

# Abstracts of the 25th Annual Brain Impairment Conference

## 17-19 May, 2002, Port Macquarie

### WORKSHOP 1

#### **Managing Posttraumatic Stress Disorder After Traumatic Brain Injury**

Richard Bryant

*School of Psychology, University of New South Wales, Sydney, NSW*

This workshop will address major clinical and medico-legal issues of posttraumatic stress disorder (PTSD) following traumatic brain injury. The workshop will commence with an introduction of recent developments in PTSD and acute stress disorder (ASD), and focus on recent research on PTSD following brain injury. The workshop will then address specific assessment issues pertaining to diagnostic and assessment issues of PTSD in brain injured populations. The role of postconcussive symptoms, memory functioning, and comorbid conditions will be reviewed. Treatment of ASD/PTSD will then be reviewed with particular focus on treating PTSD following brain injury. Finally, the workshop will focus on current medico-legal issues, malingering of PTSD, and provide guidelines for assessing trauma-related psychological disorders. The workshop will emphasise evidence-based approaches, and will integrate research findings with clinical case studies to illustrate recommended methods of diagnosing, treating, and reporting PTSD following brain injury.

### WORKSHOP 2

#### **School Students with Acquired Brain Injury: Cognitive Rehabilitation in the Classroom**

Christine Baird

*Private Practice and Royal North Shore Hospital, Sydney, NSW*

School students who sustain acquired brain injuries often make reasonable physical recovery; however, can be left with cognitive, communication and executive function impairments that compromise their ability to successfully participate in mainstream education. Cognitive rehabilitation provides a theoretical framework for functional assessment and intervention targeting the everyday problems that challenge this population. However, this approach is only effective when coupled with a collaborative approach to intervention that includes the student, their family, educators and rehabilitation professionals. Application of a functional focus to assessment must incorporate standardised assessment to understand the impairment. However, assessment must be extended to real life situations to address the impact on performance (disability and handicap) if a functional approach to intervention is going to be applied. Functional assessment that uses interview, simulating activities, task analysis and observation are the most

useful. Cognitive rehabilitation provides a model for intervention and a scope of approaches that can be applied in the school environment. These various approaches can be used individually, systemically or in parallel depending on the student, the task, the circumstances, the goal of intervention and the time since injury. Most commonly the techniques are used in combination to work towards a specific goal. Successful implementation requires collaborative consultation between students, families, educators and rehabilitation professionals. Involvement of all relevant personnel and mutual definition of problems and goals is required to ensure a whole team approach to intervention and support. This process often results in an individual contributors plans being modified or abandoned. This workshop will address the issues outlined above and require participants to be involved in activities that apply the principles to case studies.

### WORKSHOP 3

#### **The Role of the Prefrontal Cortex in Regulating Emotion and Cognition**

Arthur P. Shimamura

*Department of Psychology, University of California, Berkeley, USA*

Individuals with damage to the frontal lobes exhibit a variety of psychological disorders — including problems in attention, learning, memory, problem solving, and emotional control. Recent findings from neuropsychological studies of patients with frontal lobe lesions and from functional neuroimaging studies of healthy individuals have sharpened our understanding of frontal lobe function. In particular, there is growing consensus that the frontal lobes act to monitor and control information processing in a variety of domains. By this view, the function of the frontal lobes is to help regulate or control brain activity in posterior cortical regions. This workshop will describe neuropsychological findings concerning frontal lobe function and also evaluate recent assessment tools for the analysis of frontal lobe damage.

### PRESIDENTIAL ADDRESS

#### **Traumatic Brain Injury and Psychosocial Function: Let's Get Social**

Skye McDonald

*School of Psychology, University of NSW, Sydney, NSW*

Disorders of psychosocial function manifested in a reduction in socially skilled behaviour are prevalent following traumatic brain injury. It is clear to most clinicians that these can present the major obstacle to successful rehabilitation. Outcome studies also support this view. Despite this, there is relatively little systematic work addressing social skills remediation in Australia or elsewhere. There are even fewer studies that have evaluated the effectiveness of social skills treatment after traumatic brain injury. In this address I will consider social skills from a social skills framework that has been developed in the normal literature. This framework encompasses social behaviour, social perception (i.e., the ability to read cues accurately and social problem solving). Social behaviour is the most common target for remediation in both the normal and brain-injured populations. There is a

range of useful techniques that have proven to be efficacious in treating social skills in nonbrain-injured populations and also to have some effectiveness in the treatment of traumatic brain injury. In addition, however, it is clear that both social perception (i.e., the ability to read social cues accurately and social problem solving) are also compromised after TBI. These areas are infrequently targeted for remediation, although again, there are some remediation principles that are relevant and potentially fruitful. Finally, it is important to understand the impact of psychological reactive factors such as depression and poor self-esteem in producing or maintaining poor social skills.

## KEYNOTE ADDRESS 1

### **Exploring the Interface Between Posttraumatic Stress Disorder and Brain Injury**

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Richard Bryant

*School of Psychology, University of New South Wales, Sydney, NSW*

Posttraumatic stress disorder (PTSD) is an exemplar of disordered emotion. PTSD is characterised by disordered arousal, attention, and memory. Prevalent theories of PTSD converge with theories of the “emotional brain” that involve disruption to limbic brain regions. This address will consider the interplay of PTSD and brain injury in the light of increasing evidence concerning the mechanisms that mediate PTSD. The specific features of PTSD following brain injury will be discussed in terms of recent evidence concerning the neurophysiological patterns of PTSD. The address will then consider common pathological patterns of PTSD and brain injury, with particular focus on deficits in memory. Discussion will focus on how PTSD following brain injury can inform us about the emotional brain

## KEYNOTE ADDRESS 2

### **The Neurological Case of Eadweard Muybridge: Photographer, Inventor and Murderer**

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Arthur P. Shimamura

*Department of Psychology, University of California, Berkeley, USA*

Eadweard Muybridge, the famed 19th century photographer, is known for his stunning work in capturing animals in motion. He also invented many mechanical devices, including one of the first motion picture projectors. Among photography historians it is known that Muybridge’s life was fraught with emotional outbursts, risk-taking behavior, and obsessional tendencies. He also murdered his wife’s lover. What has never been considered is that Muybridge’s life was significantly affected by a traumatic head injury which he sustained earlier, before he became a photographer. Muybridge’s neurological case, unappreciated until now, offers interesting insights into the neuropsychology of emotional control.

## KEYNOTE ADDRESS 3

**A Clinical and Experimental Focus on Emotional Dysfunction Following Brain Damage**

David G. Andrewes

*Department of Psychology, University of Melbourne, and Royal Melbourne Hospital, Melbourne, VIC*

This talk describes experimental investigations that have furthered our theoretical and clinical understanding of emotional and social dysfunction in patients following brain damage. There is first a review of questionnaire studies that have been carried out on patients following brain surgery, stroke patients, and patients with multiple sclerosis. This work has provided profiles of emotional and social dysfunction in patients according to their neurological disorder, revealing the relative prevalence of rated emotional disorder. The research describes categories of patients that might be typically targeted for remediation and also indicates the type of therapy that might be most effective according to past research in this area. Further work is described which concerns our more extensive studies with brain surgery patients which have highlighted the contributions of gender and laterality in patients with frontal, temporal lobe and cerebellar lesions. These results provoke questions concerning the underlying mechanisms of differences between groups of patients. To further our understanding of these findings we have turned to affective neuroscience and the investigation of the affective response of patients to standardised film clips in the laboratory. Work is described which measures psychophysiological indices, self-rated affective response and categorised videoed facial response of brain surgery patients during the exposure to evocative emotionally rated film clips. This work is supportive of the questionnaire findings but adds to our knowledge concerning these patient's ability to judge their own socio-emotional behaviour and the behaviour of others. The combined use of the laboratory and the questionnaire approach has allowed a broader perspective of a complex system which describes an interaction between the affective competency of the patient and cultural influences in a structural model of emotional systems.

**Reference**

Andrewes, D.G. (2001). Emotional and social dysfunction. *Neuropsychology: From theory to practice*. UK: Hove Psychology Press.

## PAPER SESSION A: PSYCHOSOCIAL SEQUELAE OF TRAUMATIC BRAIN INJURY (TBI): PART I

**Sexual Changes Associated with Traumatic Brain Injury**

Jennie Ponsford

*Monash-Epworth Rehabilitation Research Centre, Epworth Hospital, and Monash University, Melbourne, VIC*

Findings from numerous outcome studies have shown that people with moderate to severe traumatic brain injuries (TBI) experience relationship difficulties and changes in sexuality. However, there have been few investigations of these problems, which are also inadequately addressed. Over the past two years, a study of sexuality following TBI has been conducted by the

Monash-Epworth Rehabilitation Research Centre, aiming to identify changes in sexual behaviour, affect, self-esteem and relationship quality, and their interrelationships. To date 160 individuals with moderate–severe TBI (109 males) have completed a questionnaire covering these areas 1–5 years post-injury. Their mean age was 33.0 years (range = 14–78), and mean PTA duration 31.0 days (range = 1–180 days). Their responses have been compared with those of a group of 100 controls, of similar age and gender. More than 35% of TBI individuals indicated that the importance of sexuality had decreased since injury, they had fewer opportunities and lower frequency of engaging in sexual activities, their sex drive had decreased, they reported negative changes in their ability to give their partner sexual satisfaction, to engage in sexual intercourse, their enjoyment of sexual activity, their ability to stay aroused and to climax. The frequencies of such changes were significantly higher than those reported by controls. A significant proportion of TBI individuals reported decreased self-confidence, sex appeal, higher levels of depression, and decreased communication levels and relationship quality with their sexual partner. There were few differences between males and females. Factors associated with sexual problems will be explored. Implications of all findings will be discussed.

### **Social Support and Coping as Mediators of Long Term Emotional Adjustment Following Severe Traumatic Brain Injury**

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Jacinta M. Douglas

*School of Human Communication Sciences, La Trobe University, Bundoora, VIC*

The constructs of coping and social support are central to theoretical conceptualisations of human response to chronic disability. Indeed, adequacy of social support has been shown to contribute significantly to the prediction of depression for adults with traumatic brain injury (TBI) and their carers. However, the effect of coping strategies on emotional adjustment following TBI has remained less clear. In this study, the degree of association between the coping strategies employed by adults with TBI, perceived problems with social support and the criterion variable of depression was investigated. All of the participants ( $n = 23$ ) had sustained a severe TBI (mean duration of posttraumatic amnesia = 66.65 days), were living in the community and were at least 4.5 years postinjury at the time of interview. Thirteen of the 23 participants were classified as showing significant symptoms of depression. As hypothesised social support and the use of avoidance coping strategies were significantly related to the presence and severity of depression ( $p < .01$ ). Thus, those with low or diminishing social resources and a tendency to use avoidance coping strategies were particularly at risk for clinical depression. These findings indicate that community rehabilitation efforts directed towards breaking the cycle of diminishing social ties and increasing depression following TBI may well benefit from the inclusion of programs to expand the repertoire of coping strategies used by adults with TBI.

## PAPER SESSION B: FAMILIES AND TBI

### Comparison of a Group of Long-Term TBI Marital Dyads with a Control Group of Orthopaedic Marital Dyads, on Measures of Marital Satisfaction, Marital Coping, and Perception of Husbands' Communication Skills

Christine A. Bracy and Jacinta M. Douglas

*School of Human Communication Sciences, La Trobe University, Bundoora, VIC*

This study was designed to establish empirically whether couples in which the husband had sustained a severe TBI (TBI dyads) differed significantly on measures of marital satisfaction, marital coping and husband's communication skills from control couples in which the husband had sustained traumatic injury without injury to the brain (ORTHO dyads). Fifty married couples (25 TBI dyads and 25 ORTHO dyads) were interviewed and completed a series of questionnaires to provide both quantitative and qualitative data for the study. Analysis of Variance (ANOVA) and planned comparisons were used to examine between and within group differences on measures of marital satisfaction, marital coping efforts, and levels of husbands' communication skills for TBI and ORTHO dyads. TBI couples were found to be different from control couples with respect to the constructs measured. TBI husbands self-reported, and were reported by their wives to have chronic and significant communication problems not experienced by ORTHO husbands. TBI wives coped with recurring marital problems by a singular use of Avoidance coping, not demonstrated by control group wives. This behaviour was characterised by avoidance of communication with their husbands on difficult issues. Despite the marked use of this strategy TBI wives remained significantly less satisfied in their marriages than any other participants in the study. TBI husbands, as a group, reported comparable levels of marital satisfaction to those reported by control group husbands. Implications and further investigations arising from these findings are discussed.

### 'My Life Is No Longer Mine': The Emotional Labour of Caring for a Person Following Severe Traumatic Brain Injury (TBI)

Julie Winstanley, Robyn Tate, Bridget Myles, Ian D. Cameron

*(on behalf of the Brain Injury Outcome Study (BIOS)\* group)  
Rehabilitation Studies Unit, University of Sydney, Sydney, NSW*

**A**ims: To report on qualitative and quantitative data from 160 carers, collected shortly after a client's admission to a Brain Injury Rehabilitation Program (BIRP), and identify stressors associated with high levels of psychological distress. A longitudinal prospective study of a 2-year cohort of BIRP clients across New South Wales and their principal carer, fitting the BIOS criteria, with follow up after 1 and 2 years. Demographic, injury, rehabilitation milestones and outcome measures were recorded for both carer and client. A semi-structured interview exploring the importance of the carer's needs and the extent their needs were met was conducted, in addition to completion of the General Health Questionnaire (GHQ30) and the Family Assessment Device (FAD). Their perception of life changes for their relative was measured using the Sydney Psychosocial Reintegration Scale (SPRS). 113/160 (71%) of carers exhibited GHQ caseness (score  $\geq 5$ ) and expressed difficulties in attending to their own needs. Carers with high levels of distress were concerned about their demanding role, lower quality

of life, strained family relationships and 'feeling overloaded'. High levels of dependency, physical limitations, financial problems and limited mobility were the main changes perceived for the client with TBI. These results signal the need for long term follow up and more practical support for the principal carer of a severe TBI client. The high GHQ scores are indicative of the emotional labour involved in supporting the client during the rehabilitation process.

\*Note: BIOS Group sites: Albury, Bathurst, Dubbo, Goulburn, Hunter, Illawarra, Liverpool, North Coast, Ryde, Tamworth, and Westmead

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## **The Lived Experience of Families After One Member Sustains a Severe Traumatic Brain Injury**

Nicole Hickman

*School of Occupation and Leisure Sciences, University of Sydney, Sydney, NSW*

*In conjunction with the Westmead Brain Injury Rehabilitation Unit Sydney, Sydney, NSW*

A traumatic brain injury affects not only the person who sustains the injury but also the entire family unit. For families, the experience is an emotional roller coaster ride. This qualitative research study used a hermeneutic phenomenological approach to explore the lived experiences of families after one member sustained a severe traumatic brain injury. Specifically, the research focused on families' experiences during the critical and rehabilitation phases of a family member's recovery. The aim of the study was to describe and interpret the lived experiences of families with the purpose of contributing to the understanding medical and health professionals have of families' experiences. Data was collected over a 6-week, full-time period of participation observation at the Westmead Brain Injury Rehabilitation Unit and from conducting in-depth, semi-structured interviews with five families, from which eight primary caregivers shared their family's experiences. The research findings generated three broad themes: *The Critical Phase*, *The Rehabilitation Phase* and *Family Reflections*, with findings portrayed in a rich narrative form. Issues considered in depth included *Mortality*, *Hope*, *Information*, *Families' Involvement In The Rehabilitation Process* and *Families Interaction With Professionals*. The research findings are considered in relation to the existing literature, clinical practice, service delivery and the need for further research.

## **PAPER SESSION C: PSYCHIATRIC ISSUES**

### **The Effect of Cannabis on Neuropsychological Functioning in Schizophrenia: An Overview of the Literature to Date**

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C. Coulston<sup>1,2</sup>, C. Tennant<sup>1</sup> and M. Perdices<sup>1,3</sup>

<sup>1</sup> *Department of Psychological Medicine, University of Sydney, Sydney, NSW*

<sup>2</sup> *Royal Rehabilitation Centre Sydney, Sydney, NSW*

<sup>3</sup> *Department of Neurology, Royal North Shore Hospital, Sydney, NSW*

Cognitive impairments associated with drug use have been extensively researched and reported. Similarly, cognitive impairments associated with schizophrenia have been widely studied and documented. Very little is known however, about the dual effects of drug use and schizophrenia on cognitive functioning as dual-diagnosis has largely been treated as a con-



foundings factor in the substance use and schizophrenia literatures respectively. From the available research, cannabis use in schizophrenia has only been studied in the context of other drug use and not exclusively in its own right. Cannabis demands exclusive attention for three primary reasons. First, cannabis has been identified as one of the most commonly abused drugs in schizophrenia. Second, the rates of cannabis use amongst people with schizophrenia have been found to be higher than in the population at large. Third, there is considerable evidence that cannabis exerts a specific and detrimental impact on the illness of schizophrenia. Here, an overview of the literature is presented, detailing the outcomes of previous research which have examined the effects of substance use and schizophrenia on cognitive functioning. This overview is a precedent to research we are currently preparing to undertake. Our methodology and design are discussed.

### **Investigating the Causes of Pragmatic Deficits in High-functioning Individuals with Autism**

Ingerith Martin and Skye McDonald

*School of Psychology, University of New South Wales, Sydney, NSW*

**D**eficits in the ability to use language in a social context (pragmatic language) are common to a number of clinical populations. This study investigates the causes of social language problems in 14 high functioning individuals with autism (Asperger Syndrome). Three causal theories proposed to underlie deficits in social language, namely weak central coherence, impaired theory of mind and executive dysfunction, were evaluated. Individuals with Asperger Syndrome (AS) demonstrated significant impairment in their ability to interpret non-literal language devices (ironic jokes) compared to age-matched control participants. These deficits were furthermore, significantly associated with theory of mind impairment. Whilst there was some evidence for the presence of weak central coherence and mild executive dysfunction in AS participants, these disabilities appeared unrelated to pragmatic interpretation. Theoretical implications for the causes of pragmatic language in Asperger Syndrome are discussed.

### **The Effect of Handedness on Contextual Reasoning in First-episode Psychosis**

D. Fitzgerald<sup>1,2</sup> and M. Perdices<sup>2,3,4</sup>.

<sup>1</sup> *Department of Child and Adolescent Psychiatry, Westmead Hospital, Sydney, NSW*

<sup>2</sup> *Department of Psychology, University of Sydney, Sydney, NSW*

<sup>3</sup> *Department of Psychological Medicine, University of Sydney, Sydney, NSW*

<sup>4</sup> *Department of Neurology, Royal North Shore Hospital, Sydney, NSW*

**P**revious studies using a novel task of contextual reasoning (the Cognitive Bias Task: CBT) have shown that handedness elicits opposite patterns of contextual reasoning in individuals with prefrontal lesions. The present study aimed to determine whether similar effects of handedness were evident in a sample of patients with first-episode psychosis (FEP), given that lateralised prefrontal dysfunction in schizophrenia has been widely reported. FEP subjects aged 14–25 years ( $n = 33$ ) and age-matched controls ( $n = 25$ ) were stratified into three handedness groups, strictly right-handed (RH), strictly left-handed (LH) and non-right-handed (NRH). Subjects were administered the CBT and 2 neuropsychological tasks purported to be sensitive to lateralised prefrontal dysfunction (the WCST and the Conners'



CPT). Results demonstrated that handedness has a significant effect on contextual reasoning in individuals with FEP. Strongly lateralised patients (RH and LH) demonstrated more context-independent reasoning on the CBT, whereas less lateralised, NRH patients displayed a greater degree of context-dependent reasoning. This effect was not found in the healthy control group. However, FEP patients and controls did not differ significantly on other neuropsychological measures. The present results suggest that robust handedness effects are observed even in relatively unimpaired and clinically stabilised FEP patients, and that hypotheses of left hemisphere dysfunction in schizophrenia cannot fully account for the performance of the FEP group in the present study. Future investigations of lateralised prefrontal functioning in psychosis may need to consider whether the disorder is better conceptualised as a dysfunction of the dominant hemisphere.

## PAPER SESSION D: PSYCHOSOCIAL SEQUELAE OF TBI: PART II

### **Functional, Cognitive and Psychosocial Outcomes from the Minimally Conscious State After Traumatic Brain Injury**

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Michele Lammi<sup>1</sup>, Vanessa Smith<sup>1</sup>, Christine Taylor<sup>1</sup>, Robyn Tate<sup>2</sup>

<sup>1</sup> *Brain Injury Rehabilitation Unit, Royal Rehabilitation Centre Sydney, Sydney, NSW*

<sup>2</sup> *Rehabilitation Studies Unit, Department of Medicine, University of Sydney and Royal Rehabilitation Centre Sydney, Sydney, NSW*

Over the past two decades there has been an increasing number of patients surviving severe traumatic brain injury and entering rehabilitation facilities at an earlier phase in their recovery. These patients often present in a minimally conscious state. This population is highly heterogeneous in presentation and outcome and improvements generally occur gradually. Although a plethora of literature is available investigating outcomes after traumatic brain injury, there is limited outcome documentation regarding the minimally conscious population. An original study of 25 people in the minimally conscious state was recently reported (Smith, Taylor, Lammi & Tate, 2001), describing the recovery profiles of cognitive-sensory modalities during the post acute rehabilitation stage. The current study describes work in progress, investigating the functional, cognitive and psychosocial outcomes of this sample further along the continuum of recovery, between 2–4 years post trauma. The presentation highlights cases who remain severely disabled as well as those who have gone on to achieve significant outcomes. Recovery profiles are plotted using the Functional Independence Measure and the Western Neuro Sensory Stimulation Profile. Outcome data are presented using these results as well as the Dementia Rating Scale and the Sydney Psychosocial Reintegration Scale.

#### **Reference**

Smith, V.H., Taylor, C.M., Lammi, M.H. and Tate, R.L. (2001). Recovery profiles of cognitive-sensory modalities in patients in the minimally conscious state following traumatic brain injury. *Brain Impairment*, 2(1), 29–38.

## Predictors of Suicidality After Traumatic Brain Injury

G.K. Simpson<sup>1</sup> and R.L. Tate<sup>2</sup>

<sup>1</sup> *Brain Injury Rehabilitation Unit, Liverpool hospital, Sydney, NSW*

<sup>2</sup> *Rehabilitation Studies Unit, Department of Medicine, University of Sydney, and Royal Rehabilitation Centre Sydney, Sydney, NSW*

Successful adaptive functioning after traumatic brain injury (TBI) requires integrative use of motor sensory, cognitive, and affective systems. Whilst elevated levels of hopelessness and suicide ideation post injury are understood to signify unsuccessful psychosocial adaptation, the underlying mechanisms are still unknown. The current study aimed to examine the relationship between affective distress, impairments in executive functioning, psychosocial outcome and elevated levels of hopelessness and suicide ideation post-injury. Adult outpatients ( $n = 172$ , age range 16–60) with TBI were screened utilising the Beck Hopelessness Scale (BHS) and Beck Scale for Suicide Ideation (BSS). Participants meeting criteria for High Distress ( $n = 52$ ) and Low Distress ( $n = 26$ ) were then administered a battery of measures targeting executive impairments and psychopathology. Both groups had similar profiles for gender, age at injury, time post injury and injury severity. Two hierarchical regression analyses were then conducted using the BHS and BSS as outcome variables respectively with the models including demographic, injury, executive, psychopathology and psychosocial variables. Results from the regression analyses found that impairments in behavioural regulation, elevated symptoms of depression, and poor psychosocial outcome (particularly in regaining purposeful occupation) were significant predictors of hopelessness. In turn, high levels of hopelessness, and elevated symptoms of paranoia were significant predictors of post-injury suicide ideation. The presence of executive and affective systems, coupled with poor psychosocial outcome, indicate that there are multiple factors involved in suicidality after TBI. The study provides important data that can inform suicide prevention initiatives.

## Psychosis Secondary to Traumatic Brain Injury: Case Study and Literature Review

Alexandra J Walker

*Brain Injury Unit, Westmead Hospital, Sydney, NSW*

Traumatic brain injury (TBI) has been reported to increase the likelihood of the development of psychosis. A recent study found that compared to those without psychosis, people with TBI who developed psychosis were likely to have greater cognitive impairment and evidence of more widespread damage on neuroimaging (Sachdev, Smith & Cathcart, 2001). Other predisposing factors may include previous congenital neurological disorder and head injury before the age of 15 years (Fujii & Ahmed, 2001). The case presented is a 47-year-old man who sustained a severe TBI more than 20 years ago but had managed most of his affairs independently, worked in a sheltered workshop and lived alone. He was referred for neuropsychological assessment for guardianship and possible placement in the context of marked deterioration in self-care, occupational function and communication skills over a 2-year period. He was assessed through mental health, but no psychiatric condition was diagnosed. On mental status examination, his thinking was grossly disorganised and characterised by derailment and

tangentiality. He was delusional and suspicious. He denied auditory hallucinations but was observed to stop in mid-sentence and stare fixedly. On formal neuropsychological examination there were impairments in attention, concentration, speed and capacity of information processing, memory and executive function. The results are compared to the research literature and discussed in terms of head injury, psychiatric disorder and differentiation from a dementing disorder. Implications for assessment and management of psychiatric disorders in people with brain injury are discussed.

## PAPER SESSION E: PUTTING COGNITIVE DEFICITS IN CONTEXT

### **Prospective Memory After Traumatic Brain Injury: The Contribution Prefrontal Lobe Processes**

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D. Shum and A. Maujean

*Neuropsychology Unit and School of Applied Psychology, Griffith University, Brisbane, QLD*

Individuals with traumatic brain injury have been found to be impaired on prospective memory, the ability to remember to carry out an intended action(s) in the future (Cockburn, 1996; Kinsella et al., 1996; Shum et al., 1999). This study aimed to examine the contribution of prefrontal-lobe processes in prospective remembering using a dual-task paradigm that involved a lexical-decision task and an event-based prospective memory task (performing an intended action when an external event occurs). Thirteen individuals with moderate to severe TBI and 13 matched controls were administered these two tasks and three prefrontal-lobe tests (viz., the Letter Number Sequencing Test, the Tower of London, and the Controlled Oral Word Association Test). Results obtained indicated that participants in the TBI group performed significantly more poorly than participants in the control group in the high but not low working-memory demand condition of the lexical-decision task. Results also indicated significant correlations between prospective-memory task performance with some but not all of the three prefrontal-tests. Taken together these results suggest that prospective-memory impairment in individuals with traumatic brain injury are related to prefrontal-lobe functions such as working memory and cognitive flexibility and have implications for theoretical development and clinical management of this type of memory.

#### **References**

- Cockburn, J. (1996). Failure of prospective memory after acquired brain damage: Preliminary investigation and suggestions for future directions. *Journal of Clinical and Experimental Neuropsychology*, *18*, 304–309.
- Kinsella, G., Murtagh, D., Landry, A., & Homfray, K. (1996). Everyday memory following traumatic brain injury. *Brain Injury*, *10*, 499–507.
- Shum, D., Valentine, M., & Cutmore, T. (1999). Performance of traumatic brain-injured individuals on time-, event-, and activity-based prospective memory tasks. *Journal of Clinical and Experimental Neuropsychology*, *21*, 49–58.

## The Perception of Communication Skills in Right-hemisphere Stroke Patients

Caroline Wilks, Jacinta Douglas, Louise Brown

*School of Human Communication Sciences, La Trobe University, Bundoora, VIC*

Lack of awareness of reduced capacities in a range of functions is commonly associated with right hemisphere damage (RHD) and can affect long-term social adjustment. The main purpose of this study was to compare the perception of communication skills of patients with RHD to those of their close others (e.g., spouse, relative or friend). In addition, perceptions of patients with RHD and their close others were compared to those of a control sample. The participants of this study were 12 patients, on average 2 years post-stroke and their 12 close others. A control sample consisted of 12 participants matched with patients for age, gender and education and 12 of their close others. The patient group comprised of 6 females and 6 males with a group mean age of 71.3 years. Close others of patients consisted of 9 females and 3 males with a group mean age of 59.9 years. Frequency of communication difficulties and change in communication ability since right hemisphere stroke were obtained using the La Trobe Communication Questionnaire (LCQ; Douglas, O'Flaherty & Snow, 2000). Results supported models for lack of awareness and higher order deficits following RHD. Patients perceived significantly fewer communication difficulties than did their close others and matched controls. Also, close others of patients perceived a significantly higher frequency of communication difficulties than close others perceived of matched controls. The results support theoretical models for lack of awareness of reduced capacities in various functions following right hemisphere stroke. The clinical implications of the results include the usefulness of the LCQ as a tool for directing intervention and measuring change in perceptions over time for patients with RHD.

## The Impact of Personality Style upon Post-injury Emotional Adjustment and Performance on Neuropsychological Tests: A Case Study

T.L. Ownsworth

*Brain Injury Association of Queensland, Brisbane, QLD*

Individuals with a personality style related to denial tend to present themselves in an overly favourable light and deny personal inadequacies. Following brain injury, denial may be an adaptive strategy to protect the individual from the overwhelming reality of their situation. However, persisting denial can also interfere with the adjustment process and hinder the development of more adaptive coping strategies. A case study is presented of MW, a 45-year-old woman with social anxiety and depression which demonstrates the impact of premorbid personality style upon post-injury emotional adjustment. MW sustained a severe brain injury 5 years ago and was referred for psychological treatment at the Brain Injury Association of Queensland due to a progressive deterioration in her psychosocial functioning. The 16-session treatment intervention involved cognitive-behavioural therapy and psychotherapy within an individual program and group sessions. Pretreatment and posttreatment measures indicated a significant reduction in her social anxiety and depression with associated gains in everyday functioning. The independent neuropsychological assessments conducted for medico-legal purposes, prior to and following the intervention, indicated a significant improvement in MW's performance between periods of testing.

The implications of the findings will be discussed in terms of premorbid personality characteristics, emotional factors influencing neuropsychological functioning and treatment in the medico-legal context.

## PAPER SESSION F: PAEDIATRIC ISSUES

### **Emotional Self-regulation and Social Functioning Following Paediatric Traumatic Brain Injury**

K. Ganesalingam<sup>1</sup>, A. Sanson<sup>1,2</sup>, and V. Anderson<sup>1,3</sup>

<sup>1</sup> *Department of Psychology, School of Behavioural Science, The University of Melbourne, VIC*

<sup>2</sup> *Australian Institute of Family Studies, Melbourne, VIC*

<sup>3</sup> *Department of Psychology, Royal Children's Hospital, Melbourne, VIC*

Paediatric traumatic brain injury (TBI) is frequently reported to induce difficulties in social functioning, which is believed to reflect relative vulnerability of pre-frontal cortex to damage. Yet, research has not identified the underlying mechanism(s) causing such difficulties, particularly in behaviour and social skills. The present study proposed that self-regulation may be a core deficit in children who present with post-TBI difficulties in social functioning. Self-regulation is a biologically based attribute that develops from birth, governed by the pre-frontal cortex. Self-regulation can be defined as an individual's capacity to manage his/her own thoughts, emotions and behaviour in adaptive ways, thus including cognitive, emotional and behavioural domains. The present study assessed capacity for emotional self-regulation in 6- to 11-year-old children, 2 to 5 years following moderate to severe TBI ( $n = 30$ ), and age and gender matched control participants ( $n = 30$ ). Emotional self-regulation was assessed using the Emotion Regulation Checklist and a Children's Emotional Self-regulation task. The Eyberg Child Behavior Inventory and the Gresham and Elliot Social Skills Rating System, as reported by both parents and teachers were used to assess social functioning. Findings indicated that children with TBI have a significantly lower level of emotional self-regulation ( $p < .01$ ) and higher levels of difficulties in social functioning ( $p < .01$ ) than non-injured peers, with substantial association between level of emotional self-regulation and degree of difficulties in social functioning ( $p < .01$ ). Results are discussed in terms of emotional self-regulation playing a mediating role between paediatric TBI and post-TBI difficulties in social functioning.

### **Long Term Behavioural, Psychiatric and Cognitive Outcomes Following Mild Head Injury in Childhood**

A. McKinlay<sup>1</sup>, J.C. Dalrymple-Alford<sup>1</sup>, J.L. Horwood<sup>2</sup> and D.M. Fergusson<sup>2</sup>

<sup>1</sup> *Department of Psychology and Christchurch Movement Disorder and Brain Research Group, University of Canterbury, Christchurch, NZ*

<sup>2</sup> *Christchurch Health and Development Study, Christchurch School of Medicine, Christchurch, NZ*

The evidence for adverse effects of mild head injury (MHI) in childhood has been mixed, but this literature is prone to methodological difficulties. To overcome these difficulties, we examined long-term outcomes in mid to late childhood as a function of severity of mild injury and age at outcome, using a large birth cohort and fully prospective longitudinal design. Prior to age 10, 96 cases received medical attention for MHI at an outpatient facility only and 36 other MHI cases were hospitalised overnight for observation.

The remainder of the initial 1265 cohort cases (613–807), pending exclusions and missing data) provided a reference group of non-MHI controls. The inpatient group, but not the outpatient group, displayed increased hyperactivity/inattention and conduct disorder when rated by both mothers and teachers between ages 10–13 (inpatient effect sizes ranged from  $d = 0.65$  to  $0.84$ ). These findings remained reliable after statistical control for several pre-injury, family and demographic characteristics. Progressively increasing deficits were generally evident over ages 7–13, even when matched against a subset of children in the reference group who received equivalent ratings at age 7. At 14 to 16 years, there was also an increased likelihood of psychiatric outcomes (DSM-III-R) of ADHD, CD/ODD and substance abuse/dependence, but not anxiety, mood and alcohol abuse, especially in the inpatient subgroup injured prior to age 5. No cognitive/academic deficits were evident for any group. These findings support the view that cases of more subtle mild head injury in childhood may produce long-term adverse outcomes.

## PAPER SESSION G: ASSESSMENT

### **Preliminary Neuropsychological, Functional and Psychosocial Outcomes of Treatment for Unruptured Cerebral Aneurysms**

K.J. Towgood<sup>1</sup>, J.A. Ogden<sup>1</sup>, and E.W. Mee<sup>2</sup>

<sup>1</sup> *University of Auckland, Auckland, NZ*

<sup>2</sup> *Auckland Hospital, Auckland, NZ*

The incidence of unruptured intracranial aneurysms (UIAs) in the general population is estimated to range between 0.2 & 9.9%. The effect of a UIA rupturing is potentially devastating, with estimates that approximately 50% of rupture cases result in death or long term disability. With rupture producing such disastrous consequences it would appear sensible to treat these aneurysms before they rupture. But in considering this question it should be pointed out that almost all aneurysms never rupture. The primary question then becomes one of weighing up the risks and benefits of treatment. Evidence from existing SAH research appeared to suggest that surgery to treat UIAs was unlikely to result in long-term deficits. However a recent prestigious USA study suggested that this may not be the case, finding that over 10% of patients had impaired cognitive status 1-year post-surgery. A study currently underway aims to clarify the issue with a thorough investigation of the neuropsychological, psychosocial and functional outcome of patients who undergo treatment of UIAs. Preliminary results from this study will be presented. These findings suggest that treatment of a UIA results in some mild cognitive and quality of life deficits. It is considered that final results from this project will provide invaluable information for those contemplating the risks and benefits of treatment of a UIA.

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## The Natural History of Neuropsychological Functioning and Brain Abnormalities in Patients with Neurofibromatosis Type 1

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S.L. Hyman<sup>1</sup>, E.A. Shores<sup>2</sup>, D.S. Gill<sup>1</sup>, P. Joy<sup>1</sup>, A. Steinberg<sup>1</sup>, K. North<sup>1</sup>

<sup>1</sup> *Children's Hospital at Westmead, Westmead, NSW*

<sup>2</sup> *Macquarie University, Sydney, NSW*

One of the most common complications of Neurofibromatosis Type 1 (NF1) in childhood are neuropsychological deficits and learning disability. Current research suggests a strong relationship between brain lesions evident on MRI (T2-hyperintensities) and poor neuropsychological functioning. The majority of these lesions disappear as the child develops into adulthood. Cross-sectional data suggests that there also may be improvements in general intellectual functioning. The aim of this study was to determine the natural history of cognitive functioning from childhood into young adulthood by following up a group of 32 patients with NF1 and 11 controls after an 8-year period. We also examined the natural history of T2-hyperintensities in NF1 over the 8-year period to determine whether changes in T2-hyperintensities are predictive of changes in cognitive functioning. Results showed that there was no increase in cognitive ability as the children with NF1 developed into adulthood. There were however significant decreases in the number, size and intensity of the T2-hyperintensities over the 8-year period. Despite the marked reductions in T2 lesions these changes were not associated with changes in cognitive ability. Interestingly, the best predictor of current cognitive dysfunction was whether the patient had a T2-hyperintensity when younger, rather than whether they currently had a T2-lesion. There appears to be a limited time window (< 18 years) in which the presence of T2-hyperintensities are good predictors of a lowering of general intellectual functioning. Unlike childhood, T2 lesions are no longer adequate predictors of cognitive dysfunction in adulthood.

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## Clinical Application of Event-related Potential (ERP) Indices of Response Suppression

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A.M. Fox, and J. Moyle

*The University of Western Australia, Perth, WA*

Recent experimental research using functional MRI has identified possible neural substrates for the suppression of prepotent responses (de Zubicaray et al., 2000), although the relatively poor temporal resolution of fMRI limits the ability of this technique to identify the particular stage of information processing affected. Event-related potentials (ERPs) have excellent temporal resolution and the integration of information obtained from these complementary technologies could significantly enhance our understanding of a variety of neuropsychological disorders. The present study examined the modulation of the N2 component of the ERP, argued to reflect response inhibition, in response to the parametric manipulation of response prepotency. Proportion of false alarm errors committed and N2 amplitude elicited following presentation of Nogo stimuli increased linearly with increasing response prepotency. The application of these techniques to assist our understanding of the neuropsychological impairments following traumatic brain injury will be discussed and preliminary results using a single-case analysis in a participant who had sustained multiple mild head injuries will be presented.



## Reference

- de Zubicaray, G.I., Andrew, C., Zelaya, F.O., Williams, S.C.R., & Dumanoir, C. (2000). Motor response suppression and the prepotent tendency to respond: A parametric fMRI study. *Neuropsychologia*, 38, 1280–1291.

## PAPER SESSION H: TREATMENT

### Using a ‘Meaning Reconstruction’ Approach to Adjustment to Disability Counselling for People with a Brain Injury

Sharee Lussick

*Access Brain Injury Services, Sydney, NSW*

Counsellors working with people who have acquired a brain injury are frequently faced with the person’s perception that life as they knew it is gone. Despite a good physical and functional recovery, this perception is often a reality. The severity of the cognitive impairment creates a significant barrier to the person’s ability to conceptualise how they might replace or modify what has been with realistic and meaningful goals. Impairments in abstract thinking, poor problem solving and rigidity of thought can render the person incapable of reconstructing life plans and can exacerbate the frustration experienced. The counsellor is then challenged with assisting the client to choose a life plan that is acceptable and achievable to themselves and facilitating adjustment in the process. The aim of this paper is to discuss some of the key stages of a counselling process that will ultimately assist the client to develop a series of “life plans” which they view as relevant to their sense of who they are and want to be. This approach draws on recent work on grief and loss such as that of Neimeyer (2002) who asserts that, “Meaning reconstruction in response to a loss is the central process in grieving.” (p. 4) The counselling process includes identifying areas of change experienced by the person since their brain injury, exploring the implication of the change and the setting of new goals which lead to the construction of a new self. Inherent in this model is the counsellor’s role in compensating for any difficulties with abstract conceptualising, by giving voice or mapping out realistic alternative scenarios. The importance of case management to facilitate implementation or actualisation of these life plans is also stressed.

## Reference

- Neimeyer, Robert A (Ed) (2002) *Meaning Reconstruction and the Experience of Loss*. Washington, DC: American Psychological Association

### Patterns of Service Usage in Community Rehabilitation After Acquired Brain Injury

Robyn Tate<sup>1</sup>, Barbara Strettlles<sup>2</sup>, Thelma Osoteo<sup>2</sup>

<sup>1</sup> *Rehabilitation Studies Unit, Department of Medicine, University of Sydney, and Royal Rehabilitation Centre Sydney, Sydney, NSW*

<sup>2</sup> *Brain Injury Rehabilitation Service, Liverpool Hospital, Sydney, NSW*

This paper examines patterns of service usage of approximately 470 clients from the Community Team of the Brain Injury Rehabilitation Service, now located at Liverpool Hospital, over a 12-month period. The Community Team has a staffing level of 17 full-time equivalents, and is

distinctive in that case managers ( $n = 5$ ) work along side therapists ( $n = 4$ ), psychologists ( $n = 2.5$ ) and social workers ( $n = 2$ ). During the calendar year 2000, approximately 8000 occasions of service were provided to clients. A breakdown of service type in relation to severity of injury, as well as time post trauma, is provided, and results of a detailed case file analysis of a random sample of 50 cases is reported.

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### **Assessing the Efficacy of Treatments for Alzheimer's Dementia: Right Drugs, Wrong Instrument**

Michael Perdices

*Department of Neurology, Royal North Shore Hospital, Sydney, NSW*

Three drugs are currently available for the treatment of early Alzheimer's dementia type: Aricept, Exelon and Reminyl. Clinical trials have shown each to be effective in either improving neuropsychological deficits and/or slowing rate of cognitive decline in patients with dementia. In order to receive treatment with these drugs, patients must have a diagnosis of dementia, established by a specialist (generally a neurologist or psychogeriatrician). A baseline MMSE must be performed, and if the patient obtains a score  $< 25$ , then a baseline assessment with the ADAS-Cog is also required. The ADAS-Cog consists of 11 subtests that assess various aspects of cognition including memory language and praxis. Improvement in cognitive function is reflected as a decrement in ADAS-Cog score. In order to continue treatment, patients must show either a 2-point increase on baseline MMSE score, or a 4-point decrease in ADAS-Cog baseline score. Although the ADAS-Cog is widely used and has respectable psychometric properties (reliability coefficients ranging from .810 to .963), there are significant problems. First, the method of scoring for some subtests is such that patients whose performance actually declines can show an improvement in ADAS-Cog scores. Second, a change in ADAS-Cog score of at least 7 points is needed for a reliable test-retest difference in scores, yet clinically, a 4-point decrease in ADAS-Cog score is deemed a sign of improvement. The limitations of the current system for assessing efficacy of treatments for Alzheimer's dementia are discussed and suggestions for a more clinically valid approach are offered.

### POSTERS

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### **The Use of Clinical Competencies in Supporting the Community-based Care of Individuals with Multi-Axial Diagnoses Following Brain Insult**

Roy Sugarman

*Department of Psychiatry, Adelaide University, Adelaide, SA*

Individuals with multiple diagnoses following brain insult often present with social difficulties, with either aggressive or withdrawn behaviour predominating. In individuals with behaviours that represent changes at a neural level, and in those with comorbid psychiatric diagnoses, these behaviours often represent obstacles to rehabilitation and their empowerment in the community. Consequently there is little consensus as to how such patients can be assessed, treated and interacted with, and so too there is little potential to improve outcomes with guided training. When multiple agencies are involved, such patients may "fall between the cracks" and undergo

prolonged and disempowering interventions with poor outcomes in the absence of individualised programs. This paper addresses the core issue of empowerment in the assessment and community-based rehabilitation of patients with multiple mental health issues, and utilises a case report format to illustrate the methodology.

### **Age, Proper Name Anomia and Brain Disorder: Or “I’ll Never Forget What’s-His-Name”**

Geoffrey A. Fox, and Steven Roodenrys

*University of Wollongong, Wollongong, NSW*

With increasing numbers of aged citizens, with the advent of new medications, and with the possibility of transplant surgery for victims of dementia, it has become more urgent to design testing programs that give early warning of deterioration, and monitor the effectiveness of new treatments. This study examines one such simple test — the Familiar Faces Test — which provides two measures, a measure of overall capacity for identifying recent and more remote celebrities (general proficiency), and a measure which reveals deficits in providing names for celebrities whom subjects have recognised (proper name anomia). The test was applied to three groups — a control group of unselected older volunteers ( $n = 26$  aged 53–85), an “organic” group of head trauma victims ( $n = 37$  aged 16–64), and patients thought to show early evidence consistent with dementia ( $n = 35$  aged 61–88). ANCOVA, ONEWAY,  $t$  test and Discriminant Analysis demonstrated its high sensitivity to the effects of (1) “normal” ageing, (2) to suspected brain trauma, and (3) to early pathological deterioration. The study confirmed that this simple instrument, used as part of a more extended battery, could increase our knowledge of the process of ageing, expand our understanding of the effects of trauma on brain function, provide a simple but effective measure for discriminating “normal” age effects from the effects of early dementia, give a chart for evaluating the progress of deterioration and the benefits of treatments, and provide some clues concerning the loci of brain dysfunction leading to the deterioration associated with age and dementia.

### POSTERS from the Toronto INS Meeting, 2002

(Abstracts published in *Journal of the International Neuropsychological Society*)

#### **Executive Function in Children Following Focal Cerebral Pathology during Childhood: Comparison of Cognitive and Behavioural Measures**

R. Jacobs, V. Anderson, and A.S. Harvey

*Department of Psychology, University of Melbourne, Melbourne, VIC*

#### **The Nine Box Maze Test – Child Version: A Visuo-spatial Memory Task**

L. Pentland, V. Anderson, S. Dye, and S. Wood.

*Department of Psychology, University of Melbourne, Melbourne, VIC*

#### **Acute Disseminated Encephalomyelitis: Outcomes Related to Treatment and Age at Diagnosis**

J. Neale, R. Jacons, A. Kornberg, L. Shield, and V Anderson

*Department of Psychology, University of Melbourne, Melbourne, VIC*

POSTER from the Rotman Frontal Lobe Conference, 1999

(Abstract published in *Brain and Cognition*, Vol. 44)

**Neuropsychological Profiles of Three Children with Subcortical Band Heterotopia**

R. Jacobs, V. Anderson, and A.S. Harvey

*Department of Psychology, University of Melbourne, Melbourne, VIC*