of this study was to examine changes in attention following an intensive computer-based oral reading intervention delivered remotely via the web.
Method: Twelve participants with chronic aphasia completed the Conners' Continuous Performance Test-II (CPT-II) before and after 6 weeks of an intensive oral reading intervention delivered remotely. A virtual therapist, on a computer screen, guided participants through the oral reading program. A control group of 12 participants played a commercially available computer game that did not directly target linguistic skills. Both groups practiced at the same intensity (90 minutes a day, 6 days a week for 6 weeks).
There was no significant difference between groups for age, education, or aphasia severity.
Results: Participants in the oral reading group demonstrated significant gains in omissions ($p = .04$), commissions ($p = .01$), and the confidence index ($p = .03$). Participants in the control group demonstrated significant changes in commissions ($p = .04$).
Conclusions: Results suggest that intensive computer-based oral reading treatment may drive changes in attention. Less robust changes in attention were observed in the control group. Findings support the notion that attention may be best addressed within the context of linguistic tasks.
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Blinding participants and assessors in a feasibility randomised controlled trial of peer befriending for people with aphasia post-stroke

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Background and aims: Blinding participants to intervention versus control conditions is problematic, as is the blinded assessment of participants. To minimise potential threats to validity and maintain lack of bias, a modified 2-stage consent design has been adopted, whereby all participants consent to take part in a study and have their data collected and compared to others, but are blind to the intervention been tested and group allocation. A second stage consent is completed with only those participants allocated to the intervention group. A blinded assessor is important to give objective and unbiased results.
Methods: Single blind, mixed methods, parallel group phase II RCT comparing peer-befriending vs. usual care, starting at discharge from hospital. All participants give consent to participate in the trial. Only those in the peer-befriending arm give consent to the intervention (second-stage). Rate of consent at both stages is monitored. Strategies to maintain blinding of assessors at all assessment time points are followed with instances of unblinding recorded.
Results: The trial is currently underway. The 2-stage consent process has been largely successful. No instances of unblinding by participants or assessors have been recorded. Near misses have been recorded for the assessors. These are unrelated to the assessments with participants but rather workplace factors e.g. use of email, shared calendars, telephone conversations.
Conclusions: Blinding of participants and assessors is critical to the success of a RCT. This paper discussed a range of processes including a modified two stage consent process, careful preparation and monitoring of participants, assessors and workplace factors, which are all important steps to reducing the possibility of unblinding.
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Use of baseline cognitive profiles to inform and guide appropriate Cognitive Remediation and Functional skills interventions to address deficits in occupational performance in older adults with mild cognitive impairment (MCI)

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Background and aims: The aim of this study is to establish the baseline of cognitive profiles of participants aged 65 years and over to guide cognitive remediation and functional skills training**. Based on research to date, cognitive remediation techniques have been shown to be reasonably successful in facilitating performance in patients suffering from a moderate degree of memory impairment. However, little is known about the transferability and generalisations of these gains to addressing everyday performance tasks that require** attention, planning, problem-solving, mental flexibility, and memory.

Method: Single Case Experimental Design (SCED) with ABA Design. The cognitive and functional baseline performance of participants and their occupational performance were assessed. This was followed by collaborative goal setting. The baseline assessment outcomes guided the cognitive remediation training and functional skills as interventions to improve cognitive and independent living skills. The outcomes of the intervention were evaluated, compared and analysed in relation to results of the initial baseline assessments.
Results: Preliminary analysis of participants indicate achievements for the participants on goal attainment scaling and functional performance, but indicate no significant changes in the outcomes of the standardized cognitive batteries over a 6 weeks period of interventions.
Conclusions: The outcome of this of this research may contribute to existing literature on the efficacy of this type of intervention and approach with older adults with MCI. Along with the aim of increasing the quality of life of participants with MCI by maintaining and/or increasing levels of participation in self-care, productivity and independence.
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Behavioural and cognitive processes that underlie on-road driving assessment performance of people with traumatic brain injury
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Background and aims: Return to driving is often an important goal for people following a traumatic brain injury (TBI). Occupational therapy driving assessments aim to evaluate the person's capacity to drive following injury. However, as neurological recovery may continue for several years following TBI, there is difficulty for health professionals in deciding when is the right time to refer people with a TBI for a driving assessment. This study aims to identify the behavioural and cognitive processes the contribute to failure of driving assessments by people with TBI.
Method: Thirty people with a TBI who had an on-road driving assessment within a randomly selected four-year period were identified from the occupational therapy driving assessment database at a metropolitan hospital. Participants were categorised into groups of those who passed the assessment and those who failed. Qualitative analysis of de-identified driving assessment reports is used to describe the behavioural and cognitive processes impacting driving performance.
Results: Frequency counts of specific issues identified in the reports, and comparison of data between participants who passed the on-road assessment and those who failed is recorded and will be presented. The results illustrate the complexity of the driving task with multiple behavioural and cognitive processes impacting driving outcomes.
Conclusions: The findings can be used to educate and counsel people with TBI and their families about readiness to return to driving. Awareness of the factors related to the failure of on-road driving assessments may help health professionals with their decision-making regarding when to refer people with a TBI for a driving assessment.
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Outcomes from a driving remediation program following acquired brain injury
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Background and aims: Occupational therapy driving assessments aim to evaluate the impact of a person's medical condition on safe and competent driving performance. Whilst the benefits of acquired brain injury (ABI) rehabilitation are well documented, there is very little evidence concerning the efficacy of on-road driving remediation programs. Furthermore, the capacity to sustain any improvements achieved through driving rehabilitation over time has not been researched. This study aimed to describe participant outcomes from a driving remediation trial project following acquired brain injury.
Method: Participants were eight people with ABI in a pilot wait-listed randomised control trial. Both the control and intervention group completed a baseline assessment battery including a standard off-road and on-road assessment and psychosocial measures. The intervention group completed an on-road driving rehabilitation program over six to eight weeks whilst the control group received no intervention. For both groups, the assessment battery including on-road driving performance was then repeated by a blind assessor. The control group then completed the driving intervention and were assessed. Finally, both groups completed a reassessment six months post intervention.
Results: Maintenance of driving remediation gains after six months in terms of driving performance and psychosocial factors was inconsistent. However, there was general support for the effectiveness of individualised occupational therapy on-road driving remediation. Participants demonstrated increased self-efficacy following completion of the remediation program.
Conclusions: Findings will provide health professionals with further information about the return to driving process, along with the efficacy of on-road driving remediation and psychosocial factors to consider.
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Measuring Self-Awareness of Deficits after Acquired Brain Injury: Validity, reliability and feasibility of the Assessment of Self-Awareness of Deficits (AS-AD) scale

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Background and aims: The Assessment of Self-Awareness of Deficits (AS-AD) scale was designed to help clinicians identify patients' overall levels of self-awareness of deficits, while taking into account variation in self-awareness in domains. We studied its validity, reliability and feasibility in patients with acquired brain injury.
Method: The AS-AD discerns four levels of self-awareness that are measured across eight domains. Participants (n=59) were admitted to inpatient brain injury rehabilitation. The psychologist and cognitive trainer or occupational therapist assessed patients with the AS-AD and Awareness Questionnaire (AQ) and completed a feasibility questionnaire concerning the usability of the AS-AD.
Results: The AS-AD showed sufficient convergent validity (moderate correlations between AS-AD and clinicians' opinions on patients' accuracy of self-awareness – AQ question 18; $r_{spearman}$=.54; p=.00); poor inter-rater reliability (ICC=.35; p=.01), and acceptable test-retest reliability ($r_{spearman}$=.72; p=.00). Mean administration time was 18.7 minutes (SD=12.6). The clinicians indicated that it can be difficult to fill out the AS-AD monodisciplinary early in the rehabilitation trajectory due to lack of information about the patient at that point in time.
Conclusions: The AS-AD is a brief instrument with sufficient convergent validity and acceptable test-retest reliability but poor inter-rater reliability. We suggest that neuropsychologists fill out the AS-AD after collecting information from multiple disciplines and that the results be discussed in team meetings. Teams can use the results to look for rehabilitation approaches that fit the patient's capacities. Future research is needed to study the usability of the AS-AD in team meetings and its effects on the efficiency of rehabilitation.
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Psychometric evaluation of the Self-Awareness in Daily Life-3 (SADL-3), a tool for the assessment of self-awareness of deficits in the chronic phase after acquired brain injury

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Background and aims: The Self-Awareness in Daily Life-3 (SADL-3) was designed to help support staff of assisted living facilities identify patients' levels of self-awareness in multiple daily life areas in the chronic phase after acquired brain injury (ABI). It is a practical implementation of Crosson's hierarchical model of self-awareness of deficits. Main objective was to evaluate its feasibility, reliability, validity and usability for clinical practice.
Method: The SADL-3 discerns three types of patients, based on their level of self-awareness: the Passer-by, the Searcher and the Buyer. Level of self-awareness is assessed for seven daily life areas. Participants were 89 patients from three Dutch assisted living facilities for persons with ABI. Staff members and patients completed the SADL-3, Awareness Questionnaire (AQ), Patient Competency Rating Scale (PCRS) and Clinician's Rating Scale for evaluating Impaired Self-Awareness and Denial of Disability (CRS-ISA-DD). Staff members completed a questionnaire concerning usability of the SADL-3.
Results: No floor or ceiling effects were present. Results show sufficient inter-rater reliability (ICC>.40 for SADL-3 total score and five of the seven daily life areas), acceptable test-retest reliability (r_s>.75) and sufficient convergent validity (r_s>.30 for PCRS and CRS-ISA-DD). Mean administration time was 15 minutes (SD=21.2). Most staff members rated the SADL-3 as fairly easy to very easy to complete.

Conclusion: The SADL-3 is a brief instrument with sufficient psychometric properties. It can be used in clinical practice to identify patients' awareness levels in multiple daily life areas. Future research is needed to study effects on efficiency of treatment.
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What do we need to improve social interactions? A closer look at behavioural activation theory in acquired brain injury
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Background and aims: Low mood is a significant problem after acquired brain injury (ABI; Hyder et al., 2007). The purpose of this study was to examine how post-ABI cognitive or emotional variables related to changes in social interactions over time. Identifying predictors of engagement in activities known to mitigate low mood risk is relevant to interventions, such Behavioural Activation, that show some promise after ABI (Thomas et al., 2013).
Method: As part of a larger intervention study, over 4 weeks, 65 adult stroke survivors rated changes in memory, concentration, planning skills, spatial awareness, motivation, mood, and social interactions each week, relative to the previous week. European Brain Injury Questionnaire (EBIQ) scores were collected before Week 1 and after Week 4.
Results: At Week 1, changes in planning, concentration, and spatial awareness correlated with changes in motivation, mood, and social interactions. Week 1 changes in planning skills correlated with Week 2 changes in social interactions and mood. Changes in the EBIQ cognitive subscale correlated with changes in memory and concentration at Weeks 1 and 2. Past Week 2, only motivation and mood were correlates of changes in social interactions.
Conclusions: Initial changes in cognitive variables may modulate emotional variables over time and thus social interactions. In behavioural activation research, cognitive training, through improving abilities needed for social interactions, may be a "confidence booster." In clinical interventions, beginning with cognitive training may improve social interactions post-injury. Subsequent increases in motivation may additionally facilitate and maintain improved mood and engagement in social interactions.
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Longitudinal tracking of social abilities and a social intervention for a woman with Williams syndrome who later developed co-morbid Schizophrenia
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Background and aims. Williams syndrome and schizophrenia are typically associated with contrasting social profiles. We present a ten year longitudinal case study of a 30 year old woman with Williams syndrome who developed co-morbid schizophrenia at 40 years of age. Her social profile was tracked longitudinally using standardised and experimental measures, as well as eye-tracking. Notable reductions in her eye contact, theory of mind and emotion recognition abilities coincided with her schizophrenia diagnosis.
Method. A single case social intervention was implemented and evaluated.
Results. The intervention lead to significant improvements in eye contact, facial emotion recognition and day-to-day social functioning, evidenced by significant improvements on standardised and experimental tasks, as well as improved face scan paths on eye-tracking.
Conclusions. We discuss the benefits of individually tailored interventions and the benefits of using technology such as eye tracking in addition to face to face tasks as a way of evaluating changes following intervention.
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ABSTRACTS - MONDAY

SESSION 7

This Way Ahead. Resources for families of people with Traumatic Brain Injuries and challenging behaviour
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Background: On-going challenging behaviour following traumatic brain injury (TBI) is a major source of stress for families and can lead to deteriorating health, breakdown of relationships and, ultimately, lower quality of life for the person with TBI and their extended networks. Providing expert clinical advice to manage challenging behaviours can be limited by availability of clinicians and geographic location. A solution is to provide on-line resources that can guide family members through identifying and managing common challenging behaviours. That was the aim of the current project.
Method: Six clinicians identified the most common complaints regarding challenging behaviour post TBI. An on-line survey also sought input from families regarding their concerns in dealing with challenging behaviour.

Based on this a program was developed. Families were approached and asked to work through the modules to provide feedback on their wording, content and structure. This feedback was used to modify the content when necessary.
Results: The program "This Way Ahead" encompasses seven modules that are presented on-line. The first two are education-based and designed to be completed first. The remaining five address: (1) Apathy, (2) Irritability/Aggression (3) Acting without thinking (4) Social difficulties and (7) Self-care (for the family member) and can be selected according to need. Each module is supplemented by more detailed notes and summaries of the sessions. Family feedback has been extremely positive regarding the content and mode of delivery.
Conclusions: This project aims to address a significant gap in resources for families trying to manage challenging behaviour post TBI.
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"Finding the confidence to crack on with things": A qualitative study of client reflections on holistic neuropsychological rehabilitation several years post-programme.
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Background and aims: Our holistic neuropsychological rehabilitation service routinely collects feedback from current clients, but feedback from former clients has not been routinely collected or systematically examined. This qualitative study sought to identify client perspectives on rehabilitation in the long-term, more than a year after any formal rehabilitation input and in all cases at least four years after injury.
Method: Ten adults with acquired brain injury participated in one of two focus groups. Participants included five men and five women who had sustained brain injuries predominantly from TBI, but also as a result of stroke, and encephalitis. Sessions were video-recorded, transcribed, and analysed using thematic analysis.
Results: The primary themes concerning the changes participants had experienced resulting from rehabilitation were: *understanding myself in the context of my brain injury*, *feeling more hopeful and optimistic*, *coming to terms with who I am now*, and *regaining or developing the confidence to engage with life.* Several process-based themes relevant to the delivery of rehabilitation were also identified, including: *establishing accurate expectations, working hard together*, *feeling like an equal*, *using strategies,* and *long-term support*.
Conclusions: Insightful reflections were provided on the psychological changes experienced during and after rehabilitation, along with sophisticated observations regarding the potential underlying causal mechanisms. There is much to learn from these results, which help to enrich our understanding of how rehabilitation brings about meaningful and lasting personal change, generate hypotheses that can be tested in future quantitative studies, guide day-to-day clinical practice, and inform the design and development of services.
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Social Cognition Impairments in the Long Term after Stroke
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Background: In stroke patients, little is known about deficits in social cognition in the long term, nor about the effect of general cognitive deficits on social cognition tests. Our aim was to examine the presence of social cognition deficits and the relationship between general and social cognition in a large sample of chronic stroke patients, and to identify stroke-related factors associated with social cognitive performance.
Methods: Prospective cohort study in which 148 patients underwent neuropsychological assessment with tests for social cognition (emotion recognition, Theory of Mind (ToM), empathy, and behaviour regulation) and general cognition, 3-4 years post stroke. Test scores were compared with scores of 50 healthy controls. Subgroup analysis was performed to compare right- with left hemisphere stroke patients. Correlations between general and social cognition tests were assessed. Multiple regression analyses were performed to identify demographic and stroke-related predictors of social cognitive performance.
Results: Patients performed significantly worse on emotion recognition, ToM and behaviour regulation tests than controls. Subgroup analysis revealed no differences between right- and left hemisphere patients. Social cognition tests showed significant correlations with each other and with tests for visual perception, language, mental speed, cognitive flexibility, and memory. Older age, low education level

(and for ToM also female sex) were predictors of worse performance on social cognition tests.
Conclusions: Social cognition impairments are present in the long term after stroke, even in a group of mildly affected stroke patients, which may contribute to their long term problems. Severity of impairments is mainly determined by demographic factors.
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The impact of impairments in social cognition, executive function and behavior on social and vocational participation after traumatic brain injury
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Background and aim: This study evaluates the contribution of measures for social cognition, behavior and executive functioning to the prediction of social and vocational participation in patients with traumatic brain injury (TBI).
Method: Sixty-three patients with moderate to severe TBI were assessed. The semi-structured Role Resumption List was administered for social and vocational participation. Social cognition was measured with emotion recognition and Theory of Mind (ToM) tasks. A behavioral questionnaire was proxy-rated. Assessment of executive functioning included tests for planning and switching.
Results: Hierarchical multiple regression analyses revealed that social cognition and behavioral variables accounted for 31% extra variance in vocational participation and 18% extra variance in social participation, which was significantly over and above the amounts of variance explained by executive functioning, age and injury severity.
Conclusions: Our findings underline the value of adding measures of social cognition and behavior to regular predictors of social and vocational participation post-TBI. In particular, ToM and proxy-rated behavior influence daily functioning, making them important targets for rehabilitation.
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Transcutaneous Vagal Nerve Stimulation (tVNS) for episodic aggression in acquired or developmental neurodisability: Preliminary findings from a feasibility and single case experimental design pilot study
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Background and aims: Episodic aggressive behaviours are common among those with acquired brain injury (ABI) or neurodevelopmental disorders, possibly due to reduced vagal tone (as indicated by low high frequency heart rate variability, HF-HRV). This study aims to evaluate the feasibility and potential effectiveness of a novel application of a transcutaneous vagal nerve stimulation (tVNS) device for episodic aggression in people with ABI or neurodevelopmental disorders.
Methods: A single case ABCA design was employed (A baseline, B sham intervention, C active tVNS stimulation) with randomization of onset of intervention phase. Primary outcomes (target behaviours) were frequency and severity of aggressive incidents as self-recorded by participant daily diary. We report preliminary feasibility and outcome data from our fist participant (male, 49 years old, moderate-severe ABI) in this ongoing n-of-1 trial.
Results: Feasibility: There was missing diary data for 23/44 baseline phase days, and 13/43 sub-optimal tVNS stimulation days during the active tVNS phase. Participant feedback indicated problems with fitting the device, but other study procedures were acceptable.
Effectiveness: Visual inspection of graphed diary data and statistical analysis indicated that aggressive incidents were both less frequent and less severe during the active tVNS phase when compared with baseline (Kruskal-Wallis, aggression frequency and severity, $p < .01$).
Conclusion: We present very preliminary indication for the potential of tVNS for reduction of episodic aggression in one case of moderate-severe brain injury. Replication and extension of this finding is required, and consideration of device fitting and design may be required for application in these patient groups.
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SESSION 8

Comparing face-to-face and videoconference delivery of neuropsychological assessment following stroke
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Background and aims: Cognitive impairment occurs in up to 75% of people post-stroke. Prompt and comprehensive neuropsychological evaluation is considered best practice to identify impairments and is essential in informing rehabilitation planning. In Australia only 27% of hospitals that treat stroke patients have access to neuropsychological services, with access significantly lower (7%) in regional areas. Conducting neuropsychological assessments via videoconference could help address this service gap. The aim of this pilot study was to evaluate the equivalence of face-to-face and videoconference administration of 12 common neuropsychological tests.
Method: Twenty participants with a primary diagnosis of stroke (12 Male; M_{age}= 67.15, SD_{age}= 8.55; $M_{Months\ Since\ Stroke}$= 78.07, $SD_{Months\ Since\ Stroke}$= 45.91) completed two sessions on average 17.75 (SD= 13.79) days apart, face-to-face and via videoconference (counterbalanced administration). In each session, tests were completed in a standardised order.
Results: All tests demonstrated highly similar performance means across conditions, with no significant differences identified (all *p*'s >.001). The TOPF and COWAT demonstrated significant Intraclass Correlation Coefficients (ICCs) within the excellent range (>0.90). The majority of tests (WAIS-IV Block Design, Similarities, WMS-IV Visual Reproduction, BNT, RCFT, SDMT, TMT, Animal Fluency, Stroop Test) demonstrated significant ICCs within the good range (0.75-0.90). WAIS-IV Digit Span and the HVLT demonstrated lower ICCs (0.42 and >0.10, respectively).
Conclusions: Encouraging preliminary evidence suggests equivalence between face-to-face and videoconference assessment for the majority of tests, with further research in this area clearly warranted. Results from this study could help increase the currently limited access to necessary neuropsychological services following stroke.
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Developing ApplTree; A Smartphone Reminding App for People with Acquired Brain Injury

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Backgound and aims: Smartphone applications can be used to support prospective memory. However, memory, attention and judgement impairments may mean people with acquired brain injury (ABI) forget to enter or have difficulty entering reminders. ApplTree is a smartphone reminding app that uses push notifications (unsolicited prompting) to support people to initiate reminder setting, and a guided user interface (narrow/deep design) to support people to enter reminders.
Method: Narrow/deep user interface design was compared to the alternative broad/shallow design (typical of commercial reminding apps) in a user study with people with memory difficulties after ABI. Participants (n=15) were asked to use ApplTree to set example reminders on an S7 smartphone. Condition order (whether narrow/deep or broad/shallow UI was used first) was randomised. In a further study, four participants with ABI used the app over four months. They received unsolicited prompting for two months and no such prompting for two months. The condition order was randomised.
Results: Participants made significantly fewer mistakes (2.35 vs 2.96 mistakes per reminder, *d* = 0.82 (95%CI = 0.07 to 1.15), p = 0.03) when the narrow/deep user interface was used compared to the broad/shallow interface. On average, the unsolicited prompts doubled the number of reminders set per day (96% increase from 0.38 (range = 0.2 to 0.64) to 0.74 (range = 0.24 to 1.29) reminders per day).
Conclusions: Results highlights the potential impact of user-led design and indicate that narrow/deep user interface design and the unsolicited prompts features do improve usability of an assistive technology.
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Virtual reality (VR) in cognitive rehabilitation: feasibility and preference of immersive VR compared to non-immersive VR in stroke patients

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Background and aims: Neuropsychological paper-and-pencil tasks often fail to capture (mild) deficits that only occur in dynamic real-life situations, partly due to a lack of ecological validity and limitations in sensitivity. Virtual Reality (VR) offers the potential to develop an assessment to measure cognitive deficits in a real-life situation in a safe and controlled manner. However, feasibility issues need to be addressed in order for this technology to be effectively applied in cognitive rehabilitation. The aim of the current study is to examine the feasibility and preference of immersive

VR compared to non-immersive VR in stroke patients and healthy participants.
Method: In total, 14 stroke patients and 33 healthy participants completed a task in a virtual supermarket with two different VR setups: (1) a head mounted display (HMD); and (2) a computer monitor (CM). They were instructed to memorize three products and search for them. Afterwards, all participants completed a questionnaire concerning their experience and preference towards the VR-setups.
Results: Regarding feasibility, all patients completed the task with both VR set-ups except for one patient. In total, 57% of patients were able to find the products on their shopping list. Regarding preference, 66% of the healthy participants had no specific preference for HMD or CM, whereas 21% preferred HDM. In stroke patients, comparable results were found; 25% preferred HDM, 60% had no specific preference.
Conclusions: Preliminary results show that it is feasible to use a HMD to present VR simulations in stroke patients in the sub-acute phase post-stroke onset.
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Novel inventory for cognitive complaints after acquired brain injury
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Background and aims: Currently, there is no inventory that measures specifically cognitive restrictions during activities in daily life (ADL) in patients with acquired brain injury (ABI). We developed the *Cognitive Complaints after Acquired Brain Injury Inventory* (CCABII) aiming to measure cognitive complaints (across the memory, attention and executive domain) and the required amount of help and effort (range 0-4) during ADL (e.g. housekeeping, work, driving). Subsequently, cognitive complaints during ADL in patients with ABI were compared with healthy participants.
Method: The CCABII was created based on the results of a review of available literature, expert meetings with health professionals and cognitive neuroscientists, and semi-structured interviews with patients. The inventory was administered to patients (*n*=21) and healthy participants (*n*=71) to investigate the feasibility and prevalence of cognitive complaints during ADL.
Results: All patients were able to complete the CCABII. Preliminary results show that patients require more effort and help during all queried activities, especially within family life (*M*=2.60, *SD*=.86) compared to healthy participants (*M*=1.09, *SD*=.20). Also, patients reported more complaints in attention (*M*=2.41, *SD*=.74) followed by memory (*M*=2.17, *SD*=.64) and executive function (*M*=1.97, *SD*=.59) compared to healthy participants (attention (*M*=1.08, *SD*=.11); memory (*M*=1.17, *SD*=.21); executive function (*M*=1.03, *SD*=.07).
Conclusions: The CCABII is developed as a supportive inventory to be used during a neuropsychological assessment. The next step will be to relate the reported complaints measured by the CCABBI to the results of a neuropsychological assessment.
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Use of baseline cognitive profiles to inform and guide appropriate Cognitive Remediation and Functional skills interventions to address deficits in occupational performance in patients with schizophrenia
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Background and aims: The aim of this study is to establish the baseline of cognitive profiles of participants with schizophrenia aged 18-65 years and to use these to guide cognitive remediation and functional skills training. Based on research to date, cognitive remediation techniques have been shown to be reasonably successful in facilitating performance in patients suffering from a moderate degree of memory impairment. However, little is known about the transferability and generalisations of these gains to addressing everyday performance tasks that require attention, planning, problem-solving, mental flexibility and memory.
Method: Single Case Experimental Design (SCED) with ABA Design. The cognitive and functional baseline performance of participants and their occupational performance were assessed followed by collaborative goal setting. Baseline assessment outcomes guided the cognitive remediation training and functional skills as interventions to improve cognitive and independent living skills. The outcomes of the interventions were evaluated, compared and analysed in relation to results of the initial baseline assessments.
Results: Preliminary analysis of four participants indicate achievements for participants on goal attainment scaling and functional performance, but no significant changes in outcomes of the standardized cognitive batteries over a 12 weeks period.
Conclusions: There should be increased emphasis on cognitive rehabilitation approaches and associated functional skills training with patients with schizophrenia. Cognitive and occupational

performance profile assessments should become common practice for patients with cognitive deficits within the psychiatric care services. The profiles do not only indicate areas of deficits but of strengths, which when addressed may contribute to increased independence.

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SESSION 9

Memory rehabilitation plus usual care versus usual care alone in traumatic brain injury (ReMemBrIn): a multicentre, pragmatic cluster randomised controlled trial.

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Background and aims: People with traumatic brain injuries (TBIs) commonly report memory problems affecting their personal, social and professional lives. Group-based memory rehabilitation is offered to address these, but evidence of effectiveness is limited. We evaluated the clinical and cost-effectiveness of a group memory rehabilitation programme for people with TBI.
Method: Multicentre, pragmatic, randomised controlled trial in nine English sites. Participants were aged 18-69 years, with memory problems and TBI >3 months previously, able to travel to sessions, communicate in English, and give informed consent. Clusters of four to six participants were randomised to 10 weekly sessions of group memory rehabilitation plus usual care or usual care only on a 1:1 ratio. Participants and therapists were aware of allocation, but outcome assessors were blinded. The primary outcome was the patient-completed Everyday Memory Questionnaire (EMQ-p) at 6-months post-randomisation. The primary analysis used modified intention-to-treat, without imputation.
Results: We randomised 328 participants (171 intervention; 157 control). We found no clinically important difference on the EMQ-p between arms at 6-months (mean score 38·8 [SD 26.1] in intervention and 44·1 [SD 24·6] in control, adjusted difference in means -2·1, 95% CI -6·7 to 2·5, p=0·37). For secondary outcomes, differences favouring the intervention were observed at 6-months for memory and goal attainment. There were no differences in mood or quality of life. Memory rehabilitation was unlikely to be cost-effective. No safety concerns were raised.
Conclusions: This group-based memory rehabilitation programme is unlikely to lead to clinical benefits or be cost-effective for people with TBI.
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Computerised training of working memory (Cogmed RM) in children who have survived an acquired brain injury: A phase II randomised controlled trial

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Background/Aims: There is limited research investigating the potential benefits of working memory (WM) training for children with acquired brain injury (ABI). The primary aim of this study was to determine whether children with ABI showed increased WM capacity following Cogmed Working Memory Training (CWMT), and whether training gains were maintained after 6-months. The secondary aim was to investigate whether CWMT improved performance on academic measures.
Method: Sixty-nine children (8-16 years old) were screened for WM weaknesses. Of those, 50 completed the pre-training assessments and were randomised to either adaptive training or control (non-adaptive training). Forty-six (24 adaptive; 22 control) participants received the allocated intervention condition, 35 (17 adaptive; 18 control) completed immediate outcome assessments of WM, maths, and literacy, and 24 (10 adaptive; 14 control) completed 6-month outcome assessments.
Results: After accounting for differences in baseline performance, unexpectedly, the groups did not significantly differ in their performance on the WM measures immediately after training. As predicted, however, 6-months after training, participants in the adaptive condition performed significantly better than participants in the control condition on measures of visuo-spatial short-term memory, visuo-spatial WM, and verbal WM. There were no significant group differences in maths or literacy.
Conclusion: Study findings suggest that children with ABI need time to consolidate their learning after completing CWMT. The lack of transfer to academic abilities highlights the need to develop interventions that help children to generalise the skills learnt through training. The findings might also help guide clinical decision-making about whether to recommend CWMT.

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Increasing access to memory rehabilitation after stroke: Clinical and cost effectiveness of implementing memory skills groups into public health services

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Background and aims*:* Memory impairment is common post-stroke and affects functional outcomes, yet access to cognitive rehabilitation remains a significant unmet need for stroke survivors. Memory groups incorporating education, compensatory strategies, and lifestyle changes can improve everyday memory. We aimed to enhance clinical translation of such programs by evaluating the clinical and cost-effectiveness of embedding a memory skills group (MSG) into two Australian health services.
Method: Facilitators were trained to deliver the MSG, and sessions were video recorded to monitor treatment fidelity. Stroke patients with memory difficulties were recruited over a 4-month period. The primary participant outcome measure was attainment of memory-specific goals at 6-week follow-up, using Goal Attainment Scaling (GAS). GAS outcomes for patients receiving standard care were estimated by applying data from a similar cohort. A historical control design was used to compare costs of rehabilitation between MSG participation and standard care.
Results: MSG sessions were delivered with high fidelity and competence at both sites. Of the 19 stroke patients (63% male, median age 57 years) who completed the program, 88% achieved or exceeded their individual memory goals at 6-week follow-up, compared with 27% in standard care. Costs of rehabilitation were significantly lower for MSG participants than standard care.
Conclusions: There is preliminary evidence that implementation of the MSG into stroke services by trained facilitators can feasibly increase access to clinically effective and cost-effective memory rehabilitation. Wider clinical translation of memory skills groups into health services could help meet the needs of stroke survivors living with memory difficulties.
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Searching for effective components of cognitive rehabilitation for children and adolescents with acquired brain injury: A systematic review

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Background and aims. Cognitive rehabilitation is of great interest after paediatric acquired brain injury (ABI). Currently, there is a need for explicit identification of the active components in effective cognitive rehabilitation interventions. To that end, we systematically examined studies investigating cognitive rehabilitation interventions for children with ABI, while focusing on identifying effective components. Components were categorized as 1) metacognition and/or strategy use, 2) (computerized) drill-based exercises, and 3) external aids.
Method. The databases PubMed (including MEDLINE), PsycInfo, and CINAHL were searched until July 2017. Additionally, studies were identified through cross-referencing and by consulting experts in the field.
Results. Twenty articles describing 19 studies were included. Metacognition/strategy use trainings (five studies) mainly improved psychosocial functioning. Drill-based interventions (six studies) improved performance on tasks similar to training tasks. Interventions combining these two components (six studies) benefited cognitive and psychosocial functioning. External aids (two studies) improved everyday memory. No studies combined external aids with drill-based interventions or all three components.
Conclusions. Available evidence suggests that multi-component rehabilitation, e.g. combining metacognition/strategy use and drill-based training have potential improve both cognitive and

psychosocial functioning of children with ABI. Intervention setting and duration may play a role, with interventions seeming most promising when they are intensive, appropriate for the specific developmental stage of a child, and provided in a family-or peer-supported context. Conclusions should be interpreted in the light of small sample sizes of included studies, heterogeneity regarding outcome measures, intervention and therapist variables, and patient characteristics.
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SESSION 10

Cognitive bias modification for incarcerated young people with aggressive behaviour: assessing avenues for intervention

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Background and aims: A novel cognitive bias modification intervention has altered perception and aggressive behaviour previously in a sample of community-based young offenders (Penton-Voak et al., 2013). This psychological intervention uses repetitive training and feedback, and attempts to recalibrate hostile biases in the perception of ambiguous facial expressions. We ran a pilot and feasibility study to investigate the use of this intervention, with violent young people, in a UK prison setting.
Method: We used a mixed-methods design to assess feasibility success. We conducted background health and neuropsychology assessment and delivered the intervention with assistance of prison intervention staff (four times within one week). A linear stimuli sequence morphing from anger to happiness, calculates an individual balance point used to provide manipulated feedback, encouraging positive perception. Aggressive behaviour was recorded using staff and self-rated diaries.
Results: We recruited eleven participants from a young offender institute in HMP Parc (UK). Whilst there were insufficient eligible service users to obtain the desired sample size, all completed four sessions of the training within a week, four weeks of behavioural diaries, with no study attrition. Qualitative interviews suggested the intervention was easy to use and well-received by participants and staff, with the drawback that it was repetitive, causing some to disengage with repeated administrations.
Conclusions: This informs us that this intervention is appropriate for use within a prison setting. Participant's engaged well with the interactive element and the tablet technology, and staff required minimal training and integrated the intervention easily within the current programmes.
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A one-hour group psychoeducation session increases cognitive compensatory strategy use in an alcohol and other drug treatment setting.

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Background and aims: Cognitive impairment (CI) in alcohol and other drug (AOD) treatment settings is prevalent and a significant predictor of poor AOD treatment outcomes. However, there are few neuropsychological interventions offered within AOD services, likely due to limited resources to offer such interventions. It was the aim of the current study to develop and evaluate a simple psychoeducation intervention regarding CI for AOD treatment settings.
Method: Participants were n=50 clients of a residential AOD therapeutic community. Twenty-seven participants were randomly allocated to the intervention group and the remaining n=23 participants received treatment-as-usual. The intervention group received an information booklet and a one-hour group session discussing the material in the booklet, which included information about CI and a list of 46 CI strategies. The intervention group rated how many of the strategies they used in the previous week and how many they intended to use in the future. The control group were given the information booklet five weeks later (follow-up) and asked to make the same ratings. Number of strategies used in the previous week was compared for the intervention group at baseline and follow-up.
Results: There were no differences between the groups in baseline use of strategies, however, the intervention group reported a greater intention to use the strategies in the future. The intervention group used, on average, four more strategies five weeks after the brief intervention.
Conclusions: A single psychoeducation session and provision of an information booklet is likely to increase CI strategy use within AOD treatment settings.
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Re-positioning the visual scan path to emotional facial expressions following severe traumatic brain injury: Evaluation of a training intervention using a single case experimental design

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Background and Aims: Impaired recognition of facial affect is one of the most consistently reported findings following a traumatic brain injury (TBI). Despite this deficit being reported for more than three decades, only a handful of studies have investigated ways to improve it following TBI. None have used visual scanning methods. We evaluated the impact of a technique designed to normalise visual scanning in a patient with impaired facial emotion recognition following severe TBI.
Method: A single case experimental design with follow-up was used. BR was a 35 year-old male who had sustained a severe TBI 6 years prior. Stimuli were coloured face photographs from the Radboud Faces Database (Langer et al., 2010; used with permission). Universal facial expressions of emotion were presented on the T120 binocular eye tracker (Tobii Technology, Stockholm, Sweden). Total study duration was 10-weeks. Intervention (5- weeks) used a verbal instruction to orient BR's visual attention to salient facial features when he made a labelling error.
Results: BR's labelling accuracy significantly improved (proportion of non-overlapping corrected data, PNCD=100%). At baseline, his visual scan path was mostly confined to the right hemifield. Following intervention, he made significantly more fixations to the left hemifield (PNCD=100%), and this change was sustained at follow-up (PNCD=100%).
Conclusions: Re-orienting visual attention to salient facial features appears a promising approach to improving facial affect recognition in severe TBI, particularly when a person presents with vertical midline shift syndrome.
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Socratic feedback to increase awareness of deficits in patients with acquired brain injury: pilot results and design of a randomized controlled trial

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Background and aims: The Socratic feedback method helps therapists to use questions to foster patients' critical thinking and active engagement in treatment. In a pilot study we investigated the effectiveness and feasibility of a Socratic feedback programme to improve awareness of deficits in patients with acquired brain injury (ABI).
Method: Four patients with awareness problems after ABI who were admitted to inpatient rehabilitation participated in the pilot study. A series of single-case experimental design studies with random intervention starting points (A-B+maintenance design) were used. Main measures were rate of trainer-feedback and self-control behaviour on everyday tasks, Patient Competency Rating Scale (PCRS), Self-Regulating Skills Interview (SRSI), Hospital Anxiety and Depression scale (HADS).
Results: After the intervention all patients needed less trainer-feedback; change was significant for three out of four patients. One patient improved on overt self-corrective behaviour. SRSI scored improved in all patients (medium to strong effect size), and PCRS discrepancy scores decreased in two patients (medium and strong effect size). The feasibility of the programme was rated 9 out of 10.
Conclusions: The Socratic feedback method is a promising intervention for improving awareness of deficits in patients with ABI. Controlled studies with larger populations are needed to draw more solid conclusions about the effect of this method. The design and first results of a randomized controlled trial will be presented.
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Is there a negative effect of early discharge from rehabilitation following acquired brain injury?

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Background and Aims: The effectiveness of acquired brain injury rehabilitation is well evidenced (Cicerone et al., 2008). However, fewer studies have investigated the potential detrimental effect of unplanned discharges. The aim of this study was to explore this question.
Method: A retrospective analysis was conducted on programme evaluation data of 84 individuals, 42 who competed the full rehabilitation programme and 42 who were discharged earlier than planned. The two groups were matched for age gender, diagnosis and level of disability on admission (Mayo-Portland Adaptability Inventory-4, MPAI).

Results: Although the group discharged earlier showed some improvements, the group who completed the programme had better outcomes on adjustment ($p < .01$) following rehabilitation. The differences between groups for abilities and participation approached but failed to reach statistical significance. However, the proportion of individuals who achieved minimal clinically significant improvements (Malec et al., 2017) was higher in the rehabilitation group for the three areas measured ($p < .05$).
Conclusions: These results illustrate the methodological challenges faced when using group designs to investigate the positive effects of acquired brain injury rehabilitation, including the confound introduced by the heterogeneity in the population, the difficulty in identifying truly comparable groups (McMillan, 2013), and the effects of spontaneous recovery. Further research of indicators of clinically important change of existing measures, and a recommendation to report change on those indices in future studies, in addition to standard statistical indicators, may partly address some of the difficulties in evidencing the true benefits of rehabilitation.
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Strategy training results in better self-reported executive functioning than computerised cognitive training in a residential alcohol and other drug rehabilitation setting.
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Background and aims: Despite a high prevalence and significant impact of executive dysfunction in alcohol and other drug (AOD) rehabilitation, research into effective neuropsychological interventions is limited. A pilot study (Marceau, Berry, Lunn, Kelly, & Solowij, 2017) evaluating the effectiveness of a cognitive remediation program focusing on executive functioning and incorporating both strategy training (ST) and computerised cognitive training (CCT) components reported medium to large effect sizes in regards to improved executive functioning. Given the low feasibility of delivering this intensive 24-hour program within most residential alcohol and drug (AOD) rehabilitation facilities, determining the efficacy of a 12-hour version of the program was warranted. The aim of the current study was to investigate the effects of the two separable components of the program: i) ST and ii) CCT, on BRIEF-A scores. It was predicted that BRIEF-A gains would be greater for the ST group.
Method: Participants were n=41 residents of a female-only therapeutic community who were randomly allocated to either the ST or CCT groups. Participants undertook the BRIEF-A prior to intervention, following the intervention (4 weeks later) and 3 months post intervention. Participants in each group attended three one-hour sessions per week for 4 weeks, in conjunction with treatment as usual.
Results: Participants in the ST group showed greater gains than the CCT group on the BRIEF-A following the intervention and at follow-up.
Conclusions: The 12-hour modified ST-based cognitive remediation program shows promise as an effective intervention for improving self-reported executive functioning in AOD treatment settings.
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SESSION 11

MindMate: A Single Case Experimental Design Study of a Reminder System for People with Dementia
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Background and aims: Prospective memory difficulties are commonly reported in people with dementia. The evidence supporting the use of prospective memory devices among the dementia population remains limited. MindMate is a recently developed smart device application that aims to support individuals with a diagnosis of dementia, improving self-management skills and quality of life. This study investigated the effectiveness and usability of the reminder tool on the MindMate application as a memory aid.
Method: Three participants with a diagnosis of mild Alzheimer's disease were recruited to this multiple baseline single case experimental design study. Partners of the participants recorded their performance on everyday tasks on weekly monitoring forms during a baseline phase (for between five and seven weeks) and during the intervention phase (five weeks) whilst using MindMate.
Results Two participants successfully used the app throughout the intervention weeks and gave positive usability ratings. Tau-U analysis showed a significant increase in memory performance between baseline and intervention phase (Tau-U = 1, 0.94, $p<0.01$). A third participant withdrew from the intervention phase following difficulties turning off the reminders and frustrations with the reminder alert sound.
Conclusions The use of the MindMate app was feasible for people with dementia in the community. It was effective compared to practice as usual, with participants reporting intentions to use in the future. Limitations and implications for future research are discussed.
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Neuropsychological Assessment and Driving Simulator as Predictors of Ability to Drive in Acquired Brain Injury Patients

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Background and Aims: Acquired brain injury (ABI) often causes inability to drive due to neuropsychological impairment. We aimed to identify the neuropsychological and simulator-derived variables that best predict ability to drive in ABI-patients without any physical or sensory impairment preventing them from driving.
Method: Sixty-one ABI patients and 53 controls were recruited. ABI patients were divided in two groups according to the result on the on-drive test, which was the outcome variable: able-to-drive ABI (d-ABI; n=39) and unable-to-drive ABI subjects (nd-ABI; n=22). ABI subjects underwent a comprehensive neuropsychological assessment, which included measures of Speed Processing, Attention, Working Memory, Executive Function, Learning and Memory, and motor coordination. The driving simulator exam was performed by patients and controls, and consisted on completing an urban-highway-mountainroad-urban circuit.
Results: ANOVA showed that control subjects outperformed ABI patients in most simulator variables, and the d-ABI subgroup showed a better performance than the nd-ABI subgroup in most simulator and neuropsychological variables, specifically measures of attention, processing speed, memory, and motor coordination ($p<0.05$). The best discriminating model between d-ABI and nd-ABI subjects resulting from binary logistic regression conducted only with neuropsychological variables was the combination of TMT-B, HVLT long-term free recall, and motor coordination (79,3% accuracy). Simulator-derived variables alone reached 70.7% accuracy; and combination of neuropsychological and simulator variables accurately discriminated 82.1%. The TMT-B T-score reached 71.2% accuracy.
Conclusions: Neuropsychological assessment may strongly contribute to provide reliable feedback to ABI patients about their ability to drive, although specialized on-road testing is recommended if any doubt.
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Simulated driving: the added value of dynamic testing in the assessment of visuo-spatial neglect after stroke

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Background and aims: Visuo-spatial neglect (VSN) is generally assessed with neuropsychological paper-and-pencil tasks, which are often not sensitive enough to detect mild and/or well-compensated VSN. It is of utmost importance to develop dynamic tasks, resembling the dynamics of daily living. Here, a *simulated driving task* was used to assess (1) differences in performance (i.e. position on the road and magnitude of sway) between patients with VSN (n=52; VSN+), without VSN (n=53; VSN-), recovered VSN (n=10; rVSN), and healthy control participants (n=21); (2) the relation between average position and VSN severity; and (3) its diagnostic accuracy in relation to traditional VSN tasks.
Method: Patients admitted for inpatient rehabilitation were tested with a cancellation task, the Catherine Bergego Scale, and the simulated driving task.
Results: VSN+ patients deviated more regarding position on the road compared to VSN- patients and healthy controls. The deviation was larger in patients with more severe VSN. The average position of rVSN patients was of intermediary level between VSN+ and VSN- patients. Right-sided VSN was not well detected, probably due to the asymmetric layout of the task. Regarding diagnostic accuracy, 30% of rVSN patients and 5.7% of VSN- patients showed abnormal performance on the simulated driving task. In these groups, no VSN was detected on traditional tasks.
Conclusions: Dynamic tasks can be easily added to the existing clinical pathway to detect mild and/or recovered VSN. A symmetric design should be used when designing novel tasks to assess left- and right-sided VSN.
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Acquired brain injury management using Brain-in-Hand to improve functional outcomes and independence: qualitative results from a series of case studies

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Background: Over one million people live with the long-term consequences of acquired brain injury (ABI). Many smart technologies exist to aid rehabilitation, but there is limited technology available to support self-management and functional outcomes. Brain-in-Hand (BiH) is a smartphone application designed to

address psychological problems, and encourage behaviour monitoring and change.
Methods: The study aimed to evaluate ABI patient and healthcare professional perspectives and experiences of BiH after 6 months' use. Twelve semi-structured interviews were conducted. Data were collected on the acceptability of BiH, and barriers/facilitators to use. These were analysed thematically, using a framework based on the Behaviour Change Wheel (BCW) and International Classification of Functioning, Disability and Health (ICF).
Results: An overarching theme of context (personal/environmental factors) was identified as a key barrier/facilitator to BiH use and effectiveness. Within this, the four main themes were: (1) insight/self-awareness following injury and its impact on BiH use; (2) patient support and training; (3) motivation to change behaviours and use BiH; (4) barriers/facilitators to technology use and effectiveness. Having appropriate support (set up, monitoring and goal identification/revision), motivation and self-awareness appeared to facilitate BiH use.
Conclusions: Personal and environmental factors need to be considered when implementing BiH, or similar technology interventions. Context appears to play a pivotal role in the effectiveness and long term use of BiH. It is important to identify key barriers and facilitators early in the implementation process, to guide the necessary development of BiH for ABI, and its wider applicability to mental health and long-term conditions.
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SESSION 12

Cognitive rehabilitation following traumatic brain injury: A survey of current practice in Australia and internationally
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Background and Objective: As cognitive impairments represent the greatest impediment to participation following traumatic brain injury (TBI), cognitive rehabilitation is vital. Several sets of guidelines for cognitive rehabilitation have been published, including INCOG in 2014; however, little is known about current practice by therapists working with individuals with TBI. This study aimed to characterise current cognitive rehabilitation practices via an online survey of therapists engaged in rehabilitation in individuals with TBI.
Method: The 221 respondents from Australia and 144 from other countries were predominantly occupational therapists, neuropsychologists and speech pathologists with an average 9-13 years of clinical experience in cognitive rehabilitation and TBI. The survey documented demographic information, current practice of cognitive rehabilitation, resources used to inform cognitive rehabilitation, and reflections on cognitive rehabilitation provided.
Results: Cognitive retraining and compensatory strategies were the most commonly identified approaches used in cognitive rehabilitation. Memory deficits were most frequently addressed, while executive impairments were seen as most challenging to work with. Executive functioning was mostly targeted by retraining, whereas memory was targeted with compensatory strategies. Attentional problems were less frequently addressed in Australia. Client self-awareness, family involvement, team collaboration and goal-setting were seen as important ingredients for success.
Conclusion: Clinical practice of cognitive rehabilitation is broadly consistent with guidelines. However, addressing the impediments to its delivery is important to enhance quality of life for individuals with TBI.
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Telehealth delivery of memory rehabilitation following stroke: Is it as effective as face-to-face programs?
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Background and aims: Memory difficulties affect around half of stroke survivors, impacting functional outcomes. Memory skills groups training compensatory strategies have been found to improve everyday memory function. Telehealth delivery of memory rehabilitation may overcome barriers to group participation including mobility issues and geographic location; however, evidence of equivalent effectiveness is needed.
Method: A memory skills group program with previously established effectiveness was adapted for individual delivery, via both face-to-face (F2F) and telehealth (internet-enabled videoconferencing). Participants with stroke (*N*=35; 61% male; mean age 58.6years) were allocated into telehealth (*N*=23) or individual F2F (*N*=12) modes. Achievement of personalised, memory-related goals using Goal Attainment Scaling (GAS: the primary outcome), and objective and subjective measures of memory functioning, were monitored pre- and post-intervention, and at six-week follow-up. Individual telehealth and F2F modes were compared to group F2F delivery participants from a previous comparable

cohort, using non-inferiority analyses. Margins were specified according to previous research indicating clinically meaningful units of change for each measure.
Results: Non-inferiority to group F2F delivery was established for individual telehealth and F2F intervention modes on GAS, all objective measures, and most subjective measures, at both post-intervention and follow-up. At six-week follow-up, at least one personal memory goal was achieved by 93.8% of telehealth and 100% of individual F2F participants, compared with 72.2% of group program participants.
Conclusions: Individual F2F and telehealth delivery of memory rehabilitation appear comparable in effectiveness to group-based F2F delivery. These findings have significant implications for improving access to effective memory rehabilitation for survivors of stroke.
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Utilising telehealth to deliver neuropsychological rehabilitation services to rural patients with stroke: development and evaluation of a novel pilot program
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Background and aims: Over two-thirds of survivors of stroke exhibit cognitive and/or mood impairment, yet only 6% of Australian rural inpatients with stroke have access to psychological services. The aim of this pilot program was to develop, implement and evaluate a novel teleneuropsychology rehabilitation service.
Method: Neuropsychology services were provided to a rural inpatient stroke rehabilitation unit from a metropolitan clinic hub, via telehealth, 1 day per week over a 12-month period. Patients received comprehensive assessment of cognition, mood and behaviour in addition to cognitive rehabilitation and psychological interventions. An education program and consultation service to assist clinicians with management of patient neuropsychological impairments was also provided.
Results: Compared to a pre-implementation control period, screening rates improved significantly from 42% to 90% for cognition and 19% to 88% for mood during teleneuropsychology implementation. Provision of specialist neuropsychological services rose from 0% to 71% for assessment and 0% to 61% for therapy. Setting of interdisciplinary goals increased from 23% to 43% relating to cognition and 10% to 55% for mood. Median waiting times for neuropsychology consultation was 7 days. 89% of patients and 95% of clinicians reported being satisfied with their teleneuropsychology consultation. Preliminary economic simulations indicate teleneuropsychology services can be delivered for approximately half the cost of an equivalent counterfactual face-to-face model of service provision.
Conclusions: Preliminary data provide initial support for the feasibility, acceptability, effectiveness and efficiency for this potentially world-first teleneuropsychology rehabilitation service. Key enablers and barriers to teleneuropsychology implementation and delivery will be discussed.
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POSTERS - MONDAY

Cognitive impairments after glioma resection and associated brain regions: evidence from VLSM
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Background and aims: Status of cognitive functions of glioma patients after surgical operation affects quality of life of them. In glioma patients, although it is known that cognitive functions are recovered after surgical operation, which cognitive impairments are vulnerable to impairments after brain damage and associated brain regions were not illuminated. In this study, we investigated change of cognitive functions of glioma patients pre- and post-operations, and associated the brain regions.
Methods: 33 patients with glioma in the left hemisphere (17 females and 16 males; Mean age = 41.5 years old, SD=9.8) participated. Seven cognitive tasks selected from five cognitive domains such as verbal memory, verbal fluency, attention, psychomotor processing speed, inhibitive function, concept shifting and working memory were administered to them twice, pre- and 6 months post-surgery.
Results: Z scores for 6month's raw score of cognitive task were calculated based on raw scores of each task in pre-operation. Voxel-based lesion symptom mapping analyses were administered to reveal brain regions associated with significant lower z scores of each cognitive task. As a result, for memory task, the medial temporal gyrus including hippocampus and the posterior parietal regions were revealed. For verbal fluency, two regions, the middle temporal and the middle frontal gyri were revealed, and for psychomotor processing speed, the posterior temporal gyri, and for inhibitive function, the medial frontal cortex were revealed.

Conclusions: Our findings help to elucidate cognitive functions that could remain impaired following tumor resection, along with related brain regions involved in cognitive performance.
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Adjustment post-stroke and aphasia: protocol for the SUpporting well-being through PEeR-Befriending (SUPERB trial)
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Background and aims: Stroke and aphasia can have a profound impact on people's lives. There is a need to systematically evaluate interventions that aim to improve psychosocial wellbeing for people with stroke and aphasia, who are often excluded from stroke studies. SUPERB will evaluate the feasibility of a study on the clinical and cost-effectiveness of one-to-one peer befriending for people with aphasia post-stroke and provide the necessary parameters to plan a definitive trial.
Methods: Design: Single blind, mixed methods, parallel group phase II RCT comparing peer-befriending vs. usual care, starting at discharge from hospital. The design has been informed by the MRC framework for complex interventions. The study will deliver on four work packages: development phase; RCT; qualitative study; economic evaluation. Participants (n=60) will be assessed three times up to 10 months post-randomisation
Results: We will assess feasibility of recruitment to a definitive trial (proportion screened who meet criteria; proportion who consent; rate of consent); participant, significant other, peer befriender views on acceptability of procedures (qualitative study); number of missing/incomplete data on outcome measures; attrition rate at follow-up; potential value of conducting main trial using value of information analysis (economic evaluation); description of usual care; intervention fidelity of peer-befriending. Patient-reported outcomes will include mood, confidence, participation, social support, quality of life.
Conclusion: This study will provide evidence for one-to-one peer befriending; and provide the necessary parameters and information to plan a definitive trial. Peer befriending is worth exploring as it has the potential, pending positive outcomes of a definitive trial, to improve service provision for people with stroke and aphasia.

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The role of early intervention in improving the level of activities and participation in youths after mild traumatic brain injury: a scoping review
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Background and aims. Most children recover completely after a mild traumatic brain injury (MTBI), but 6 to 43% of children experience post-concussive symptoms (PCS) up to 6 months after the injury and beyond. Persistent physical, cognitive, emotional and behavioral symptoms are found. These can lead to limitations in activities and participation such as returning to school and play. In this review, clinical studies investigating interventions directed at improving the level of activities and participation in children and adolescents with MTBI are summarized, and clinical recommendations and directions for the future are provided.
Method. A scoping review was conducted. Clinical studies investigating an intervention for children with MTBI were evaluated in the domains of activities and participation according to the framework of the International Classification of Functioning (ICF).
Results. Most interventions are designed to reduce symptoms such as headaches, cognitive problems or other PCS, but or not specifically directed at improving the level of activities and participation. Combining information and education with reassurance seems effective in preventing symptoms. Reassurance can be optimized by including a follow-up consultation, addressing individual concerns. Family problem-solving interventions improve child and family functioning but have not been separately investigated for children with MTBI. Graded activity procedures seem effective in supporting return to school, sports and play.
Conclusions. Information and education about the injury and its consequences are recommended, combined with additional follow-up consultation, including individualized advice and reassurance. Interventions should be family-centred and, ideally, return to activity and participation should be graded and done step-by-step.
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Understanding the Experience of Compensatory Rehabilitation and Computerised-Cognitive Memory Training: A Qualitative Study of Stroke Survivors

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Background and aims: Up to one-third of stroke survivors will experience ongoing memory impairment. Memory skills groups (MSG) for compensatory strategy training, and computerised-cognitive training (CCT), are two rehabilitation methods available to improve memory function, however there is mixed evidence regarding their effectiveness. The aim of this study was to explore and contrast the qualitative experiences of adult stroke survivors following participation in MSG or CCT.
Methods: 20 stroke survivors (M_{age} = 61.90, *SD* = 10.48) who received six-weeks MSG training (*n* = 10) or CCT (*Lumosity*™, *n* = 10) completed in-depth semi-structured interviews. Data collected was analysed thematically adopting a critical realist approach.
Results: Six themes emerged from participants' reports of their experiences: 1) Facilitators and barriers to intervention engagement, 2) Improving knowledge and understanding, 3) Connecting with others, 4) Perception of the intervention, 5) Impact on everyday memory and 6) Impact on emotions and sense of purpose. Improvements to knowledge and subjective memory were reported in both MSG and CCT groups; however, barriers and negative perceptions were more pronounced following CCT. MSG participants reported learning and sharing with similar others as important to the experience and described everyday memory improvements. By contrast, CCT participants reported frustration associated with game-specific characteristics and did not report everyday memory improvements.
Conclusions: Most participants reported satisfaction and value in their experience, irrespective of the intervention received. Qualitative accounts do however suggest a more engaging and meaningful experience with MSG rehabilitation. These findings will be used to guide the development of future memory rehabilitation programs.
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The impact of executive functioning on attention to threat in an adult traumatic brain injury population: an experimental group design

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Background and aims: Research has found that individual differences in executive function (EF) impact selective attention to threat (Williams, Suchy and Rau, 2009). The aim of this study was to test the contribution of EF to selective attention to threat by exploring the difference between a healthy controls and individuals who have sustained a traumatic brain injury (TBI) with EF difficulties.
Method: An experimental group design was used to compare reaction times of people with TBI (n = 18) and healthy controls (n = 34) to threat and neutral word stimuli, using the dot probe task running on a laptop. Participants were recruited from inpatient behavioural rehabilitation units and community settings, and completed measures of general intellectual functioning, EF, emotional symptoms and the dot-probe task of selective attention to threat.
Results: There was no significant difference on selective attention to threat, nor was there an interaction between group and condition, indicating that the presence of EF difficulties did not significantly contribute to selective attention to threat.
Conclusions: The results did not support the hypotheses. Study limitations include small sample size and possible effect of general cognitive functioning or slow speed of processing on task performance. This suggests further investigation of EF processes and selective attention to threat using a larger sample of people with less impairment, and more sensitive paradigms may be required.
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Finding a new balance in life: identifying (health) care needs in the chronic phase following acquired brain injury

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Background and aims: Long-term consequences of acquired brain injury (ABI) are frequent and mostly psychosocial, yet care in the chronic phase is an under-addressed issue. This study aims to identify care

needs of people with ABI and their partners, as a step towards patient-centred care in the chronic phase.
Methods: Four patient (n=18) and three partner (n=19) focus groups were held, audio- and videotaped, transcribed verbatim and analysed using inductive content analysis.
Results: Care needs were expressed at different levels – intrapersonal, family, health care and societal – and addressed in three themes: 1) Adjustment to changes, including the process of awareness, acceptance and learning to deal with the lasting changes in daily life; 2) Empathy and understanding from others, such as family, friends, professionals, institutions and society; 3) Timely and individualised care, involving patient information, support at discharge home, seeking/finding help, peer support, and support for family members. Patients expressed the need for personalised care and acknowledgement of small improvements, while the need for respite and a case manager emerged for partners specifically.
Conclusions: The results show that in the chronic phase, patients and partners need to find a new balance in life. This study provides new insights to better support this process. Individualised care is required to address specific needs at different levels, including personalised and well-timed information provision, continuation of practical and emotional support after discharge from hospital/rehabilitation centre, use of patient-experts as co-therapists and more transparency on available care, as well as increased societal knowledge on ABI.
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Acceptance and Commitment Therapy adapted for people with acquired brain injury
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Background and aims: In order to test the effectiveness of Acceptance and Commitment Therapy (ACT) for depression and anxiety after acquired brain injury (ABI), a treatment protocol was developed. This ACT treatment protocol is adapted for the specific (e.g. cognitive) deficits and needs of ABI patients.
Method: A literature review was conducted to get an overview of adopted and suggested adjustments to psychotherapy and ACT for people with ABI. Furthermore, an expert panel was formed and discussion meetings were organized. ACT-therapists who have experience in working with ABI patients, were asked how to adjust ACT.
Results: These methods have led to several ways of adapting ACT-treatment for people with ABI. General adaptations: sessions should be shorter and individual with structure and repetition. Therapy material should be as concrete and concise as possible. Summaries should be provided at the end of the sessions. Sessions should take place weekly at the start and every two weeks later on.
ACT specific adaptations: patients should be presented with one metaphor at the time which can be used to demonstrate multiple core components. These should be visualized and demonstrated during the therapy sessions. The metaphors should be concrete and relevant to the situation of the patient. Mindfulness exercises should be shorter and purposeful behavior stimulated in small steps.
Conclusions: The effectiveness of this protocol will be tested in a multicenter randomized trial examining the effectiveness of ACT for ABI. The content of the adapted ACT-treatment and the design of this study will be presented.
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Moderating variables in medical help-seeking following traumatic brain injuries
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Background and aims: Traumatic Brain Injury (TBI) is a major cause of disability and death around the world. There are significant long-term (cognitive, behavioural, social) effects associated with TBI, which are compounded in resource-poor countries like South Africa. However, many people still do not seek medical help post-TBI. Much of the current literature on medical help-seeking behaviours post-TBI stems from high-income countries. Therefore, this study aims to better understand what influences people's decisions to seek medical help post-TBI in a South African context.
Methods: An adapted Survey of Common Misconceptions about Head Injury and Recovery (CM-TBI) was administered to 384 first-year psychology students at the University of Cape Town. We used descriptive analyses to describe current head injury aetiology, symptomatology and beliefs regarding injury and management and to compare the results of the current study against those reported in a previous local study of a similar basis.
Results: Preliminary results indicate that having had a head injury does not actually predict correct knowledge and attitudes towards (mild) head injuries. Among participants who did not seek care post-injury, more than 70% thought that their injuries were not serious enough to warrant such care. Misconceptions were present in each of the seven categories of the CM-TBI questionnaire, with most misconceptions

shown on the questions relating to amnesia and unconsciousness.
Conclusion: Identifying misconceptions of this nature in a South African context is necessary to inform interventions that may seek to provide appropriate psychoeducation, which may in turn facilitate optimal help-seeking behaviours.
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#TwentyFirstCenturyRecovery: Exploring self-management, via Wellness Recovery Action Planning (WRAP), with Acquired Brain Injury and Mental Health cohorts

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Background and Aims: The concept of recovery has taken on new meanings in recent years. Traditional emphasis on diagnosis and repair, has been steadily replaced with developing and maintaining psychological wellness. To date, Cognitive-behavioural therapy (CBT) has been commonly used in the treatment of low mood, however, in the case of Acquired Brain Injury (ABI), cognitive impairment and insight difficulties may compromise the use of CBT. This study examined Wellness Recovery Action Planning (WRAP), a self directed, mutual support system, as a possible intervention in mental health management.
Method: Using self report questionnaires, a between groups case cohort design was employed, to examine and compare the effects of WRAP with ABI and Mental Health cohorts, and their respective wait list control counterparts (n = 105).
Results: Results yielded impressive outcomes for the WRAP intervention. This was the case for both ABI and Mental Health participants, not otherwise observed with wait-list controls. Cohen's d observed medium effect sizes in the reduction of Anxiety and Depression for both the ABI (Cohen's d for Anxiety -0.5, Cohen's d for Depressionn-0.7) and Mental Health cohorts (Cohen's d for Anxiety -0.7, Cohen's d for Depression -0.6).
Conclusion: Results demonstrate the potential of WRAP in offering a fresh, twenty-first century perspective in the functional management of mental health. Prior to this study, there was no evidence of WRAP having been trialed within the context of ABI. Based on the results indicated, it may be a worthy contender in management of mental health.
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P.O.P! – Power Over Pain: Pain Management Pilot Study of Patients with Moderate to Severe Brain Injuries and Neurological Conditions

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Background and aims: A significant amount of patients experience high levels of pain post brain injury. Despite research illustrating the positive effect of CBT for post-traumatic headaches, there still appears to be a gap in the research regarding therapeutic treatment programs for pain with no evidence of group interventions. Therefore, the aim of the study was to develop a pain management group approach for patients with moderate to severe brain injuries and neurological conditions.
Method: Five inpatients at a neurorehabilitation hospital attended an 8 week adapted CBT based group program including weekly 1:1 follow up sessions. The groups focused on relaxation techniques and basic cognitive restructuring. Pre and post pain and mood related measures were completed to assess for any quantitative changes in pain. The data was also explored qualitatively using thematic analysis.
Results: Using thematic analysis three main themes emerged evidencing the benefit of this pain management approach. These were, 1 – Peer support and learning from others, 2 – Awareness and acceptance of pain, 3 – Perceived control. Small sample size meant that quantitative analysis was not feasible.
Conclusion: This study provided us with an insight into patients' pain perceptions highlighting the beneficial nature of a group based pain management program for patients with moderate to severe brain injuries. We hope to deliver this group again with the aim of gathering more data for analysis.
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'Putting a New Perspective on Life': A Qualitative Grounded Theory of Posttraumatic Growth Following Acquired Brain Injury

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Background and aims: Tedeschi and Calhourn (1998) defined PTG as the positive psychological change that a person may experience following the struggle with the aftermath of a traumatic event. Yet, the concept of PTG has only more recently started to attract more attention within the field of ABI research. Therefore, further qualitative enquiry is needed to fully understand an individual's own personal process of growth and positive emotional outcome following ABI.
Method: Social constructionist grounded theory using semi-structured interviews. Participants were 10 people with ABI (6 TBI, 1 infection causing abscess, 1 hematoma, and 2 hemorrhage; mean age 49.9 years; 6 male; mean 15.6 years since injury), recruited from a charitable community support service.

Results: The results from this study suggest that the participants went through an iterative and fluid process in the development of PTG. The main themes are 'living with a life changing injury', 'trying to "beat it" and acceptance', 'identifying with a new you and others', and 'meaningful positive change'.
Conclusions: The process developed in this analysis suggests that acceptance of losses and changes, and meeting others with an ABI, are both important for achieving PTG and can lead to the view that there is "life after brain injury". The role of social relationships may be important to consider when people are going through rehabilitation. It may also be important to consider the point a person is along this process and how best services can facilitate PTG following ABI.
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Adapting assessment procedures for a difficult to test man with unilateral neglect
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Background: A 67 year old man, LT, with a right hemisphere haemorrhagic stroke was referred for neuropsychology assessment. One of his main problems was unilateral neglect however he proved resistant to formal testing. Procedures needed to be modified to persuade him to participate.
Aim: To illustrate how standardised procedures needed to be adapted to persuade a difficult to test man with neglect to participate.
Method: LT's neglect was assessed with subtests from the BIT. Initially, he refused to complete these tests as he felt they were not relevant to him. As a keen Chelsea supporter, the star cancellation subtest was adapted using small and large Chelsea football logos. The task was the same; to cancel the small logos only. LT was happy to attempt the adapted version of the task. This version was then used during the anchoring intervention.
LT was also assessed for personal neglect using the "fluff test" and far neglect using a projected version of the adapted star cancellation task.
Results: Near neglect was established with the adapted test. LT also showed far neglect however this was less prominent than the near neglect. There was no evidence of personal neglect. Through completing the anchoring intervention with the adapted task, LT's neglect improved. In addition, after establishing LT had near neglect his insight improved and this impacted on his adherence to therapy and rehabilitation.
Conclusion: Adapting the assessment demonstrates the importance of using an innovative approach to assess patients.
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Need for spatial exploration training in Cervical Dystonia?
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Background and aims: Cervical Dystonia (CD) is a neurological disorder characterised by involuntary neck muscle contractions that may lead to abnormal head and neck postures. The aim of this study was to investigate the consequences of an abnormal lateral head posture on spatial exploration while walking. The hypothesis was that lateral head rotations affect the detection of stimuli placed on the contralateral space in patients with CD.
Method: Ten patients with CD and 11 age-matched healthy controls walked a designated circular course in clockwise and anti-clockwise directions (counterbalanced order). While walking, the participants were asked to locate coloured visual targets placed along the walls of the course. There were 20 left-sided and 20 right-sided targets and the dependent measure was a spatial asymmetry score calculated as right-sided minus left-sided target omissions.
Results: The CD patients did not differ from the controls on a group level ($t=0.86$, $p>0.4$). Inspection of the data revealed that one patient with a head rotation towards the left-side failed to detect most right-sided targets (asymmetry score of -13). Bayesian single case statistics confirmed that this asymmetry was significantly different from the controls (Bayesian $p <0.002$).
Conclusions: Most CD patients adequately compensated for their lateral head rotations and did not demonstrate difficulties in attending to the contralateral side while walking. However, one patient showed severe signs of neglect. Our finding warrants further investigation into the prevalence of impaired spatial exploration in CD and its implications for function and participation in everyday life.
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