

Abstracts of the 22nd Annual Brain Impairment Conference 9–11 April 1999, Sydney

PRIZE-WINNING STUDENT ABSTRACTS

**The Kevin Walsh Encouragement Award for Honours or Masters
Research was awarded to Maria Kangas for the following presentation:**

Clumsiness: An Examination of Skilled Hand Movements in Individuals With Left Hemisphere Cerebrovascular Accident

*Maria Kangas*¹ and *Robyn Tate*²

¹ *School of Psychology, University of New South Wales, Sydney*

² *Rehabilitation Studies Unit, Department of Medicine, University
of Sydney and Royal Rehabilitation Centre Sydney, Sydney*

Individuals who sustain a cerebrovascular accident (CVA) in the dominant (typically left) hemisphere, are at an increased risk of developing motor skill deficits due to motor-sensory impairments, as well as cognitive impairments (eg, apraxia). Clumsiness is a central component affecting motor skills in individuals with a left hemisphere CVA (LCVA). Historically, however, clumsiness has not been operationally defined, thereby making diagnosis difficult and its contribution to apraxic disorders uncertain. Accordingly, in this study “clumsiness” was explicitly defined by establishing a set of four criteria. The hand movements of two groups of participants were examined: 18 individuals with LCVA and 19 healthy individuals without a history of brain impairment. Performance was examined on four sets of motor tasks, including a conventional praxis test, naturalistic action tasks, a mixed battery of perceptual-motor tasks, and a kinaesthetic acuity test. In comparison with the control participants, the left (nonaffected) hand functioning of individuals with LCVA was compromised due to motor impairments that were cognitive in origin, which included poor spatial planning, programming and sequencing. Individuals with LCVA were also more prone to making a variety of clumsy movements on different types of motor tasks including activities of daily living, compared to the control participants. The implications of these results for assessment and rehabilitation are discussed.

**The Luria Award for Doctoral Research was
awarded to Pamela Snow for the following presentation:**

Outcome Following Severe Traumatic Brain Injury: How Does Communication Fare?

Pamela Snow, Jacinta Douglas and Jennie Ponsford

School of Human Communication Sciences, La Trobe University, Melbourne

Although much is known about the long term psychosocial sequelae of traumatic brain injury (TBI), previous workers have not studied outcome with respect to communication abilities. This paper will describe the

results of a longitudinal follow-up study of a group of severely injured TBI speakers. The discourse skills of a group of 26 TBI speakers were examined at an initial assessment (at a mean of 17 weeks post-injury) and 24 of these speakers were reviewed at a minimum of 2 years post-injury (mean 2 years, 10 months). At follow-up, the relationship between conversational discourse skills and selected measures of executive functioning and psychosocial adjustment was examined. As a group, TBI speakers' conversational skills had not improved significantly over time, and they continued to perform more poorly than a group of non-TBI orthopaedic patients. Significant correlations were found between discourse performance and (a) degree of self-reported psychosocial handicap (as measured by the Craig Hospital Assessment and Reporting Technique), and (b) performance on two measures of executive function (word fluency and Part "B" of the Trail-Making Test). There was also a significant association between outcome and duration of speech pathology services. The findings will be discussed with respect to implications for speech pathology service delivery in the longer time after severe TBI.

SESSION 1: KEYNOTE ADDRESS

An Everyday, Routine-Based Approach to TBI Rehabilitation: Theoretical, Neuropsychological, and Empirical Foundations

Mark Ylvisaker

College of St Rose, Albany, New York, USA

Significant traumatic brain injury frequently results in chronic impairment in that domain of functioning in which cognition, communication, behaviour, and executive functions intersect and interact in ways that make them difficult to disentangle. Traditional impairment-oriented approaches to intervention in this domain — that is, attempts to restore function with decontextualised exercises that target specific functions — have been disappointing in their effects on long-term outcome. In this address, I will outline an alternative approach to intervention that reverses the traditional impairment-then-disability-then-handicap sequence in rehabilitation, that contextualises rehabilitation within the routines of everyday life, and that relies heavily on supports provided by everyday people in the life of the individual with chronic impairment. I will highlight a theoretical rationale for this approach, relying in part on analogies with other disability groups. Concrete illustrations of the intervention themes will also be presented.

SESSION 2: KEYNOTE ADDRESS

Working Memory and the Acquisition of Language

Alan Baddeley

Department of Experimental Psychology, University of Bristol, Bristol, UK

A brief account of the concept of working memory is presented, followed by a more detailed description of one sub-component of the system, namely the phonological loop. The question of the functional significance of this component of working memory is discussed. Neuropsychological evidence suggests a minor role in language comprehension, together with a much more substantial role in a capacity to acquire novel phonological, and possibly gram-

matical forms. This conclusion is reinforced by studies of normal children and adults, and of children with specific language impairment. It is suggested that the phonological loop has evolved as a mechanism for language acquisition.

SESSION 3: FREE PAPERS – MEMORY AND LEARNING

Working Memory and Verbal Problem-Solving: A Comparison of Anterior and Posterior Post-Operative Aneurysm Patients

K. Bruce Byrne and David Andrewes

Department of Psychology, University of Melbourne, Melbourne

In this study we compared patients following surgical treatment for Anterior Communicating Artery aneurysm (ACoA, $n = 13$) with a combined group of patients with aneurysm to the Middle Cerebral Artery (MCA, $n = 8$) and Posterior Communicating Artery (PCoA, $n = 7$). The study was designed to compare the paradigms of two forms of working memory (WM) developed by Baddeley & Hitch (Baddeley, 1986) and Goldman-Rakic (1984) within a verbal problem-solving paradigm. The task required a convergent solution to a series of clues. Conditions 1 and 2 tested the effect of removing clues prior to a request for solutions. Condition 3 required a further demand in which there was added interference to the articulatory loop in the tradition of the Baddeley WM model. The requirements of Conditions 2 and 3 were further manipulated in Conditions 4 and 5, in which incongruent solutions to the clues were required, following the work by Burgess and Shallice (1996). The prediction that the anterior aneurysm patients would do more poorly on the more demanding interference paradigm, and also in the condition requiring non-congruent solutions was substantiated. These results are discussed in terms of the influence of the central executive on problem-solving. Also discussed is the performance of a recovered Conduction Aphasic patient, BR, with an isolated impairment of the phonological store. BR's satisfactory performance on this WM task encourages the view that a further semantic slave system is involved in the completion of this task.

References

- Baddeley, A. (1986). *Working memory*. Oxford: Clarendon Press.
- Baddeley, A. (1996). Exploring the central executive. *The Quarterly Journal of Experimental Psychology*, 49A(1), 5–28.
- Burgess, P.W. & Shallice, T. (1996). Response suppression, initiation and strategy use following frontal lobe lesions. *Neuropsychologia*, 34(4), 263–273.
- Goldman-Rakic, P.S. (1984). The frontal lobes: uncharted provinces of the brain. *TINS*, 425–429.

Variability in Long Term Outcome With Severe Acquired Memory Disorders of Non-Traumatic Origin

Peter Dowling¹ and Martin Jackson²

¹ *Psychology Department, Victoria University, Melbourne*

² *School of Psychological Science, La Trobe University, Melbourne*

Severe organic memory disorder is a recognised major sequel of a number of acquired neurological conditions of non-traumatic origin, including hypoxic brain damage, encephalitis, hydrocephalus and tumour (Parkin &

Leng, 1993). When there has been little improvement in memory function within the first few months after the onset of the neurological condition, despite effective medical treatment of the precipitating condition and substantial rehabilitation input, the prognosis for significant recovery in declarative memory is usually considered to be quite bleak. Typically the preserved capacity for procedural learning, that is a feature of such conditions, is then seen as offering the best opportunity for functional improvement in daily living activities and vocational rehabilitation (Schacter & Glisky, 1986).

A series of case studies of adults (18–45 years) with severe memory disorders of diverse aetiology will be presented. In all of these cases, there has been the opportunity for follow up after an extended time interval and a review neuropsychological assessment. This follow-up has highlighted the variability in long term outcome in cases of severe memory disorder and emphasised the need to systematically explore discrete aspects of memory processes if particular areas of improvement are to be identified. Also the follow-up has provided insight into the long-term functional impact of severe memory disorders and the relationship between functional outcome and performance on formal neuropsychological assessment.

Memory Dissociation and Metamemory in Multiple Sclerosis

Marian Scarrabelotti and Marie Carroll

Department of Psychology, Canberra Hospital and Centre for Applied Psychology, University of Canberra, Canberra

Memory deficits are reported to occur in up to 50% of those diagnosed with MS, but the nature of these deficits is still poorly understood. The present longitudinal study was designed to shed light on memory impairments, by applying the process dissociation procedure (Jacoby, Toth, & Yonelinas, 1993) to separate out conscious and automatic contributions to recall. It is the first to investigate memory function with an MS group using this procedure, and the first to obtain metamemory judgments about recall under inclusion and exclusion instructions for any population. Initial and twelve month delay data are reported; the final year of testing was recently completed. Forty-eight MS and thirty-nine matched controls were administered a word stem completion task under implicit, inclusion and exclusion instructions, and made metamemory judgments about their performance. The California Verbal Learning Test (CVLT), Stroop, and Reitan's Word Finding Test (WFT) were also administered. At year one, no group differences were identified in word stem completion under indirect, inclusion, or exclusion instructions, nor in conscious and automatic estimates. By contrast in the second year, MS subjects remembered significantly fewer words than controls under inclusion instructions, and employed significantly less conscious processing than the control group to achieve recall. However, estimates of automatic memory processing were the same for both groups. MS subjects equalled controls in their prospective and retrospective monitoring of words they consciously recalled under inclusion instructions, in both years. By contrast, both groups were poor at monitoring words completed automatically under exclusion instructions; by year two, MS subjects were even less able to monitor such material than controls. Finally by the second year, reduced conscious processing was also related to reduced performance on the Stroop, WFT, and CVLT recall and use of semantic clustering. Taken together, these

findings indicate that automatic memory processing is intact in MS, but impairment in memory, metamemory, and other cognitive tasks becomes evident when they rely on conscious processes.

Preservation of Memory for Generalities in Amnesia

Catherine Haslam

*Psychology Division, Australian National University and
Department of Psychology, Canberra Hospital, Canberra*

In this paper the theoretical notion of partial knowledge in amnesia is discussed. Here it is proposed that amnesic patients access fragmentary knowledge which is sufficient to support performance on tests examining memory for general information but not specific detail. In the case of retrograde amnesia, partial knowledge is retained and in the case of anterograde amnesia, partial knowledge is acquired. Results from several experiments examining both remote and newly acquired knowledge are highlighted in support of this notion. In each experiment memory for high- and low-level detail was examined and the findings indicated that patients remembered general-level knowledge better than specific details. This pattern of performance, in which memory for general or higher-level knowledge is differentiated from lower-level knowledge, is referred to as *preservation of memory for generalities*. The implications of these findings for our understanding of memory function and dysfunction are discussed.

Stability and Practice Effects on Tests of Memory: Implications for Clinical Practice

*Robyn Tate, Linda Jurjevic, Carissa Coulston,
Fiona Wilkinson, Heidi Muenchberger and Silvia Maggiotto*

*Rehabilitation Studies Unit, Department of Medicine,
University of Sydney and Royal Rehabilitation Centre Sydney, Sydney*

It is widely known that substantial practice effects occur on many neuropsychological tests, and this presents particular difficulties in clinical situations where repeated neuropsychological examinations are necessary. Yet there is an assumption that such practice effects will be universal, irrespective of age or intelligence levels. The present study examined this thesis in 94 healthy individuals from the community. The participants were fairly evenly divided by gender, ranged from 16 to 76 years of age, with estimated Full Scale IQ on the National Adult Reading Test ranging from 80 to 127. They were administered a range of standard memory tests including the California Verbal Learning Test, Rey Visual Design Learning Test, and Rey Osterreith Complex Figure Test. The participants were examined on two occasions, one week apart. As expected, most components of all tests showed significant practice effects. The data were further examined by three age and three IQ groups. The pattern of practice effects did not change for age group, but in the IQ groups it was found that those with lower estimated IQ showed fewer practice effects than the higher IQ groups. These results have important implications for clinical practice, given that many patients have estimated premorbid levels of intelligence that are less than Average.

Changes in Memory Function During Cerebral Arterial Occlusion by Balloon Angiography

Michael Perdices¹ and M. Morgan²

¹Department of Neurology and ²Department of Neurosurgery, Royal North Shore Hospital, Sydney

Surgical management of patients with internal carotid artery or vertebro-basilar artery aneurysms may involve clipping the aneurysm, by-passing the aneurysm with a venous graft, or clipping/embolising the affected artery proximal to the aneurysm. A risk associated with the latter procedure is that unless there is adequate collateral blood supply, permanent occlusion of the artery may cause significant ischaemia affecting the cerebral structures formerly irrigated by that vessel. Selection of the appropriate surgical intervention is guided by, among other things, assessment of the risk of ischaemia. This can be tested using balloon angiography to occlude the artery for 20 minutes. Neuropsychological assessment, EEG recording and SPECT scan are performed during the occlusion. The neuropsychological protocol focuses on assessment of memory, cognitive flexibility and language. Intra-occlusion neuropsychological test results are compared to a pre-occlusion assessment. Results of the procedure on three female patients (2 = ICA aneurysm; 1 = basilar artery aneurysm) are described. No intra-occlusion EEG changes were recorded for any of the patients. In one patient, no changes in neuropsychological performance were evident on comparison of pre- and intra-occlusion measures. SPECT scan on this patient revealed mild ischaemic changes in the ipsilateral hemisphere, which had also been evident pre-occlusion. In the other two patients, neuropsychological assessment revealed notable decrements in verbal memory function (particularly rate of acquisition, and active short-term recall), while language and cognitive flexibility were unaffected. The neuropsychological changes were associated with ischaemic changes found on SPECT scan.

SESSION 4A: FREE PAPERS – PAEDIATRIC SYMPOSIUM I

Premorbid Characteristics, Family Functioning and Degree of Disability: Predictors of Outcome From Childhood Head Injury

Vicki Anderson, Cathy Catroppa, Linda Pentland and Robyn Stargatt

Department of Psychology, University of Melbourne and Royal Children's Hospital, Melbourne

It has been argued that factors such as injury severity and pre- and post-injury psychosocial factors may account for the considerable degree of variability in outcome following childhood head injury (HI). Despite this assertion, the majority of studies addressing outcome have emphasised injury-related variables primarily, failing to acknowledge the possible contribution of child, family and environmental effects on the process of recovery. Further, the measurement of outcome has often been limited to performance on neuropsychologic tests, with a failure to identify more 'ecological recovery' in areas such as academic progress and behavioural adjustment.

The sample included 112 children. Inclusion criteria were: (1) aged 2–12 years; (2) evidence of a closed HI involving period of altered consciousness; (3) no history of pre-injury neurologic, psychiatric or developmental disorder. Children were divided into mild ($n = 31$), moderate ($n = 52$) and severe ($n = 29$) HI groups on the basis of Glasgow Coma Scores, duration of coma,

and radiologic evidence of brain pathology. There were no differences across groups for age, gender or socioeconomic status.

Children were recruited into the study during hospital admission and parents were asked to complete a series of questionnaires providing medical, social and educational background, and pre-injury behavioural characteristics and level of functioning. These measures were completed again at 6 months post-injury, along with a measure of perceived family burden. Children were evaluated acutely, once PTA had resolved, and again at 6 and 12 months post-injury. Data from these assessments were collated and impairment ratings were calculated for physical, cognitive, learning and behaviour domains, based on degree of impairment and number of abilities impaired.

Outcome measures included Family Burdens, behavioural functioning and family functioning. Analyses examined the predictors of outcome in these three domains, including degree of impairment in the child, premorbid level of ability, family functioning and behavioural functioning.

Results showed, as expected, that children sustaining more severe HI exhibited greater deficits for physical, cognitive, learning and behaviour domains, but not for behaviour. Children with mild and moderate HI generally exhibited deficits in a single domain, if any. In contrast, two-thirds of children with severe HI displayed moderate to severe impairments in two or more of these domains, reflecting more substantial and generalised sequelae. Regression analyses found that post-injury psychosocial adjustment was predicted by pre-injury psychosocial functioning, and by degree of behavioural deficit displayed by children post-injury, with injury-related variables less predictive. Family perception of degree of burden was predicted by injury severity and child's physical impairment, but not by psychosocial factors.

The Development of Pragmatic Language Skills in Head-injured Children

*Elissa Didus, Vicki Anderson, Cathy Catroppa,
Flora Haritou, Sue Morse and Jeff Rosenfeld*

Department of Psychology, University of Melbourne, Melbourne

The present study investigated the developmental levels of 'real life' pragmatic language skills in children following head injury, in comparison to their uninjured peers. Thirty head-injured and 19 healthy controls, classified into a 'young' age group, 8–9 years, and an 'old' age group, 11–12 years, participated in the study. Each subject was administered the WISC-III, a Negotiating Requests task and a Hint task, the latter two assessing verbal reasoning skills and abilities to be indirect, respectively. It was found that negotiation and hinting strategies were rapidly developing in these age groups, where abilities to hint were less mature for all groups. Results found a main effect for injury on cognitive and functional language tasks, reflected by lower performance levels and inflexibility in reasoning for the head-injured group. Injury sustained at an earlier age consistently predicted poorer performance on the language tasks, complicating the ongoing development of centralised and higher-order communicative skills. Higher pre-injury communicative abilities predicted higher performance levels on both tasks, implicating a reliance on preserved knowledge. However a more severe head injury contributed to a better explanation for poor performance levels on the more executive Hint task, once pre-injury ability and age variables were accounted for. Long-term assessment of children following head injury must extend beyond standardised neuropsychological tests, combined with moni-

toring of psychosocial adjustment, in order to see whether or not they develop and acquire the skills displayed by their healthy age-matched peers.

Paediatric Conversational Discourse: A Comparison of Early and 12 Month Post Severe Brain Injury Effects

Sue Morse and *Bronwen Mahar*

Speech Pathology Department, Royal Children's Hospital, Melbourne

It has been said that closed head injury (CHI) impairs some language functions in individuals. Previous research has identified that language can be a persistent difficulty at least one year after the event and since language competence is an essential skill for learning and interpersonal development is worthy of close and appropriate evaluation.

This study investigated the effect that severe closed head injury has on young children's conversational discourse during play with a clinician, approximately 3 months and twelve months post injury. A sample of 26 children, divided into two groups: severe head injury ($N = 13$; mean age = 5.11 years); and non-injured controls ($N = 13$; mean age = 5.12 years) were evaluated for conversational discourse performance. Children were screened for pre-injury age, sex, socioeconomic status, and adaptive functioning to establish equivalence between the two groups. At three and twelve months post injury, twenty-minute conversational samples were given. The last ten minutes of these samples were analysed using Damico's (1991) Clinical Discourse Analysis (CDA). This study found that severely head injured children display significant impairment of some aspects of conversation when compared to non-injured children at both three and twelve months.

When these results are compared to those of adults and older children, differences in the nature and frequency of errors were found. It seems important to take into account the development of conversational skills in children when considering the effect that head injury has on their discourse function.

Impact of Early Intervention on Outcome Following Mild Traumatic Brain Injury in Children

Jennie Ponsford, Catherine Willmott, Andrew Rothwell,

Peter Cameron, Gary Ayton, Robyn Nelms, Carolyn Currann and Kim Ng

Epworth Hospital, Bethesda Rehabilitation Campus, Melbourne

Studies examining outcome following mild traumatic brain injury (TBI) in children have demonstrated that the majority of children make a good recovery. However a proportion of cases experience ongoing problems. Few studies have attempted intervention to circumvent difficulties. This study evaluated the impact of early assessment, and provision of information to parents about mild TBI, expected symptoms and suggested coping strategies. 130 children with mild TBI were allocated to Intervention Group ($n = 72$), seen 1 week and 3 months post-injury, or Non-Intervention ($n = 58$) groups, seen at 3 months only, and compared with two groups of demographically similar controls ($n = 49$ and 47). Measures of pre- and post-injury behaviour completed by parents included the Child Behaviour Checklist and Rowe Behavioural Rating Inventory. Injury-related symptoms were documented using the Post Concussion Syndrome Checklist.

Neuropsychological measures included the Peabody Picture Vocabulary Test, WRAML Verbal/Delayed Learning and Visual/Delayed Learning subtests, the WISC-III Digit Span and Coding subtests, the Contingency Naming Task and the 2.8 sec pacing of the CHIPASAT (for children > 10 years). Both groups had recovered well by 3 months post-injury, but there was a subgroup of 17% of children who had ongoing problems. Risk factors for ongoing problems included a history of previous head injury, prior learning difficulties or family stressors. At 3 months post-injury, practice effects were evident in all groups on some neuropsychological measures. Parents of Mild TBI participants who did not receive early intervention reported significantly more post-concussional symptoms and behaviour problems 3 months post-injury. Implications of these findings will be discussed.

SESSION 4B: FREE PAPERS – APHASIA AND APRAXIA

**The Kevin Walsh Encouragement Award for Honours or Masters
Research was awarded to Maria Kangas for the following presentation:**

Clumsiness: An Examination of Skilled Hand Movements in Individuals With Left Hemisphere Cerebrovascular Accident

*Maria Kangas*¹ and *Robyn Tate*²

¹ *School of Psychology, University of New South Wales, Sydney*

² *Rehabilitation Studies Unit, Department of Medicine, University of Sydney and Royal Rehabilitation Centre Sydney, Sydney*

Individuals who sustain a cerebrovascular accident (CVA) in the dominant (typically left) hemisphere, are at an increased risk of developing motor skill deficits due to motor-sensory impairments, as well as cognitive impairments (eg, apraxia). Clumsiness is a central component affecting motor skills in individuals with a left hemisphere CVA (LCVA). Historically, however, clumsiness has not been operationally defined, thereby making diagnosis difficult and its contribution to apraxic disorders uncertain. Accordingly, in this study “clumsiness” was explicitly defined by establishing a set of four criteria. The hand movements of two groups of participants were examined: 18 individuals with LCVA and 19 healthy individuals without a history of brain impairment. Performance was examined on four sets of motor tasks, including a conventional praxis test, naturalistic action tasks, a mixed battery of perceptual-motor tasks, and a kinaesthetic acuity test. In comparison with the control participants, the left (nonaffected) hand functioning of individuals with LCVA was compromised due to motor impairments that were cognitive in origin, which included poor spatial planning, programming and sequencing. Individuals with LCVA were also more prone to making a variety of clumsy movements on different types of motor tasks including activities of daily living, compared to the control participants. The implications of these results for assessment and rehabilitation are discussed.

Hand Movement Sequencing, Apraxia and Brain Damage

Geoffrey A. Fox and *Allison M. Fox*

Private Practice, Port Macquarie, New South Wales

The pre-frontal cortex is vulnerable to the effects of a wide range of insults. The present study examines whether the Hand Movement Test

(HMT, Kaufman & Kaufman, 1983) can differentiate patients suffering from two disorders which have been reported to affect frontal lobe functioning, namely the effects of alcohol-related brain damage and traumatic brain injury (TBI). Recent studies have confirmed the appropriateness of this test for adults (Bowen & Littell, 1997). The test has been used by the senior author for 14 years in the assessment of adults. Seventy-four male adults without clinical evidence of disorder (mean age 43.53 years), comprised the control group. Ninety-five male adults with a history of alcohol abuse (mean age 48.3 years), referred to a special assessment clinic, comprised the alcohol-related damaged group, and 95 consecutive male clients (mean age 33.9 years), who were assessed for the effects of traumatic head injuries, comprised the TBI group. Performance on the Hand Movement Test was influenced by both age and premorbid level of ability, as measured by the National Adult Reading Test. Both clinical groups performed more poorly than controls on the Hand Movement Test, after statistically controlling for age and estimated premorbid ability. Case study analysis supported the clinical sensitivity of the test. In addition, results suggest that the HMT may be used with another test (Gestalt Closure Test) as a screen for simulation of organic damage.

References

- Kaufman, A., & Kaufman, N. (1983). *Assessment Battery for Children*. American Guidance Service.
- Bowen, M., & Littell, C. (1997). Discriminating adult normals, patients and claimants with a pediatric test. *The Clinical Neuropsychologist*, 11, 4.
- Neiman, M., Duffy, R., Belanger, S., & Coelho, C. (1994). Concurrent validity of the Kaufman Hand Movement Test as a measure of limb apraxia. *Perceptual and Motor Skills*, 79, 3.

Impairment of Lexical Tone Production in Stroke Patients With Bilingual Aphasia

Valerie Lim, Jacinta Douglas and Jennifer Lambier

School of Human Communication Sciences, La Trobe University, Melbourne

This study compared tone production abilities of a group of 13 bilingual speakers with aphasia and a group of 13 matched controls across two tasks (i.e., picture-naming and word-repetition) and two languages (i.e., Mandarin and Cantonese). Possible correlates of the tone production impairment in each language were also examined, including tone perception, phonemic discrimination, aphasia severity and time post-stroke.

Mandarin and Cantonese tone production were evaluated separately using different sets of stimuli. These consisted of single-syllable root-words which formed a minimal word set for all 4 Mandarin tones or all 6 Cantonese tones. Audio-recorded responses in each language were perceptually rated by separate pairs of listener-judges using a minimal set identification procedure.

Compared to normal controls, the bilingual speakers with aphasia produced a significantly greater number of tonal errors in both Mandarin and Cantonese ($p < .0001$). Tonal errors were exhibited in picture-naming and word-repetition, and the difference in performance across tasks was not significant for either language ($p > .05$). Pooled across tasks, speakers with aphasia made significantly more errors in Cantonese than in Mandarin tone production ($p < .0001$). No significant relationships were found between tone perception, phonemic discrimination, aphasia severity and time post-onset,

and impaired tone production for either Mandarin or Cantonese ($p > .05$).

The results indicated that both Mandarin and Cantonese tone production were impaired in bilingual speakers with aphasia. Despite parallel recovery of both languages, the impairment was more apparent in Cantonese than in Mandarin. The extent of the impairment was not associated with aphasia recovery or impaired perceptual ability. However, it may have been influenced by factors intrinsic to the language.

Dysphasia Outcomes Following Acute Stroke Unit Management

Jennifer Lethlean

Speech Pathology Department, Princess Alexandra Hospital, Brisbane

Specialised acute stroke unit management has been reported to reduce mortality rates and complications, quicken recovery and shorten length of stay in hospital for patients following cerebrovascular accidents (Indredavik et al., 1991). Indeed, a multidisciplinary team approach involving general medical and nursing staff, neurologist, rehabilitation consultant, speech pathologist, occupational therapist, physiotherapist, social worker, dietician and pharmacist enables early intervention, early identification of patients appropriate for rehabilitation, and “fast-tracking” of patients home, to general medical wards to await nursing home placement, or to rehabilitation facilities. The current paper discusses the Princess Alexandra Hospital (PAH) Acute Stroke Unit in Brisbane and the speech pathology experience with reference to early decision making regarding a dysphasic patient’s prognosis and appropriateness for rehabilitation. A total of 191 patients were treated in the stroke unit in the first 10 months of opening at PAH. On discharge, 48 (25%) of these patients demonstrated persistent language problems as indicated by the Enderby (1997) functional outcome measure of impairment for dysphasia with severity ratings ranging from 15 patients with global aphasia to 12 with a mild dysphasia. Twenty-one of the aphasic patients went to inpatient rehabilitation units, five went home with follow-up outpatient or day hospital speech therapy, one went home with no follow-up, four went to a nursing home or hostel directly from the ASU and the remaining 17 patients were transferred to medical wards to await nursing home placement. The outcomes of these patients will be addressed with particular reference to case studies with severe communication impairment. Issues concerning early intervention and follow-up for dysphasic patients in the stroke unit setting will also be discussed.

References

- Enderby, P. (1997). *Therapy Outcome Measures*. Singular Publishing Group Inc: San Diego.
- Indredavik, B., et al., (1991). Benefit of a stroke unit: A randomised controlled trial. *Stroke*, 22, 1026–1031.

SESSION 5A: FREE PAPERS – PAEDIATRIC SYMPOSIUM II

Effects of Traumatic Brain Injury on the Development of Attention Skills in Children

Trudy Fenwick and Vicki Anderson

Department of Psychology, University of Melbourne and Royal Children’s Hospital, Melbourne

A recently developed functional test of attention, the Test of Everyday Attention for Children (TEACh) was employed, in conjunction with traditional attention measures including the Stroop Test, Trail Making Test, and Continuous Performance Task (CPT) to investigate the effects of moderate-to-severe closed head injury (HI) on the attentional abilities of children. Eighteen HI children and 18 non-injured matched controls participated in the study. Inclusion criteria for the HI group were: (1) aged 8–14 years; (2) evidence of a closed HI involving period of altered consciousness; (3) no history of pre-injury neurologic, psychiatric or developmental disorder. Non-injured children were matched as closely as possible for age and gender with HI sample.

Results suggest that attentional skills may be differentially impaired after HI, with children who have sustained moderate-to-severe HI exhibiting significant deficits on the following attentional domains: sustain, focus, and divide. Results suggest that attentional impairments following paediatric HI may be more generalised than those reported for adult samples.

Mild Paediatric Head Injury and SPECT: A Case study

Anna Mandalis

Brain Injury Unit, Sydney Children's Hospital, Sydney

K.C. was aged 2 years, when she allegedly sustained a closed head injury. She was travelling on a bus, fell forward and hit a metal pole. There was no loss of consciousness, however K.C. was drowsy for a period of 2 weeks. Early developmental history was normal as reported by K.C.'s parents and paediatrician. However, since the accident, it became apparent that K.C.'s development changed over time. Speech pathology and neuropsychology investigations revealed significant deficits, consistent with TBI. K.C. is now 7 years old and functioning within the Intellectually Disabled range. There has been a progressive decline in the level of her intellectual functioning. This was unexpected, given the relatively mild nature of her injury. CT and MRI investigations failed to detect any abnormalities. Blood test investigations ruled out genetic reasons for her intellectual disability. Finally, SPECT analysis was decided upon. SPECT results confirmed K.C. had reduced blood flow in areas typically associated with TBI. This case study exemplifies the necessity of following up children who appear to have sustained a relatively mild head injury, demonstrates the impact of early insult to long-term outcome and also shows the usefulness of SPECT.

The HBMP Problem Solver: Training Adolescents With TBI to use a Metacognitive Approach to Problem Solving

Jeffrey Bogan

Sydney Rehabilitation Services, Sydney

There is documented evidence of the widespread neurobehavioural impact of TBI on children and adolescents. In particular, problems with executive function pose serious constraints on the ability of the adolescent with TBI to cope with the academic demands of school. Adolescents with TBI often have difficulty in getting started on an activity, staying on task until they complete the activity and in avoiding distractors. There is a view that rehabilitation should focus on the processes of learning, providing structured metacognitive activities designed to teach compensatory strategies. The pre-

sent research was designed to evaluate the efficacy of one metacognitive approach to rehabilitation for adolescents with TBI. The study involved forty adolescents with TBI who were classified as having a moderate to severe brain injury as a consequence of a MVA, who were at least 12 months post-injury and who attended mainstream secondary classes. Subjects were randomly assigned to one of three experimental groups: Cognitive Retraining (CRT), Placebo and Control. The CRT and Placebo subjects were each involved in a 20 week individual intervention program that was delivered at the subjects' schools. CRT subjects were taught to use a problem-solving plan — HBMPC — which was a structured approach to learning using visual plans, that could be applied across the curriculum. CRT subjects self-monitored their use of the strategies in class. The Placebo subjects were involved in a 20 week individual reading comprehension program at their school. The Control subjects received no intervention.

All testing was administered by a research assistant who was blind to which group subjects had been assigned. Subjects were pre and post-tested on a range of cognitive and behavioural measures considered to be sensitive to TBI. The data were analysed using an Analysis of Variance with Planned Contrasts using a stringent Bonferroni correction for significance. The results indicated that there was a significant improvement following treatment for the CRT group only on a developmental measure of executive function. There were no significant differences for the other cognitive measures. The CRT group reported a significant increase in their use of the metacognitive strategies in the classroom during the treatment period. In addition, teachers reporting of day-to-day behaviours for the CRT group for Executive Function behaviours approached significance with an improvement of more than 0.5 standard deviations following the intervention. Behaviours rated by teachers under Executive Function were those that related to the processes of learning: attending, working independently, following through with instructions and using planning and organisational strategies. It was argued that these were the very behaviours that were the target of treatment and the ones that were mediated by executive function processes. By contrast, teacher reporting of Academic and Personal/Social behaviours only displayed a minimal improvement for the CRT group with increases of 0.17 and 0.18 standard deviations. The Control subjects displayed no improvement in teacher reported behaviours. The Placebo group also displayed a positive improvement in Executive Functions but not on other behaviours, although the improvement was less than 0.5 standard deviations.

It was concluded that the CRT treatment had a positive and significant effect on subjects' executive function skills, as measured by neuropsychological testing and that this improvement was observable by class teachers. The HBMPC Problem-Solver was deemed to be an effective intervention strategy for adolescents with TBI and it was contended that the metacognitive strategies used in this study could be applied to other behaviours for subjects with TBI.

SESSION 5B: FREE PAPERS – PSYCHOLOGICAL ISSUES IN TBI

Effects of Posttraumatic Stress Disorder Following Severe Traumatic Brain Injury

Richard Bryant

School of Psychology, University of New South Wales, Sydney

Although it has traditionally been held that posttraumatic stress disorder (PTSD) cannot occur after severe brain injury, recent evidence suggests that it can exist in this population. This paper presents the summary of a study of 96 severely brain injured patients, who were assessed for PTSD and general functioning six months after hospital discharge. Twenty-six (27%) patients met criteria for PTSD. Patients with PTSD reported more depression, psychiatric morbidity, chronic pain, functional disability, aggression, and less community integration and less satisfaction with life than those without PTSD. Severity of PTSD was primarily predicted by an avoidant coping style. These findings indicate that PTSD represents a marked problem in severe TBI populations because it is associated with marked impairments in functional and psychological rehabilitation following the injury. These data indicate that identifying those individuals with PTSD and therapeutically attempting to reduce their PTSD symptoms may facilitate more effective rehabilitation.

Suicide Ideation and Hopelessness After Traumatic Brain Injury

Grahame Simpson¹ and Robyn Tate²

¹ Brain Injury Rehabilitation Unit, Liverpool Hospital, Sydney

² Rehabilitation Studies Unit, Department of Medicine, University of Sydney and Royal Rehabilitation Centre Sydney, Sydney

Completed suicide after traumatic brain injury (TBI) is an infrequent event (Tate, Simpson, Flanagan, Coffey, 1997). A much larger group of patients display clinical signs of suicidality, including suicidal ideation and hopelessness. High levels of hopelessness is one of the key long-term predictors of completed suicide (Beck, Steer, Kovacs, Garrison, 1985). No large scale surveys have yet been done describing the prevalence and nature of suicidality after TBI. This is an important step in developing and targeting suicide prevention strategies for this client group. Outpatients of the Brain Injury Rehabilitation Unit ($N = 110$) were screened for suicidal ideation and hopelessness using the Beck Scale for Suicide Ideation (BSS) and the Beck Hopelessness Scale (BHS). In addition, data were collected on demographic and injury variables, and significant risk factors for completed suicide including previous attempts, history of substance abuse, and psychiatric history. A substantial proportion of the population scored within the clinical range on the measures. Moderate to severe levels of hopelessness (35.5%), high levels of suicide ideation (21.8%) and reports of suicide attempts post-injury (13.6%) indicate that suicidality is a significant clinical issue amongst outpatients with TBI. A number of correlations were computed which suggest suicidality is independent of age at injury and severity of injury but that suicide risk may increase over time post-injury. These findings have important implications for how services should be organised to provide support to people with TBI.

References

- Tate, R., Simpson, G., Flanagan, S., & Coffey, M. (1997). Completed suicide after traumatic brain injury. *Journal of Head Trauma Rehabilitation*, 12(6), 16–28.
- Beck, A.T., Steer, R.A., Kovacs, M., & Garrison, B. (1985). Hopelessness and eventual suicide: A 10 year prospective study of patients hospitalised with suicidal ideation. *American Journal of Psychiatry*, 142(5), 559–563.

Indicators of Depression in Adults With Severe Traumatic Brain Injury

Jacinta M. Douglas and Frank J. Spellacy

School of Human Communication Sciences, La Trobe University, Melbourne

Although it is generally accepted that social support plays a role in the maintenance of psychological well-being, there has been relatively little direct investigation of the role that social support may play in affecting post-injury depressive symptoms and mediating the effects of traumatic brain injury (TBI). Consequently, we selected social support as the framework within which to investigate possible indicators of depression in adults with severe TBI. We were interested in the degree of association between social support and the criterion variable of depression in the context of demographic and disability-related variables that have been identified as significant correlates of depression. All of the participants ($n = 30$) had sustained a severe TBI (post-traumatic amnesia, PTA > 7 days) and were at least 3.5 years post-injury (mean 7 years) at the time of interview. Fifty-seven percent of the participants were classified as showing significant symptoms of depression. Altogether 63% (57% adjusted) of the variability in depression was predicted by gender, marital status, disability level, and social support. As hypothesised social support contributed significantly to prediction of depression, with 40% of the variance attributable to it as a unique source. In particular, strong-tie support appeared to be an important indicator of well-being for adults with severe TBI who continue to live in the community several years after injury.

SESSION 7: PRESIDENTIAL ADDRESS

Whither the Garden Path? Some Gnomes Revisited and Some Others Worth Considering

Jan Ewing

Queensland Neuropsychology, Brisbane

In 1991 Dr Kevin Walsh, the founding President of ASSBI, presented an invited address entitled "Some gnomes worth knowing" in which he discussed examples of common errors and difficulties in neuropsychological test interpretation in the form of "gnomes" or aphorisms from prominent clinicians. His paper was aimed at demonstrating "the need for improvement in the education of all psychologists who are likely to be faced with essentially neuropsychological problems". The current paper will examine the extent to which such improvement has occurred over the past eight years and will consider directions for the future. The major areas of concern outlined by Dr Walsh will be reviewed in terms of current clinical practice. Additional areas of controversy and concern which have emerged more recently, such as the assessment of mild head injury, the assessment of malingering and the impact of neurochemical changes in certain psychiatric conditions, will also be considered. The importance of considering the client in a more holistic manner, which takes into account a range of issues that may impact upon test scores, is emphasised. It is hoped that this presentation will assist in formulating more clearly the challenges facing all those involved in research, assessment and treatment of brain disorders as we approach a new millennium.

SESSION 8: POSTERS ON DISPLAY ALL DAY, ATTENDED BY POSTER PRESENTERS

Two New Resources for Children With ABI, Their Families, and the Wider Community*Mathilde Backhouse**Montrose, Corinda, Queensland*

A description of two books is provided including their production, history from idea to distribution, and anecdotes relating to goals.

Sparky Goes to Grandma's Cottage is a fictional story of Sparky, the dog, who learns to find grandma's cottage by jumping the fence, following a creek, turning uphill at the wagon wheel, smelling for the chicken pen, and following the track. After he has a brain injury, he can no longer integrate the visual, hearing, kinaesthetic, and olfactory senses required to follow the route. His young boss has to find a new way of helping Sparky to learn. The book includes simulation activities for groups of children to experience.

Comaboy and Superwoman: Two kids with brain injuries beat the odds — Their true stories are two anecdotal accounts of ABI survivors as told by their brothers. The cartoonist has taken the images from actual photographs of the children. The stories are funny and poignant, and reveal rich insights into family life after ABI.

The goals of the books are to encourage young people with ABI and their families to tell their own story, and to raise awareness of and empathy with individuals with residual difficulties resulting from ABI, and their families.

Available from Montrose — telephone (07) 3379 9200, cost \$10 for *Sparky* and \$7 for *Comaboy* (plus \$3 postage).

Myths and Maps – Learning Through Personal Experience and Paradigms in Severe Traumatic Brain Injury*Heather Hill¹, Hugh Dickson¹ and R. Bartrop²*¹ *School of Community Medicine, University of New South Wales, Sydney*² *School of Psychiatry, University of Sydney, Sydney*

Much of the knowledge concerning the long-term outcome of people with severe traumatic brain injury, seems to be mythical, such as the statement that recovery ceases after one to two years. Through personal progress (severe TBI, coma 6 wks) and involvement with several traumatic brain injury survivors the reality indicates that improvements may continue to occur over years.

Sources of information about the outcomes after traumatic brain injury may include observational studies, and increasingly, subjective sources. Narrative analysis provides an avenue to explore life after the event of trauma, and a perspective that may illuminate aspects of the relationship between health professional and health consumer. Language use by health professionals in their interactions with health consumers may profoundly bias expectations and outcomes. Terms such as “recovery” may be inappropriate, as severe traumatic brain injury may not be an injury that one is able to “recover” from. If the brain is seen as the basis of the personality and is altered by the trauma, then, philosophically, it is difficult to argue that the person is the same after as before.

Notions of rehabilitation after severe traumatic brain injury should take into account the lack of knowledge about long term outcomes, the importance of language, and expectation in shaping the outcomes, and the concept of the development of new and adaptive patterns of behaviours rather than the concept of recovery. Development in different directions raises the notions of rehabilitation as the provision of new navigational maps. This paradigm of maps is positive, honest as far as expectations are concerned, and has the advantage of being able to encompass the idea of "unknown territory".

ABIOS: A Goal Oriented, Community Based Service Working Towards Social Integration and Service Coordination

Susan Gauld and Pim Kuipers

Acquired Brain Injury Outreach Service, Brisbane

The Acquired Brain Injury Outreach Service (ABIOS) utilises a community-based model of service delivery which is individually focussed, promotes flexibility, and which recognises the importance of the client's community context in their long-term rehabilitation. The service provides community based, tertiary rehabilitation for people with ABI consisting of:

- Individual case management
- Training and consultancy to generic service providers and family members/carers
- Coordination of existing services
- Building community networks around people with ABI, and
- Discipline specific services.

This poster provides a practical, client-oriented overview of the ABIOS model of service delivery. The nature, priorities and timing of services provided by ABIOS are represented through a diagrammatic representation of the rehabilitation 'careers' of three people who have sustained an ABI. Distinctives of this community based approach are highlighted with particular attention to the way in which assistance provided by ABIOS: (a) responds to client's goals, (b) strengthens client's social networks and service connections and (c) addresses client's memory and learning problems in the community.

Identification of Cognitive Behaviours Affecting the Performance of Everyday Tasks in Clients With Aids Dementia Complex

Judy Ranka and Christine Chapparo

School of Occupational Therapy, University of Sydney, Sydney

AIDS Dementia Complex (ADC) is a cognitive and motor disorder (Price & Brew, 1988) that affects a client's ability to perform everyday tasks in home and community environments. The focus of therapy for clients with ADC is on (a) identifying the impact of cognitive deficits on client performance of tasks, (b) developing effective methods to improve and maintain quality of life for as long as possible in home and community environments, and (c) documenting the course of change in everyday performance over time. Existing standardised and observational measures of cognition have not proved useful to therapists in this area of practice. These assessments often require that clients have intact motor function, the ability to comprehend instructions and the capacity to attend to test items for pro-

longed periods of time. Few instruments test performance in real world conditions. One instrument, The Perceive, Recall, Plan and Perform System of Task Analysis (The PRPP System) (Chapparo & Ranka, 1997) has been found to be effective and valuable in (a) observing cognitive behaviours during the performance of any functional task or routine, (b) setting effective management goals relative to these specific cognitive behaviours, and (c) generating effective management strategies that will prompt or compensate for disordered cognition. It is a client-centred, criterion-referenced tool that is founded on information processing theory and employs task analytic methods. This paper will use an in-depth case study to describe The PRPP System and illustrate its use.

References

- Chapparo, C., & Ranka, J. (1997). The Perceive, Recall, Plan and Perform System of Task Analysis. In C. Chapparo and J. Ranka (Eds.), *Occupational Performance Model (Australia): Monograph 1* (pp. 189–198). Lidcombe, NSW: Occupational Performance Network, School of Occupation & Leisure Sciences, University of Sydney.
- Price, R.W., & Brew, B.J. (1988). The AIDS dementia complex. *Journal of Infectious Diseases*, 158, 1079–1083.

“There’s no place like home” – Occupational Therapy in an Acute Aged Care Unit

Claudia Rugless

Occupational Therapy Department, Prince of Wales Hospital, Sydney

Occupational Therapy at Prince of Wales Hospital (P.O.W.H.) is aimed at maximising a patient’s independence and facilitating a safe discharge from the acute hospital environment to an appropriate discharge destination. A patient’s ability to return home on discharge has social and economic benefits for the patient and the health care system.

In the South Eastern Sydney Area Health Service the proportion of older people is 2% greater than the N.S.W. average and 65% of the hospital separations during 1993–1996 involved patients over 75 years. This high utilisation of health services by older people requires an adaptive response by health care providers to meet the needs of this population. Occupational Therapists at the P.O.W.H. within the acute aged care unit have addressed this high utilisation by the introduction of a new method of assessment.

Traditional acute care Occupational Therapy functional assessments are conducted on the ward. However, over 60% of people admitted to the P.O.W.H. acute aged care unit have a cognitive impairment. This can significantly impact on their ability to perform functional tasks because of an inability to perform in an unfamiliar environment or a reduced capacity to learn a new routine. Therefore, assessment of a patient with a cognitive impairment within the ward environment is not an accurate predictor of their ability to function in their own home environment and consequently not a reliable assessment to determine discharge destination. The result of an inaccurate assessment is decreased patient satisfaction and an increase in the total cost for patient care by potential institutional placement.

This poster will depict how Occupational Therapy services at P.O.W.H. acute aged care unit have adapted to meet the needs of the patient with a cognitive impairment resulting from dementia. A single case study will contrast

Occupational Therapy assessments within the acute hospital ward and the patient's home to illustrate that assessment in the home is a more reliable predictor of patient safety and functional independence on discharge.

Acknowledgements

Occupational Therapy department, P.O.W.H., for their assistance with compilation of the abstract and poster.

The Macquarie University Neuropsychological Normative Study (MUNNS): sample characteristics and results

E. Arthur Shores and J.R. Carstairs

Department of Psychology, Macquarie University, Sydney

The Macquarie University Neuropsychological Normative Study (MUNNS) was conducted during the period February 1996 to March 1998, and involved the assessment of a representative sample of 399 healthy 18–34 year old Sydney adults. The primary aim of the MUNNS is to establish normative data on neuropsychological measures commonly used in the rehabilitation and medico-legal assessments of patients with traumatic brain injuries. The study will provide normative data on tests of intelligence, memory and higher neuropsychological function, and will provide local standards against which brain injured patients can be compared. The present paper provides an overview of the sample characteristics and results.

15 Year Neuropsychological and MRI Reviews of a Korsakoff-like Amnesic Without a History of Alcohol Abuse and With Predominantly Frontal Pathology due to a Motor Vehicle Accident

E. Arthur Shores¹, Claudia Kraiuhin² and J.E. Marosszeky³

¹ *Department of Psychology, Macquarie University, Sydney*

² *Brain Injury Rehabilitation Unit, Westmead Hospital, Sydney*

³ *Department of Rehabilitation, Westmead Hospital, Sydney*

A 43-year-old hospital engineer with no history of alcohol abuse was involved in a motor vehicle accident resulting in a brief, if any, loss of consciousness. His Glasgow Coma Scale score was 13 four hours after injury and a head CT scan was reported as showing only a contusion of the right parietal lobe. He was discharged from hospital six weeks later and attempted a return to work after a few months. By the time he returned home from his first day at work he was unable to recall where he had been or what he had done that day. At that point he was referred for neuropsychological assessment. This revealed a Korsakoff-like amnesia and frontal systems impairment, which were unexpected findings in terms of the CT results. An MRI scan performed three years later revealed extensive frontal lobe damage and gliosis in the right temporal, parietal and occipital lobes as well as small, possible areas of ischaemia in the thalami.

Neuropsychological review 15 years after injury reveals a remaining, severe amnesic syndrome and executive disorder against an average level IQ. A MRI scan reveals extensive bifrontal and less extensive right hemisphere pathology as well as atrophy of the corpus callosum. The neuropsychological and radiological evidence of this case are discussed in terms of the contributions to memory processing of the basal forebrain and diencephalic systems. The importance to rehabilitation management and medico-legal

work of going beyond traditional clinical and CT scan information when assessing for evidence of functional impairment and structural brain pathology is also discussed.

Links Between Inpatient Rehabilitation and Community Outreach Services in Queensland

Karen Thompson

Head Injuries Unit, Princess Alexandra Hospital, Brisbane

The Head Injuries Unit at the Princess Alexandra Hospital is a 26 bed inpatient rehabilitation unit. Working through a multi-disciplinary team approach, the aim is to restore patients to their fullest possible physical, mental and social capabilities. The Unit actively involves families in the rehabilitation process and is currently developing a “family support program” in collaboration with the Acquired Brain Injury Outreach Service based on a psychoeducational model of support.

The Brain Injury Association of Queensland is a community resource centre that provides education and support to consumers, families and carers. The Association offers complimentary membership to all inpatients of the Head Injuries Unit. The Association has an extensive resource database for referrals, it conducts rural education programs and support groups for consumers and carers. Most recently the Association has been involved in developing a life style support worker program and together with the Acquired Brain Injury Outreach Service has been working on a behavioural modification program.

The Acquired Brain Injury Outreach Service (ABIOS), funded through Queensland Health and the Motor Accident Insurance Commission, provides community based rehabilitation services on a multi-disciplinary case management model of service delivery. ABIOS directly services people who live within a 150 km radius of Brisbane. Individuals can self refer or service providers can refer for assessment, resettlement or vocational rehabilitation. ABIOS provides a consultancy service to service providers and is actively involved in a range of research projects.

ABIOS, the Brain Injury Association and the Head Injuries Unit work closely together in providing services and supports for consumers, families and carers with a goal of improving their quality of life.

Memory Compensation Strategies Using a Group Approach

Donna Wakim, Gaye Murrills and Agnes Rappaport

CRS Australia, Darlinghurst Unit, Sydney

Studies supporting the value of memory remediation strategies with acquired brain impaired (ABI) clients report mixed results. Although the generalisation of techniques does not always occur, clients often benefit from interventions in varied ways. In recent years service delivery to ABI clients has changed significantly and services by rehabilitation providers are increasingly constrained by financial limits. Memory deficits, however, continue to be a major problem faced by clients with ABI.

In 1990 CRS, NSW, developed an 18-session group program for use with ABI clients to: explain memory and how it works, introduce and practice strategies to assist memory and learning, and explore the use of memory

aids. An additional 11 session group program was developed by CRS in 1994 to improve diary use and organisational skills.

This poster details a pilot project which combined the salient aspects from these two programs into 7 sessions, in order to make the intervention cost effective. A range of measures were utilised to determine its effectiveness and usefulness. A total of 11 clients completed the program.

Preliminary results suggest that the approach is beneficial in increasing the use of memory strategies and providing positive psychological effects from shared experiences within the group. Further research is required to fully validate the benefits of the program, using control groups and to ensure that critical aspects of the previous programs are satisfactorily addressed in such a brief intervention.

SESSION 9A: FREE PAPERS – COMMUNICATION AND ABI

Self/Close Other-Report and Communication Skills Following Severe Traumatic Brain Injury

Pamela Snow, Jacinta Douglas and Jennie Ponsford

School of Human Communication Sciences, La Trobe University, Melbourne

Because of changes in insight and self-awareness associated with traumatic brain injury (TBI), self-report measures have traditionally been viewed as methodologically fraught. In more recent times, however, evidence has emerged that the perceptions of the TBI survivor may be relatively aligned to those of close others on certain domains of functioning (e.g., self-care), while differing on measures of cognitive function. The aim of the present investigation was to examine self and close other reports regarding communication skills in a group of 24 survivors of severe TBI (PTA \geq 14 days) at a minimum of two years post-injury (mean = 2 years, 10 months). The La Trobe Communication Questionnaire (Douglas, O’Flaherty & Snow, in press) was employed in the current investigation. This tool consists of 30 items, derived both from Gricean theory and cognitive-communicative constructs associated with severe TBI. Respondents are asked to (a) assign a (four-point) rating to each parameter and (b) indicate whether they perceive a change (positive, negative, or no change) to have occurred post, as compared to pre-injury. Results indicated that perceptions of TBI speakers and their close others did not differ on either dimension (overall ratings or perceptions of change). These findings will be discussed with respect to (a) theoretical aspects of self-perception regarding communication ability and (b) the role of self/other report in the clinical evaluation of communication skills following severe TBI.

You hear what I say, but do you know what I mean? Assessing the Ability to Read Social Cues

Sharon Flanagan¹, Skye McDonald¹ and Jennifer Rollins²

¹ *School of Psychology, University of New South Wales, Sydney*

² *Commonwealth Rehabilitation Service, Sydney*

It has been well documented that individuals following TBI may demonstrate deficits in social skills, based on observation of their overt behaviour in social situations. However, preliminary work on the assessment of social perception — i.e., the ability to “read” social cues — has identified

specific difficulties demonstrated by TBI individuals at the cognitive or covert level of social interaction. Video assessment material developed to assess the “reading” of social cues such as emotion and sarcasm has been expanded to include the decoding of inferences such as sympathetic lying, to form a test battery called The Awareness of Social Inference Test (TASIT). The results of normative testing using a large sample of Australian Defence Force personnel will be presented, and the utility of the TASIT in assessing TBI individuals in a clinical setting will be discussed.

Can Training of Communication Partners of People With TBI make a Difference?

Leanne Togher¹, Skye McDonald², Chris Code¹ and Susan Grant¹

¹ School of Communication Sciences and Disorders, University of Sydney, Sydney

² School of Psychology, University of New South Wales, Sydney

Communication treatment programs typically focus on the person with traumatic brain injury (TBI) whereas it may be beneficial to concentrate treatment efforts on the communication partner. Common communication problems observed in the interaction of staff, families and others in the community include: a) asking for the same information repeatedly to “check” on its accuracy, b) failing to follow up information given by the injured individual and c) failing to provide the person with TBI with the appropriate feedback during periods of communication failure.

This paper investigates the effectiveness of a 6-week training program with the NSW Police Service which targeted these and other behaviours during routine phone enquiries. 20 male police officers were randomly assigned to two groups (training or control). 20 male TBI subjects were also assigned to two subgroups (X and Y). Prior to the training program, TBI subjects made a routine telephone enquiry to the police (with subgroup X contacting the training group, subgroup Y contacting the control group). Following the training, this was repeated with a crossover of TBI subgroups. The 40 service encounters were transcribed and analysed using analyses from systemic functional grammar (Halliday, 1994). A comparison of pre and post training generic structure potential analysis results will be reported. Police use of strategies to establish the service request, provide a clear service compliance and ensure appropriate leave-taking enabled more appropriate responses to TBI subjects’ verbose, personal and unrelated contributions. This resulted in more efficient, focused interactions in the post-training phone calls. Part of the difficulty of modifying the communication behaviour of injured individuals is the cognitive limitation imposed by their frontal lobe damage (Ylvisaker et al., 1993). By modifying communication partners’ behaviours, interactions can be more efficient, TBI subjects can be provided with appropriate feedback, support and structure and recovery of communication skills will be enhanced.

References

- Halliday, M.A.K. (1994). *An introduction to functional grammar* (2nd ed.). London: Edward Arnold.
- Ylvisaker, M., Feeney, T.J., & Urbanczyk, B. (1993). Developing a positive communication culture for rehabilitation: Communication training for staff and family members. In C.J. Durgin, N.D. Schmidt & L.J. Fryer (Eds.), *Staff development and clinical intervention in brain injury rehabilitation*. (pp. 57–81). Gaithersburg, MD: Aspen.

The Luria Award for Doctoral Research was awarded to Pamela Snow for the following presentation:

Outcome Following Severe Traumatic Brain Injury: How Does Communication Fare?

Pamela Snow, Jacinta Douglas and Jennie Ponsford

School of Human Communication Sciences, La Trobe University, Melbourne

Although much is known about the long term psychosocial sequelae of traumatic brain injury (TBI), previous workers have not studied outcome with respect to communication abilities. This paper will describe the results of a longitudinal follow-up study of a group of severely injured TBI speakers. The discourse skills of a group of 26 TBI speakers were examined at an initial assessment (at a mean of 17 weeks post-injury) and 24 of these speakers were reviewed at a minimum of 2 years post-injury (mean 2 years, 10 months). At follow-up, the relationship between conversational discourse skills and selected measures of executive functioning and psychosocial adjustment was examined. As a group, TBI speakers' conversational skills had not improved significantly over time, and they continued to perform more poorly than a group of non-TBI orthopaedic patients. Significant correlations were found between discourse performance and (a) degree of self-reported psychosocial handicap (as measured by the Craig Hospital Assessment and Reporting Technique), and (b) performance on two measures of executive function (word fluency and Part "B" of the Trail-Making Test). There was also a significant association between outcome and duration of speech pathology services. The findings will be discussed with respect to implications for speech pathology service delivery in the longer time after severe TBI.

Pragmatics and Ageing: A Comparative Study of the Conversational Skills of the Normal Elderly and Early Onset Alzheimer's Disease Sufferers

Michelle L. Kotis

Speech Pathology Department, Olympia Private Rehabilitation Hospital, Thornbury, Victoria

Is there a decline in pragmatic competence with age? This paper will compare the conversational skills of the normal elderly with early onset Alzheimer's Disease sufferers. The aim of this paper will be to describe the discourse organisational abilities of both subject groups; with specific reference to the systematics of conversational turn-taking proposed by Sacks et al., (1974). The paper will also make reference to Grice's Cooperative Principle and Sperber and Wilson's Theory of Relevance.

Thirty minute audio and video tape recordings were made of naturally occurring conversations of both the normal elderly and Alzheimer's patients over a twelve week period. The tapes were then transcribed verbatim for qualitative analysis. Results indicated that there is minimal decline in the discourse organisational abilities of the normal elderly. The patients with early onset Alzheimer's Disease continued to use the mechanisms for successful turn-taking, however the degree to which they were able to manipulate a conversation in the event of breakdown was compromised. The results also indicate that the Alzheimer's patients had difficulty with topic selection and topic change. The analysis concludes with a brief discussion of conversational implicature and referent tracking, with the Alzheimer's patients violating a

number of the rules associated with these processes. The researcher postulated that these difficulties were secondary to reduced short-term recall and the inability to retain and manipulate specific details over time.

References

- Grice, H.P. (1975). Logic and Conversation. In P. Cole & J.L. Morgan (Eds), *Syntax and Semantics*, (pp. 41-58). New York: Academic Press.
- Sacks, H., Schegloff, E.A., & Jefferson, G. (1974). A simplest systematics for the organisation of turn-taking for conversation. *Language*, 50, 696-735.
- Sperber, D., & Wilson, D. (1986). *Relevance: Communication and Cognition*. Oxford: Blackwell.

Exploring the Cognitive Basis of Right Hemisphere Language Disorders

Skye McDonald

School of Psychology, University of New South Wales, Sydney

Patients with RH damage (typically from CVA) while not aphasic, have communication disturbances such as verbose and tangential speech and poor comprehension of inferences.

To explain this it has been suggested that the RH is instrumental for integrating new with prior knowledge and that RH language disturbances reflect a loss of this ability. Specifically it has been argued that RH patients are not perturbed by the absurdity of absurd syllogisms (All apes climb trees, Porcupines are apes, porcupines climb trees) because they no longer place information in the perspective of their wider knowledge of the world and therefore simply follow the chain of logic.

An alternative explanation is that RH research has encompassed many patients with damage to the frontal systems of the brain characterised by a failure to behave in a goal directed fashion and to be concrete in the appraisal of information. In such a case a quite different outcome is predicted for the above task. Instead of following the logic, such patients would be fixated by the salient concrete attributes of the information given and be unable to ignore this in order to see the logical relationship.

This study compared the performance of 18 RCVA and 18 control subjects on a range of neuropsychological tasks and the syllogism task. The RCVA subjects, as expected, were poorer than controls on visuospatial tasks. They also performed poorly on the syllogisms. Furthermore, this performance was related to verbal fluency a test known to be susceptible to executive dysfunction. The results suggest that poor language behaviour seen after RH damage may be due to executive dysfunction.

SESSION 9B: FREE PAPERS – MEDICAL AND METHODOLOGY ISSUES

Development of an Internet-Based Physiotherapy Evidence Database

*Anne Moseley*¹, *Cathie Sherrington*² and *Rob Herbert*³

¹ *Rehabilitation Studies Unit, Department of Medicine, University of Sydney and Royal Rehabilitation Centre Sydney, Sydney*

² *Physiotherapy Department, Bankstown-Lidcombe Hospital, Sydney*

³ *School of Physiotherapy, University of Sydney, Sydney*

Cochrane (1979) argued that much of what was practiced in medicine was not optimally effective, and that randomised clinical trials were

required to establish which therapies were effective and which were not. He saw the dissemination of the findings of randomised controlled trials as key strategies to improve the quality of healthcare. Sackett et al. (1997) have also identified fast, easy access to the best available evidence as a crucial aspect of evidence-based practice. These arguments also apply to physiotherapy practice in the 1990s.

At present physiotherapists face a number of impediments to the use of an evidence-based approach to clinical decision-making. These include: poor access to relevant, high quality trials; insufficient skills to evaluate the methodological quality of clinical trials; the fact that there are very few systematic reviews of the effectiveness of physiotherapy interventions. The aim of this project was to develop an internet-based resource to facilitate the implementation of evidence-based physiotherapy. This will involve establishing a database which contains nearly all randomised clinical trials of relevance to physiotherapy, with each trial rated according to its methodological quality. When complete, the Physiotherapy Evidence Database (called PEDro) will alleviate the issues of access to and evaluation of trials, and will facilitate the systematic review process.

An initial list of randomised clinical trials relevant to physiotherapy was established by combining the database compiled by the Rehabilitation and Related Therapies Field of the Cochrane Collaboration and several personal databases maintained by the authors and their colleagues. Additional trials have been identified by volunteer physiotherapists performing systematic searches of the literature using computer databases (eg, Medline, CINAHL) and hand searching. Each clinical trial will be assessed and rated according to its methodological quality using a modification of the Delphi scale (Verhagen et al., 1998).

To date, a database of nearly 1800 randomised clinical trials relevant to physiotherapy has been established. These trials are currently being rated for quality. Trial details and quality ratings will be archived in a searchable database on the World-Wide-Web. The database will be searchable by any field, including author, title, abstract, subject headings, body part or system, and intervention type. The search results will be ranked in order of quality, and annotated with comments about the methodology used. By addressing several major impediments, PEDro will contribute to the implementation of evidence-based physiotherapy.

References

- Cochrane, A.L. (1979). 1931–1971: A critical review, with particular reference to the medical profession. In G. Teeling-Smith (Ed.). *Medicines for the year 2000*, (pp. 1–11). London: Office of Health Economics.
- Sackett, D.L., et al., (1997). *Evidence-based medicine. How to practice and teach EBM*. London: Churchill Livingstone.
- Verhagen, A.P., et al., (1998). The Delphi list: a criteria list for quality assessment of randomised clinical trials for conducting systematic reviews developed by Delphi consensus. *Journal of Clinical Epidemiology*, 51(12), 1235–41.

Stimulant Use in Paediatric Acquired Brain Injury: Evaluation of a Protocol

Kathleen Bakker and Mary-Clare Waugh

Rehabilitation Department, New Children's Hospital, Sydney

Research investigating cognitive outcome following acquired brain injury (ABI) in paediatric populations outlines specific neuropsychological deficits in language, psychomotor speed, memory and new learning and

attention. Deficits in attentional skills such as, sustained attention, distractibility, and impulsivity are likely to have far reaching implications for children and adolescents in the classroom. Indeed, attentional deficits have the potential to influence all aspects of social, academic and adaptive functioning. The use of central nervous system (CNS) stimulants is gaining increasing popularity as an adjunct to rehabilitation in adult ABI populations. Arguments for the use of CNS stimulants in ABI rehabilitation include the fact that CNS stimulants have been successfully utilised in the management of attentional problems in children and adults with ADHD. More pertinent is the fact that CNS stimulants are believed to act on the neo-cortex, an area of the brain implicated in neurobehavioural sequelae of ABI. Thirdly, use of stimulant medication constitutes "rational pharmacotherapy" since deficits in monoaminergic neurotransmitter functioning have been reported in ABI patients. There is a dearth of research however, into the use of CNS stimulants in paediatric brain injury. Published studies have shown inconsistent findings, and have employed varying methodologies. We present a case study of the use of CNS stimulants in paediatric ABI, the case is discussed with regard to efficacy of pharmacological interventions and the design of objective protocols for stimulant trials.

Morphine, Glucose and Memory Impairments in Rats

Judi Homewood and Suzanne Hobart

Department of Psychology, Macquarie University, Sydney

Morphine sulphate is the drug of choice for the relief of both the physical and emotional response to pain. That this may be at the expense of memory impairment is suggested both by the anecdotal reports of patients and a small body of literature derived from studies of rodents. A second body of literature has examined if glucose treatment can facilitate performance per se in addition to remediating morphine-induced performance decrements. This study examined the ability of morphine to disrupt acquisition by rats of working and reference memory tasks in the Morris water tank, a water escape task, and of glucose to facilitate performance. Forty eight male hooded Wistar rats served as subjects. In the reference memory task, optimal performance requires that escape responses are directed to the same location each day. In the working memory task, the beginning of a new set of trials each day required the animal to learn a new location for escape. Rats were allocated randomly to one of four groups distinguished by the treatments administered 30 minutes prior to test: the glucose group (100 mg/kg glucose i.p.), the morphine group (5 mg/kg i.p.) morphine plus glucose (100 mg/kg glucose and 5 mg/kg i.p.) and the control group (saline 0.9mg/kg i.p.). The results showed a beneficial effect for glucose both alone and in conjunction with morphine treatment occurred only when newly presented information had to be used.

Neuropsychological Functioning of Methadone Maintenance Patients

Jamie Sims, Skye McDonald, Shane Darke and Wendy Wickes

School of Psychology, University of New South Wales, Sydney

Heroin and methadone are not neurotoxic; however, there are several reasons to suspect that methadone maintenance (MM) clients may be at risk of acquired brain damage. The risk factors for these clients may be

divided into three areas, overdose, alcohol abuse and head injury. These potential causes of brain damage have similar implications for cognitive functioning. That is, slowed information processing and attention, poor new learning, and reduced adaptive and problem solving skills, all of which have implications for clinical management.

A sample of 30 MM clients was compared to a matched sample of 30 non-heroin users on exposure to risk factors for acquired brain damage and on a range of neuropsychological tests. Results indicated that the rate of head injury in the MM group was considerably higher than that of the control group. Similarly, many more MM clients met the DSM IV criteria for a lifetime diagnosis of alcohol dependence compared with the control group. Rates of overdose in the MM group were commensurate with those of other studies. Neuropsychological test results appear to confirm that the MM group had acquired cognitive deficits in the areas of attention, information processing, visual and verbal learning and memory, and problem solving.

Neuropsychological Assessment of People With Impaired Vision: Comparing Visual and Tactile Skills in Perceptual Organisation

Carissa Coulston¹ and Robyn Tate²

¹ Department of Psychology, University of Sydney, Sydney

² Rehabilitation Studies Unit, Department of Medicine, University of Sydney and Royal Rehabilitation Centre Sydney, Sydney

A common approach in neuropsychological assessment of people with impaired vision is to magnify pictures to facilitate perception of all visual features. Despite adequate magnification, research has failed to consider that the ability to identify pictures of distorted objects and animals in tests of perceptual organisation may require intact vision throughout development. This would have adverse implications for people who have had impaired vision since childhood. Tactile processing of pictures may enhance performance of this population given a well developed sense of touch they often demonstrate. In order to investigate these ideas, 20 participants with onset of vision impairment in childhood (early onset), 20 participants with onset of vision impairment in adulthood (late onset), and 20 fully-sighted controls were compared on three tasks of perceptual organisation in both the visual and tactile modalities in a 2 X 3 factorial design. The tasks comprised the Gollin Figures, Hooper Visual Organisation Test, and the Visual Object and Space Perception Battery. There were no differences in degree of impaired vision between the early- and late-onset groups and all groups were equal with respect to age, gender, and performance on two cognitive screening measures (Peabody Picture Vocabulary Test and Tactile Form Perception Test). Results of a MANOVA yielded significant main effects for modality ($F(6,52) = 378.81, p < 0.001$), group ($F(12,104) = 5.56, p < 0.001$), and interaction between modality and group ($F(12,104) = 14.13, p < 0.001$). Results of planned contrasts showed that the early-onset group identified significantly fewer pictures in the visual modality and significantly more pictures in the tactile modality than the late-onset and control groups. The latter two groups performed comparably in both modalities. All groups identified significantly more pictures in the visual modality. These results suggest that the visual modality is the better option when assessing early-onset people however, caution must be taken when interpreting their scores as impaired vision from childhood appears to interfere with the cognitive development of perceptual organisation.

The Frontal Lobes: Not so Mysterious? Forensic and Clinical Implications of Problems in Detecting Frontal Dysfunction

Tom Benjamin¹ and Peter Golus²

¹ *Health Services Management, University of New South Wales, Sydney*

² *PsychQuest, Sydney*

Recent reviews have only reinforced the mystery surrounding the role of the frontal lobes. The neuropsychological effects of frontal damage have proved to be subtle, with conflicting results. Indeed, the supposed beneficial effect of frontal leucotomy on general intelligence has sometimes been given as a rationale for performing the operation on intellectually-handicapped or elderly patients for whom such psychosurgery would normally be contra-indicated.

It is rare in modern medicine to obtain access to data from subjects who have undergone these surgically-induced lesions. The NSW Royal Commission into Mental Health Services provided such an opportunity. This paper is based on examination of records from 80 patients who were given cingulo-tractotomies in the 1970s and two patients who desired a more extensive battery of tests, one including a CT scan. Conventional intelligence tests predictably showed little change following the operations. However, tests requiring executive and planning functions showed marked deficits. It would appear that the apparent subtlety of effects noted in so many studies has probably been a limitation of methodology rather than a true measure of the actual contribution of the frontal lobes to integrated adult functioning.

These results particularly highlight the difficulties faced by persons with frontal damage of lesser magnitude in communicating the nature of their problems. The lack of obvious deficits may lull the patients, their families, and clinicians into attributing changes to psychological factors rather than recognising their neuropsychological nature. This has implications for diagnosis, treatment, and forensic applications.

SESSION 10A: FREE PAPERS – NEUROPSYCHOLOGICAL ISSUES

Neglect Dyslexia and Visual Word Recognition

Marina Haywood

School of Psychology, Deakin University, Geelong

This paper presents a single case study of a patient with left neglect dyslexia, an acquired reading disorder in which letters on the left of words or nonwords are misidentified. RR's deficit was examined according to a three-stage model of visual word recognition proposed by Caramazza & Hillis (1990). This model proposes that each stage of visual word recognition has corresponding spatial coordinates which reflect a progression away from the physical stimulus towards a more abstract representation of a word. The location of a word on the retinal image is important at the retino-centric level. The spatial position of a letter in relation to the other letters in a word is important at the level of stimulus-relative representation. At the graphemic level, the physical details of the stimulus are discarded in favour of an abstract or normalised representation. It was demonstrated that RR's deficit was to the stimulus-relative level. Her neglect was relative to the leftmost and rightmost letters in a word, rather than to its position in absolute space: her

error rate was the same whether a word was presented in her right or left visual field. She showed no signs of visuo-spatial neglect on conventional tests, when naming strings of symbols and pictures or when making visual matching judgments on nonsense letter shapes. This suggests RR does not have difficulties in extracting feature information. She was not impaired at the graphemic level: she continued to neglect the leftmost letter when reading words presented in mirror-reversed orientation and did not neglect in oral spelling to dictation. Five characteristics of neglect dyslexia when the deficit is stimulus-relative are defined. First, neglect does not occur because attention is attracted away from the leftmost letter: RR made the same number of errors to that letter irrespective of the stimulus quality of non-first letters. Second, a potential word is defined by perceptual features such as spaces. Third, the probability of an error being made to a given letter is a monotonically decreasing function of its position in the letter string. Fourth, the whole, rather than part, of a letter is neglected: RR's error responses in the leftmost item position were neither visually similar or dissimilar to the target. If she neglected part of a letter, her errors would have been visually similar to the target. In addition, she would have neglected the left side when making visual judgments on nonsense letter shapes. Fifth, category information is maintained: when RR made an error to the leftmost item when naming strings of mixed letters and numbers, the category of that item was preserved.

Conditions Under Which Perseveration can be Induced in People Without Brain Damage

Michelle Maitz¹ and Robyn Tate²

¹ Department of Psychology, University of Sydney, Sydney

² Rehabilitation Studies Unit, Department of Medicine, University of Sydney and Royal Rehabilitation Centre Sydney, Sydney

Perseveration, the pathological repetition of a response when it is no longer appropriate, is often observed clinically after damage to the frontal lobes, but is not exhibited by people without brain damage. There is continuing controversy regarding the underlying mechanism of perseveration and the aim of the present study was to examine a deficit in working memory as a possible explanation. In a dual-task experimental paradigm, Dunbar and Sussman (1995) had previously shown that performance on a concurrent interference task resulted in perseverative behaviour on the Wisconsin Card Sorting Test (WCST) in non-brain-damaged subjects. The present study extended those findings by examining whether perseveration resulted as a function of interference *per se*, or if the novelty of the task was the contributing factor. Thus interference was examined in a 2 x 2 experimental design, using novelty of interference (routine versus non-routine) and type of interference (verbal versus visuospatial), with WCST as the primary task. Four groups, each of ten undergraduate students, participated in the experiment. Main effects for novelty of interference were found, with more perseveration occurring on the non-routine condition. No significant effects were found for type of interference. The experiment was repeated with a visuospatial design test as the primary task, an adaptation of Luria's ramparts. The same interference tasks were used as for the WCST. In contrast to those findings, main effects were found for type of interference, with more perseveration occurring under the visuospatial condition, but no significant effects were found for novelty of interference. The paper concludes with a discussion of the role of deficits in working memory as an explanation of the underlying mechanisms of perseveration.

Planning Deficits in Normal Elderly People: Application of the Supervisory Attentional System

Tania Lioulios

Division of Psychology, Australian National University, Canberra

Cognitive planning is one of our most valuable cognitive resources. By taking into consideration the anticipation of future consequences, we lay the foundations for effective planning. Without this, decision making is poor, and we are unsure and inadequate when confronted with new situations in everyday life.

Planning, and preparing to carry out the planned intention, draws on a number of executive and non executive processes. Burgess and Shallice applied the Supervisory Attentional System in an attempt to explain data demonstrating breakdowns at various stages of these processes in brain injured people. They conceptualised the deficits found in terms of a Strategy Application Disorder. However, the question of whether patients with this disorder were unable to spontaneously generate conscious access to previous experience as a tool for strategy application was not directly addressed.

In the present research the ability to effectively plan actions was demonstrated to rely upon the ability to consciously and spontaneously draw on previous learning, and strategically apply this learning when developing a plan based on possible future consequences. A novel test of planning (Foresight Test) was developed which was simple to administer, and ecologically valid. Preliminary results from 82 normal elderly people between the ages of 50 and 85, suggest that those people showing a decline in planning did not consciously make a choice based on consideration of possible consequences. However, their performance on the Foresight Test improved when they were prompted to do this. Implications for clinicians' use of prompts in assisting the brain injured patient to consider the consequences of future actions are discussed.

Executive Dysfunction One Month Following Traumatic Brain Injury

Gerard Pauley and Maria Hennessy

Clinical Neuropsychology Laboratory, James Cook University, Townsville

The assessment of executive functioning in recent research and clinical practice is problematic due to an overreliance on eclectic and descriptive models of functioning. Component process analysis along with the development of integrated neurocognitive models of prefrontal cortex functioning, such as that proposed by Stuss, Shallice, Alexander & Picton (1995), have important implications for future research. Using such models, a battery of executive functioning tasks were selected and administered to a group of mild traumatic brain injury patients and matched orthopedic controls. At one month, minimal signs of executive dysfunction were evident on the tasks administered. A case-matching approach was then utilised to examine individual outcomes which may have been obscured by the group data. In addition, results from the Cognitive Bias Task (CBT), recently described by Goldberg and colleagues, were also examined. The CBT is a new experimental task which appears highly sensitive to prefrontal cortex lesions and its novelty lies in the use of an ambiguous response format which contrasts with traditional correct/incorrect response formats of commonly used neuropsychological tasks. Analysis of case-matching and CBT

data showed some significant results in certain specific areas of executive functioning. The possible implications of these results for further research and clinical practice and assessment are considered.

SESSION 10B: FREE PAPERS – MEMORY, TREATMENT AND OUTCOME

Neuropsychological Outcome Following Mild Traumatic Brain Injury

Maria Hennessy, C. O'Connor and Gerard Pauley

Clinical Neuropsychology Laboratory, James Cook University, Townsville

The Brain Injury Outcome Project (BRINC) aims to define and characterise the long-term neuropsychological consequences of mild traumatic brain injury (TBI). BRINC uses tasks selected on the basis of neurocognitive models of brain systems implicated in mild TBI, and examines their relationship to outcome after TBI based on clearly defined models of outcome. Data is presented on the first cohort of 12 mild TBI patients and their orthopedic controls, at one week and one month and six months post-injury. One week assessment focussed on attentional dysfunction based on Stuss, Shallice, Alexander & Picton's (1995) model of anterior attentional functioning. A differential profile of attentional dysfunction was indicated for the attentional processes of concentrating and switching at one week post-injury. At one month, an extended executive functioning and psychosocial evaluation was administered. Again, a differential pattern of attentional dysfunction involving the processes of concentrating and switching was indicated. However, non-significant results were found for the executive functioning tasks. Six month follow-up data for neuropsychological and psychosocial functioning will also be presented. The implications of these findings for neuropsychological theory, research methodology and clinical practice are discussed.

Persisting and Cumulative Effects of Sports-related Concussion on Speed of Information Processing: A Retrospective Analysis

Anton Hinton-Bayre, Gina Geffen and Laurie Geffen

Cognitive Psychophysiology Laboratory, University of Queensland, Brisbane

Several studies have shown that the effects of concussion in contact sport on standard neuropsychological measures are relatively brief and transient. Some evidence of long-term cognitive deficits resulting from repeated concussion has been reported in samples of professional boxers and, to a lesser extent, soccer players. The incidence of concussion in Rugby League has been estimated at 8.5% of all injuries per season. Our data indicated that 89.6% of players interviewed over a 3 year period had a history of concussion, 72.4% with at least one episode of post-traumatic amnesia (PTA) and 36.3% involving loss of consciousness (LOC). In the present study 105 professional rugby league players completed the Digit Symbol, Symbol Digit, and Speed of Comprehension tests pre season. Using a standardised structured interview, episodes of previous concussion were documented, and verified against medical records when available. Initial analysis revealed that players reporting no history of concussion were not significantly different to those reporting only a minor concussive episode (no LOC/PTA) within the last 12 months on any of the psychometric tests. It was then found that players with a history of multiple concussion (2+) showed similar performance to players reporting one or no prior concussions. The effects of severity and recency of concussion were then

considered. It was found that players experiencing a LOC within the last 12 months were significantly slower on the Symbol Digit Modalities Test than players reporting only PTA and those with no history of concussion. Follow-up analysis revealed that this deficit was still present in players with a history of LOC more than 12 months prior to testing. However, players with a history of multiple LOC were not different to those with only one episode of LOC. These results suggest that LOC experienced in contact sport may lead to persistent deficits, however repeated trauma may not be necessarily cumulative.

Self-Report Following Traumatic Brain Injury and Implications for Rehabilitation

Amanda Port, Cathy Willmott, Judith Charlton, Clare Humphries, Emma Gaffney and Robyn Nelms

Epworth Hospital, Bethesda Rehabilitation Campus, Melbourne

Research has largely indicated that self-report of impairment following traumatic brain injury (TBI) is unreliable, particularly in the realms of behavioural and emotional changes. Many of these studies have, however, been conducted more than two years post-injury thereby providing limited information regarding the implications of insight, or lack of insight, for rehabilitation, in the earlier stages post-injury. The present study investigated awareness of deficits in a group of thirty patients who had sustained a moderate or severe TBI less than two years previously and were still involved in rehabilitation. Level of insight was measured by the degree of agreement between self and significant other (SO) report on a questionnaire assessing various domains of daily functioning. On the whole, there was substantial agreement between TBI individuals and their SO, although the TBI patients were less likely to acknowledge executive problems. Interestingly, both groups reported only mild to moderate levels of difficulty, suggesting that SO's awareness may also be limited in the early recovery stages. A subgroup of the TBI patients obtained benefit from participation in a memory group in a rehabilitation setting. This was indicated by self-report of therapeutic changes at pre-/post- group intervals.

Educational Outcome for Postsecondary Students Following Traumatic Brain Injury

Alison Stewart-Scott, Jacinta Douglas and Jennie Ponsford

La Trobe University, Melbourne and Epworth Hospital, Bethesda Rehabilitation Campus, Melbourne

Given that traumatic brain injury (TBI) predominantly affects young people between the ages of 15 to 28 years, it could be expected that a significant proportion are secondary or postsecondary students at the time of their injury. It is likely that many of these students will want to resume their studies following TBI in order to fulfil an important life goal and enhance their vocational future.

The current study is the second in a series of studies conducted by the authors on the same topic. The aims of this study were to document the educational outcome for a group of postsecondary students one to four years following their injury and to identify indicators of positive educational outcome.

Twenty participants were interviewed and asked to complete a structured questionnaire regarding four aspects of their pre and post injury experience of study. These aspects included educational attainment, educational performance, social adjustment and personal-emotional adjustment. In addi-

tion, a range of neuropsychological tests and self report measures of neurobehavioural problems and mood were also administered and injury related data was obtained from medical files.

At the time of interview, 7/20 students had completed their pre-injury course and 5/20 students were continuing to study their pre-injury course. Five students were continuing to study a different course and 3/20 had withdrawn from study following their injury.

Educational outcome for this group of students will be discussed with respect to the influence of a range of variables including severity of injury, neuropsychological performance, mood and pre-injury educational profile.

SESSION 11: FREE PAPERS – COMMUNITY REINTEGRATION AND NEUROPSYCHOLOGICAL TESTING

Attendant Carers: The Quiet Achievers in Community Based Rehabilitation

Annie McCluskey

Division of Occupational Therapy, University of Western Sydney – Macarthur, Sydney

Attendant carers often spend 30–40 hours per week with one client. Many develop close and very effective working relationships with their clients, but remain an underutilised and often unrecognised member of the community rehabilitation team. A qualitative study was conducted to identify the roles and expectations of paid attendant carers. Both carer and care recipients' perspectives were investigated. Semi structured interviews were conducted with 5 pairs (people with a TBI and 5 attendant carers). Data were analysed to the level of open coding. Major roles identified include Attendant, Friend, Negotiator, Coach and Protector. The *role of Friend* was most important to participants with a TBI, most of whom had lost contact with their pre-injury associates. A strong bond developed between some of the pairs over many months. The *Negotiator role* involved mediation on behalf of clients with children, spouses, institutional staff and members of the public. It also involved limit setting and negotiation with the person with a TBI. The *Protector role* involved considerable role conflict for some of the carers. Clients who became more independent took more risks. Carers did not always agree with a client's decision making but acknowledged their right to make mistakes. The *role of Coach* involved prompting and encouraging the person to try new activities and improve their skills over many months. Most of the carers had received little or no training for this type of work but had implemented well designed community integration programs for their clients over many months. Rehabilitation professionals can learn much from these quiet achievers.

ABI Behaviour Consultancy: A 15-Month Analysis of Outcomes Following Behaviour Interventions for People With Acquired Brain Injury and those Caring for Them

Samantha Burns, Jan Loewy and Ann Parry

Behavioural Consultants, Melbourne and Epworth Hospital, Bethesda Rehabilitation Campus, Melbourne

Research has indicated that behaviour and emotional changes in a person following acquired brain injury (ABI) are the single largest cause of stress for individuals, family members and carers. Research regarding the follow-up of clients several years after an ABI and the provision of practi-

cal behaviour management strategies by therapists has been somewhat limited. The ABI Behaviour Consultancy was established to provide behaviour management support to individuals who have sustained non-compensable ABI and to their family members and carers. There are many different behaviours and emotional changes following ABI and the present study will present 15 months of outcome data examining the type of ABI and the types of behavioural and emotional change. Data will also be presented that provides detailed information regarding: carer stress levels, the frequency and intensity of behaviour problems, risk factors, level of skill and knowledge about behaviour management, relationship factors, and activity level. The model being employed by the Consultancy involves detailed examination of the type of ABI, and factors related to the person and the environment. Two detailed case studies will be presented to further highlight the nature of interventions provided by the Consultancy using this model.

Are Neuropsychologists Able to Determine the Presence and Severity of Brain Impairment Based on Neuropsychological Test Scores Alone?

Robin Murray

Psychology Department, Canberra Hospital, Canberra

Neuropsychologists may be requested to determine whether brain impairment is present, and if so, give an estimate of the severity of impairment on the basis of neuropsychological test scores, client history, and review of medical records. The question of whether neuropsychologists are able to judge impairment on the basis of test scores alone was examined. The San Diego Neuropsychological Test Battery, a comprehensive battery which emphasises learning, memory, and attention was given to forty subjects, half of whom suffered from insomnia with no other complicating medical or neurological condition. The remaining subjects suffered from eosinophilia myalgia syndrome, a condition resulting from the ingestion of a toxic substance. Two independent neuropsychologists tested the subjects, then developed an objective impairment rating, based on *z* score calculations for selected tests, for each subject. Two separate neuropsychologists were asked to perform "blind" ratings for the subjects, with each neuropsychologist rating twenty subjects, so that ratings could be compared to impairment indices, but one neuropsychologist's ratings could not be compared to the other's. They were asked to determine whether or not brain impairment was present, and if present, to classify the impairment as "mild", "moderate", or "severe". A Pearson correlation coefficient was calculated to examine the association between neuropsychologists' impairment ratings and the original impairment indices. Results suggested that neuropsychologists are able to predict impairment from test score results when individuals show severe deficits. With moderate impairment, results, while still strong, were less certain. However, when impairment was mild or absent, psychologists' ability to determine impairment was at the level of chance. These findings are discussed in terms of their clinical and medico-legal implications, and their relationship to the existing literature.