

ABSTRACTS

ASSBI AWARDS

Douglas & Tate Prize for Best Research Article in Brain Impairment 2019

Paula Robinson

Robinson, P.L., Russell, A., & Dysch, L. (2019). Third wave therapies for long term neurological conditions: A systematic review to evaluate the status and quality of the evidence. *Brain Impairment*, 20(1), 58–80. doi: 10.1017/BrImp.2019.2

ABSTRACTS - ASSBI CONFERENCE 2020*

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‘How to’ evaluate mainstream and emerging technologies used for executive function support after brain injury: development and testing of a new scoping framework

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Session synopsis: Emerging technologies in the 21st century offer opportunity to change the way support is delivered to people with acquired brain injury (ABI). Smart home, wearable and mobile technologies, and associated mobile applications can offer new approaches to compensate for executive dysfunction. The growing range of technologies available hold potential to improve independent living in the community. However, tools to guide consideration and selection of technology for compensatory cognitive support are lacking. This ‘How To’ session will present a new framework for scoping and evaluating key features of technology which may be applied to compensate for executive dysfunction following ABI. Key evaluation domains will be outlined and discussed in detail. Workshop attendees will explore use of the framework via a case scenario (contributed by our team’s lived experience collaborators) to evaluate and consider features of a new movement-sensing technology that can be retrofitted into a home to offer audio-prompting support customised to a user’s goals and support needs. There will be an opportunity to provide structured feedback about the utility of the framework based on this applied experience.

Learning objectives: At the end of this session, participants will have learnt about a new technology scoping framework developed by a research team in collaboration with people with lived experience of ABI; health professionals; researchers and social and injury insurers; gained greater understanding of the domains of evaluation necessary when a person is exploring the use of technology for executive function support following ABI; been offered opportunity to test and provide feedback on use of this framework, using a case scenario contributed by lived experience collaborators; contributed feedback which will further inform the framework design and utility.

Investigating social cognition in dementia syndromes

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Synopsis of session: Dementias are progressive neurodegenerative brain disorders which manifest clinically in many different forms, depending on the type, location and severity of the underlying pathology. With the ageing of the population, it is becoming urgent to ensure an early and accurate diagnosis. Clinical diagnostic criteria have been proposed in recent years, but these do not generally include social cognition despite the fact that social cognition processes are supported by many of the brain structures that undergo pathological changes in dementia.

This session will provide an overview of social cognition (i.e., emotion processing, understanding of social norms, empathy and theory of mind) and review the recent literature pertaining to dementia. It will also highlight how investigations of these features will improve early and accurate diagnosis and inform therapeutic interventions that can have a positive effect, not only on the individual diagnosed with the disease but also on their family members.

Learning objectives: By the end of the session, attendees will (i) have an understanding of the main aspects of social cognition, (ii) be able to identify the profiles of social cognition deficits in the main dementia syndromes and (iii) understand their neural bases.

Neuropsychological assessment feedback helps patients with varying levels of cognitive functioning to ‘get on with the business of living’: cognitive impairment subgroup analysis of a randomised controlled trial (RCT) in patients living with multiple sclerosis (MS)

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Background and objectives: There is no published research detailing the psychological benefits of neuropsychological assessment (NPA) feedback according to the patients’ level of cognitive impairment. Current guidelines rely upon expert clinical opinion, and most of them advise against providing detailed feedback to patients with major neurocognitive disorders (i.e., dementia).

Method: This was a RCT with crossover and follow-up. Seventy-one MS patients were randomly allocated to one of two groups: NPA feedback or ‘sham wait-list’ control. The intervention was a semi-structured, collaborative feedback session delivered by experienced clinical neuropsychologists. The primary patient hypotheses were that NPA with feedback would lead to improved knowledge of cognitive functioning and improved coping. A range of primary and secondary psychological measures was used to evaluate these, and other, hypotheses. Outcome instruments were administered by a research assistant blinded to group allocation. The influence of level of cognitive impairment was investigated in a subgroup analysis in which the patients were classified by the neuropsychologists as having no abnormalities detected (NAD) or Mild or Major impairment.

Results: At 1-week post-NPA feedback, there were significant improvements (i.e., group-by-time interaction effects with large effect sizes) in the NAD subgroup in mood and memory compensation strategy use, and in the Major subgroup in knowledge of cognitive functioning. Importantly, there were no significant adverse psychological reactions in any subgroup, including the Major subgroup. This, along with high satisfaction ratings, confirmed the safety and acceptability of the feedback protocol. At 1-month follow-up, results

of within-subjects analyses over time showed improvements (with medium effect sizes) in the NAD subgroup in knowledge of cognitive functioning and self-efficacy, and in the Mild subgroup in coping style.

Conclusions: These results provide evidence that NPA feedback helps MS patients with all levels of cognitive impairment to ‘get on with the business of living’. Even the Major subgroup benefitted briefly. However, because the benefits vary according to the patients’ level of cognitive impairment, and also vary over time, effective delivery of NPA feedback requires a carefully nuanced and person-centred clinical approach. NPA feedback should thus be viewed as an effective but complex psychoeducational intervention.

Using the Ambiguous Intentions Hostility Questionnaire to assess negative attributions after brain injury

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Background and objectives: A practical measure is needed for studying negative attributions after traumatic brain injury (TBI). This study explored a widely used measure, the Ambiguous Intentions Hostility Questionnaire (AIHQ), for the first time in the TBI population. Primary study aims were to determine if attribution differences could be identified between participants with and without TBI using the AIHQ and examine if traditional attribution associations with anger and aggression were supported.

Method: Eighty-five adults with TBI and 86 healthy controls (HCs) were recruited from 2 rehabilitation hospitals. Study design was a cross-sectional survey. Outcomes assessed such as attributions (intent, hostility and blame), anger and aggressive responses to hypothetical scenarios were measured with the AIHQ. Additionally, trait aggression was assessed with the Buss–Perry Aggression Questionnaire (BPAQ).

Results: Compared to HCs, participants with TBI had stronger attributions ($p \leq .001$), anger ($p = .021$), and aggressive responses ($p = .002$) to AIHQ scenarios. Attributions were significantly correlated with anger and behavioural (aggressive) responses to AIHQ scenarios and the BPAQ.

Conclusion: Participants with TBI judged others’ behaviours more severely than HCs. More negative attributions were associated with stronger anger and more aggressive responses. Consistent with past negative attribution research that used a longer, more complex measure, the AIHQ may be a practical instrument for assessing negative attributions after TBI.

Characterising support needs after severe traumatic brain injury

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Background and objectives: Support needs after traumatic brain injury (TBI) vary, not only with respect to type and intensity but also level of disability and time post-trauma. None of these features are well described in the literature, and this study aimed to characterise these aspects of support needs.

Method: A state-wide inception cohort of 131 people with severe TBI was followed up. The majority were males (74.8%) and the mean age was 30.9 years. Average length of post-traumatic amnesia was 54.3 days,

with most falling in the extremely severe range of injury (51.1%). By 3 years post-trauma, the sample spanned the range of disability levels on the Disability Rating Scale (49.6% low disability, 39.7% moderate disability and 10.7% severe disability). Support needs were measured with the Care and Needs Scale (CANS) at 3 and 5 years post-trauma.

Results: Support needs were documented for the majority of participants at both 3 years (95%) and 5 years (94%). The most common type of support need was psychosocial (95%), followed by instrumental activities of daily living (IADL; 63%). The most common intensity level of support need was every few days (24%). A significant increase in the total number of support needs occurred between 3 and 5 years, particularly for IADL supports. This increase was particularly noted in the low disability group. At the individual level, intensity of support significantly changed for 53% (increase in 35% and decrease in 18%), with disability subgroups showing different patterns of support needs.

Conclusions: These results indicate that support needs after severe TBI are common, varied, change between 3 and 5 years post-trauma, and are configured differently for different disability subgroups. Implications for care-giving and service delivery are discussed.

An intervention to improve coping following TBI in adult male prisoners: a pilot study

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Background and objective: There is a high prevalence of traumatic brain injury (TBI) in prisoners. This study aimed to test whether a psychological intervention could help to improve understanding of TBI and its potential impacts, coping skills and prevention aggressive behaviour within this population.

Methods: A single-centre randomised controlled trial was undertaken with 55 adult male mainstream and segregated prisoners who had reported a history of TBI on admission into the prison. Participants were randomised to receive a group-based 5-week (10 session) manualised cognitive behaviour therapy and mindfulness-based stress reduction approach or a wait-list control group. Measures of post-concussion symptoms, negative affect repair and in-prison infractions were assessed at baseline, following the intervention and after 12 weeks. On completion of the intervention, a short qualitative interview was conducted by an independent psychologist to determine participants' experiences of the intervention and analysed using thematic analysis.

Results: There were no statistical differences in the sociodemographic between the two groups. Seventy-five per cent of participants completed the intervention. The intervention group had significantly improved coping post-intervention ($F [1,38] = 4.68, p = .037, d = .36$) but this was not maintained at 12-week follow-up. There were no differences in post-concussion symptoms or infractions within the prison at either follow-up time point. Three themes were identified in the qualitative interviews including the journey into jail, reflections of the intervention and new understandings.

Conclusions: The intervention was positively received by participants and may help to improve coping skills within the prison population. A full-scale randomised trial is warranted.

Understanding the role of telehealth and implementation in to a community brain injury service

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Background and objectives: Telehealth involves the use of telecommunication techniques to deliver health services over long distances, for example, video-conferencing. Telehealth has been shown to be a cost-effective, efficient means of delivering health services. However, there is currently a limited evidence base to support telehealth use within acquired brain injury rehabilitation. The objectives of the current project were to understand the role telehealth might play within a community-based interdisciplinary brain injury service and to integrate this service as required.

Method: A telehealth specific knowledge translation (Theodoros et al., 2016) approach was used to identify specific service requirements and staff and client training needs. The initial knowledge gathering phase (Phase 1) included reviewing literature, client considerations, equipment needs and benchmarking. Clinician barriers/facilitators were also examined. The innovation phase (Phase 2) involved in the development of a local training package and the development of service-specific processes. The implementation and evaluation phase (Phase 3) involved in the provision of training packages and embedding processes into usual practice alongside various quantitative and qualitative measures of success (e.g., occasions of service, staff travel time saved, staff confidence).

Results: Staff feedback from focus groups identified common barriers, including staff perceptions and confidence, client access, and practical support requirements for clients and clinicians. A 3-month snapshot of client resources revealed reasonable access to personal smartphones (88%), however reduced access to internet in home (69%). A local training package was developed and delivered to address clinician needs. Service processes developed included an e-helper package to up-skill clients, suitability criteria, instructions, checklists, scripts and troubleshooting documentation. Telehealth occasions of service increased, and clinician travel time significantly reduced. Clinician knowledge of telehealth significantly improved, along with confidence in usage.

Conclusions: Overall, telehealth was integrated into a community brain injury service, allowing greater access to rehabilitation. Ongoing staff and consumer feedback is essential to continue developing and maintaining the service.

What are we doing to prevent our clients with brain injury from being scammed online? Understanding clinicians' experiences and evaluating a capacity-building workshop

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Background and objectives: Cybercrime is a growing problem, costing more than \$5b worldwide and \$100m in Australia annually. Online scams can cause significant psychosocial impairment, forensic risks and even physical or sexual harm. As scammers become increasingly sophisticated, greater community awareness and protection is required, with a focus on those most at risk. Individuals with acquired brain injury (ABI) are potentially highly vulnerable due to cognitive difficulties which may prevent scam detection. However, there has been no previous research to explore cyberscams in individuals with ABI nor there is clinical guidance for cyberscam identification, prevention or treatment. This study aimed to 1) investigate clinician's experiences in identifying and treating cyberscams after ABI and 2) evaluate the impact of a cyberscam workshop for ABI clinicians.

Method: An online survey for ABI clinicians explored the frequency, types, associated factors and interventions for cyberscams after ABI and was examined descriptively. Self-ratings of clinician confidence,

skills and knowledge were collected. Workshop attendees were invited to repeat the self-evaluation survey at 1 and 6 weeks post-workshop, analysed using paired-samples *t*-tests.

Results: Participants were 101 ABI clinicians from Australia and New Zealand. Half of the participants reporting having at least one client with ABI affected by cyberscams, predominantly romance scams initiated over social media. Clients were predominantly male, high school educated and had moderate-to-severe traumatic brain injuries. Increased vulnerability was associated with lack of insight, reduced problem-solving ability and loneliness. No prevention or intervention approaches were rated as having high effectiveness. The workshop evaluation revealed a significant increase in self-reported knowledge, skills, confidence and overall capacity ($n = 46$, all $p < .001$) after 1 week compared to pre-workshop ratings. There were no differences in ratings between 1 and 6 weeks post-workshop ($n = 26$, all $p > .05$).

Conclusions: This is the first study to examine cyberscams after ABI, finding it to be a common problem, particularly affecting those with more severe brain injuries and associated cognitive impairments and social isolation. Whilst the workshop was found to be an effective capacity-building programme for clinicians, the lack of identified prevention or intervention options underscores the need for further research in this area.

Telehealth-based assessment of cognition, social cognition, mood and functional independence in older adults

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Background and objectives: Telehealth technologies can provide important healthcare services for people in rural and remote areas. In older adults, cognition, social cognition, mood and functional independence are key predictors of dementia; however, few assessment tools are validated for telehealth administration. Further, the question of whether older adults would accept this form of assessment undertaken remotely is unclear.

Method: This study examined the agreement between face-to-face and telehealth administration of five assessments: cognition (Addenbrooke's Cognitive Examination-III; ACE-III), social cognition (Brief Assessment Social Skills-Dementia; BASS-D), mood (Hospital Anxiety and Depression Scale; HADS) and instrumental/activities of daily living (Assessment of Living Skills and Resources-revised; ALSAR-R2 and Modified Barthel Index; MBI). We also examined the feasibility and acceptability of this mode of assessment. Thirty-nine healthy participants (18 male) over 50 years of age ($M = 71.9$, $SD = 11.7$) were randomised to face-to-face-first or telehealth-first test modality, followed by the alternate mode within 5 weeks. Telehealth administrations occurred via Skype and minor variations were made to the ACE-III and the BASS-D to allow for this remote form of assessment.

Results: Eligible participants completed all assessment items, and telehealth was well tolerated. There were no significant differences found for acceptability based on age, gender, years of education, mood, vision or hearing impairments. High mean intraclass correlations ($ICC = .913$ to $ICC = .995$) were found for each assessment across formats. Relationships in performance between tools administered were consistent independent of mode of delivery.

Conclusions: Overall, this research provides preliminary evidence for the feasibility, acceptability and reliability of conducting a brief battery of assessment tools for older adults via telehealth. Further research should explore telehealth-based assessment with people diagnosed with mild cognitive impairment and dementia and their support person.

Training sector professionals to support people with disability to develop participant-led videos: an independent evaluation

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Background and objectives: Participant-led videos (PLVs) are an effective and innovative tool that gives people with disability and complex needs the opportunity to direct and train their support workers based on their self-described meaningful goals. PLVs were codesigned, piloted and evaluated by La Trobe University and Summer Foundation with five National Disability Insurance Scheme (NDIS) participants in 2018. To extend the roll-out of PLV, Summer Foundation conducted a training workshop with health and disability sector professionals in Australian Capital Territory to facilitate the development of PLV. This study independently evaluates the training workshop and subsequent PLV development from the perspective of trained sector professionals, people with disability and close others.

Method: A mixed method research design utilising quantitative and qualitative paradigms was used. Fifteen sector professionals completed a post-workshop online survey. Eight sector professionals participated in 1-month post-workshop telephone interviews and five sector professionals participated in 1-month post-PLV production telephone interviews. Additionally, three participants with disability and three close others were interviewed face to face. In total, 34 interview transcripts and survey data were thematically analysed.

Results: Sector professionals highly endorsed the usefulness of the PLV training workshop and reported high levels of satisfaction and enjoyment, as well as confidence to support a participant to produce PLV. This was supported by a twofold increase in excellent understanding ratings following the workshop. Interviews with sector professionals, people with disability and close others reinforced the findings from the pilot work that PLV provide a voice to people with disability to direct their own supports. PLV act as a mechanism to get to know the participant. Sector professionals, people with disability and close others recommended the PLV production process for others with an average rating exceeding 9 on a 10-point scale.

Conclusions: This evaluation demonstrates that production of PLV is not dependent on the innovative expertise at Summer Foundation. Following training, sector professionals successfully supported people with disability to produce videos. The findings support the use of PLV to improve the delivery of support and maximise outcomes by enabling people with disability to have choice and control, set their own goals and direct their supports.

Hospital to home: evaluating the discharge planning process and lived experience of people with acquired disability

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Background and objectives: The aim of this study is to evaluate the discharge process of people with acquired disability to identify facilitators, challenges and barriers of effective discharge. The objectives are to record time frames of hospital discharge and NDIS processes, measure patient outcomes and

document the lived experience of patients who have been recently discharged from hospital. This research contributes to the Summer Foundation's overall aim and supports the recent call by the Royal Commission into Residential Aged Care (RAC) to develop an evidence base to prevent young adults with acquired disability entering RAC.

Method: A mixed method retrospective and prospective cohort study design is used. Phase 1 of the study involves de-identified retrospective and prospective administrative data from nine hospital sites across Australia. Phase 2 involves 1-h semi-structured interviews at three approximate time points post-discharge (6, 1 and 12 months) with people with disability, a close other and a discharge planner.

Results: Administrative data of over 100 patients and preliminary follow-up data for 15 people will be presented. Initial administrative data for 27 patients has been received from hospitals in metropolitan Melbourne. Preliminary results indicate that prior to hospital admission, 63% ($n = 17$) of patients were employed full time, 93% ($n = 25$) did not have a carer, 93% ($n = 25$) were not NDIS participants and 93% ($n = 25$) applied for the NDIS while in hospital. 37% ($n = 10$) of patients had acquired brain injuries. The average delay in discharge was 104 days (STD 138, median 117) ($n = 7$). Thirty-seven per cent ($n = 10$) of patients experienced a delay in discharge, due to waiting for NDIS access and plan approval, awaiting NDIS supports, and denial of some NDIS requests which were essential for discharge. Supports were required for 72% ($n = 18$) of all patients on discharge and 60% ($n = 15$) required loan equipment to facilitate discharge. There were 81% ($n = 22$) of patients living in private residences pre-admission, compared with 44% ($n = 12$) post-admission.

Conclusions: The outcome data from this study contribute to building a much needed evidence based on the experience of people with complex needs and/or acquired disability during their transition from hospital to the community. Significant evidence is required to improve existing services to provide appropriately for this marginalised population, as well as to support the call by the Royal Commission.

Engaging consumers in the design of a post-concussion education service

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Background and objectives: Post-concussion syndrome is increasingly recognised to be associated with significant economic and social burden for many, even for those diagnosed with a relatively mild concussion. Literature supports the efficacy of appropriate early guideline-based care. Aspects of this care including education and self-management advice can be implemented in a cost- and outcome-effective manner. This education service is relatively new within the State Head Injury Unit in WA, and a consumer engagement project was undertaken to evaluate the benefit of this service and improve its delivery.

Method: Focus groups and individual feedback were undertaken with 39 post-concussion clients referred to the State Head Injury Unit in WA in 2018/19.

Results: Key areas of need for education identified as important by the participants included 1) the range of post-concussion symptoms and practical tips on effective management strategies, 2) information around the multifactorial impact of post-concussion symptoms and 3) services that are available for post-concussion clients. Participants also provided insights into their experiences with different post-concussion symptoms and how these impacted their lives. Group education sessions were identified as a helpful forum for meeting other individuals in the same situation and sharing symptom experience and strategies to manage these symptoms. Electronic and paper copy resources were both identified as important complementary education to individual telephone or face-to-face education.

Conclusions: Participants were overall very satisfied with the quality and consistency of post-concussion information currently provided by the service. Group and individual education services are highly appreciated, with the addition of other take-home resources to optimise education. These results can inform more practically useful and cost-effective post-concussion education that can be delivered by a range of health professionals across different health settings.

A closer look at the occurrence of traumatic brain injury in Australia: What is the risk and who is at risk?

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Background and objectives: Traumatic brain injury (TBI) is a major public health concern, causing substantial mortality and disability worldwide that may be preventable. Understanding the risk and who is at risk is a crucial step to enhance prevention and quality of care for these injuries. However, little population-based data are available in Australia. This study aimed to (i) estimate the population-based incidence of hospitalised TBI and (ii) identify groups at higher TBI risk, in New South Wales (NSW), Australia.

Method: We conducted a 1-year state-wide audit of hospital admissions from the NSW Department of Health database. Any first-time admission of NSW residents to any NSW hospital was screened for TBI occurrence. TBI identification was based on a combination of TBI-related diagnostic and external cause International Classification of Diseases (ICD-10th Revision) descriptors.

Results: Among the 10,175 screened hospital admissions, 6,827 hospitalised TBI cases were identified. This corresponds to an incidence rate of 99.1/100,000 population. Overall, the risk of sustaining a TBI was greater for anyone who lived in remote and socio-economic disadvantaged areas of the country. Risk of incurring a TBI was almost three times higher for people older than 75 years of age and residents in remote areas. Compared to the general population, Aboriginal and Torres Strait Islander people had 1.7 times higher TBI risk. A less favourable profile, comprising longer hospital stay, increased morbidity and mortality, occurred among older people and more severe TBIs.

Conclusions: TBI incidence rates are lower than documented elsewhere in the world. However, there are Australian population subgroups who are at much higher risk of TBI and/or report poorer hospital outcomes. These subgroups would benefit from further research and public health attention.

Two *n-of-1* trials of an occupation-based metacognitive intervention targeting awareness, executive function and goal-related outcomes after traumatic brain injury

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Background and objectives: Self-awareness is commonly impaired after traumatic brain injury (TBI) and impacts on rehabilitation engagement and community re-integration outcomes. Interventions which incorporate metacognitive strategy instruction (MSI) designed to improve self-awareness have the potential to improve rehabilitation engagement and outcomes. An occupational therapy intervention which is Environment-focussed, Goal-directed and Occupation-based (EGO) and incorporates a range of metacognitive strategies (AWARE) was developed to enhance awareness of and self-monitoring and self-correction of errors during performance of meaningful occupations. This study aimed to determine whether the EGO-AWARE intervention resulted in goal achievement and improved online awareness and executive function performance during the goal-related tasks.

Method: An *n-of-1* trial using an A-B-C single-case experimental design with multiple baselines was used to evaluate the effectiveness of the 12-week intervention for two males with severe TBI. Repeated measures of goal-related performance, percentage of self-corrected errors and executive function were made via

independent analysis of video footage and documentation logs. Data analysis involved 2 SD bandwidth analysis, reliable change index and evaluation of goal achievement across phases.

Results: One participant identified three goals (relating to budgeting, cooking and prospective memory) and the other participant identified four goals (related to participation in music, cooking and two related to studying), which were targeted during the intervention. Executive function performance during the goal-related tasks significantly improved for both participants for half of their targeted goals. There were significant increases in self-corrected errors for one participant, which were maintained; however, changes in self-corrected errors were not significant for the second participant. Significant reductions in stress ($RCI=\pm 7.05$) were evident for both participants, with significant reduction in anxiety ($RCI=\pm 5.98$) occurring for one participant following the intervention.

Conclusions: The occupation-based intervention incorporating MSI led to improvements compared to baseline in performance in some targeted goals, online awareness and executive function performance during goal-related tasks and reduced stress and anxiety.

'You never know what will come up': applying the recognition model to address sexuality in interdisciplinary transitional rehabilitation for clients with acquired brain injury

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Background and objectives: Sexuality is described by the WHO as a central aspect of being human throughout life and encompasses sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction. Following acquired brain injury, sexual identity and practices are often disrupted. Evidence suggests that sexuality is often not addressed by health professionals following brain injury.

The Acquired Brain Injury Transitional Rehabilitation Service (ABITRS) is a new interdisciplinary pilot project in QLD. This study aimed to explicitly address sexuality in service development and delivery by identifying an approach suitable to the ABITRS context and develop a process to implement and evaluate the identified model within the service.

Method: Three sequential steps were involved:

1. A brief literature review was completed to identify a sexual health model appropriate to the ABITRS context.
2. A change management approach was utilised to facilitate and maintain change in the interdisciplinary team (IDT). This involved providing training and education to the IDT around sexuality after ABI and the chosen model. Two focus groups were completed to identify knowledge, barriers and facilitators, in addressing sexuality.
3. Evaluation and review processes were established to maintain change.

Results: The literature review identified the recognition model (Couldrick, Sadlo & Cross, 2013) as an interdisciplinary method for addressing sexuality which could be used in the context of early transitional brain injury rehabilitation. Qualitative information regarding experience and confidence and barriers and facilitators to addressing sexuality were obtained from the focus groups with ABITRS clinicians. Team procedures for utilising the Recognition framework were developed from the synthesised information, providing a consistent method of addressing sexuality within an IDT service.

Conclusions: The recognition model has been successfully applied within an interdisciplinary transitional rehabilitation brain injury setting, ensuring that all clients of this service have an opportunity to discuss and address matters related to sexuality.

Adapting TBI Express communication partner training to leaders of a community peer support group for adults with acquired brain injury (ABI): is it feasible, acceptable and potentially effective?

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Background and objectives: Communication difficulties are common after acquired brain injury (ABI), leading to social exclusion, isolation and poor quality of life. Support networks, such as STEPS (Skills To Enable People and communities), aim to assist people with ABI after discharge from formal health services. STEPS comprises of peer support groups that aim to create accepting communities to facilitate participation. A growing body of evidence supports communication partner training (CPT) (Togher et al., 2013). However, there is little evidence supporting CPT with peer support ABI groups.

Method: *Design:* A two-phase mixed method pilot pre-post study explored (1) changes in awareness of communication difficulties, confidence interacting with people with communication difficulties and knowledge of effective communication strategies by STEPS leaders; (2) perceived acceptability; and (3) feasibility of the CPT. *Participants:* STEPS Group Leaders actively facilitating STEPS Network social groups in their local area (in QLD). Each STEPS Group is co-led by a health service provider and a 'peer' leader (adult with ABI and/or family member of an adult with ABI). *Training:* A pre-conference survey identified common communication challenges within STEPS Groups and perceived CPT needs. A 3-h, tailored CPT workshop, modified from *TBI Express* (Togher et al., 2010), was incorporated into a 2-day STEPS Leader conference. *Quantitative and qualitative outcomes* of awareness, confidence and knowledge, and acceptability of the training were taken at pre-, post- and 3-month follow-up. Researchers were interviewed post-training regarding feasibility.

Results: Of the 29 participants, 19 were peer leaders and 10 were health service providers. Data indicated statistically significant improvements in awareness, confidence and knowledge of ABI communication of the STEPS Leaders (all $p < 0.05$), which was maintained at 3-month follow-up. At follow-up, 89% reported their new knowledge had enhanced the social participation of a person with impaired communication in their STEPS group. High levels of acceptability were reported by participants and qualitative data indicated a sense of self-worth and purpose among STEPS Leaders. Modification of *TBI Express* was reported to be feasible.

Conclusions: This pilot project supports the potential of delivering CPT to leaders of an adult community support group for ABI. Future CPT studies with peer support ABI groups are required.

Knowledge of sports-related concussion in young sports athletes

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Background and objective: One in five of all traumatic brain injuries (including concussion) are sustained within the sports and recreation context. Due to high rates of participation in sport, young adults are at a

particular risk. Over the last decade, there have been a number of initiatives to increase concussion awareness within sports. This study aimed to explore current levels of knowledge towards concussion in New Zealand and to identify any gaps to inform educational initiatives.

Methods: A nationwide, anonymous, cross-sectional survey was conducted between September 2018 and June 2019 in New Zealand. To be included participants were required to be aged between 16 and 21 years and actively engaged in a sports activity. Participants were recruited via national sports organisations, local tournaments and social media.

Results: There were 1628 participants (mean age 17.2, SD 1.6, 65.6% female) who completed the questionnaire. More than 80% of participants correctly recognised dizziness, headaches, blurred vision and confusion as signs of concussion. Awareness of other symptoms including amnesia, loss of consciousness, nausea and insomnia were less well recognised (26–74% correct). Thirty-five per cent of participants understood that players should not return to sports until symptoms have fully resolved, with a further 33.8% suggesting a player should wait between 3 and 4 weeks. There were no statistically significant differences in concussion knowledge between sports, $p < 0.01$.

Conclusions: Whilst knowledge of some symptoms of concussion are high, there remains some common important gaps in knowledge across sports. High diversity in response to return-to-play time frames reflects inconsistency of messaging. The findings suggest the need for international concussion guidelines and education programmes that are cross-sporting disciplines, with specific sports focusing on sports-specific issues such as helmet use and injury prevention strategies.

Are we adhering to clinical guidelines in stroke practice? An audit of an early supported discharge service

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Background and objectives: Documentation audits are a tool to objectively evaluate clinical service provision. Whilst formal national audits of stroke practice against clinical guidelines occur in hospital settings, there is no such consistent audit in the early supported discharge context. During 2017, a project commenced to examine the use of *2010 Clinical Guidelines for Stroke Management* of an early supported discharge service, which commonly provides rehabilitation for acute and subacute stroke survivors. This project consisted of a documentation audit, with subsequent analysis and feedback. The objectives were to record 6 months of data to identify service gaps and guide future training and education priorities.

Methods: The project team determined which aspects of the stroke audit would apply to the early supported discharge setting, developed an audit tool and implemented systems to complete the audit. The audit was conducted by several staff members, with data entered into a secure Microsoft Excel database. Clinical staff were aware of the audit occurring, and notes were reviewed after the stroke survivor had been discharged from the service. Data were classified into seven impairment areas and analysed using Excel and Stata.

Results: This project highlighted key issues in data collection and database structure, which provided valuable learning for the service on data management. Audit results of over 150 cases identified consistent areas of impairment screening and intervention provision that adhered to clinical guidelines. Practice gaps were identified within documentation, and potentially, screening and intervention of neglect/inattention and mood. Feedback and review of team processes has occurred, and translation of guidelines into clinical practice continues.

Conclusions: This audit highlighted key aspects of stroke guidelines that are relevant to early supported discharge service provision and gaps within this. The audit process also revealed some of the difficulties of establishing and applying consistent audit criteria and provided the audit team with several important lessons on data definition and management. Audit results reinforced the need for clinical training on stroke guidelines and documentation systems that reflect evidence-based care.

Are we working towards a common goal? Insight into the experience of goal setting for youth with acquired brain injury and their parents

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Background and objectives: Collaborative goal setting in paediatric rehabilitation is considered 'gold standard' practice following an acquired brain injury (ABI). Despite being viewed as a crucial component of rehabilitation, there is surprisingly little understanding of how youth who have sustained an ABI and their families experience this process. This study aimed to explore how youth with an ABI and their parents experience and engage in goal setting in outpatient rehabilitation.

Method: Using a qualitative research design, 17 semi-structured interviews were conducted with 13 parents and 9 youth with an ABI aged between 9 and 18 years involved in outpatient rehabilitation. Interview transcripts were analysed using constructivist grounded theory methods.

Results: Two main themes emerged: (1) understanding goal setting within the context of life: *The role of professionals; The role of the youth; and The role of the parents.* (2) Working as a team: *Understanding each other and building trust; Communicating, sharing knowledge and different perspectives; and Being flexible.* These themes reflect youth and parent's understanding of goal setting during paediatric ABI rehabilitation, the collaborative nature of goal setting, and the barriers and facilitators that can influence engagement.

Conclusions: Youth and their parents perceive the focus of outpatient rehabilitation as working alongside clinicians to collaboratively gain the knowledge to understand and independently manage ABI. Youth and their families understood goal setting to be solving issues as they arose in everyday life and representing what they were working towards. Clinicians play an important role educating youth and their families how to effectively set goals in a rehabilitation context. These findings have implications for goal setting in paediatric rehabilitation and for the roles of clinicians and services in facilitating youth and parent engagement during outpatient goal setting following paediatric ABI.

Engaging children with acquired brain injury and their families in goal setting: the clinician perspective

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Background and objectives: Collaborative goal setting is a key element of child- and family-centred care in the rehabilitation of paediatric acquired brain injury (ABI); however, its implementation into routine

practice is surprisingly patchy. To optimise practice, a better understanding of the challenges associated with implementation is important.

As part of a larger study investigating goal setting in paediatric ABI rehabilitation, this paper explored clinicians' experiences of setting goals with children with ABI and their families in paediatric rehabilitation. Specifically, it aimed to provide an understanding of the barriers and facilitators to the engagement of children and adolescents with ABI and their families in collaborative rehabilitation goal setting.

Method: Using a qualitative research design, semi-structured interviews were conducted with 13 allied health clinicians, all members of an interdisciplinary rehabilitation service, who routinely work with children with ABI and their families. Disciplines represented were occupational therapy, paediatric medicine, physiotherapy, speech pathology, education consultancy, neuropsychology, team coordination and social work. Interview transcripts and additional data were analysed using constructivist grounded theory methods.

Results: Three main themes and subthemes were developed: (1) seeing the bigger picture: *Goals change over time; Families set bigger picture goals; Need-to-dos: Goals that the child needs to achieve;* and *Want-to-dos: Goals that the child wants to achieve;* (2) collaborating as a team: *Everyone needs to be on the same page; Hearing the child's voice;* and *Parents as advocates;* and (3) recognising and navigating challenges; *Child- and family-related challenges* and *Time as a service-related challenge.* These themes reflect the characteristics of goals set in paediatric ABI rehabilitation, the collaborative nature of goal setting and the challenges that can impact upon children's and families' engagement in this process.

Conclusions: Clinicians perceived their role during goal setting to be that of an active agent, enabling children and families to generate meaningful, personally relevant rehabilitation goals. These findings present implications for goal setting in paediatric rehabilitation and for the roles of clinicians and services in facilitating child- and family-centred goal setting following paediatric ABI.

Implementation of vocational rehabilitation following brain injury from the providers' perspective: a qualitative study

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Background and objectives: Return to work is seen as a marker of successful recovery for people with a brain injury. Vocational rehabilitation (VR) providers are health professionals trained to support people with brain injuries to achieve their vocational goals. The objective of this study was to understand the perspective and concerns of VR providers on current VR service delivery for people with brain injuries to assist in planning of future service delivery.

Methods: Qualitative descriptive methodology, guided by The Consolidated Framework for Implementation Research (CFIR), was employed to gather the rich descriptions and to systematically categorise factors influencing implementation of VR. This study took place in the state of Queensland, Australia. Four VR providers, with length of experience ranging between 7 and 37 years of working with brain injury clients, participated in a focus group lasting 2 h. Data collected were analysed with framework analysis and final codes were organised using the CFIR constructs.

Results: The CFIR framework was adequate in examining the concerns of VR providers. Of the 29 constructs examined, the participants identified six constructs as barriers to implementing VR. The majority

(3) were related to the intervention characteristic: evidence strength and quality; complexity; and design quality and packaging. Two were related to the outer setting: patient needs and resources and external policy and incentives, while one was related to the inner setting: access to knowledge and information. Description of how each construct illustrates the perspective and concerns of providers as well as recommendation were provided in the paper.

Conclusions: This study presents an approach for using the CFIR to code qualitative data and systematically identify concerns of VR providers and hence, suggest recommendations in the planning of future service delivery. This study identifies that VR providers need reliable and valid tools to assess work ability and resources to help clients and other stakeholders navigate the complex VR process. Future research needs to include a greater diversity of providers to provide holistic recommendations to improve VR service delivery.

Yarning together: incorporating telehealth into the provision of culturally secure speech pathology services for Aboriginal Australians after brain injury

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Background and objectives: Stroke and traumatic brain injury are more common in Aboriginal Australians than their non-Aboriginal counterparts, yet knowledge surrounding what Aboriginal Australians view as a culturally secure rehabilitation service is limited. Our previous research trialled a culturally secure model of rehabilitation which was feasible to deliver and acceptable to Aboriginal people who had an acquired communication disorder (ACD) following a stroke. The model involved the use of yarning principles and an Aboriginal co-worker (ACW) working in conjunction with the speech pathologist (SP). The current project (Lowitja Institute Funding 2018- 2019) extends this previous work by adding a telehealth component and again explores the feasibility and acceptability of the treatment delivered via one of two modes: face to face or using telehealth technology.

Method: Participants ($n = 11$), Aboriginal adults with an ACD after stroke or traumatic brain injury (>1 year–18 years post-onset), were case-matched and allocated to one of two groups: face-to-face therapy or therapy utilising telehealth technology and received 16 x 1 h treatment sessions provided twice weekly. Therapy integrated a yarning framework and was provided jointly by a SP and ACW in the person's place of residence. Feasibility was measured by analysing the number of sessions conducted jointly by the SP and ACW and participant attendance. Improvement in the participants' communication skills were measured through change in verbal output within language samples collected at multiple time points. Semi-structured interviews were used to explore both the participants' perspectives and the ACW's and SP's perceptions on the acceptability of and change achieved through the therapy. All interviews were analysed through qualitative descriptive analysis.

Results: Across all sessions, 235/258 (91.1%) were attended by the ACW and SP and 10 of the 11 participants completed all prescribed sessions. Positive feedback was provided by participants, the ACW and SPs on the key components of the programme including the use of telehealth technology.

Conclusions: The findings from this study provide direction for rehabilitation therapists who provide services to Aboriginal people to improve quality of care and provide culturally secure services. This work demonstrates that therapy can be delivered remotely by a SP but that an ACW being physically present is an important part of this rehabilitation approach.

Narrative discourse intervention after TBI: What has been tried and what works?

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Background and objectives: Narrative discourse (e.g., telling stories, anecdotes or relating personal events) comprises a critical part of social interaction and is commonly affected after traumatic brain injury (TBI). The vast majority of research literature has focused on characterising how discourse is impaired after TBI, rather than on intervention approaches. The purpose of this study was to review existing empirical research on narrative discourse after TBI. We aimed to identify the components of narrative discourse treatments and the underlying theory supporting these to inform future intervention approaches.

Method: We conducted a search on Embase, CINAHL, PsycINFO and PubMed with key terms relating to narrative discourse intervention and TBI. Studies were included that were original research, with at least 50% population of adults with TBI, treating spoken narrative discourse. After screening, data were extracted and categorised using the Intervention Taxonomy (ITAX).

Results: The search yielded 617 papers. Following screening, five papers were found with treatments aimed at improving narrative discourse skills; these were single-case or small cohort studies, with A-B or A-B-A design. Stimulus materials for narratives included sequential picture series or single picture description; outcome measures reported included the ABaCo ($n = 3$), thematic units produced ($n = 1$) and story grammar episodes ($n = 1$). Interventions were based on metacognitive and metalinguistic theoretic principles, with a focus on understanding the structure and components of narratives. Although all studies reported improvements on treated narratives following intervention, there were mixed results for generalisation and/or maintenance of effects. Active components of treatments are discussed and compared in relation to existing narrative discourse treatment programmes for other neurological communication disorders, for example, aphasia, dementia and right hemisphere disorder.

Conclusions: The ability to produce narratives is critical for engaging socially in interactions. INCOG guidelines recommend communication intervention after TBI should be contextualised and involve personally relevant materials, and this was not evident in the reviewed intervention approaches. Directions are suggested for clinical practice and for future research in treating narratives.

Now we're home, how do we keep the conversation going? An interdisciplinary approach to communication partner training

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Background and objectives: Following acquired brain injury (ABI), between 60 and 80% of people experience cognitive communication and interpersonal changes. International guidelines recommend educating and supporting those with ABI and their communication partners about communication change in a context-rich way. The Acquired Brain Injury Transitional Rehabilitation Service (ABI-TRS) supports clients with ABI and their families during the transition from hospital to home. This is a time psychosocial distress and relationship breakdowns can occur, but also the first opportunity for contextual communication practice. To address these issues, speech pathologists (SPs) commenced delivery of communication partner training (CPT), using components of the 'TBI Express' (Togher et al.). During early CPT, participants demonstrated increased awareness of changes and adjustment to injury. They also frequently raised

relationship strain, requiring social work (SW) support and counselling skills. As a result, we aimed to a) develop a coordinated interdisciplinary (IDT) approach to CPT and b) adapt CPT resources to meet client needs in a time-limited transitional phase of rehabilitation.

Method: A knowledge translation approach was used to apply TBI Express CPT to the time-limited early discharge context of ABI-TRS; and a quality improvement (QI) approach was used to adapt the programme and develop associated resources and processes to embed CPT within the service; allowing for interdisciplinary input. Participants were engaged on programme structure and content to inform resource development and optimise participation.

Results: A modified CPT programme and resources were developed and embedded in the ABI-TRS. The programme is delivered by an IDT: SPs providing communication training/strategy identification; SWs providing support for relationships; allied health assistants helping embed strategies and act as partners (as required). It is delivered as a two-part education series with practical components (video recording and feedback) and follow-up therapy. The programme has been successfully trialled across locations and contexts (clinic, home and community venues, and large group or individual/family sessions). The programme will be presented as well as a case study to demonstrate use in ABI-TRS.

Conclusions: The modified IDT CPT is now core practice for ABI-TRS. Clinical indicators suggest that this approach addresses client and family needs related to raising understanding of communication change after ABI and is helping to prevent relationship stress at a vulnerable point. It is hoped that by establishing better communication patterns early on it will protect against future relationship breakdowns. Future directions for the project will further investigate outcomes and benefits of IDT CPT and investigate how this CPT fits within the Brain Injury Rehabilitation continuum in QLD.

Navigating the challenges in conducting behaviour intervention research with families

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Background and aims: The importance of involving families as active members in behaviour support interventions following acquired brain injury (ABI) is widely acknowledged. Effective behaviour support requires monitoring and modification over time and longitudinal studies are essential to programme evaluation. Research in this area, however, has multiple challenges; families often experience significant burden and have limited time and reserve to participate in such interventions, despite being aware of the potential benefits. Our aim was to consider these challenges and their implications for research examining family involvement in behavioural interventions.

Methods: The research team reflected upon the process of conducting two 8-month longitudinal behaviour support studies (consisting of education and individualised sessions) and one education programme pilot (involving 4 weekly sessions) with families following ABI, including recruitment, implementation and repeated assessments over multiple time points. The facilitator's journal provided further insight into the complexities of conducting the research.

Results: Although families communicate their desire for behaviour support, the additional burden associated with conducting research (e.g., assessments and time commitment) may not be feasible. This raises important considerations regarding family-professional relationships, flexible modes of delivery and meaningful, but limited assessments.

Conclusions: Longitudinal studies allow us to examine the long-term outcomes of behavioural interventions following ABI; however, recruiting and retaining families in this process can be challenging. Findings provide important insights and recommendations for future behaviour support research and practice seeking to focus on family involvement.

'All the things that you don't think about when you're leaving hospital . . .': Client and family member experiences of an ABI transitional rehabilitation service pilot

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Background and objectives: The Acquired Brain Injury Transitional Rehabilitation Service (ABITRS) is a 5-year pilot programme established in response to an identified unmet need in the continuum of acquired brain injury rehabilitation services (BIRS) in Queensland. To determine the impact of ABITRS, a mixed method evaluation is in progress. Exploring the experience of the ABITRS from client and family perspectives will highlight valued service design features that facilitate participant community reintegration and will contribute to evaluating whether the programme is meeting the pilot project aims.

Method: Data were drawn from two qualitative arms of the mixed method evaluation: 1) semi-structured interviews with ABITRS clients ($n = 10$) and their family members ($n = 10$); and 2) an anonymous client satisfaction survey (assisted by family members as appropriate) provided to clients and family members at the end of the ABITRS programme ($n = 60$). Thematic interview transcript analysis was based on the Framework Method. Client satisfaction surveys were analysed using summative content analysis. Data triangulation will test for consistency in client and family perspectives and explore any inconsistencies in findings.

Results: Data analysis is still in progress. Preliminary analysis of the qualitative interviews indicates that clients and family members consistently value elements of the ABITRS service model which are congruent with pilot project aims: facilitating early community re-integration during transition from hospital to home; improved continuity between hospital and community services; and enhanced access to community rehabilitation. Results to be presented will include outcomes of the triangulation process.

Conclusions: Preliminary qualitative analysis indicates that client and family member experiences of the ABITRS complement the aims of the pilot project. Triangulation of this data with client satisfaction survey outcomes offers the opportunity for a deeper understanding of the service experience.

Trial implementation of CIRCuITS cognitive remediation therapy for people with schizophrenia: therapists' experiences

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Background and objectives: Many people with schizophrenia experience cognitive impairment and have difficulty in completing daily tasks, as well as participating in work, social and leisure activities. Cognitive remediation therapy (CRT) is recommended in the current Australian and New Zealand clinical practice guidelines for schizophrenia and related disorders. An implementation trial of the Computerised

Interactive Remediation of Cognition-Interactive Training for Schizophrenia (CIRCuiTS) programme was undertaken in Orange, NSW. An important component of the evaluation of the CIRCuiTS programme in our local context was the exploration of the meaning clinicians placed on their experiences as CIRCuiTS therapists.

Method: Seven CIRCuiTS therapists who were each involved in the implementation trial agreed to present platform papers at the CIRCuiTS Expo held in May 2018. A thematic analysis was undertaken on the transcripts of these presentations.

Results: Therapists valued their involvement in delivering the CIRCuiTS programme. They pointed to many instances in which they felt their practice in mental health rehabilitation was enhanced through their experience as CIRCuiTS therapists. The three major themes identified from the data included 1) appreciation of the lived experience of schizophrenia, 2) the centrality of the therapeutic relationship and 3) increased professional satisfaction and 'Joy in work'. CIRCuiTS therapists' language was consistent with recovery-focused practice.

Conclusions: To our knowledge, this was the first study to explore CIRCuiTS therapists' experiences. Overall, the findings supported the feasibility and acceptability of the CIRCuiTS programme from the therapists' perspectives. Further research is required into the dynamics of the therapeutic relationship and contribution of CRT to the work-life experiences of clinicians providing psychiatric rehabilitation.

'Watching the video is a lot better than trying to talk to someone and explain': a case study example of using participant-led videos to train support workers

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Background and objectives: Recruiting and training support workers is an ongoing challenge for survivors of acquired brain injury (ABI) and their families. Central to training is educating support workers about how the person with disability wants to be supported, ensuring a person-centred approach to care. This presentation provides a case study exemplar of the use of participant-led videos (PLVs) to train support workers, drawing upon the findings of a novel project that set out to co-design, pilot and document a process to produce PLVs with NDIS participants.

Method: Primary participants involved in the co-design of the PLVs included four men and one woman living with ABI and with very high support needs, including cognitive and communication impairments. The original evaluation study involved thematic analysis of 28 interview transcripts and survey data from 14 participants (5 primary participants, 5 close other supporters and 5 staff facilitators) gathered at 1 week and 4 months after production of the videos. This case study exemplar focuses on the experiences of one participant, his family and support workers, up to 1 year following production of the video.

Results: All participants reported high levels of satisfaction with the PLV process. Thematic results revealed the importance of people with disability having a voice and taking control in directing their lives, in addition to personal growth through participation, and feeling validated through the experience. The case study exemplar provides additional insights into key factors when considering implementation of this approach in practice: time for planning and producing video, identification of focus of video ensuring meaningfulness to participant, approaches to ensuring the 'voice' of the participant in the video and format of video for ease of access.

Conclusions: The production and use of PLVs is encouraged. They have much potential to improve the delivery of support and maximise outcomes by enabling people with cognitive and communication impairments to have choice and control, set their own goals and direct their supports. In addition, they assist the efficiency and potential effectiveness of ongoing training of support workers.

Training to improve speech pathologists' counselling practice for supporting the psychological wellbeing in post-stroke aphasia.

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Background and objectives: Speech pathologists are key health professionals in supporting health and quality of life outcomes in people affected by post-stroke aphasia and frequently address the mental health of this client group. However, they receive limited and variable pre-qualification training and seek a variety of post-qualification training in counselling to support mental health in post-stroke aphasia. We will outline an evidence-based training module to improve speech pathologist self-rated efficacy and competency to counsel this client group to support mental health after stroke.

Method: Synthesis of the stepped psychological care framework, a systematic review of speech pathology counselling training to support psychological wellbeing in post-stroke aphasia, and current pre-qualification training of speech pathologists for counselling clients affected by post-stroke aphasia were conducted to inform development of a training module.

Results: We will outline a feasibility randomised controlled trial to investigate the effect of a training module on speech pathologists' self-rated efficacy and competency in counselling in post-stroke aphasia.

Conclusions: Speech pathologists require appropriate counselling training to support the psychological wellbeing of their client's with aphasia after stroke. Training that improves clinician self-rated efficacy and competence for counselling may improve their practice in supporting mental health in post-stroke aphasia.

Introducing PBS + PLUS: a person-driven positive behaviour support approach for challenging behaviour after acquired brain injury

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Background and objectives: Challenging behaviours, such as aggression and socially inappropriate behaviour, are common and distressing consequences of acquired brain injury (ABI). Without effective treatment, challenging behaviours can contribute to relationship breakdown, unemployment and psychiatric disorders. Findings from case studies, single-subject experimental designs and a recent survey of Australian

ABI Clinicians support the use of Positive Behaviour Support (PBS) interventions for challenging behaviour post-ABI. Despite this, clinicians report they lack the confidence and training to provide behaviour interventions. Consequently, individuals with post-injury challenging behaviour may not receive professional support. There is a crucial need to improve ABI clinician's familiarity, skills and confidence in delivering PBS interventions. This presentation will introduce the PBS + PLUS framework and illustrate its application using case studies.

Method: A 12-month intervention was delivered by a transdisciplinary therapy team to individuals with post-ABI challenging behaviour and their natural supports (e.g., family members, caregivers). PBS + PLUS is a multi-component and flexible PBS intervention using a person-driven collaborative approach to build a meaningful life and self-regulate behaviour after ABI. A single-case description design was used, with recruitment of three pilot cases from a parent randomised controlled trial (RCT). The primary outcome measure was the Overt Behaviour Scale (OBS) administered at baseline and 4 monthly intervals during therapy and for a further year of follow-up.

Results: Three cases, Reese, Ethan and Ollie, received the intervention along with their natural supports. Each presented with diverse behaviours, living situations, cognitive profiles, functioning levels, support networks and desired outcomes. Visual analysis of the OBS indicated that whilst Ethan and Ollie made demonstrable improvements in self-regulation of behaviour, which were maintained over time, Reese's initial improvements in behaviour were not sustained beyond 8 months.

Conclusions: PBS + PLUS is a flexible approach which can be applied to a range of presentations and behaviours, increasing its relevance to the heterogeneous ABI population. Positive outcomes were obtained for two out of the three cases, with efficacy to be determined through the parent RCT. Further advantages, clinical challenges and reasons for poor response to treatment will be discussed.

Routinely measuring upper limb function after stroke in an early supported discharge service

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Background and objective: Valid and reliable outcome measures are integral to intervention planning and clinical evaluation in stroke rehabilitation. However, as Australia's national audits consistently indicate, this is rarely occurring. In those with a stroke-affected upper limb, most improvement in function is anticipated in the first 3 months, in most patients. Even though our region's early supported discharge services manage patients in the first 3 months post-event, therapists were inconsistently measuring upper limb outcomes in stroke survivors. The objective was to identify an upper limb assessment, and, using that assessment, routinely collect standardised outcome data in more than 70% of stroke survivors experiencing upper limb dysfunction and admitted to our service's early supported discharge services.

Methods: A working party considered various upper limb assessments and selected the upper limb subscales of the Motor Assessment Scale (UL-MAS). This 18-point scale with high scientific integrity takes approximately 10–15 min to complete in patients. A higher score indicates better upper limb function. Following training and implementation, data were collected by all facilities in as many patients as possible.

Results: Following implementation from 2017 to 2019, Occupational Therapists across seven sites administer the UL-MAS stroke survivors with an adversely affected upper limb. Between admission and discharge, the cohort experienced a mean improvement of 3 points in upper limb function.

Conclusions: In the first 3 months post-stroke, and when most functional improvement is anticipated in most patients, it is feasible to use the same assessment to routinely and consistently measure upper limb recovery in most patients. This has potential benefits for all stakeholders, especially the patients and their families and carers. It also means a region's capacity to measure change in functional outcomes is translated into standard clinical practice.

Implementing the role of an exercise physiologist in an ABI transition setting

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Background and objectives: The Acquired Brain Injury Transitional Rehabilitation Service (ABI-TRS) commenced clinical service in January 2017. The service aims to support clients with ABI and their families during the transition from hospital to home using an interdisciplinary team (IDT) model. The model includes an exercise physiologist (EP) which is novel for brain injury services within Queensland Health. Exercise physiologists provide exercise prescription for structured exercise and lifestyle physical activity, activity modification, behaviour change and health promotion; this is associated with improved physical health, life satisfaction, cognitive functioning and psychological wellbeing. This project aimed to develop and implement the EP role within ABI-TRS.

Method: Two interrelated activities occurred:

- 1) A process for defining and implementing the EP role in the ABI-TRS model of care was developed. This included identifying clinicians' knowledge and experience in working with an EP; providing training and education regarding an EP's scope of practice and core skills to members of the IDT and implementing a screening process for referrals and referral criteria.
- 2) Concurrent involvement of ABI-TRS in an external research project which aimed to adapt the Adapted Physical Activity Program Intervention Model (APAP) which had previously been trialled with community-dwelling adults with brain impairments (Clancy, Tweedy and Trost, 2018).

Results: These combined processes have established criteria for EP referral, an improved understanding of the EP role in ABI rehabilitation and expanded service provision in the transitional phase. Clinically, the EP role in ABI-TRS is addressing clients' needs in the areas of: participation in physical activity (addressing individual goals and health needs), managing pre-existing or emerging chronic disease risk factors (including risk prevention) and promoting holistic wellbeing (e.g., mental health management). The process of implementing an exercise physiology service, barriers and facilitators identified by the team, case study examples and clinician experience will be presented.

Conclusions: The role of the exercise physiologist has been established as an integral component of the ABI-TRS model of care.

What are the factors influencing referral to rehabilitation services for children and adolescents with a moderate to severe traumatic brain injury?

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Background and objectives: Traumatic brain injuries (TBI) in the paediatric population are significant and have variable effects, some of which can be lifelong. A TBI can affect functional domains that include, but are not limited to, cognition, behaviour and physical capabilities. Rehabilitation is vital in making

functional gains post-injury, the efficiency of referral to these services is therefore critical. Early rehabilitation has shown to be associated with significant improvements in both paediatric and adult populations. Due to unclear clinical guidelines, there are often missed or delayed referrals to rehabilitation which means a missed opportunity to engage the patient at an earlier stage of their recovery. The objective is to assess whether referrals to rehabilitation are being made for the population of moderate and severe TBI that present to the Royal Children's Hospital (RCH). The hypothesis is that there would be inconsistency in referrals. It was expected that if there was a documented referral, there would be a variation in delay from the patient admission to transfer.

Method: The study is a retrospective audit. The population consisted of children between the age of 0 and 18 years at the time of injury, who were admitted at RCH for a TBI between April 2016 and April 2019. Participants were identified using electronic medical records. The variables collected included severity of injury, method of injury, if the patient was referred, if the referral was documented and which was the transfer/discharge team. Descriptive statistics were conducted.

Results: A total of 76 patients that fulfilled the inclusion criteria were included in the analyses. Results were descriptive. The results demonstrated inconsistencies in referral, with more than 50% of patients that were eligible for rehabilitation services being discharged without referral.

Conclusions: The findings demonstrate that there is an inconsistency in referral with the clinical implication being the missed opportunity to engage these children in rehabilitation. This indicates the need for research into the creation of TBI-specific rehabilitation referral guidelines.

The impact of physical activity on social cognition, cognition and mood following TBI: a randomised controlled trial protocol

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Background and objectives: Difficulties with various aspects of social cognition following traumatic brain injury (TBI) are well documented. The rapidly expanding focus on social cognition presents an opportunity to explore holistic integrative approaches in rehabilitation. This study aims to explore the impact of a physical activity (PA) programme on heart rate variability and social cognition for people with TBI. It is known that limited participation in PA puts people with TBI at a significant health risk but increasing PA in this population positively impacts physical health, mood and cognition. Thus, it is hypothesised that the same improvement can be attained for social cognition. Studies with people without TBI have actually reported a connection between heart rate variability and facial emotion perception, supporting this hypothesis.

Method: Twenty adults with moderate-to-severe TBI will be recruited for this randomised controlled trial. Participants are eligible if they are currently engaging in less than 90 min of PA per week. Participants individually complete a 12-week exercise programme, supervised by an accredited exercise physiologist. Pre- and post-intervention measurements will include objective data from the accelerometer, self-report questionnaires measuring mood and social participation, and researcher-administered assessments to investigate the impact of the exercise programme on social cognition, cognition, executive functioning and general physical health (including heart rate variability).

Results: This protocol is currently being implemented. The links between social cognition, cognition, mood and PA (including heart rate variability) will be discussed. An overview of the protocol will be presented, including rationale, methods and challenges faced in implementing the protocol to date.

Conclusion: This innovative protocol has the potential to improve social cognition, cognition and mood alongside physical health, offering a prospective holistic approach to rehabilitation for people with TBI.

Getting on with study: exploring the clinical usefulness of wellbeing ratings as an indicator of students' participation in secondary and tertiary education following traumatic brain injury (TBI)

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Background and objectives: There has been increasing interest around the world in the concept of positive mental health and how it contributes to improving everyday life. Following traumatic brain injury (TBI), subjective ratings of life satisfaction often differ to objective measures of function, with generally lower quality of life being reported both in the short- and long-term post-injury. This longitudinal investigation of wellbeing was part of a broader qualitative study exploring experiences of secondary and tertiary students with TBI as they participated in education. In this aspect of the project, we aimed to track wellbeing in the context of participating in study for these students and examine the convergence between students' wellbeing measures and experiences represented in interview data from the main project.

Method: Twelve students (aged 17–32 years) completed in-depth interviews and a wellbeing questionnaire (Warwick-Edinburgh Mental WellBeing Scale [WEMWBS]) up to 3 times over a period of 4–15 months, capturing a total of 30 time points. Data from the WEMWBS were descriptively analysed. Individual results were compared to population data provided by WEMWBS and graphed to show changes over time.

Results: Wellbeing scores for the majority of students tended to be lower than the expected range for a similar population. There was substantial variability in wellbeing ratings over time for individual students that seemed to be reflective of how students were doing overall and showed consistency with experiences described in students' interview data.

Conclusions: The inclusion of wellbeing measures in this study provided a useful lens for investigating students' experiences, whilst participating in education and point to the importance of broader factors beyond academic participation alone. Our findings suggest that wellbeing measures can be used to monitor and evaluate student progress over time and provide clinicians with valuable indicators of a student's educational journey. The positive preliminary results around measurement of wellbeing in this exploration indicate that further research in this area is warranted.

The effects of temporal lobectomy on electrical brain potentials in response to emotional stimuli

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Background and objectives: Epilepsy is one of the most common serious neurological conditions, which can cause a significant burden on the individual functionally, emotionally and socially. Temporal lobe epilepsy is the most common form of epilepsy in adults. A common treatment for difficult to manage epilepsy is temporal lobectomies which involves surgically removing a section of the temporal lobes to contain the seizure activity. However, research has indicated that temporal lobectomies often lead to a number of cognitive difficulties, including the processing of

emotion in others. The impact that temporal lobectomies have on emotional processing and furthermore on empathic processing is limited. The current study proposes to address the impact that temporal lobectomies have on the processing of emotion and empathy.

Method: Researchers recruited 47 participants (16 healthy controls, 6 postsurgical temporal resection patients' left lateralisation, 8 postsurgical temporal resection patients' right lateralisation, 6 postsurgical focal epilepsy of non-mesial temporal origin patients, 7 nonsurgical generalised epileptic patients). The epilepsy and surgical patients were recruited from the Royal Brisbane and Women's Hospital and were selected by the clinical neuropsychologists working at this institution. The healthy controls were recruited from The University of Queensland. Data from three healthy participants were removed due to issues with data collection (one did not wear their glasses, one had completed a study with the images recently and one was not fluent in English). The study addressed these factors using electroencephalography (EEG) responses to emotional stimuli. The stimuli were grouped into three categories: emotional faces (angry vs neutral), emotional bodies (angry vs neutral) and scenes depicting an emotional context (painful vs neutral situations). Participants were assessed on pre-attentive processing of emotional images, which was done by asking participants to respond to a question (i.e., is the image depicting a neutral or fearful face?). Participants also completed preliminary measures including the National Adult Reading Test (NART), Montreal Cognitive Assessment Test (MOCA), The Depression, Anxiety, and Stress Scale (DASS-21), The Empathy Quotient (EQ) and the Interpersonal Reactivity Index (IRI). These were administered to assess for premorbid functioning, to screen cognitive functioning, mood and perceived empathy levels. Additionally, epileptic patients completed the Epilepsy Surgery Inventory 55 (ESI-55) to address their quality of life.

Results: Preliminary results show that lobectomies modify the electrical response to facial expressions of emotions.

Conclusions: The results suggest that temporal lobectomies have subtle impacts on emotion perception. The impact of this on day-to-day life is still not clear and further research regarding this is recommended.

Prediction of emergence from prolonged disorders of consciousness from measures within the UK Rehabilitation Outcomes Collaborative database: a multicentre analysis using machine learning

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Background and objectives: Increasing numbers are surviving medical emergencies but a proportion survive with catastrophic brain injury. Predicting who is most likely to emerge from a prolonged disorder of consciousness (PDOC) is important for deciding how long to continue life-sustaining interventions. However, there is limited evidence to guide prognostication and studies to date have focused on predictor variables which are easily available in acute settings. We examined which variables from admission to specialist tertiary rehabilitation units were best predictors of emergence from PDOC using traditional logistic regression (LR), linear discriminant analysis (LDA) and artificial neural networks (ANNs).

Method: A multicentre national cohort analysis of prospectively collected clinical data from the UK Rehabilitation Outcomes national clinical database 2010–2018. The outcome variable was emergence from PDOC before discharge (yes/no). In the absence of formal measures of consciousness in the dataset, we used UK FIM + FAM scores of ≤ 31 as a proxy for PDOC, and scores of ≥ 35 as the operational definition of having 'emerged from PDOC'. Variables for filtering using bootstrapped t-tests included age, length of stay, time from the onset to admission and the individual items of the Neurological Impairment Scale, Rehabilitation Complexity Scale, Northwick Park Dependency Scale and Patient Category Scale.

Results: Filtering (1170 PDOC on admission patients) resulted in 12 significant variables for use in further analysis. LR on emerged from PDOC ($n = 1007$) explained 27% to 37% of variance with overall fit accuracy of 77% (87% sensitivity and 61% specificity) with six filtered variables being partly significant. LDA produced a four-variable model with leave-one-out cross-validation accuracy of 69% (87%, 40%). ANNs resulted in 81% accuracy (90%, 67%) using repeated 95% training/5% testing partitions, with area under the ROC curve of 0.93 and two variables as most important.

Conclusions: The six variables found through LR (Motor, Communication, Behaviour, Medical, Disability and Eating), the four variables through LDA (Behaviour, Motor, Medical and Disability) and the two variables found through ANNs (Motor and Communication) indicate that Motor, Communication, Behaviour, Medical and Disability contain potentially useful information for predicting whether patients admitted in PDOC will emerge. The model now requires further testing using direct measures of consciousness.

Social cognition and the cytokine network in multiple sclerosis

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Background and objectives: Social cognitive impairment in people with multiple sclerosis (pwMS) is increasingly characterised as an outcome affecting important personal and professional relationships. However, it is unclear if impairments are biologically derived primary disease-related factors, or secondary comorbid factors with an unknown pathogenesis. In MS, disruption to the *modus operandi* of the auto-immune milieu dysregulates the cytokine network resulting in aberrant concentrations of cytokines, chemokines, growth and colony-stimulating factors related with sickness behaviours, such as depression and social disturbance. We examined the role of immunomarkers in social cognitive ability in pwMS.

Method: Forty participants (20 pwMS and 20 healthy matched controls [HCs]) completed the *Emotion Recognition, Empathy, and Sociability* subscales on the Social Emotional Questionnaire (SEQ) and The Awareness of Social Inference Test – Short (TASIT-S). Serum (s) and urine (u) samples were collected to measure immunomarkers.

Results: PwMS (cf. HCs) performed more poorly on TASIT-S emotion recognition and sarcasm detection tasks. On TASIT-S in pwMS, sarcasm detection was moderately and negatively related to proinflammatory IL-17 (s), chemokines IP-10 (u) and MIP-1 α (u), immunoregulator VEGF (u) and anti-inflammatory IL-4 (s). Relationships were similar in HCs for IL-17 (s), MIP-1 α (u) and VEGF (u) but were weak for IP-10 (u) and IL-4 (s). TASIT-S sarcasm detection was moderately and positively related to IL-1ra (s) in pwMS, whereas in HCs the relationship was negligible. TASIT-S lie detection tasks were moderately and negatively related to MIP-1 α (u) and IL-4 (s) in pwMS; in HCs the relationship for MIP-1 α (u) was similar but negligible for IL-4 (s). On the SEQ, emotion recognition and empathy were moderately and negatively related to TNF α (s) in pwMS. Sociability was moderately and negatively related to proinflammatory IL-1ra (u) in pwMS.

Conclusions: In pwMS, social cognitive ability was related with higher levels of IL-1ra (s) and IL-4 (s), and lower TNF α (s), IL-17 (s), IP-10 (u), MIP-1 α (u) and VEGF (u). Self-reported sociability appears to be affected by lower levels of IL-1ra (u) in pwMS but not in HCs. In MS, social cognitive deficits were detected primarily via serum-derived cytokines, in contrast to urinary-derived chemokines. These findings provide new insight into associative relationships between the cytokine network and social cognitive abilities in MS.

An exploratory study of the Perceive Recall Plan Perform assessment with stroke survivors in an early supported discharge setting

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Background and objectives: Cognitive impairment is a common barrier to effective occupational performance for stroke survivors. The Perceive Recall Plan Perform assessment is used to examine both ecological occupational performance and cognitive strategy application, providing a different analysis of cognition in context, than that which is extrapolated from traditional assessments. The transition from hospital to home is a pivotal component of the rehabilitation journey for stroke survivors, requiring utilisation of cognitive strategies to support performance in daily living. The primary aim of this study was to examine occupational performance and cognitive strategy application of stroke survivors, using the PRPP. Secondary aims were to explore the time requirements of the PRPP assessment and examine associations with standard measures. The application of the PRPP assessment during this time provided a unique and standardised ecological assessment.

Methods: Ten participants with a new cognitive impairment post-stroke were recruited from an early supported discharge service. Scores from three assessments of occupational performance were analysed: the PRPP, Functional Independence Measure and Lawtons Scale.

Results: Errors of cognitive strategy application were highlighted by the PRPP, particularly in the subquadrant areas of sensing, mapping and evaluating. Occupational Therapists reported that the PRPP required a similar time commitment to that of other assessments. The PRPP provided more detailed information on cognition and task mastery than that of generic assessments of occupational performance.

Conclusions: This study provided preliminary descriptive evidence of the application of the PRPP as an ecological assessment with stroke survivors in the community. Results in this cohort indicated reduced occupational performance mastery and difficulties in cognitive strategy application, despite being in familiar environments.