

CRE NEWSLETTER

2012/13



WELCOME

MOVING AHEAD

Centre for Research Excellence in Brain Recovery

Dear Reader,

Welcome to the first newsletter of MOVING AHEAD: NHMRC Centre of Research Excellence in Traumatic Brain Injury. This CRE commenced in April 2012 and has a specific focus on improving psychosocial outcomes after TBI. Our team of Chief Investigators comprises some of the most well-known researchers in this field in Australia. Together with our team of Associate Investigators and our Post-doctoral and PhD students we have a comprehensive and impressive research team capable of really making a difference in the Australian and international landscape in terms of improving the lives of people with TBI and their families and in terms of making clinical research in this field a vibrant, interactive network of clinicians and researchers. We also have an expert advisory team of eminent international researchers to help guide directions of the CRE.

The CRE has four broad aims: (1) to pursue specific research projects to improve psychosocial outcomes; (2) to facilitate knowledge transfer between research and clinical practice and to foster research in practice; (3) to train the researchers of tomorrow and (4) to increase collaboration. We have been working together over the past 12 months to address each of these aims and a short overview of what we have done towards these is detailed overpage.

In addition, the CRE represents a network of researchers across Melbourne, Sydney and Brisbane who are engaged in numerous studies to address psychosocial rehabilitation following TBI. We have detailed some of the individual projects of our students and CIs that have been conducted over the past 12 months or are currently in the planning stages, commencing from Page 9.

We hope you find this newsletter informative and interesting. Please give us your feedback at movingahead@unsw.edu.au and do visit our website for more information and for updates throughout the coming year. You can also find a more detailed description of the CRE in the following journal article:

McDonald, S., Anderson, V., Ponsford, J., Tate, R., Togher, L., Morgan, A., Fleming, J., Ownsworth, T., Douglas, J. & Murdoch, B. (2012) Moving Ahead: A new centre of research excellence in brain recovery, focusing on psychosocial reintegration following traumatic brain injury. *Brain Impairment*, 13 (2), 256-270.

Best wishes,
Skye McDonald



Our team of Chief Investigators

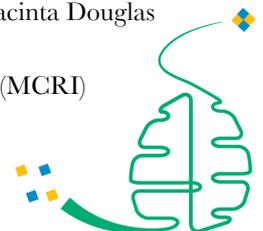
Bottom row, left to right:

Dr Angela Morgan (MCRI), Prof Skye McDonald (UNSW), Dr Jenny Fleming (UQ), Prof Leanne Togher (USYD)

Top row, left to right:

Prof Robyn Tate (USYD), A/Prof Cathy Catroppa (Associate Investigator, MCRI), Prof Bruce Murdoch (UQ), Prof Jennie Ponsford (Monash University), Dr Tamara Ownsworth (Griffith University), A/Prof Jacinta Douglas (La Trobe)

Missing: Prof Vicki Anderson (MCRI)



Moving Ahead

Centre of Research Excellence in Brain Recovery

2012 achievements of CRE

Aim 1: To pursue specific research projects to improve psychosocial outcomes.

Five projects representing collaborations across CRE members were initiated in 2012:

1. Speech production in adults: (UQ: Bruce Murdoch and Angela Morgan)
2. Facilitating home-life: (MCRI: Vicki Anderson & Cathy Catroppa)
3. Facilitating friendships: (USYD/La Trobe: Leanne Togher & Jacinta Douglas)
4. Self-awareness: (UQ/Griffith: Jenny Fleming and Tamara Ownsworth)
5. Emotion regulation: (UNSW/USYD: Skye McDonald and Robyn Tate)

Aim 2: Knowledge transfer

In 2012 this objective was pursued by: (1) development of Moving Ahead's website providing a portal to (a) research activities of the CRE (b) PscyBITE and SpeechBITE (providing access to all published empirical research on remediation for problems associated with TBI) (c) evidence based resources for treating/assessing psychosocial disorders; (2) commencement of a continuing education program with workshops by Fleming and Ownsworth (see Page 7); (3) pursuit of other avenues of engagement with clinicians via (a) meetings to foster links with clinicians in Brisbane (Ownsworth and Fleming) (2) engagement with the NSW TBI evidence based practice group (McDonald).

Aim 3: Research training

The CRE aims to support research training. This has commenced via several initiatives in 2012: (1) appointments of PostDoctoral fellows and PhD students specifically to foster training (see Pages 28-34); (2) planning day (UNSW) involving PostDoctoral fellows in April and early career training day (MCRI) held in Melbourne in September (see Page 7), (3) advertising of seed grants to foster research by clinicians with three successful grants awarded in December 2012 (see Pages 5-6).

Aim 4: Increase collaboration

The CRE also aims to increase collaboration within CRE members and between the CRE and the broader national and international community. This has commenced via (1) establishment of an international panel of experts as the CRE Advisory Board (2) new collaborations between CIs on CRE research projects (see Aim 1 above) (3) new collaborations between CIs on grants (e.g. new project grant awarded to Ownsworth, Fleming and Tate, 2012) (4) a collaborative research project involving all CRE members aimed at devising a standardised protocol for assessing psychosocial outcomes (5) the intention to develop a Clinical Advisory Board (nominations will be called for in 2013 - see Page 35 for more details).

MA Website

The Moving Ahead website provides up to date information on the activities of our CRE and its people.

MOVING AHEAD

Centre of Research Excellence in Brain Recovery

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Moving Ahead

The Moving Ahead Centre of Research Excellence (CRE) in Brain Recovery is the first centre worldwide to take a multidisciplinary, multisite approach to addressing the rehabilitation of individuals following TBI.

Moving Ahead brings together key experts from universities, hospitals and research institutes in Australia and overseas.

Severe Traumatic Brain Injury (TBI) will surpass many diseases as the major cause of death and disability in the Western world by 2020.

The Moving Ahead Centre of Research Excellence (CRE) in Brain Recovery is the first centre worldwide to take a multidisciplinary, multisite approach to addressing the psychosocial rehabilitation of individuals following TBI. Moving Ahead brings together key experts from a range of partner universities, hospitals and research institutes in Australia and overseas to address what is a growing problem.

The physical, cognitive and emotional impairments that result from TBI can have a profound effect on an individual's quality of life. Severe TBI is associated with fewer employment opportunities, greater risk of depression, family stress, deteriorating relationships, and social isolation. While psychosocial remediation is essential, evidence for existing remediation techniques is limited.

Moving Ahead aims to improve outcomes for those with a traumatic brain injury by developing empirically-supported treatments, addressing deficits in social skills, communication, mood, fatigue, self-awareness and self-regulation.

CRE Seed Grants

In 2012, the Moving Ahead CRE awarded three small seed grants to the value of \$2,000 each. The aim of these grants was to provide some assistance to outstanding individuals who were undertaking, or were about to embark on, promising research that was consistent with the overall goals of Moving Ahead. Applications for the grants were highly competitive. The lucky recipients included Rachael Rietdijk, Ali Crichton, and Paul Gertler.

Using telehealth for improving the communication skills of people with traumatic brain injury and their carers

By Rachael Rietdijk, Leanne Togher and Emma Power

What the study will be about:

Many families have little access to support or training to deal with managing communication problems, particularly in rural and remote regions. A possible solution is the use of telehealth to provide communication training and support for families. This project will examine the use of telehealth to deliver social communication skills training to people with TBI and their carers. The study will evaluate whether social communication skills can be assessed as accurately over the Internet using Skype as compared to a face-to-face assessment. This will determine whether Skype is an appropriate and feasible medium for working with people with TBI and their carers on complex communication skills. The study will also use qualitative methods to explore the perceptions of people with TBI and their carers of telehealth services.



Rachael Rietdijk

What we have done:

We have completed assessments and qualitative interviews with 7 participants residing in regional or rural NSW and 2 participants residing in Sydney. We are planning to recruit a further 10 participants during 2013. We will be comparing Skype-based assessment and face-to-face assessment using the results of independent ratings of the quality of the communication of people with TBI and the support skills of their carers, and using the results of self and carer ratings on communication-focussed questionnaires. The two modes will also be compared in terms of efficiency of time and participant satisfaction. The qualitative interviews will be used to investigate participants' experiences of the two different assessment sessions and their views on the potential for using telehealth for brain injury services.

What we expect to find:

We expect this study will provide information about the feasibility of using Skype to work with families of people with TBI on communication skills, in terms of quality of clinical observations, impact on client participation and comparisons of clinical efficiency. This study will also inform about the potential for using telehealth for brain injury services more broadly through investigating the opinions of families regarding telehealth services.

To read more about this study:

A systematic review of studies involving the use of telehealth for providing support or training to family members of people with TBI formed the background for this project: Rietdijk, R., Togher, L. & Power, E. (2012). "Supporting family members of people with traumatic brain injury using telehealth: A systematic review". *Journal of Rehabilitation Medicine* 44: 913-921.

Serum biomarkers to predict fatigue outcome after paediatric traumatic brain injury

By Ali Crichton, Vicki Anderson, Franz Babi, Ed Oakley, Jamie Hutchison

What this study is about:

Fatigue is one of the most commonly reported and challenging symptoms after traumatic brain injury. It significantly impacts on well being and quality of life after injury. Post brain injury fatigue has been well documented in adult literature although this is not the case in paediatrics. It is currently unclear how many children experience fatigue after discharge from hospital, and what determines their recovery. The aim of this study is to establish the extent to which fatigue after paediatric brain injury is predicted by early biochemical markers (biomarkers).

What we will do:

This research project will be conducted as part of a larger international, multi-site study led jointly by researchers at the Murdoch Children's Research Institute/Royal Children's Hospital (RCH) and Hospital for Sick Children (HSK), Toronto. It will extend on an existing protocol led by Drs Jamie Hutchinson and Vicki Anderson that examines the link between biomarkers and quality of life, and examine the ability of these biomarkers to predict an additional outcome of clinical importance, fatigue. We will conduct a prospective longitudinal study of 120 children recruited from RCH and HSK and measure fatigue at 12 months using parental report questionnaire.

What we hope to find:

The research enabled by the CRE Seed Grant will allow me to investigate the potential for blood based biomarkers to predict fatigue outcomes in children who have suffered brain injury. It will improve our understanding of the factors that predict fatigue following brain injury. This study will improve our understanding of the factors that predict fatigue following brain injury. Findings have the potential of helping clinicians and health services with the early identification of children at risk of poorer long term outcomes following brain injury. Early identification of children at risk will enable clinicians to better target support and intervention



Ali Crichton

Benefits of psychological treatment for depression after traumatic brain injury

By Paul Gertler, supervised by Robyn Tate and Ian Cameron

The current project fits into the broader scheme of a PhD program that aims to evaluate the benefits of psychological treatment for depression following traumatic brain injury (TBI). Depression is more common after TBI and this can be because damage to the brain affects the experience of emotions and the way emotions are managed. Depression can also be a secondary consequence of catastrophic injury and life changes.

There are very few studies addressing the value of psychological treatment for depression following TBI. Practicing clinical psychologists and other health professionals are regularly called upon to provide non-pharmacological treatment for depression with little evidence of the effectiveness of these treatments when applied to people with cognitive impairments.

The CRE grant is being used for the evaluation of behavioural and cognitive therapies by way of a single-case experimental design. The CRE funds will specifically be used for the independent evaluation of treatment outcomes by a clinical or neuro-psychologist not otherwise involved in the research. The independent psychologist will therefore be more likely to be impartial in their findings thereby making the outcomes more robust. It is hoped that this study, and the research program more broadly, will provide a clearer understanding of whether psychological treatments are effective and which components of treatment work best for people with TBI.



Paul Gertler

Facilitating psychosocial adjustment after brain injury: Goal planning, self-identity and self-awareness interventions

ASSBI Workshop, Sydney, 7 September 2012
Acquired Brain Injury Outreach Service, Brisbane, 12 February 2013

By Jennifer Fleming and Tamara Ownsworth

This one day workshop addressed the related issues of impaired self-awareness, adjustment to disability and self-identity following brain injury. Workshop participants learnt about the use of individualised interventions for facilitating self-awareness and adjustment using goal planning and occupation-based approaches. Topics covered include models of self-awareness and self-identity, assessment approaches, and evidence-based interventions for use with people with brain injury in rehabilitation and community settings. Latest research findings and case studies demonstrating the effectiveness of interventions including goal planning, psychotherapy, metacognitive skills training, and feedback will be presented. The workshops provided a successful forum for interdisciplinary discussion and debate about key factors underpinning psychosocial adjustment in brain injury rehabilitation. The workshop will also be presented at the ASSBI Brain Impairment Conference in Hobart on 2 May 2013.

2012 Postdoctoral and Postgraduate Planning Day

Murdoch Childrens Research Institute, Melbourne 3-4 September 2012

By Cynthia Honan & Frank Muscara

This two day planning meeting was conducted to enhance the research capabilities of the Moving Ahead CRE postdoctoral and postgraduate members. The meeting began with an engaging keynote address from Professor Vicki Anderson where she spoke about the goals of the CRE, her current CRE-related research endeavours, and future opportunities for young researchers in the area of psychosocial research. A number of guest presenters also gave engaging talks on various educational topics. They included: (1) Dr Amanda Lane-Brown who presented on single-case designs and analysis; (2) Dr Jacqueline Rushby who presented on how to apply for competitive research grants and scholarships; (3) Dr Ashley Di Battista who presented on conducting systematic reviews; (4) Frank Muscara who presented on implementing the Consolidated Standards of Reporting Trials (CONSORT) guidelines; and (4) Dr Janine Cooper who presented on imaging techniques useful for traumatic brain injury research. The meeting was attended by around 20 postdoctoral fellows and postgraduate students from various research institutions around Australia. It provided an excellent opportunity for these early career researchers to meet others working in the field, learn about related research projects currently in progress or in development, form collaborative networks for future research projects, and to improve research skills and knowledge of traumatic brain injury.

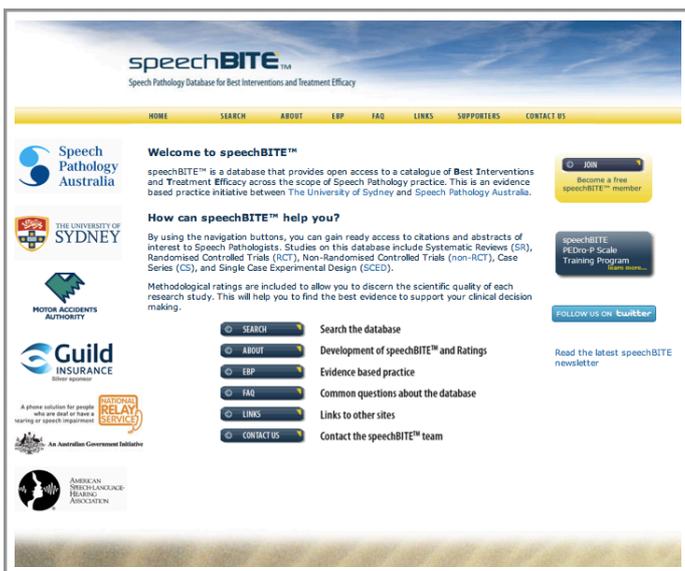
We are always very keen to receive suggestions for future workshops and research training opportunities, so please don't hesitate to contact us with your ideas! Just drop us an email at movingahead@unsw.edu.au

PsycBITE and SpeechBITE

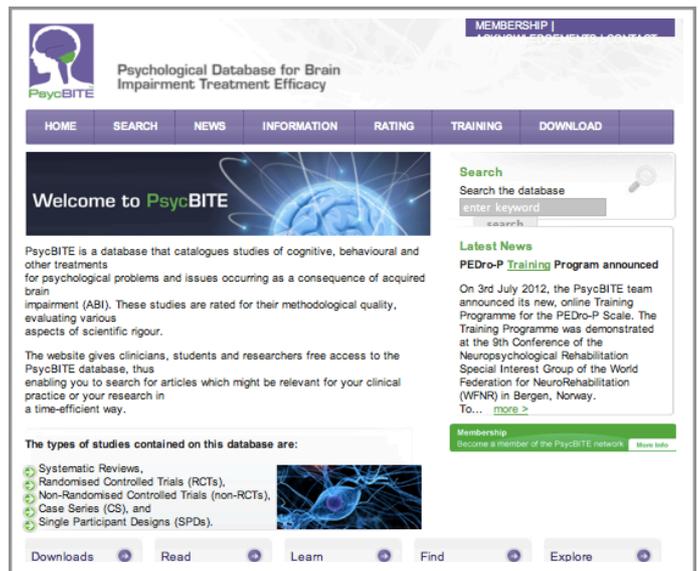
As part of its aim to support research in clinical practice, the Moving Ahead website provides links to both PsycBITE and SpeechBITE.

PsycBITE and its sister database SpeechBITE are readily-available, free web-resources developed by members of the CRE. These can be accessed directly in the internet or via the MA webpage. PsycBITE contains all published, empirical reports on the effectiveness of non-pharmacological interventions for the psychological consequences of acquired brain impairment (currently over 4000 records). SpeechBITE contains all published empirical reports attesting to the effectiveness of treatments for speech, language and swallowing disorders (currently over 3700 records). Using these databases, clinicians, consumers and researchers can, at the touch of a button, access all studies for a given treatment, which are rated for and ranked on the database by their methodological quality. This makes it easy to identify the best evidence. The databases are updated monthly.

Some of the facilities offered on PsycBITE				
Easy search for treatments	Summaries of remediation techniques	Ratings of methodological quality	On-line training in how to rate methodological quality	
Access to all papers that target a given problem (e.g. memory) at the press of a button	Access to a large selection of summaries of techniques used in good quality studies	Provision of a methodological rating by which to gauge the scientific validity of the study	Step by step training in how to evaluate RCTs (launched in July 2012)	Step by step training in evaluating n-of-1 trials (in preparation)



SpeechBITE Home page



PsycBITE Home page



Professor Vicki Anderson

Vicki Anderson is a child neuropsychologist at the Royal Children's Hospital and Murdoch Childrens Research Institute, Melbourne. Her expertise is in working with children with brain injuries and their families. Her clinical research team, the Australian Centre for Child Neuropsychology Studies (ACCNS) conducts research addressing the assessment, diagnosis and treatment of problems resulting from brain injury, including cognitive, behavioural and social difficulties. ACCNS has extensive local and international collaborations.

Predictors of emotion perception skills, and their relationship to socio-emotional adjustment in young adult survivors of childhood TBI.

Honours Thesis

Nick Ryan, supervised by Vicki Anderson, Cathy Catroppa, Celia Godfrey

Emotion perception impairments are not uncommon following TBI, and may contribute to reduced social communication and poor social adjustment. In our study that involved a 16-year follow-up of 34 young survivors of childhood TBI, young adults with severe TBI had significantly poorer emotion perception than healthy controls and children with milder injuries. Further, poorer emotion perception was associated with lower SES, and a less intimate family environment during the acute recovery period.

Though reduced emotion perception was associated with more frequent externalising behaviours including aggression and rule breaking, this relationship was mediated by reduced social communication. Based on these findings, it appears cognitive remediation programs targeting emotion perception may be required in the long term, to improve interpersonal effectiveness, and thus indirectly reduce risk for maladaptive social behaviour in the TBI population.

Clinical validation of the Paediatric Care and Needs Scale (PCANS) for assessing support needs after traumatic brain injury (TBI)

Study in Progress

Cheryl Soo, Robyn Tate, Jane Galvin, Vicki Anderson

Background: As a result of traumatic brain injury (TBI), children and adolescents may acquire disabilities in a range of areas of everyday life that require support. These needs include assistance in basic hygiene activities and use of transport through to help in school activities and getting along with others. Although many scales have been developed to assess disability in children, there is a lack of standardised scales developed specifically for identifying care and

support needs following childhood TBI.

Aim: This study will evaluate the reliability and validity of a revised version of the Paediatric Care and Needs Scale (PCANS-2) which was designed to assess support needs of children and adolescents with TBI.

Method: Thirty children with TBI recruited from the Royal Children's Hospital will be invited to participate. Inclusion criteria include: (1) aged 5 to 15 years, (2) sustained a TBI, and (3) referred to Victorian Paediatric Rehabilitation Service at the Royal Children's Hospital. Exclusion criteria include: (1) parent/caregiver non-fluency in English and (2) child history of psychiatric illness, developmental disability or pre-injury neurological disorder. Inter-rater reliability will be examined by comparing ratings of two clinicians who have independent

assessed the child using the PCANS.

Test-retest reliability of the PCANS will be examined over a 1 week period. Concurrent validity will be assessed by examining the relationship between PCANS ratings and measures currently used for children with TBI. Discriminant validity will be evaluated by comparing PCANS scores of children who have been independently dichotomised into groups according to injury severity and functional outcome.

Conclusions: This validation study will provide evidence for the use of the PCANS for assessing support needs in children with TBI. The findings from this study have direct application to clinical practice by helping the rehabilitation clinician to objectively assess care and support needs following childhood TBI.

Outcomes of childhood traumatic brain injury

15-year follow-up

Cathy Catroppa, Celia Godfrey, Vicki Anderson

This longitudinal study investigates 15-year outcome from childhood traumatic brain injury (TBI). The study involves follow-up of an existing cohort, enrolled during initial hospital admission for TBI before 8 years of age. The study will investigate risk factors (e.g. injury variables), moderating factors (e.g. interventions) and outcomes (e.g. physical functioning, cognitive ability, educational/vocational attainment and emotional/social skills). This study has an international reputation and is in a unique position to investigate the complex relationships contributing to long-term outcome from childhood TBI. Data collected at this 15-year time-point will include measures of mental health,



A/ Professor Cathy Catroppa

Cathy Catroppa is a research fellow of the Murdoch Children's Research Institute (MCRI). For the last 15 years she has been coordinating a large scale research program examining long-term term outcomes and predictors following traumatic brain injury (TBI), and given the research findings has placed an emphasis on developing and piloting intervention programs in this domain. She is on the Editorial Board of Brain Injury, Journal of Pediatric Psychology, Journal of the International Neuropsychological Society and Neuropsychology.

psychological functioning and MRI scan data, in the context of exploring any changes in this period of transition from late adolescence to young adulthood.

Neural Substrates of Moral Reasoning after Traumatic Brain Injury

Janine Cooper, Miriam Beauchamp, Julian Dooley, Vicki Anderson

Aim: Many of the brain regions associated with sociomoral reasoning involve neural circuits of the frontal lobe, which are particularly vulnerable to the effects of traumatic brain injury (TBI). Despite the potential for disruption of these circuits following TBI, little attention has focused on the presence of moral reasoning deficits in this population. In patients with such lesions, moral decision making has been described as 'concrete, erratically rule-based and formulated primarily around their own needs', reflecting a

developmentally immature level of functioning. The overall objective of this project was to identify and quantify the behavioural indices of moral reasoning functions post-TBI and to investigate the neural correlates of such behaviour in adolescents.

Method: Adolescents who sustained moderate-to-severe paediatric TBI and were between 1 and 4 years post-injury were asked to make social decisions with and without moral content during functional magnetic resonance (fMRI) imaging. The novel event related fMRI paradigm is a modification of the Socio-Moral Reasoning Aptitude Level (So-Moral) behavioural task and consists of visual social scenes in the first person perspective. The participant responses, reaction times and functional imaging data was compared to a group of typically developing age matched controls.

Results: Imaging analyses using SPM8 revealed a network of brain areas of activation when making moral decisions that included a large prominent cluster in the superior medial prefrontal region extending just to the anterior cingulate, and significant clusters in the left orbitofrontal, the left temporoparietal junction, and left amygdala.

Conclusions: There is a network of brain regions involved in moral reasoning in adolescents and damage to the prefrontal cortex appears to influence socio-moral decision making and maturity.

A randomised controlled trial of cognitive behavioural therapy for managing anxiety in adolescents with acquired brain injury

Study in progress

Cheryl Soo, Robyn Tate, Vicki Anderson, Suzanne Benson, Ron Rapee, Cathy Catroppa, Katherine Lee, Skye McDonald and Natasha Dean

Background: We know that after an acquired brain injury (ABI), some adolescents may experience increased levels of anxiety. So far, very little research has looked at the ways we can help young people with ABI overcome anxiety difficulties and improve the way they are able to get along with others at school, home and in the community.

Aim: This randomised controlled trial will evaluate the efficacy of a cognitive behavioural therapy (CBT) program for managing anxiety for adolescents with ABI. The program is based on the “Chilled” program (Rapee

et al., 2006) and has been especially adapted for young people who may have cognitive difficulties associated with TBI (e.g., memory impairments).

Method: Forty adolescents with ABI from Royal Children’s Hospital, Melbourne and Children’s Hospital at Westmead, Sydney will be invited to participate. Participants will be randomly allocated to the CBT (n=20) or a waitlist control group (n=20). Inclusion criteria include: (1) aged 12-19 years, (2) sustained an ABI, (3) elevated levels of anxiety, (4) IQ equal or above 70 and (5) time post-onset of greater than 6 months. Adolescents in the treatment group will participate in an 11-week CBT program.

Discussion: The program aims to reduce anxiety and increase levels of participation in everyday activities of young people following ABI. If effective, the program used in this trial will be developed into a manual thereby allowing for applicability of the program in a range of therapeutic settings.

Speaking for themselves: How do adolescents define their quality of life after a traumatic brain injury?

PhD Dissertation

Ashley Di Battista, supervised by Vicki Anderson, Cathy Catroppa, Cheryl Soo

Traumatic brain injury is (TBI) a leading cause of morbidity and mortality in young people (Yeates et al., 2002). The status of quality of life (QoL) in paediatric TBI is mixed. Our recent meta-analysis of paediatric QoL (Di Battista et al., 2012) found that good QoL outcomes are contingent on milder injuries, proxy reporting and early assessment whereas poor outcomes reflect more severe injuries and later assessment. Available paediatric QoL data is largely based on the health-related quality of life (HRQoL) paradigm; where a good outcome is contingent on what one can accomplish or achieve, as assessed by proxies. Information on the subjective well-being (SWB) component of QoL is limited. When estimating the HRQoL in adolescents, the presence of anxiety and depression and the quality of social relationships are important considerations, because adolescents are entrenched in social development during this phase of maturation. The influence of anxiety, depression and loneliness on HRQoL in adolescent survivors of TBI has not been documented. The goal of this study was to explore the adolescent experience of quality of life, anxiety, depression and loneliness after a traumatic brain injury.

This study is a mixed-methods assessment of the impact of mood states and loneliness on quality of life (QoL) in adolescents who have survived a traumatic brain injury (TBI). **METHOD:** mixed method/cohort pilot study (11 adolescents, mild to severe TBI; 9 parents), using self-report (anxiety, depression, HRQoL, loneliness) and proxy-report measures (anxiety, depression and HRQoL) and clinical psychiatric interviews (adolescent only). The adolescent experience of these states is not accurately reflected by parental proxy. Self-reported depression and age at injury were associated with health-related quality of life outcomes, while anxiety was not. Severity of injury was not related to secondary outcomes. Adolescent narratives revealed that having experienced a TBI does not a priori impact upon perceived QoL. The impact of a TBI on QoL could be positive or negative. Post-injury changes in ability were not always attributed to the injury, but rather to a sense of normal age-related changes as identified by the adolescent. Changes as a result of the injury were not always considered important to the adolescent’s view on QoL. Adolescents identified social and inter-personal discrepancies and the emotional consequences of these discrepancies. Ultimately, the individual’s appraisal of their identity from pre to post injury life related to their current sense of well-being. Friendships were very important considerations for post-injury well-being. Processes of post-traumatic growth were identified in the adolescent narrative. The findings of this study are novel and have important implications for both research study design and clinical care settings involving adolescent survivors of a TBI.

Social functioning in early primary school following traumatic brain injury prior to age three: The contribution of cognitive, environmental and neurological factors.

Louise Crowe, supervised by Vicki Anderson, Cathy Catroppa, Franz Babl

Traumatic brain injury (TBI) is associated with a high risk of social impairment (e.g., isolation, aggression, peer problems) in school-aged children, adolescents, and adults. These social impairments can have devastating consequences for the individual, and have been linked to reduced self-esteem, antisocial behaviour, mental illness, and family breakdown, with these difficulties also impacting on the wider society. Epidemiologic studies show that children younger than 3 years are at the greatest risk of TBI across children of all ages including adolescence.

The aim of this study is to investigate the effect of TBI sustained prior to 3 years on social function at 6-8 years of age, when children are in the early primary school years, and where intact social skills are especially important. Using a theoretical framework of social function recently published by our team (Beauchamp & Anderson, 2010) as the basis for this study, social outcomes and the contribution of cognitive factors, environment and most importantly brain development will be explored.

The project has four aims;

1. To compare social function in the early primary school years in children with a history of TBI prior to age three, with that of typically developing children.
2. To examine the contribution of cognitive factors to social outcomes in children sustaining TBI prior to age three.
3. To examine the role of environmental factors on the social outcomes in children in early primary school who sustain a TBI prior to age three.
4. To compare brain characteristics of children sustaining a TBI prior to age three to age-matched typically developing children

To date, data (assessments and MRI scans) has been collected from 28 children.

Long-term psychiatric disturbance in childhood TBI

Vicki Anderson

Psychiatric disturbance, such as depression and anxiety, is a well-known short-term outcome of child traumatic brain injury (TBI). However, long-term difficulties in this domain subsequent to the TBI are less recognised. Our 16-year follow-up sought to investigate depression, anxiety and substance use in young adults who sustained a TBI during childhood, as they reach a new level of independence and face unfamiliar challenges. It was found that a greater proportion of post-childhood TBI young adults met the criteria for a sub-threshold or clinical diagnosis of anxiety, depression and/or substance use, when compared to their peers. Post-childhood TBI young adults also reported higher levels of anxiety and depression symptomatology.

These difficulties did not relate to socio-economic status, pre-morbid tendencies towards anxiety sensitivity, measures of family functioning or injury related family burden. Furthermore, there was no clear relationship between the severity of the TBI, and psychiatric symptomatology in young adulthood.

This research highlighted the need for increased awareness that post-childhood TBI individuals face a lifetime risk for psychiatric disturbances, which is particularly pertinent as they begin to face the challenges of adulthood.



Professor Robyn Tate

Robyn Tate's expertise in outcome evaluation is reflected in her work on international committees within the World Health Organisation and the Cochrane Collaboration. She is Co-editor of Brain Impairment, Executive Editor of Neuropsychological Rehabilitation, and secretary of the Special Interest Group in Neuropsychological Rehabilitation of the World Federation of NeuroRehabilitation.

A survey of school support for adolescents with acquired brain injury: Effective overall, but room for improvement in communication, transitions and planning

Robyn L Tate¹, Michelle Genders¹, Margaret Mathers¹, Ulrike Rosenkoetter¹, Catherine Bain², and Rachel Motbey¹

¹ Rehabilitation Studies Unit, Northern Clinical School, Sydney Medical School, University of Sydney, Australia

² Lifetime Care and Support Authority, Sydney, Australia

Background: Adolescents with acquired brain injury (ABI) often have specific support needs related to school as a result of their impairments. Concerns have been raised regarding the implementation of support in the school setting. It is suggested that the process of knowledge transfer between clinicians and educators is one area where breakdown occurs. Clinicians know what to do from a health perspective and educators know what to do from an education perspective, but dovetailing this knowledge is problematic. This study aimed to survey current practice in the health and education sectors surrounding the return to school of students with ABI.

Method: A semi-structured interview was conducted with 148 participants regarding the experiences of 43 student referents. Participants comprised 32 students, 41 parents, 34 health respondents and 41 education respondents.

Results: The majority of students received support from professionals. A wide variety of supports across 33 different areas was provided to students at school. On average 9.6 supports were provided to each student and, as expected, students with high needs received more supports than students with low needs.

Conclusions: Overall, the results of the survey were positive. Areas of difficulty were examined in order to identify three areas for improvement: knowledge of brain injury and communication, transitions to be planned for in a timely manner and appropriate supports provided, and planning with joint input from health and education sectors.

For correspondence regarding these two studies, please email Professor Robyn Tate; rtate@med.usyd.edu.au

Preparing adolescents for life after school: a randomized controlled trial into the effectiveness of a coaching-based and motivational interviewing intervention

Robyn L Tate, Michelle Genders, Ulrike Rosenkoetter, Margaret Mathers, Rachel Motbey

Rehabilitation Studies Unit, Northern Clinical School, Sydney Medical School, University of Sydney, Australia

Background: Existing resources specifically designed to assist adolescents with acquired brain injury in the transition from school to the 'adult world' are limited. Consequently, they can fall through the gap, which in turn may cause severe disadvantage for their entry to the 'adult world'.

Aim: to evaluate the effectiveness of an intervention based on coaching model with motivational interviewing components

Method: The participants (n=43), aged 14 to 19 years and in years 8 to 12 at school, were randomised to either standard care (control group, n=22) or coaching intervention

(n=21). A broad range of variables compatible with a coaching philosophy was selected to evaluate changes in a variety of areas, capturing both client-centred values (satisfaction, emotional functioning, hope for the future) and objective functioning as reported by the parent (community participation, behaviour, support needs).

Results: Participants in the coaching group received, on average, six coaching sessions with the interventions occurring over an average of 22 weeks. There was no evidence that, relative to baseline, the coaching group showed greater improvement following the

intervention in comparison with the control group on any of the primary (satisfaction, community participation) or secondary (emotional functioning, hopefulness, behaviour and support needs) outcome measures.

Conclusions: Although this study indicated that the intervention based on a coaching model with motivational interviewing components did not result in significantly different outcomes in comparison with standard care, it is hoped that transition supports for all adolescents with acquired brain injury continues to be developed.



Professor Skye McDonald

Skye McDonald conducts experimental research in emotion perception, sharing techniques and data collection with colleagues at McGill Uni, Montreal, Uni of Wisconsin, USA, Donders Institute, the Radboud University, Netherlands. She also serves as Associate Editor of the Journal of the International Society (JINS) and is on the Board of Governors for the International Neuropsychological Society (INS).

Assessing social cognition and communication in adolescents with Traumatic Brain Injury

Skye McDonald, Therese English, Rebekah Randall, Thea Longman, Leanne Togher & Robyn Tate

What this study was about:

Traumatic brain injuries (TBI) in children and adolescents can impair social cognition and communication skills, but there are few assessment tools suitable for adolescents. Our test, The Awareness of Social Inference Test (TASIT), uses professionally enacted audiovisual vignettes of everyday conversational exchanges and is a valid measure of social perception disorders in adults.

What we did:

We tested 16 adolescents with TBI on TASIT. We also tested another 9 adolescents with brain injuries from other causes such as hypoxia and brain infections, but as their performance was very similar to those with TBI we focus here on the TBI group alone. We compared the performance of the TBI group to a group of 16 typically developing (TD) adolescents.

What we found:

Adolescents with TBI were, on average, no different to their TD peers on TASIT 1 (emotion recognition) and TASIT 3 (recognising lies and sarcasm when provided with additional cues), but were impaired on TASIT 2 which required them to interpret sarcastic and sincere conversational exchanges with few cues other than the demeanor of the speakers. Within

the TBI group, poor performance on TASIT correlated to both relative and self-reported communication difficulties at home. It also correlated with IQ, face recognition and severity of injury (as indexed by duration of post-traumatic amnesia). Overall, this study suggests TASIT is a valid measure for adolescents, although it raised questions as to how effective normative data is for comparing performance in social cognition during childhood and adolescence. This is a period of rapid development in skills and there is a great deal of variation across this age range, making it difficult to compare any one adolescent with others.

To read more about this study:

This study is currently under review: McDonald, S., English, T., Randall, R., Longman, T., Togher, L. & Tate, R.L. (Under review) Assessing social cognition and pragmatic language in adolescents with traumatic brain injuries.



ADULT STUDIES

Sexual changes following traumatic brain injury

Jennie Ponsford, Rene Stolwyk, Marina Downing, and John Taffe

What the study is about:

Human sexuality is a complex phenomenon, which may be affected by physical injury, hormonal changes as well as a person's self-confidence, mood and the quality of their relationships. Sustaining a brain injury may disrupt many of these things. Despite this, there have been few studies of sexuality following Traumatic Brain Injury (TBI). We have conducted a study to examine changes in sexuality following moderate to severe TBI and identify factors associated with these changes.

What we did:

We asked 865 people with TBI and 142 age and gender-matched controls to complete a questionnaire documenting changes in various aspects of their sexuality following injury, including aspects of sexual performance, relationship quality and mood. We also assessed their levels of anxiety and depression symptoms and their self-esteem.

What we found:

We found that people with TBI reported significantly poorer sexual function, relationship quality and self-esteem and mood than the healthy controls, with up to 54% reporting a decline in these aspects of sexuality post-injury. Individuals with TBI attributed sexual changes to various causes, most commonly fatigue, low confidence, pain, decreased mobility and feeling unattractive. Being older, less independent in

Monash University School of Psychology and Psychiatry and Monash-Epworth Rehabilitation Research Centre

daily activities, being more depressed and having lower self-esteem were associated with poorer sexuality. We concluded that therapeutic interventions for sexuality need to become a greater focus of rehabilitation following TBI. They need to include a focus on depression and self-esteem, and address barriers to social participation and opportunities for sexual contact in individuals who are less independent.

To read more about this study:

Stolwyk, R.J., Downing, M.G., Taffe, J., Kreutzer, J.S., Zasler, N.D., Ponsford, J.L. (in press) Assessment of Sexuality following Traumatic Brain Injury: validation of the Brain Injury Sexuality Questionnaire (BISQ). *Journal of Head Trauma Rehabilitation*. Accepted December 2012.

Downing, M., Stolwyk, R., & Ponsford, J. (in press). Sexual changes in individuals with Traumatic Brain Injury: A control comparison. Paper submitted to the *Journal of Head Trauma Rehabilitation*. Accepted 3 February, 2013.

Ponsford, J., Downing, M., Stolwyk, R., & Taffe, (in press). J. Factors associated with Sexuality following Traumatic Brain Injury. Paper submitted to the *Journal of Head Trauma Rehabilitation*. Accepted 3 February, 2013.



Professor Jennie Ponsford

Jennie Ponsford leads an extensive program of research aimed at improving outcomes following traumatic brain injury, focused on assessment and treatment of problems including anxiety and depression, fatigue and cognitive dysfunction. She has collaborative grants with colleagues in the US, Canada and Europe. She is the incoming President of the International Neuropsychological Society (INS), is a member of the Executive Committees of the International Brain Injury Association, the World Federation of NeuroRehabilitation ASSBI and INS and serves on the editorial boards of five international journals.

Investigations of friendships following traumatic brain injury (TBI)

Tennille Thomasz, Leanne Togher, Emma Power & Jacinta Douglas

Social isolation is a significant and common affect following a TBI. One factor that contributes to changes in socialisation is functional impairments in communication, which affect conversation. People with a TBI make more pragmatic errors. They also experience difficulty with information transfer, therefore not meeting the needs of their communication partners. It is often deemed that they are less rewarding to converse with, because they have difficulty extending conversation. In terms of receptive abilities, they require more time to respond and are more likely to need repetition. These impairments contribute to deleterious changes in the person's social participation and friendships.



Professor Leanne Togher

Leanne Togher conducts innovative research in communication disorders and training for people with TBI, families, community agencies and health professionals in collaboration with colleagues in the USA and Canada (University of Wisconsin-Madison; Carnegie Mellon University, Pittsburgh, University of Montreal). She is the President of ASSBI and is on the Editorial Board of a number of journals including the Journal of Rehabilitation Medicine and Brain Impairment.

The aim of this study is threefold. Firstly: to investigate the experiences of Speech Pathologists, particularly in relation to their work with friends of people with TBI. Secondly: to investigate the experiences of friends of people with TBI and thirdly: to determine whether providing education to friends and a person with TBI improves communication in

comparison to treatment that only involves the person with TBI.

What we will do?

A group of 50 Speech Pathologists will complete an online survey. Responses will be analysed both qualitatively and quantitatively. Semi structured interviews will be conducted with 10 friends (of people with a TBI). Responses will be

transcribed and thematically analysed.

The final component is a treatment study. This will involve 2 participants and a friend. It will utilise a single subject experimental case series design. Participants will be randomly allocated to complete either a communication partners training program or a program that works with just the person with TBI to improve communication specific coping skills. Discourse samples will be collected and analysed using the adapted Kagan scales to determine whether changes in communication are evident post treatment.

Currently awaiting ethics, therefore study has not commenced.





Dr. Angela Morgan

Angela Morgan uses neuroimaging techniques (e.g., fibre tractography, functional connectivity) in her work examining prognosis and propensity for recovery of speech disorder following brain injury. Angela has strong collaborative links to the University College London Institute for Child Health. She is Associate Editor for the International Journal of Speech-Language Pathology.

Dysarthria following Traumatic Brain Injury

Angela Morgan

Severe speech disorder, dysarthria, may be present for life after traumatic brain injury in childhood. Yet we have limited knowledge of the neural correlates of this chronic disorder. We conducted a study to address this problem, led by the Murdoch Childrens Research Institute in collaboration with University College London and Florey Institute of Neuroscience and Mental Health.

The study examined the structural and functional neuroimaging correlates of chronic dysarthria after childhood-onset traumatic brain injury (TBI). Forty-nine participants aged 12 years 3 months to 24 years 11 months were recruited to the study: (i) a group with chronic dysarthria ($n = 17$); matched for age and sex with two control groups of (ii) healthy control subjects ($n = 17$); and (iii) individuals without dysarthria after traumatic brain injury ($n = 15$). We collected a high-resolution 3D T1-weighted whole-brain data set for conducting voxel-based morphometry (VBM) analyses of group differences in grey matter. Functional MRI was used to examine activation associated with speaking single words. Group differences on VBM revealed widespread grey matter reductions in the dysarthric group compared with healthy control subjects, including in numerous speech motor regions bilaterally, such as the

cerebellum, the basal ganglia and primary motor cortex representation of the articulators. Individuals with dysarthria had reduced grey matter bilaterally in the ventral sensorimotor cortex, but this reduction was concomitant with increased functional activation only in the left-hemisphere cluster during speech. Increased recruitment of Broca's area was also found to be correlated with better speech outcome, suggesting that this 'higher-level' area may be more critically involved with production when associated motor speech regions are damaged.

The data indicate that the bilateral morphological abnormalities within cortical speech networks in childhood prevented reorganization of speech function from the left- to right-hemisphere. Rather, functional reorganization involved over-recruitment of left-hemisphere motor regions. This reorganization method was thought to be only partly effective, given the presence of chronic, yet mild, speech deficits. The bilateral structural abnormalities found to limit functional reorganization here, may be critical markers for poor long-term speech prognosis for children who sustain traumatic brain injury.

Do people with severe traumatic brain injury benefit from making errors? A clinical trial of the efficacy of error-based learning and errorless learning training (2013-2015)

New NHMRC Project

Tamara Ownsworth, Jenny Fleming, Robyn Tate & Amanda Lane-Browne

Self-awareness and error self-regulation are key predictors of whether people return to work and live independently after TBI. Although metacognitive training

has been found to improve self-awareness and self-regulation deficits after severe TBI, people's capacity to generalise skills beyond training has rarely been examined. Poor skills generalisation poses one of the biggest barriers to successful outcomes of rehabilitation because most interventions are delivered in a specific context and are cost and time limited. This project seeks to address the following key questions:

- Is making errors actually beneficial in the learning process or is it better to avoid errors when training skills in rehabilitation? Specifically, does an error-based learning approach promote greater self-awareness and skills generalisation than errorless learning?
- Is improvement in self-awareness and skills generalisation after error-based learning related to better long-term social outcomes (e.g., work, independence and relationships)?

Commencing in 2013, this RCT aims to recruit people with severe TBI from units in Brisbane and Sydney and will compare the efficacy of error-based learning and errorless learning (8 sessions) for improving awareness of deficits, skills generalisation and long-term social outcomes. The project also aims to determine whether improvements in self-awareness and self-regulation following error-based learning are associated with long-term gains in role participation and reduced support needs.

Dr. Tamara Ownsworth

Tamara Ownsworth is a clinical neuropsychologist who is internationally recognised for her research on self-awareness and self-regulation after brain injury. She is a representative of the World Federation for NeuroRehabilitation's Special Interest Group in Neuropsychological Rehabilitation and on the Editorial Boards of *Neuropsych Rehabilitation* and *Brain Impairment*.



Video-feedback on functional task performance improves self-awareness after traumatic brain injury

Julia Schmidt, Jennifer Fleming, Tamara Ownsworth and Natasha Lannin

What the study is about:

Impaired self-awareness (insight) is common in many people after traumatic brain injury (TBI). People with impaired self-awareness have limited motivation to participate in therapy, decreased incentive to use strategies, difficulty setting achievable goals and difficulty achieving a productive and independent lifestyle in the community. Successful participation in work, study, independent living, and social relationships require adequate self-awareness. In this study, we wanted to find out what type of intervention is most effective to improve impaired self-awareness in people after TBI.

What we did:

We had 54 participants with impaired self-awareness after TBI randomly allocated to three groups. We provided three different types of intervention that involved the provision of feedback on the person's completion of a daily activity, including video feedback, verbal feedback and experiential feedback. We measured the participants' level of self-awareness before and after the intervention.

What we found:

People that were shown a video of their performance of a daily activity had the greatest improvement in self-awareness, as compared to people that were verbally told about their performance and people that performed the activity without feedback from a therapist.

To read more about this study:

Schmidt, Fleming, Ownsworth, Lannin (2013). Video-feedback on functional task performance improves self-awareness after traumatic brain injury: A randomised controlled trial. *Neurorehabilitation and Neural Repair*, 27, 318-326.

Goal Planning: Facilitators and Barriers

Emmah Doig, Jennifer Fleming, Petrea Cornwell

What the study is about:

Unlike the treatment for a broken arm, which in most cases would be a uniform treatment process (i.e. x-ray, cast) of short duration with little or no expected complications after healing, the rehabilitation journey after traumatic brain injury is most often very different. Due to the wide and varied changes that occur after brain injury, rehabilitation is often not uniform, rather needing to be individualised according to unique needs and often continues long after hospital stay, in community settings due to the ongoing impact of changes on functioning. In order to meet individual needs in rehabilitation, a core practice used by practitioners is goal planning. Goal planning is a process where rehabilitation targets are set in order to address individual needs. Goals can be a motivational tool, driving the rehabilitation process. A client-centred process where goals that are important and meaningful for the client are developed and focussed on during rehabilitation is suggested to be important for client motivation to engage in rehabilitation. There is no gold standard for 'how to' develop rehabilitation goals despite it being a widespread practice. It has been suggested, but not systematically explored, that goal planning can be



Dr. Jennifer Fleming

Jennifer Fleming conducts a program of research on psychosocial functioning and cognitive rehabilitation following TBI in collaboration with Griffith University. She holds a conjoint research appointment in occupational therapy with the University of Queensland and Princess Alexandra Hospital, and is Associate Editor of Brain Impairment.

challenging with people after brain injury for a range of reasons such as cognitive changes, including reduced awareness of changes post injury.

What we will be doing:

This study will explore how various practitioners (physiotherapists, speech therapists, occupational therapists) working in various community-based rehabilitation settings carry out goal planning with people with and without brain injury. This study will audiotape goal planning sessions to capture the process used as well as measure a range of factors related to the therapist (i.e. experience, discipline, therapeutic alliance), client (i.e. type of injury and changes following injury such as changes in thinking skills or self-

awareness) and the organisation (i.e. funding and time available for goal setting, training). This study will also measure the client's perception about how meaningful and important the developed rehabilitation goals are to them (the client-centredness of the goals) as well as the extent to which the goals are achieved. It is anticipated that this study will provide information about whether goal setting is more challenging for people with brain injury, as well as identify facilitators of client-centred goal planning by exploring the relationships between the client, therapist and organisational factors and client-centredness.

Meta-cognitive strategies to improve errors during meaningful occupation

Emmah Doig, Jennifer Fleming, Tamara Ownsworth

What the study is about:

This study evaluates the effect of an occupation-based intervention for people with self-awareness deficits after traumatic brain injury. After traumatic brain injury people, it can be challenging for a person to understand all of the changes in the abilities, and how those changes might impact on doing everyday tasks. This can be problematic when they attempt to return to valued activities at home, work and in the community. Therefore it is important that therapy uses activities or occupations that are meaningful for the individual and considers the context where these activities are performed in real life. The intervention to be evaluated in this study is environment-focussed, goal-directed, and

occupation-based intervention and incorporates specific strategies designed to facilitate self-awareness.

What we will be doing:

We will be inviting a small number of people with traumatic brain injury to participate in a 10 week, intensive therapy program with an occupational therapist. The therapy program will use a client-centred approach by targeting goals related to areas of life that are meaningful and important to the person. The therapy will involve an occupation-based approach (using engagement in meaningful tasks related to goals in therapy sessions) to provide opportunities to learn strategies to avoid making or self-correct errors. It is anticipated that this intervention will facilitate goal achievement and ability to self-monitor and self-correct errors in task performance. The design of this study will also enable the researchers to determine if skills learned during practice of specific therapy tasks are applied (or generalised) by the person during other tasks that are not the target of the intervention.

Increasing Meaningful Occupation After Traumatic Brain Injury: The Productive Engagement for Participation Alliance (PEPA) Study.

Study in progress

Robyn Tate, Amanda Lane-Brown, Donna Wakim and Michelle Genders

What this study is about:

This project specifically addresses the issue of diminished meaningful occupational activity for people who have sustained a traumatic brain injury (TBI) and are unable to return to work.

Participation in the workforce is often not possible for people who have sustained a severe TBI. Furthermore, a large proportion of those who are unable to return to work also do not engage in any meaningful occupation in lieu of work; consequently they have a large amount of “free” time, each and every day. These people generally have sustained major impairments of the cognitive functions essential to the development of meaningful occupational activities: specifically the ability to plan, initiate action, and to monitor and/or sustain activity. Therefore, they often require structure and support if they are to develop a program of meaningful activities.

The ultimate goal of the project is to assist service providers to facilitate a program of meaningful occupation in people with TBI who are not able to participate in the workforce. This project is in two parts: Phase 1 of the project will develop and trial a framework of service delivery with participants with TBI and Phase 2 is the implementation of the framework to clinical service practitioners.

What we will do:

During Phase 1 the framework and procedures will be evaluated with a series of people with TBI using single-case experimental methodology. Health outcome measures will be taken pre and post-treatment. Target behaviours will be collected each session during baseline and treatment phases, as well as at 2 and 6 month follow-up to examine maintenance of treatment effect.

Treatment for participants during Phase 1 will include strategies to develop skills to be more active including daily timetables and goal setting. An individually tailored program of activity that matches the participant’s interests and lifestyle will be developed and may include leisure, voluntary work and other activities.

The results from the single cases will be used in Phase 2 to adapt the procedures that will then be used in the training of service providers through a series of workshops.

The study has received ethics approval and recruitment of participants with TBI is in progress.



Deficits in comprehension of speech acts after TBI: The role of Theory of Mind and Executive Function

Cynthia Honan, Skye McDonald, Alana Fisher, Alison Gowland & Rebekah Randall

What this study was about:

Theory of mind (TOM) is a term used to describe a person's ability to form inferences about another person's beliefs or intentions, and is a critical component of effective communication. TOM abilities are mediated by frontal brain structures that are also thought to mediate executive processes such as cognitive flexibility, inhibition, and working memory. Given that frontal lobe brain structures are usually compromised following traumatic brain injury (TBI) it is not surprising that both abilities are commonly affected in this population. There is much debate, however, about whether TOM is dependent on executive functioning or not. The issue is complicated by the fact that many TOM tasks use complex stories requiring a significant capacity to understand. This study aimed to determine whether TOM is dependent on executive functions or whether these abilities are, in fact, modular (i.e., are independent functions).

What we did:

A group of severe TBI and 25 people with similar backgrounds but without any brain injury participated in the study. Videotaped vignette segments, containing a woman talking about her recent experiences or a news reader, were shown to all participants. The vignettes were specifically presented so that they contained either: minimal executive function demands, high cognitive flexibility demands, high working memory demands, or high inhibition demands. Participants completed both low and high TOM questions and tasks after viewing the vignettes in each of these varying executive conditions.

What we found:

In the high working memory demand condition, individuals with TBI were more impaired on high TOM tasks. This difference in TOM performance was removed after taking into account the high working memory demands of the task. There were no group differences found in high TOM tasks in the inhibition and flexibility conditions, even after controlling for the increased executive demands. This may indicate that TOM ability is independent of inhibition and cognitive flexibility demands, although further investigation is required. Overall, the results suggest that TOM does not uniquely contribute to communication comprehension ability, and that TOM ability is selectively dependent on working memory demands, in individuals with TBI.

To read more about this study:

Honan, C. A., McDonald, S., Gowland, A., Fisher, A., & Randall, R. K. (Submitted) Deficits in comprehension of speech acts after TBI: The role of theory of mind and executive function.

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c.honan@unsw.edu.au

Trialling a brief intervention for deficits in recognising emotional prosody following severe Traumatic Brain Injury

Skye McDonald, Leanne Togher, Robyn Tate, Rebekah Randall, Therese English & Alison Gowland

What this study is about:

Many adults with acquired brain injuries, including traumatic brain injuries (TBI) have impaired emotion perception. Impaired perception of emotion in voice can occur independently to facial expression and represents a specific target for remediation. No research to date has addressed this.

What we did:

We used a randomised controlled trial to examine the efficacy of a short, 6 session treatment for improving the ability to recognise emotional prosody for people with acquired brain injury, mostly TBI. Ten participants were allocated to treatment and 10 to waitlist.

What we found:

There were no significant treatment effects for group, but analyses of individual performances indicated that 6 of the treated participants made demonstrable improvements on objective measures of prosody recognition. The reasons why some participants showed improvements while others did not was not obvious. Improvements on objective lab-based measures did not generalise to relative reports of improvements in everyday communicative ability, nor was there clear evidence of long term effects.

To read more about this study:

This study is currently in press: McDonald, S., Togher, L., Tate, R., Randall, R., English, T. & Gowland, A. (In Press) Trialling a brief intervention for deficits in recognising emotional prosody following severe Traumatic Brain Injury. *Neuropsychological Rehabilitation*.





Do people with Traumatic Brain Injury experience ostracism?

Michelle Kelly, Skye McDonald & David Kellet

What the study is about:

People with Traumatic Brain Injury often report increased social isolation or reduced social support as a consequence of their injury. Changes in social support are generally across the domains of family relationships, friendships, social activities and employment. Social isolation and inadequate social support is known to have detrimental effects on people's mood. It is, therefore, not surprising that people with a brain injury experience psychiatric disorders such as depression secondary to their injury. While links between self-reported changes in social support and psychological outcomes have been drawn, there is no evidence for the direct and immediate effects of ostracism, or an acute experience of social isolation on individuals with a brain injury. Research into this area is particularly important given that how a person reacts or copes with a single social experience may determine whether future opportunities for interactions are likely. Given the evidence that individuals with a brain injury subjectively report lower levels of arousal when it comes to emotionally-laden stimuli, particularly negative stimuli, and have a different physiological response to emotional stimuli, it is unclear whether they will 'feel' the pain of ostracism to the same extent as healthy controls.

What we are doing:

This study looked at the psychological and physiological effects of ostracism (being socially excluded by one or more other people) in 14 adults with a brain injury, and compared them to 16 matched control participants. The Cyberball ball tossing game was used to induce an immediate experience of social exclusion. Participants were asked to play an online game of toss with other volunteers. On one occasion they were excluded from the game, on the next they were included

fairly in the game. We then asked participants to report on how they felt after each game. Also, sometimes we feel as though we are not having an emotional response to a situation yet our body says differently. Using small electrodes attached to the fingertips, we are able to measure very small changes in heart rate and perspiration that represent emotional responses. Data is still being collected.

What we have found so far:

Against predictions, preliminary results suggest little difference between groups on the self-reported effects of ostracism, however, while not significant, the observed trend suggests that participants with a brain injury display a different physiological response (skin conductance levels) to ostracism than control participants. Specifically, adults with a brain injury displayed higher levels of arousal during the inclusion condition, when compared with the ostracism (exclusion) condition. This might suggest that those with a brain injury are having a larger emotional response when being included rather than when being excluded. This poses a problem as we may rely on our emotional responses to drive or motivate behaviour that will help us to rejoin a group or re-engage socially. If our physiological responses do not tell us there is a problem, we may not be driven to do something about it.

To find out more about this study:

Kelly, M., McDonald, S., Kellet, D. (Submitted) The Psychological Effects of Ostracism Following Traumatic Brain Injury

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Spontaneous and posed emotional facial expressions following severe Traumatic Brain Injury

Marie Dethier, Sylvie Blairy, Hannah Rosenberg & Skye McDonald

What this study is about:

Dramatic interpersonal problems result frequently from severe TBI. These include relationship failures, increased social isolation, loneliness, and reduced social networks. Non-verbal communication skills, both the recognition and the expression of non-verbal behaviours, have been described as an important component in the maintenance of successful social relationships. To date, the research in patients with TBI has largely explored nonverbal emotion recognition: a significant proportion of adults with TBI present impairments in decoding emotional facial expression. However,

nonverbal emotion expression has remained mainly unexplored. The object of the present study was to test the intensity of spontaneous expressions and the accuracy of posed expressions (in response to both visual and verbal cues) of patients with TBI.

What we did:

Twenty-three participants with TBI and 27 control participants from similar backgrounds took part on this study. To test spontaneous expressivity, we asked participants to relate personal angry, happy, and sad events. We tested posed expressivity with two tasks. In the first one, they were asked to mimic the facial expressions presented on a photograph and in the second one, to produce emotional facial expressions on the basis of a word. Participants' faces were filmed during the three tasks and their emotional facial expressions were coded via judges' ratings.

What we found:

Participants with TBI had less intense sad expressions when relating a sad event compared to control participants. No group difference emerged in the happy and angry events. Participants with TBI were also impaired in their ability to pose sad emotions. These findings suggest that patients with TBI are impaired at expressing sad expressions either spontaneously or deliberately. This may reflect difficulties in the initiation or suppression of facial expression as well as an impaired knowledge of the facial configuration of sad expression.

To read more about this study:

Dethier, M., Blairy, S., Rosenberg, H., & McDonald, S. (2012). Spontaneous and Posed Emotional Facial Expressions Following Severe Traumatic Brain Injury. *Journal of Clinical & Experimental Neuropsychology: Official Journal of the International Neuropsychological Society.*



Investigation of emotion recognition in adults with Traumatic Brain Injury (TBI) – Examining differential difficulty

Hannah Rosenberg, Skye McDonald, Marie Dethier, Roy Kessels & Fred Westbrook

What the study is about:

Difficulties interpreting social situations and understanding the emotions portrayed by others are common following a traumatic brain injury (TBI). The ability to quickly and accurately recognise how other people are feeling is crucial in a variety of everyday social situations and improving our understanding of these difficulties is important in order to promote functioning post-injury. An issue that arises from research into emotion recognition concerns the differential difficulty in recognition of the various emotions. Research suggests that while some emotions (such as happiness) are easier to recognise, others (such as fear) are more difficult. This means, for example, that it is generally easier to recognise when someone is happy than when that person is scared.

What we are doing:

The research is being conducted as part of a Ph.D in the School of Psychology at the University of New South Wales. Participants with a brain injury as well as control participants were asked to view a series of real-time interactive morphs of faces, between two endpoint facial expressions of the same identity, from 0% emotion (neutral face) to 100% emotion. The faces expressed six emotions: happiness, surprise, anger, disgust, sadness and fear, in different intensities, ranging from 20% to 100%. They were asked to select what emotion best described how the person in the picture was feeling, as well as to undergo conventional neuropsychological tests.

What we found:

In comparison to control participants, those in the TBI group were less accurate overall in correctly recognising the expressions of surprise, anger, disgust, and happiness. Further, participants in both the control and the TBI groups were poor in recognising fearful facial expressions in lower intensities. However, while control participants improved their accuracy as the intensity increased, the accuracy of the participants in the TBI group remained low. This suggests that fear is especially difficult to recognise from faces for both control participants and people with a TBI, with the latter group finding it equally difficult even when the intensity of the fearful expression increases.

Facial mimicry and arousal to repetitions of affective movie clips

Jacqueline Rushby, Skye McDonald, Rebekah Randall, Arielle de Sousa & Emily Trimmer

What the study is about:

Over a number of studies, we have shown that severe traumatic brain injury (TBI) is associated with reduced facial mimicry to pictures of facial expressions, affective scenes, and short affective movie clips. These effects are related to a reduction in self-reported emotional empathy, which is defined as ‘the tendency to mimic the verbal, physiological, and/or behavioural aspects of another person’s emotional experience/expression, and thus to experience/express the same emotions oneself’ (Hsee et al, 1990, p. 328). Empathy is thought to be critical for successful interpersonal functioning, as it provides an individual with the ability to understand and respond to the emotional experiences of others. The current study explored whether repeated exposure to emotionally evocative film clips would enhance facial mimicry responses in participants with TBI.

What we did:

Nineteen participants with TBI and 23 control participants viewed five repetitions of six two-minute film clip segments containing pleasant (When Harry met Sally and Mr Bean’s Christmas), unpleasant (My Bodyguard and Cry Freedom), and neutral content (Birds and Stream taken from the documentary Danali). Two facial muscles were monitored while participants watched the films: the zygomaticus, which activates when we feel happy, smile or laugh; and the corrugator, which activates when we feel unhappy or frown. We also monitored skin conductance level (SCL), which measures arousal changes over time.

What we found:

In line with our previous research (McDonald et al., 2010; de Sousa et al., 2011) TBI participants showed impaired corrugator responses to negative films (illustrated in Figure 1), but normal zygomaticus responses to positive films (Figure 2). Both groups showed a reduction in zygomaticus responses to repeated presentation of the positive clips, but only control participants showed a reduction to the negative clips – TBI responses were consistent over repetitions. In regards to arousal, control participants showed increased SCL to affective clips compared with neutral, whereas TBI participants showed no changes in arousal to any of the film clips (Figure 3). Follow-up work in our group is investigating how these findings may be incorporated into our socio-emotional rehabilitation program.

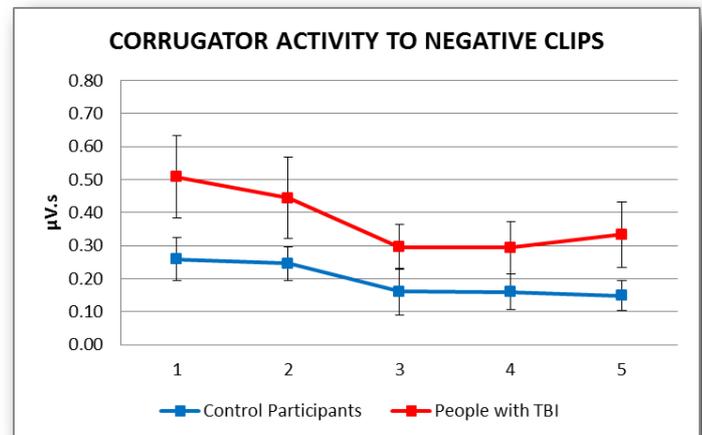


Figure 1.

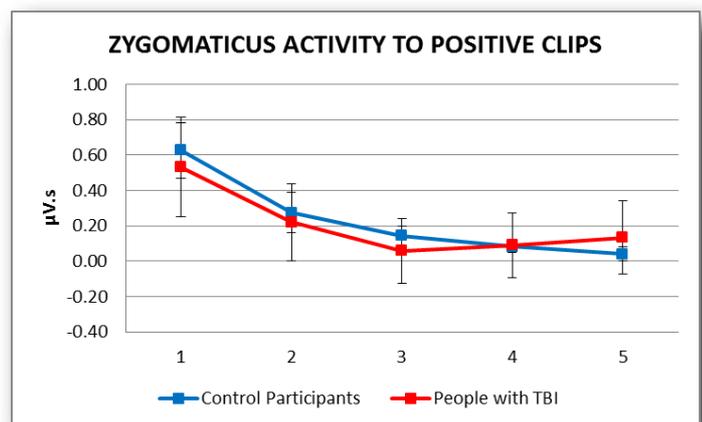


Figure 2.

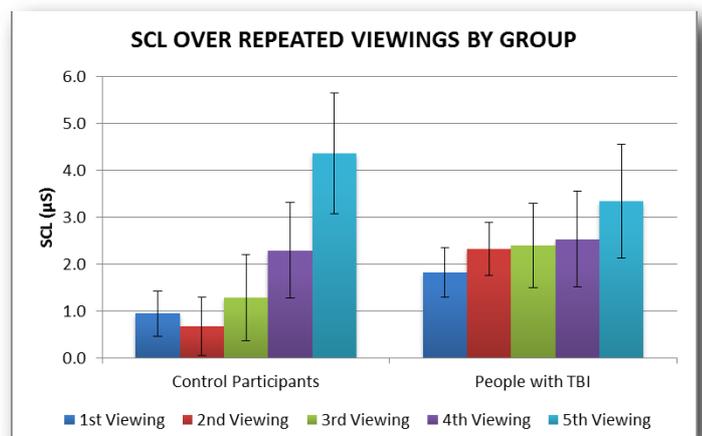


Figure 3.



A new test of social decision making for people with Traumatic Brain Injury

Michelle Kelly, Skye McDonald & David Kellet

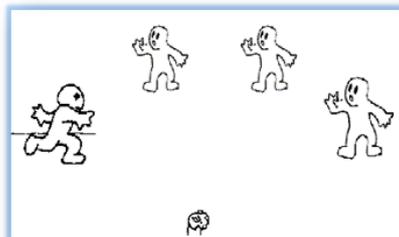
What the study was about:

People with a traumatic brain injury (TBI) often have problems making decisions in everyday life. It is possible that the difficulties experienced when making decisions about everyday things, like what to eat and what to wear are very different to difficulties experienced when making decisions about things that affect us emotionally or socially. Decisions that involve our emotions include whether to start or end a relationship, whether to confront a friend about a disagreement or whether to spend all your savings. It is also possible that different areas of the brain are responsible for these two types of decisions and thus damage to one area may only affect one type of decision-making. Additionally, it is possible that there are a number of reasons why people with a brain injury might not do well in social situations. One of the possibilities is that they are not using cues, or feedback, from the social environment to guide future decisions and behaviours. This project aimed to: 1) develop a test that will investigate decision-making in a social situation where our emotions are involved; 2) examine the ability of adults with TBI to make good social decisions on this task; 3) determine whether adults with TBI have the same physiological response when making social decisions as adults without brain injury; 4) determine whether adults with brain injury know when they are being socially excluded, i.e., can recognise the social cues; 5) determine whether adults with brain injury have the same psychological response to ostracism as adults without brain injury; and, 6) determine whether adults with brain injury have the same physiological response to ostracism as adults without brain injury. Four studies were conducted to address these aims.

What we did:

Participants were asked to complete a number of different tasks. The card game asked participants to choose cards from 4 decks. With each card choice, the participant would win some money, but could also lose some. By looking at the choices made we can see if participants were able to learn which decks would win them the most money in the end (everyday decision-making). The new task that was developed to test decision making in a social situation asked participants to play a game of 'catch and throw' with other participants on the internet. Participants were asked to try to 'win' as many throws as they could. A second game of 'catch and throw' was used to determine whether participants could recognise when other people were not playing fairly, i.e., when they were being left out of the game.

Also, sometimes we feel as though we are not having an emotional response to a situation yet our body says differently. Using small electrodes attached to the fingertips, we are able to measure very small changes in heart rate and perspiration that represent emotional responses. This may tell us whether an injury to certain parts of the brain may stop people being aware of the changes that are happening in their body when they are making emotionally charged decisions.



What we found:

All of the data has now been analysed. The studies demonstrated that, as a group, the brain-injured participants were less able to determine which players would return the ball the most, and therefore ended up winning less throws in the new social decision making task. However, those with a brain injury were just as good at making decisions on the non-social card game as those without a brain injury.

The data also demonstrated that, as a group, those with a brain injury were less hurt by ostracism than those without a brain injury. Preliminary evidence suggests that this may be due to not having the same physiological response to the social cue of ostracism.

Together these studies suggest that people with a brain injury may be having more difficulty in social situations because they are less able to use the feedback, or cues from the environment to guide future decisions and behaviours.

We would like to say a big thank you to all the very generous people in Newcastle and in Sydney who have kindly volunteered for our research. This important work would not be possible without them.

To find out more about this study:

Kelly, M., McDonald, S., Kellet, D. (Submitted) Development of a Novel Task for Investigating Decision Making in a Social Context Following Traumatic Brain Injury

Contact Michelle Kelly:
Michelle.Kelly@hnehealth.nsw.gov.au

Emotional regulation impairments following severe Traumatic Brain Injury: An investigation of the body and facial feedback effects

Marie Dethier, Sylvie Blairy, Hannah Rosenberg & Skye McDonald

What this study is about:

Difficulties in the regulation of emotion are among the most common and debilitating consequences of severe TBI. Many patients fail to return to work, have decreased leisure activity, or experience breakdowns in intimate relationships as a result of changes in emotional behaviours. TBI commonly impairs both the expression and experience of negative affective states. There may be increases of irritability, aggression, and impulsivity, or alternatively, a diminution of arousal and motivation and a high level of apathy. The aim of this study was to investigate body and facial feedback. Body and facial feedback designates the fact that emotional experience is affected by cues generated by afferent feedback produced by changes in the muscles involved in body posture and

facial expression. These two processes have a role in healthy emotional regulation, and its investigation may improve the understanding of the difficulties of patients with TBI dealing with the regulation of negative emotions, and of anger in particular.

What we did:

A group of 24 people with severe TBI and a group of 28 people from similar backgrounds but without an injury took part in this study. We read them instructions that asked them to adopt facial expressions and body postures (that were associated with a particular emotion) and maintained these positions for 10 seconds. Expressions and postures entailed anger, sadness, and happiness as well as a neutral (baseline) condition. After each expression/posture manipulation, participants evaluated their subjective emotional state (including cheerfulness, sadness, and irritation).

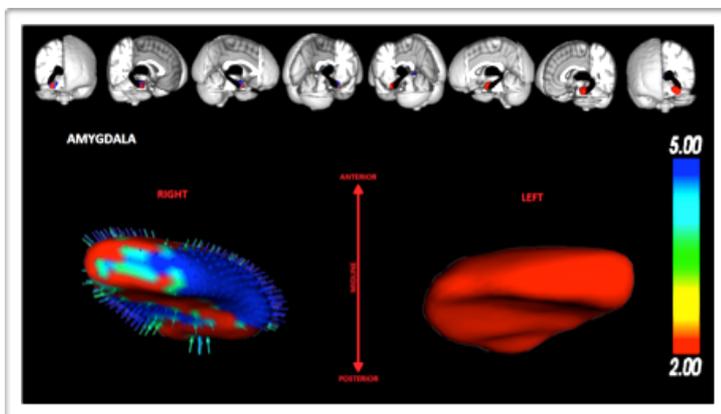
What we found:

Participants with TBI were less reactive to the effects of facial and body feedback than control participants, especially for the emotion of anger, as can be seen in Fig 1. It means that whereas control participants reported

increased feelings of irritation after adopting an angry posture and facial expression, TBI participants were not: their feelings of irritation were of similar intensity in the different conditions. Reported problems in the regulation of negative emotions, especially anger, following TBI may come, in part, from difficulties that people with TBI have in correctly recognising their own emotions. As emotional knowledge has an important role in emotional regulation, it stands to reason that people with TBI may have problems regulating feelings of anger because they do not recognise them. Findings from the present study have important clinical implications. Rehabilitation of emotion regulation deficits following TBI may need to target the disconnection between emotional behaviour and emotional awareness in order to bring emotional behaviour under conscious control.

To find out more about this study:

Dethier, M. Blairy, S., Rosenberg, H. & McDonald, S. (In Press) Deficits in processing feedback from emotional behaviours following severe TBI. *Journal of the International Neuropsychological Society*.



Amygdala volume predicts arousal and empathy deficits after severe traumatic brain injury

Jacqueline Rushby, Skye McDonald, Nicklas Parks, Jaimi Iredale, Rebekah Randall & Olivier Piguet

What the study is about:

People with severe traumatic brain injury (TBI) often find social situations challenging because they can no longer respond to the emotional state of others. Loss of emotional responsivity, i.e., reduced facial mimicry and autonomic arousal to facial expressions, have been reported to be associated with low self-reported emotional empathy following TBI (de Sousa, McDonald, Rushby et al., 2011). To date, however, no comparisons

have been made between changes in brain morphometry and loss of emotional responsiveness. The current study aimed to determine whether a relationship is evident between brain regions implicated in emotion processing and changes to arousal regulation and empathic ability.

What we did:

We compared grey matter volume from brain regions thought to be involved in the regulation of arousal and emotional responsiveness, specifically the bilateral amygdala, insula and thalamus, with resting arousal (measured by mean skin conductance level (SCL) over 2 minutes with eyes-closed) and self-reported cognitive and emotional empathy scores. To date, 16 adults (12 male; mean age = 38 years) with severe TBI (mean PTA = 81 days; \geq 5 years post injury) and 16 matched controls (12 males; mean age 46 years) have participated.

What we found:

Reduced grey matter volume was found in several structures examined in TBI compared with controls, with the largest reduction found in the right amygdala (illustrated in Figure 1). Compared to controls, TBI participants had lower resting arousal-SCL and cognitive empathy, but higher emotional empathy levels (see Table 1). Reduced amygdala volume was associated with lower arousal, and lower cognitive empathy. It was also associated with greater self-reported emotional empathy. Overall, the present study shows that amygdala reduction after TBI leads to deficits in the regulation of

Pilot test of biofeedback to regulate heart rate variability, and its relationship to emotional responsiveness in severe traumatic brain injury

Skye McDonald, Jacqueline A. Rushby, Alana Fisher, Rebekah Randall & Robyn Tate

What the study is about:

Severe traumatic brain injury (TBI) is known to result in impaired responsiveness to emotionally-salient events, as well as ‘emotional blunting’ or the impaired experience of emotions and feelings. Moreover, reduced emotional responsiveness and arousal has shown to be linked to lowered empathy, and thus deficits in the ability to understand another person’s thoughts and feelings, essential for successful interpersonal functioning. Heart rate variability (HRV) is an index of autonomic regulation: a balance between sympathetic and parasympathetic activity. HRV is known to be disrupted in disorders associated with impaired arousal, such as depression, anxiety and pain. Importantly, by using a visual pacer to breathe at a rate that normalises HRV, people with migraine, depression, and anxiety demonstrate significant changes to heart rate, reported mood levels and cognitive function. To date, HRV has not been examined in severe TBI, however, normal heart rate deceleration to emotionally salient materials is absent in a proportion of people with severe TBI.

The current pilot study aimed to establish whether: (a) HRV is reduced in TBI; (b) the use of a simple biofeedback measure (a visual pacer) improves HRV in people with TBI (and controls); and (c) the relationship between HRV and self-reported empathy, as well as ability to identify and describe one’s own feelings (alexithymia).

What was done:

Participants were 12 adults with severe TBI (PTA M = 62.64 days) and 8 Controls matched for age and education ($p > 0.05$). Firstly, participants completed self-report measures of: current depression, anxiety, stress (DASS-21); emotional and cognitive empathy (IRI and BEES); trait alexithymia (TAS-20 and BVAQ). For TBI participants, relative reports of emotion regulation (CBS) were also provided. Participants then completed two ‘breathing’ sessions during which HRV was recorded: (i) HRV ‘free-breathing’ condition (5 min. resting baseline); (ii) HRV ‘biofeedback’ condition (5 min. with visual pacer at 6 breaths per minute, see Figure 1).

What was found:

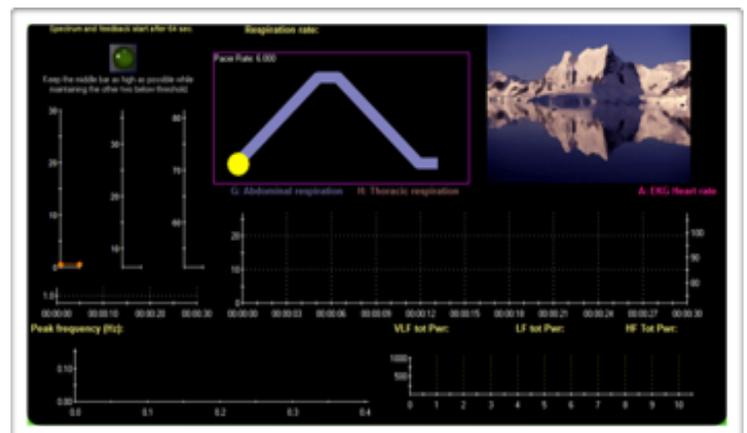
Among TBI participants, we found significantly reduced: HRV ($p = 0.012$; see Figure 2); cognitive and emotional empathy levels ($p < 0.01$); ability to identify and describe own feelings, indicating higher trait alexithymia ($p = 0.012$ on TAS-20; $p < 0.01$ on BVAQ).

For both TBI and Control participants: biofeedback training lead to significant increases on HRV ($p = 0.016$). Overall, higher HRV during biofeedback was associated with: higher self-reported emotional ($r = .58$, $p < 0.01$ on IRI; $r = .59$, $p < 0.01$ on BEES) but not cognitive empathy (all $p > 0.10$); lower trait alexithymia ($r = -.55$, $p = 0.012$ on TAS-20; $r = -.59$, $p < 0.01$ on BVAQ). No relationship with reported emotion regulation found in TBI, however.

What we concluded:

These pilot results suggest that HRV may provide a useful index of reduced autonomic regulation in severe TBI. Disrupted autonomic regulation (lower HRV) appears to be associated with an impaired ability to understand another person’s thoughts and feelings (empathy), as well as greater difficulties in identifying and describing one’s own feelings (alexithymia). Importantly, after only a single brief session of biofeedback training, significant improvement on HRV was observed in severe TBI, thus optimising the balance between sympathetic and parasympathetic nervous system activity. Based on this pilot work, a formal protocol of HRV biofeedback training may lead to normalisation in people with severe TBI; resultant improvements on autonomic regulation may go part of the way in alleviating impairments on empathy and emotional self-awareness, which are integral to successful interpersonal communication .

Figure 1. Screen-shot showing visual pacer during biofeedback to normalise HRV.



Cassandra Shields
Griffith University

Research topic: Understanding emotional adjustment following traumatic brain injury: A transdiagnostic perspective

Cassy commenced her PhD in clinical psychology at Griffith University in 2010. She is investigating a transdiagnostic perspective on emotional adjustment following TBI. She has followed up a subgroup of 54 individuals who previously participated in a prospective longitudinal hospital transition study, and are now 1-6 years post-discharge. Cassy's PhD seeks to understand the transdiagnostic influence of injury-related, neuro-cognitive, psychological and social/environmental factors on depression, anxiety and global distress. Her findings indicate that key transdiagnostic variables include difficulties with behavioral and emotional regulation, and greater appraised threat in the context of stressful life events.



Cassy is presenting some of her PhD findings in the self-awareness symposium at the ASSBI conference in Hobart (May, 2013).

Her supervisors are A/Prof Tamara Ownsworth, A/Prof Analise O'Donovan (Griffith University) and A/Prof Jennifer Fleming (PA hospital/UQ).

Dr Elizabeth Beadle
Griffith University

Research topic:

Identity change and rehabilitation after traumatic brain injury

Lizzie already has a Doctorate of Psychology (Clinical and Neuropsychology) and is the project coordinator of a new NHMRC project. She commenced her PhD at Griffith University in February 2013 and is interested in identity after a moderate to severe TBI in adulthood. Specifically, she is interested in if/how identity changes after TBI, and how this influences psychological adjustment. She is exploring this through "self discrepancy theory": a theory of how perceptions of who we are, and who we feel we should be, can cause emotional discomfort. She is also interested in cognitive factors that underlie these identity processes.



Her supervisors are A/Prof Tamara Ownsworth, Prof David Shum (Griffith University) and A/Prof Jennifer Fleming (PA hospital/UQ).

**Owen Lloyd
Griffith University**

Research topic:

Self-awareness deficits following paediatric TBI: natural recovery and relationship to outcome

Owen is doing a part-time PhD at Griffith University and is the Neuropsychology Clinical Leader at the Queensland Paediatric Rehabilitation Service at the Royal Children's Hospital in Brisbane. Owen commenced his PhD in March 2013, and is planning to examine the natural course of recovery of awareness of deficits, and investigate the impact of self-awareness on psychosocial outcomes after paediatric TBI.

Owen's supervisors are A/Prof Tamara Ownsworth (Griffith University) and A/Prof Jennifer Fleming (PA hospital/UQ).



**Elizabeth Pagan
Griffith University**

Research topic:

Moving Ahead Clinician Survey

Liz commenced her Masters in clinical psychology at Griffith University in February 2013. To support one of the key aims of the CRE, her research seeks to investigate clinicians' perceptions of the barriers to providing effective neurorehabilitation for people with TBI and their professional development preferences. Liz will conduct a survey of multidisciplinary professionals involved in psychosocial rehabilitation after TBI at the 2013 ASSBI conference in May.

Her supervisors are A/Prof Tamara Ownsworth in collaboration with Professor Skye McDonald, Dr Cynthia Honan and A/Prof Jenny Fleming.



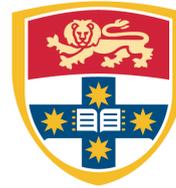
**Dr Christina Furtado
Monash University**

Christina Furtado has recently completed a Doctorate in Psychology (Clinical Neuropsychology) at Monash University. Her thesis focused on volumetric and neurocognitive changes during a major depressive episode and following symptomatic recovery. She is now currently working with Professor Jennie Ponsford in rehabilitation research at the Monash Epworth Rehabilitation Research Centre and is the project manager of the NHMRC funded psychological intervention study using adapted motivational interviewing and cognitive behavioural therapy for depression and anxiety following traumatic brain injury.



**Dr Kelly Sinclair
Monash University**

Kelly Sinclair has recently completed a Doctorate in Psychology (Clinical Neuropsychology) at Monash University. Her thesis focused on the assessment of fatigue and sleep disturbance following Traumatic Brain Injury, and also examined the use of light therapy to reduce fatigue and sleepiness following injury. The project is currently ongoing at Epworth Hospital and Monash University, Melbourne. Kelly continues to work part-time on this project.



Tennille Thomasz
University of Sydney

Part-time Masters student called Tennille Thomasz has enrolled at The University of Sydney to commence work on a project investigating the issue of friendships following TBI. Tennille Thomasz is a Senior Speech Pathologist who works at the Brain Injury Unit at Bathurst Base Hospital. Tennille's research will provide the foundations for our planned RCT with friends of people with TBI. Tennille has worked on her literature review, methodology and is now submitting her ethics application.

Tennille's supervisors are Prof Leanne Togher, Dr Emma Power and A/Prof Jacinta Douglas.



Dr Amanda Lane-Brown
University of Sydney

Amanda Lane-Brown is a postdoctoral research fellow with the NHMRC Centre of Research Excellence 'Moving Ahead' / University of Sydney and a Rehabilitation Psychologist at the Brain Injury Rehabilitation Unit, Liverpool Hospital. Amanda's research interests include deficits of drive following brain injury, awareness of deficits, executive dysfunction, cognitive rehabilitation, adjustment to disability, dual diagnosis of traumatic brain and spinal injury, and evidence-based clinical practice.

Amanda's mentor is Prof Robyn Tate.



Elise Bogart
University of Sydney

Elise Bogart is a doctoral candidate at the University of Sydney. Her current research interests are investigating the recovery of spoken discourse following severe traumatic brain injury.



Matthew Frith
University of Sydney

Matthew Frith is a qualified speech language pathologist with 10 years of experience in the field. He is currently Research Higher Degree candidate in the Faculty of Health Sciences at the University of Sydney examining the efficacy of standardised language assessments for children with acquired cognitive communication impairments after a traumatic brain injury. Frith is also service manager with Kaleidoscope's Paediatric Brain Injury Rehabilitation Team in Newcastle and has facilitated a number of research projects within the team.



Joanne Steel
University of Newcastle

Joanne Steel's PhD research investigates cognitive-communication during post-traumatic amnesia (PTA). The purpose of the research is to increase understanding of cognitive-communication recovery in the early stages after injury, particularly during PTA.

Her supervisors are Prof Alison Ferguson, Dr Elizabeth Spencer (University of Newcastle) and Prof Leanne Togher (University of Sydney).



Dr Belinda Kenny
University of Sydney

Belinda Kenny is working on a project that will trace communication recovery in people with severe TBI over a two year period following their injury. The study will be conducted by an international research team, led by Professor Leanne Togher from The University of Sydney, in collaboration with three major Brain Injury Rehabilitation Units in Sydney, NSW. The aims of the project are to determine predictive factors underlying recovery of communication deficits after TBI and identify the optimal period of recovery for communication skills.



Alannah Bailey
La Trobe University

Research topic:

Investigating the evolution and potential for the maintenance of friendships across time following severe TBI.

Alanna Bailey is a newly enrolled PhD student La Trobe University. Alanna's project will be focusing on friendships following TBI, supervised by Associate Professor Jacinta Douglas. Alanna completed her Masters of Speech Pathology at La Trobe University in 2005. She is currently working as a speech pathologist at Epworth Rehabilitation, Camberwell Campus in Melbourne. She previously worked in the TBI Unit at Royal Rehabilitation Centre in Sydney with TBI clients across both inpatient and community settings.

Her supervisors are A/Professor Jacinta Douglas and Prof Leanne Togher.





Dr Emmah Doig
University of Queensland

Research topic:

- (1) Evaluation of an environment-focussed, goal-directed, occupation-based intervention incorporating metacognitive treatment strategies for people with self-awareness deficits after traumatic brain injury
- (2) Goal planning in community-based rehabilitation settings – exploration of the process and the relationship between client-centredness, contextual factors and outcomes.

Emmah is a part-time post-doctoral research fellow who completed her PhD in 2010. Emmah is currently involved in two research projects in collaboration with Associate Professors Jenny Fleming and Tamara Ownsworth, and speech pathologist, Dr Petrea Cornwell from Griffith University. The first study will use a series of single case experimental designs involving participants with moderate-severe self-awareness deficits, to trial the impact of the client-centred goal-planning approach and occupation-based intervention piloted during her PhD studies. The intervention will incorporate metacognitive strategies designed to improve the person's ability to anticipate, monitor and self-correct errors in performance of meaningful occupations. The study will investigate the impact of the intervention on goal achievement, self-awareness, and participation in meaningful occupation. The study design will enable the researchers to determine if the intervention results in generalisation of skills learned on targeted goals to other occupation-based tasks not targeted by the intervention. The second study explores a core rehabilitation practice that is often challenging with clients with self-awareness deficits – goal planning. This study will use qualitative and quantitative methods to explore goal-planning with people with TBI in various community rehabilitation settings from multi-disciplinary perspectives. This study will explore the facilitators and barriers to client-centred approaches to goal planning and the relationship between contextual factors, client-centredness and outcomes.



Emmah will be presenting some of her research during the self-awareness symposium at the ASSBI conference in Hobart (May, 2013).



Dr Caroline Barwood
University of Queensland

Dr Caroline Barwood is an early career researcher in The Centre for Neurogenic Communication Disorders Research at The University of Queensland. She completed her PhD in the field of speech pathology in 2011 utilising state-of-the-art transcranial magnetic stimulation to treat patients with language disorders following stroke lesion. Her recent work has applied transcranial magnetic stimulation techniques to assist the treatment of speech dysfunction in Parkinson's disease, chronic tinnitus and language dysfunction following stroke. Dr Barwood has made a seminal contribution to the field of transcranial magnetic stimulation used for treatment of neurogenic communication disorders publishing articles in international journals in the fields of Neurology, Neuroscience and Speech Pathology.



Christine Knuepfer
University of Queensland

As a PhD student under Prof. Bruce Murdoch at the University of Queensland Centre for Neurogenic Communication Disorders Research, Christina is investigating how early-acquired TBI affects established and emerging neural white matter pathways and language processing efficiency. Implementing diffusion MRI tractography, event-related potential recordings and behavioural language tests, her current PhD project aims to provide insights into long-term neurolinguistic outcomes in adult survivors of paediatric and adolescent TBI. Her background is in Neuropsychology (MSc, University of Maastricht, The Netherlands) with a focus on neural correlates of intact and impaired language processing skills. Main research interests include the development of sensitive technology-assisted assessment tools to measure neurolinguistic outcomes following paediatric and adult TBI.

Dr Fiona Lewis
University of Queensland

Dr Fiona Lewis has a speech pathology background and is part of a team of investigators based at the University of Queensland. Under the leadership of Professor Bruce Murdoch, the team is applying a combination of behavioural, neurophysiological and neuroimaging techniques in order to predict language functioning following traumatic brain injury (TBI), with the aim of enhancing rehabilitation outcomes in the TBI population.



Ongoing PhD students

- Julia Schmidt (topic: feedback interventions to improve self-awareness)
- Amanda Francis (topic: transition of children with brain injury to adult services)
- Ros Harrington (topic: motor accident insurance scheme design and severe TBI)

New RHD students:

- Freyr Patterson (topic: use of therapy groups in inpatient brain injury rehabilitation)
- Phyllis Liang (topic: driving rehabilitation following TBI)



Dr Frank Muscara
Murdoch Children Research Institute

Frank Muscara is a research fellow/clinical neuropsychologist at the Murdoch Childrens Research Institute, supervised by Professor Vicki Anderson. Frank's research interests include long term social outcomes following childhood acquired brain injury, and the impact of parent functioning on these social outcomes. Frank's interests also include the measurement of social outcomes in children and adolescents following acquired brain injury.



Stefanie Rosema
Murdoch Children Research Institute

Stefanie Rosema is a PhD student and research assistant at the Murdoch Childrens Research Institute. She is particularly interested in psychosocial outcomes after childhood traumatic brain injury and is currently setting up an intervention program for children with social and psychological difficulties. She is also involved as a research assistant in improving attention and memory in children with a brain injury and in training to analyse (f)MRI data.

Dr Cheryl Soo
Murdoch Children Research Institute

Cheryl Soo is a research fellow at the Murdoch Children's Research Institute and has worked on research projects on the psychosocial outcome of children and adults with TBI for the past 10 years. She is currently lead investigator on a multi-centre RCT of cognitive behavioural therapy for managing anxiety in adolescents with brain injury funded by the NHMRC.





Dr Jacqueline Rushby
University of New South Wales

Jacqueline Rushby was awarded a NHMRC four year research fellowship, to investigate psychophysiological indices of recovery after severe Traumatic Brain Injury (TBI). Her research aims to examine psychophysiological processes underpinning arousal and activation, in order to inform our understanding about how and why arousal to emotional events is dysregulated after severe brain injury.

Dr Cynthia Honan
University of New South Wales

Cynthia Honan is a postdoctoral research fellow working under the supervision of Skye McDonald, UNSW. In 2012, Cynthia played a key role in the coordination of CRE-related activities and projects. One such project involves the development common outcome measures and protocols for use across a variety of rehabilitation research projects within the CRE. The final list of recommended outcome measures is expected late 2013. Cynthia has also been developing her own CRE-related program of research including: (1) developing a new clinical test of social disinhibition, and a Social Cognition Screening Battery suitable for use in clinical practice; (2) examining the contribution of executive function to theory of mind and speech comprehension deficits following TBI; and (3) examining the construct validity of two self-report empathy measures.



Hannah Rosenberg
University of New South Wales

Hannah Rosenberg is a PhD/Master of Psychology (Clinical) Candidate at UNSW. Her research area involves the study of emotion perception deficits in individuals with traumatic brain injury (TBI) and Parkinson's Disease. She is especially interested in the differences between recognition of negative and positive facial expressions and how this recognition improves as a function of emotion intensity.



Julia Plumb
University of New South Wales

Julia is a PhD candidate working under the supervision of Professor Skye McDonald and Dr Jacqueline Rushby. Having just commenced her PhD, her current research direction involves the role of the mirror neuron system in facial mimicry and affective resonance/empathy in people with Autism Spectrum Disorder (ASD) or Traumatic Brain Injury (TBI). Julia's other research interests include schizophrenia, neuroplasticity, and the neurobiology of drug addiction.



Katie Osborne-Crowley
University of New South Wales

Katie Osborne-Crowley has recently commenced her PhD studies after completion of Honours last year. Her research interests include disorders of motivation and disorders of control following traumatic brain injury.



Francesca Foreich
University of New South Wales

Francesca works as an Administrative Assistant supporting the day to day management of the CRE. Having recently commenced her Masters in Clinical Psychology at UNSW, her research interests involve school-based bullying and disordered eating.



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Clinician Advisory Board

If you are interested in being a member of our Clinicians Advisory Board – providing input into research directions and implementations of the CRE, please contact us at movingahead@unsw.edu.au.

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MOVING AHEAD CRE NEWSLETTER

