Abstracts of the 24th Annual Brain Impairment Conference 17–20th May 2001, Magnetic Island

Conference Introduction: Chasing the Unknown

Maria Hennessy

Conference Organiser, and the School of Psychology, James Cook University, Townsville QLD

The genesis of executive functioning theory lies in nineteenth century clinical and comparative experimental research that focussed on the behavioural symptomatology following frontal lobe damage. The continuing fascination with the classic case of Phineas Gage, the railway construction worker who was severely brain injured during a work accident in 1848, is related to our continuing difficulty to adequately conceptualise the cognitive functions associated with those brain systems whose complexity is so uniquely human. The integration of these disparate cognitive and behavioural observations as executive functions, did not begin until the late 1960s and 1970s. Of significance are the clinical writings of Luria (1966, 1973). His astute observations of the psychological consequences of cerebral disorders, clear descriptive categorisation of these behaviours, and emphasis on the need to develop these categorisations into a detailed analysis of the individual components of complex mental activities, provided an insightful foundation for the theoretical development of executive functioning.

Until recently, clinical neuropsychological research has been heavily influenced by Lezak's (1995) descriptive classification of executive functions. Her four component framework of volition, planning, purposive action and performance effectiveness has been a significant influence on clinical conceptualisations of executive functioning. However, its descriptive nature and reliance on generic everyday terminology lead to a circular impasse in the development of executive theories. Under such a descriptive framework, components may be revised, new components added, and tests purporting to measure each component may be added in an idiosyncratic manner. This form of approach, while dominant in some clinical circles, does not lend itself to the development of testable experimental hypotheses, and as such, produces a descriptive stasis rather than a dynamic framework for the systematic refinement of executive functioning theories. Lezak's framework would seem to highlight the basic descriptive elements first defined by Luria, without taking the further challenge of seeking to refine these executive processes in a systematic manner.

Fortunately, developments in experimental primate research and cognitive psychology have begun to redress this imbalance. The challenge for future research is how to integrate the fascinating data produced by experimental primate research, cognitive psychology, psychophysiology, functional imaging, and research investigating clinical disorders across the life span. The primary aim of the ASSBI 2001 conference was to encourage such a process.

The conference has attracted researchers from both Australia and overseas. Most importantly, speakers are at a variety of career stages, from honours students to internationally respected leaders in their field. Surely, one of the most unique contributions of ASSBI is an ability to foster such an exchange of ideas across career stages and disciplines, in an atmosphere of collegial equanimity. Enjoy.

References

Luria, A. (1966). *Higher cortical functions in man.* New York: Basic Books.

Luria, A. (1973). *The working brain: An introduction to neuropsychology.* Middlesex: Penguin Books.

Lezak, M.D. (1995). *Neuropsychological assessment*. New York: Oxford University Press.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

WORKSHOP 1

Functional Imaging of Executive Processes

Tim Shallice

Institute of Cognitive Neuroscience, University College, London UK.

Research on functional imaging of executive processes will be reviewed concentrating on (i) top-down modulation of lower level processes and left dorsolateral prefrontal systems, (ii) the role of right dorsolateral and right ventrolateral regions in both episodic memory retrieval and more general cognitive control operations, (iii) effortful processses and the anterior cingulate and (iv) the functions of area 10 in task setting. Where possible links will be made to neuropsychological evidence.

WORKSHOP 2

Using Occupation in ABI Rehabilitation: Assessment and Treatment Strategies for Impaired Self-awareness

Jenny Fleming

Department of Occupational Therapy, University of Queensland, and the Princess Alexandra Hospital, Brisbane QLD

Impaired self-awareness in adults with severe brain injury can pose obstacles for successful engagement in rehabilitation and the use of compensatory strategies for cognitive deficits. In individuals with acquired brain injury (ABI), a lack of self-awareness can be attributed to neurological impairment, or psychological denial, or a combination of both. The Pyramid Model of Awareness conceptualises self-awareness as having three interdependent levels: intellectual, emergent and anticipatory awareness (Crosson et al., 1989). Intellectual awareness refers to knowledge about specific brain injury deficits. It can be assessed using questionnaire and interview methodologies and treated using counseling and education. Emergent and anticipatory awareness, on the other hand, is best assessed and treated in the context of the performance of functional activity. Emergent awareness refers to the ability to recognise a problem as it is occurring during task performance and anticipatory awareness refers to the ability to anticipate that a problem may occur because of some deficit. Occupation is defined as "the activities people engage in throughout their daily lives to fulfill their time and give life meaning" (American Occupational Therapy Association, 1997, p. 864). This workshop will review the use of functional activities in an occupational context as a means of assessing and treating impaired self-awareness in adults with ABI. The use of standardised assessments such as the Self-Awareness of Deficits Interview (SADI) (Fleming et al., 1996) will also be discussed as a way to facilitate realistic goal setting. Treatment techniques such as video feedback, self-prediction, self-checking, self-questioning and role reversal (Toglia, 1998) can be used in conjunction with meaningful occupations to enhance self-awareness. This will be illustrated using case study presentations.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

WORKSHOP 3

Assessment and Management of People with Severe Brain Injury and Reduced States of Awareness

Barbara A Wilson

Medical Research Council Cognition and Brain Sciences Unit, Cambridge and The Oliver Zangwill Centre for Neuropsychological Rehabilitation, Ely UK

This workshop is intended for those working with people with severe brain injury. It addresses assessment of both acute head injury, that is, people in coma and in post traumatic amnesia (PTA), and of more chronic head injury, that is, people who are vegetative and minimally conscious. Management and treatment issues including appropriate goal setting will also be discussed. For the assessment of patients in coma and in PTA, existing scales are described together with a new scale, The Wessex Head Injury Matrix, designed to assess patients recovering from the early stages of severe head injury. The use of this scale with patients who are vegetative and minimally conscious is also described. Case studies and videos of patients are used to illustrate certain points.

At the conclusion of the workshop, participants should a) have a better understanding of coma, the vegetative state and minimal responsiveness; b) be able to select and use instruments to assess and monitor progress in acute and chronic head injury patients; and c) be able to use the information gathered from the assessments to identify appropriate management techniques and set appropriate and achievable goals.

WORKSHOP 4

Understanding Attention in Normality and Pathology: A Cognitive Neuroscience Perspective

Jason Mattingley

Department of Psychology, University of Melbourne, Melbourne VIC

In the field of cognitive neuroscience, considerable recent effort has been devoted to uncovering the brain mechanisms that underlie human attention. It is now clear that mechanisms of attention are crucial for conscious perception. Even in neurologically healthy individuals the absence of attention can lead to profound and surprising perceptual anomalies. Some of the most significant advances in the field have emerged from neuropsychological studies of individuals with acquired brain injuries, who can exhibit a selective loss of attention for just a subset of sensory inputs, despite being fully alert. For instance, individuals with stroke-induced damage to the brain's right hemisphere may lose awareness for the left side of their perceptual world, even though their neural apparatus for basic sensation remains intact. Laboratory studies have revealed that such 'unilateral neglect' of the environment is caused by an impairment of those attentional processes that would normally select behaviourally relevant sensory information for further processing. In this workshop I shall review recent research on the neuropsychological study of selective attention and awareness, with particular emphasis upon unilateral neglect and related disorders. It is argued that although there can be considerable cognitive processing in the absence of awareness, only those sensory inputs that are selectively

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

attended are available for conscious report. Mechanisms of selective attention play a crucial role in modulating the contents of consciousness, and may hold the key to developing more effective rehabilitative strategies for individuals with acquired brain lesions.

KEYNOTE ADDRESS 1

Fractionating the Supervisory System

Tim Shallice

Institute of Cognitive Neuroscience, University College, London UK

A theoretical perspective for replacing disorders of executive system functions will be presented. It will be derived from artificial intelligence work on expert systems but will concentrate on three processes — the top-down modulation of activation levels of schemas, the monitoring of novel operations and the laying down/realising of intentions. The regions held to be involved are left dorsolateral prefrontal cortex, right dorsolateral prefrontal cortex and area 10 respectively. The empirical evidence to which it will be related will include functional imaging and standard neuropsychological studies.

KEYNOTE ADDRESS 2

Neuropsychological Rehabilitation of Executive Deficits: A Goal Planning Approach

Barbara A Wilson

Medical Research Council Cognition and Brain Sciences Unit, Cambridge and The Oliver Zangwill Centre for Neuropsychological Rehabiltation, Ely UK

Executive deficits include disorders of planning, organisation, initiation, divided attention and monitoring behaviour. Such deficits are common after brain injury and pose a challenge for people involved in rehabilitation. Rehabilitation is a process whereby people injured by illness, trauma or disease work together with health care professionals and others to achieve their optimum level of physical, psychological, social, emotional and vocational well being. Rehabilitation includes all measures aimed at reducing the impact of disabling and handicapping conditions and at enabling disabled people to return to their own most appropriate environment. Neuropsychological rehabilitation is particularly concerned with the amelioration of cognitive, social and emotional deficits and reducing the impact of these in everyday life. Some general approaches to the amelioration of executive deficits are described including strategy training and external aids. This is followed by a consideration of goal planning as a way to implement neuropsychological rehabilitation. Many centres now adopt an approach whereby goals for treatment are negotiated between the brain injured person, family members or carers and the rehabilitation staff. This paper describes the background to goal planning, the principles and processes involved, and discusses some advantages and disadvantages of this system. Clinical examples of goal planning programmes with people sustaining executive deficits following brain injury are provided.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

PAPER SESSION 1: CURRENT ISSUES IN THE ASSESSMENT OF EXECUTIVE FUNCTIONING

Executive Functions: Are We Really Measuring What We Think We are Measuring?

Olivier Piguet[1], D Grayson[1], Tony Broe[2], Robyn Tate[3], T Lye[1], Hayley Bennett[1], Helen Creasey[1] and W Brooks[1]

[1]Centre for Education and Research on Ageing, University of Sydney, Sydney NSW
[2]Prince of Wales Medical Research Institute, Sydney NSW
[3]Rehabilitation Studies Unit, Department of Medicine, University of Sydney, Sydney NSW

Executive functions (EFs) are generally accepted to be cognitive abilities that encompass the capacity to program, regulate and verify the unfolding of complex behaviours. EFs are also frequently described as showing early age-related changes compared to other cognitive abilities, paralleling a structural decline affecting the frontal regions. Nevertheless, these functions remain poorly defined and familiar EF tasks often fail to adequately capture this construct despite exhibiting seemingly reasonable face validity. Data arising from the performance of 123 randomly selected community dwellers, aged 81 years and above, on nine tests of EFs (yielding 26 measures) are presented. Using structural equation modelling procedures, common constructs of EFs, such as "set" and "switch" could not be extracted. However, a two-factor model emerged representing externally constrained, and internally generated strategies. This model fits Eslinger and Grattan's (1993) model of reactive and spontaneous flexibility. These findings support the view for a fractionation of EF constructs. They show that the measurement of EF constructs require further investigation and caution against a premature diagnosis of executive dysfunctions based on current clinical tools.

Executive Function Processes and Relational Complexity

Toni Jones and Graeme Halford

School of Psychology, University of Queensland, Brisbane QLD

While executive functioning has been the focus of many studies there is, as yet, no agreed specification of the construct of 'executive functioning'. Operational definitions have relied on individuals' performance on neuropsychological tasks used to measure one or more cognitive processes generally associated with executive functioning such as planning, response inhibition, regulation, and verification. While the nature and structure of these underlying processes are yet to be fully defined, there is growing evidence that efficient executive functioning entails processing relations. The current paper attempts to define the cognitive processes underlying executive functioning using Halford, Wilson and Phillips' (1998) model of relational complexity. Halford et al. (1998) have defined equivalence classes of equal structural complexity and developed techniques for analysing complexity of cognitive tasks (e.g. conservation, hierarchical classification, Tower of Hanoi and Latin square tasks) based on the structure of relations processed. The utility of this model in specifying processes underlying executive functions is supported by findings from developmental psychology, physiological psychology and neuroimaging studies. It is proposed that complexity of relations that can be processed will provide a good measure of executive functioning which will help to discriminate between impaired

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

and control subjects, and assist in the clarification and specification of the construct of executive functioning in future research.

Executive Functioning, General Intelligence and Cognitive Development

Simon Davies and M Anderson

Robin Winkler Clinic, Department of Psychology, The University of Western Australia, Crawley WA

Recently it has been argued that "executive" functions associated with the frontal lobes are the basis of general intelligence (g). Evidence for this comes from experiments that show individuals with frontal lesions, closed-head injuries, and normal individuals with low "fluid g", share a deficit in the organisation of goal-directed behaviour — a phenomenon called goal-neglect. This hypothesis, however, sits uneasily with cognitive theories that attribute g to differences in speed of information processing – a low-level parameter of neural functioning. In contrast, it maps well onto theories of cognitive development that attribute changes in g to the acquisition of "executive" modules during maturation. In two experiments, we administered two versions of a goal-neglect task to 10 patients with frontotemporal dementia (FTD), 10 low-g controls matched for age and premorbid intelligence, and 116 children aged 6 to 11-years. On the standard task, FTD patients, low-g controls and young children performed poorly. On the slowed task (hypothesised to remove a speed confound) the performance of low-g controls and older children improved. The ability of these subjects to resolve goal-neglect, a characteristic not shared by FTD patients and young children, suggests executive functioning is not the basis of g but of cognitive development.

The Role of the Basal-Cortical Circuitry in Executive Functions

Tim Connell

Crippled Children's Association of SA Inc, Marleston Business Centre SA

Discreet circuitry connecting the basal ganglia and cortical areas of the brain has received increasing attention as possible mediators of neuropsychological functions. Lesions of this circuitry among 25, right-handed people with various brain injuries (closed head injuries, cardiovascular accidents and tumors) were verified by expert scrutiny of neuro-imaging. Their performance on measures of attention, performance of complex motor programs, executive functions, memory and language skills was compared to a control group of 11 subjects with spinal injuries and 13 right handed people with early-stage Parkinson's Disease (PD). Data were analysed according to an adaptation of classification tree analysis. Functions associated with this circuitry among the 25 brain injured subjects were dynamic allocation of attention between competing inputs, problem solving that required consideration of several novel items of information in decision making and verbal elaboration of abstract phenomena. Neither problem solving alone or working memory alone was associated with this circuitry. Significant differences between the lesion-subjects and the PD subjects' performance were found. Implications for modeling of executive functions were discussed.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

Motor/Verbal Dual Task Performance Following Mild Traumatic Brain Injury

Veronica Comerford, Gina Geffen and P Heath

Cognitive Psychophysiology Laboratory, University of Queensland, Brisbane QLD

The sensitivity of simultaneous speech and alternate sequential finger tapping to mild Traumatic Brain Injury (mTBI) was investigated. The number of correctly sequenced taps, latency to start tapping and the consistency of tapping were measured alone or during repetition of 3 syllable words. A study of 15 participants (13 male, 2 female) who had sustained moderate TBI at least six months earlier and 16 controls (13 male, 3 female), showed that TBI patients tapped more slowly and repeated fewer words during 10 second intervals. A second study of 21 mTBI patients (17 male, 4 female) and 20 orthopaedic patients (15 male, 5 female) showed that patients with mTBI were slower to start tapping and showed a slower tapping rate than orthopaedic patients. All participants showed slower starting times, produced fewer correct taps and repeated fewer words during dual than single tasks. Right hand performance was superior to that of the left, however, in line with previous studies, concurrent speaking interfered more with right hand performance than left, reflecting competition for left hemisphere control of skilled right hand movements and speech. These results indicate that while the speed and accuracy of finger movements and speech were diminished by TBI there was no alteration of normal laterality effects of dual task interference.

Verbal Fluency: A Comparison of Performance of Severe TBIs and Controls

Nathaniel Popp[1], R Bittner[2], Simon Crowe[2] and Alan Tucker[1]

[1]*Department of Psychology, Victoria University, Melbourne VIC*
[2] *School of Psychological Science, La Trobe University, Bundoora VIC*

Compromised performance on tests of verbal fluency is a commonly observed cognitive sequelae of TBI. Because of the multi-factorial nature of the COWAT task, performance may be affected by a number of cognitive factors including immediate memory, working memory, processing speed and verbal intelligence. This study examined the performance of a severely injured TBI group against a matched control group on verbal fluency, as measured by the COWAT. In addition to comparing the performance between the two groups, the cognitive determinants of verbal fluency performance was examined. In comparison to previous research, preliminary analysis indicated that verbal intelligence (as measured by WAIS-III Vocabulary) was the greatest predictor of COWAT performance in the TBI sample. Vocabulary did not predict COWAT performance in the control group. Complete subsequent analysis will be presented along with an interpretation of the findings in relation to recent research on verbal fluency.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

PAPER SESSION 2: REHABILITATION AND OUTCOME FOLLOWING ADULT TRAUMATIC BRAIN INJURY

Factors which Contribute to Satisfying and Stable Care Arrangements for People with Traumatic Brain Injury

Annie McCluskey

Division of Occupational Therapy, Faculty of Health, University of Western Sydney, Campbelltown NSW

Health professionals are sometimes asked to establish and supervise attendant care programs for people with severe traumatic brain injury (TBI), particularly individuals with challenging behaviour. Aim: This qualitative study investigated factors which contribute to satisfying and stable care arrangements for people with TBI. Method: A total of 49 participants were recruited and interviewed including 15 people with TBI, 12 family members, 5 case managers, 2 care agency coordinators, and 15 paid attendant carers. The 15 participants with TBI completed the Craig Handicap Assessment and Reporting Test (CHART) and Sydney Psychosocial Reintegration Scale (SPRS), to document their level of handicap and psychosocial functioning. Time post-injury ranged from 2.5 to 37 years. Analysis: Interviews were transcribed. Like-data were grouped together (or coded). These codes were then grouped together into categories, and the relationship between categories explored. Results: Factors which contributed to the stability of care arrangements over time included the agency style, availability of paid carers, level of client disability, family attitudes and values, and the cost of care. The transition from hospital to home was particularly problematic for some families. Recommendations are made for health professionals, care agencies and families about ways to improve the organisation of paid attendant care programs.

Community Access: Use of the PRPP Model to Guide Assessment of Performance

Janelle Walters and Sarah Reade

Occupational Therapy, Lady Davidson Hospital, North Turramurra NSW

For people with a disability, the physical, cognitive-perceptual and psychosocial demands of accessing the community to perform everyday tasks can be challenging. As clinicians it is important to be able analyse a patient's performance rather than just judge whether or not a patient is safe or appropriate. The PRPP (Perceive, Recall, Plan & Perform) System (Chapparo & Ranka, 1997) is a formal method of task analysis based on information processing theory. It is used by Occupational Therapists to assess performance of everyday tasks. Initially a task analysis of the activity is conducted and a mastery level determined. Errors of accuracy, repetitions, omissions and timing of each step are identified and then analysed in relation to perceptual, recall, planning and performance skills. The client-centred PRPP method is appropriate for evaluating the multitude of tasks and environments that patients may encounter in the community. We have developed a guide for evaluating client performance of everyday activities in the community. It gives a task analysis of activities and prompts of behaviours the therapist should observe which relate to specific perceptual, recall, planning and performance skills required. It aims to assist therapists to: (1) identify the complexity of steps involved; (2) analyse the patients

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

abilities/ difficulties in task performance; (3) identify specific skill deficits; (4) communicate client difficulties to other professionals and carers; (5) identify difficulties that may occur during other activities; and (6) generate treatment ideas/ remediation strategies. The presentation will give a brief background to the PRPP model and how it can be applied when evaluating a patient's performance of everyday activities in the community. An example of the guide in use and results obtained from analysis of performance will be presented.

ABI Behaviour Consultancy: Effective Behaviour Management Following ABI in Community Based Settings: Two Case Studies

Samantha Burns, Ann Parry and Jan Loewy

ABI Behaviour Consultancy, Fitzroy North, Melbourne VIC

The ABI Behaviour Consultancy is a community-based organisation established to provide behaviour management support to individuals with acquired brain injury (ABI) and their family members and carers in cases where the ABI is non-compensible. The model currently employed by the Consultancy involves detailed examination of the nature of the ABI and factors related to the person and their environment. Two detailed case studies will be presented to comprehensively examine behaviour intervention techniques, including strategy development and implementation. One case will examine behavioural change after severe hypoxic brain injury and the subsequent development of psychiatric symptoms. A second case will consider the complexities of traumatic brain injury and co-existing drug/alcohol issues.

Neuropsychological Rehabilitation Inside the Tube: Assessment and Recommendations for a Severely Brain Injured Surfer

Andrew Rothwell

Julia Farr Services, Fullarton SA

The effectiveness and integrity of neuropsychological rehabilitation is maximised when understandings of cognitive abilities and subsequent recommendations obtained from the office assessment are then put to the test in the client's everyday environment. A case study is presented of a 21-year-old competitive surfer who sustained a severe brain injury and identified 'catching more waves' as one of his rehabilitation goals. Following neuropsychological assessment, an on site 'surfing assessment' was conducted in 3–4 ft waves at Middleton Beach South Australia. This revealed errors in the client's 'take-off' technique that were more attributable to limitations in divided attention and speed of information processing than his motor control issues. Remedial hydrotherapy exercises were recommended to the physical educator on the rehabilitation team in addition to direct feedback to the client. A three-month review indicated that the goal to catch more waves had been largely achieved. Issues pertaining to reasons for the recovery, ecological validity and the role of the neuropsychologist in the rehabilitation setting are examined.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

Long-term Outcomes After Severe Traumatic Brain Injury

Heather Hill, H Dickson and R Bartrop

School of Community Medicine, University of New South Wales, Sydney NSW

In a qualitative analysis study of the long-term outcome after severe traumatic brain injury, 16 people were traced from a cohort of 75 people admitted to Royal North Shore Hospital in 1981 after a severe traumatic brain injury. The criteria for entry to the original study were patients with a non-missile head injury scoring 7 or less on the Glasgow Coma Scale within 48 hours of admission who remained in coma for at least 6 hours. Fifteen of the 16 people provided narratives, either written or obtained by face-to-face interview. Demographic details were obtained by questionnaire. The participants were alerted to our areas of interest by provision of a sample narrative and a set of questions about their lives since the injury. The narratives were coded both separately and collaboratively by three researchers, using a set of criteria generated either as *a priori* themes or by methods similar to those used in grounded theory analysis. Coding agreement was 55% ± 14% (Kappa 0.4 average for two narratives).

Many in the group were determined to gain improvements in function, and adopted a variety of strategies to achieve their goals, including persistent practice. Contact with rehabilitation services was limited after return home. Until the time of the interview, none had had contact with any other person with traumatic brain injury after discharge from their rehabilitation service. Most of the people in our group reported changes continuing for over two or more years, with one person reporting significant changes even 19 years after injury. Only one out of the 16 people was given an initial good prognosis.

These findings indicate that the belief that little gain can be expected in patients with severe traumatic brain injury after the first one to two years is not sustainable, and may reflect insensitivity of outcome scales.

Where There's a Will, There's a Way: The Functional Consequences of Amnesia

Robyn Tate[1], Ahmed Veerabangsa[2] and Adeline Hodgkinson[2]

[1]Rehabilitation Studies Unit, Department of Medicine, University of Sydney and Royal Rehabilitation Centre Sydney NSW

[2]Brain Injury Rehabilitation Unit, Liverpool Hospital, Sydney NSW

A case of circumscribed amnesia is described, along with the adjustment process over a six-year period. At age 23, "Michelle" sustained a penetrating brain injury when she was stabbed in the region of the left eye. MRI scan showed a narrow path extending from the inferior left frontal lobe, genu of the internal capsule adjacent to the fornix anteriorally, and ending at the right thalamus. As a consequence of the injury, Michelle was left with only minor motor-sensory impairments, involving the 3rd and 4th cranial nerves, but was severely amnesic. Neuropsychological assessment was commenced at two months posttrauma. Serial assessments between six months and six years posttrauma documented a stable clinical profile consisting of an amnesic syndrome in the context of preserved neuropsychological functions, with only slight reduction of verbal generativity. Premorbid and posttrauma data were also available concerning her personality profile. At the time of Michelle's discharge from rehabilitation at four months posttrauma, it was anticipated that she would require a high level of supervision to live in the community. She has experienced a chequered

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

course in her community reintegration, and attempts to train her in the use of memory strategies were of limited success. In spite of her marked impairments and handicaps, Michelle's determination to succeed in areas of importance to her, has seen her resume unrestricted driving and work as a volunteer at the Sydney Olympics. These observations raise issues regarding the role of contextual variables in predicting rehabilitation outcomes after traumatic brain injury.

PAPER SESSION 3: ASSESSMENT ISSUES IN ADULT TRAUMATIC BRAIN INJURY

Errorless Learning: Clarifying Theory and Improving the Technique

Rebecca Tailby and Catherine Haslam

Australian Institute of Criminology, Australian National University, Canberra ACT

In rehabilitating individuals who suffer from severe memory impairment, errorless learning techniques have proven particularly effective. Prevention of errors during acquisition of information leads to better memory than does learning under errorful methods. However, the mechanisms underlying these benefits remain unclear. In this paper we present results of a study of errorless learning in three patient groups: those suffering mild, moderate, and severe memory impairments. Memory performance under errorless and errorful conditions was compared within and across each group of patients, to facilitate theoretical insight into the memory processes underlying performance. The pattern of results observed supported the hypothesis that the benefits seen under errorless learning reflect operation of a *combination* of implicit and residual explicit memory processes. A second goal of the study was to trial a new version of errorless learning, one, which encourages more active participation in learning via use of elaboration. This technique led to significantly better memory performance than seen under standard errorless learning conditions. This finding highlights the value of increasing the active involvement of patients in errorless learning, in order to build upon the benefits flowing from error prevention.

Investigation of the Role of Denial and Executive Functioning in the Rehabilitation of Deficits in Self-Awarenss and Self-Regulation

Tamara Ownsworth and Ken McFarland

School of Psychology, University of Queensland, Brisbane QLD

Theoretical models suggest that a relative contribution of psychological and neuropsychological factors underlie deficits in self-awareness and self-regulation. However, past studies have not systematically examined the role of both psychological and neuropsychological factors. Sixty-one subjects with acquired brain injury were assessed using standardised measures of self-awareness and self-regulation. Psychological factors included post-injury personality change, coping-related denial and personality-related denial. Neuropsychological factors were examined using an estimate of IQ and two measures of executive functioning which assess the capacity for volition and purposive behaviour. The findings indicated that neuropsychological factors had a more direct effect than psychological factors in contributing to deficits in self-awareness and self-regulation. This conceptualisation allowed examination of factors associated with clinical

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

outcome following a 16-week group program designed to enhance self-regulation skills and psychosocial functioning. Following the program, reliable change indices indicated that individuals with impaired executive functioning were more likely to demonstrate improved levels of awareness, strategy behaviour and psychosocial functioning. Overall, individuals exhibiting denial were less likely to improve their level of self-regulation skills and psychosocial functioning after the program. However, there were different reasons for the lack of clinical improvement, related to specific forms of denial. The present findings provide guidelines for clinical decision-making.

The Relationship Between Neuropsychological Performance and Practical Performance on Automated Tasks

K Mahony, Martin Jackson & Simon Crowe

School of Psychological Science, La Trobe University, Bundoora VIC

Neuropsychological investigations into the capacity of test results to predict real-world functioning have yielded modest results with an upper limit of 40 per cent of explained variance. The purpose of the current study was to explore whether neuropsychological performance on standardised clinical measures can predict functional ability with automated machines and services among people with an acquired brain injury (ABI) and healthy controls. Participants were forty-five individuals meeting criteria for mild ($N = 15$), moderate ($N = 15$) or severe ($N = 15$) ABI and healthy control participants ($N = 15$). The patient and control groups were matched on key demographic variables including age and education. Each participant was required to complete a standard battery of neuropsychological tests, as well as three tasks involving an automated ticketing machine, an Automatic Telling Machine (ATM) and an automated telephone service. The results showed consistently high relationships between the neuropsychological measures, both as single predictors and in combination, and competency with automated machines. Logistic regressions correctly predicted more than 90% of the overall variance on each of the automated tasks. The general finding of high correlations is in stark contrast to other previous studies that have found relatively weak associations. One explanation for these findings may be associated with the measure of functional ability used in the current study. Automated machines are part of relatively new phenomena in service delivery and offer a functional measure of performance that represents a true indication of new learning. It follows therefore, that functional assessment on automated machines and services is likely to be one of the best measures of learning and adaptive ability, and one that is likely to demonstrate correlations with ABI. Performance on automated tasks offers the potential of being an accurate index of functional disability.

Graphomotor Tests of Perseveration — Should we be Using Them?

J Edwards and Izabela Walters

Department of Psychology, Victoria University, Melbourne VIC

Graphomotor tests have been used for the detection of perseveration since their description by A.R. Luria in the 1960's. Such tests have been used in various forms by virtually every discipline involved in the assessment and treatment of brain damage. It has been generally assumed

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

that these tasks can be carried out without error by any neurologically intact individual. Surprisingly, to date this assumption has not been formally tested. Sixty normal subjects completed eight commonly used graphomotor tests of perseveration. The rates of correct performance were found to vary significantly between tests. On the least difficult tests, 96.7% of the sample performed correctly. However, on the test that proved the most difficult, only 36.7% performed flawlessly, with 56.7% of subjects producing perseverative responses. These results have major implications for the clinical use of these tests.

Conducting Cognitive Assessments with Indigenous Australians: The Challenges Now and Into the Future

Gerard Pauley and Virginia McKendrick

Queensland Health, Mt Isa and Townsville QLD

Globally, neuropsychology has struggled to come to terms with the range of issues associated with the assessment of indigenous peoples. This has also been the case in Australia where these difficulties have clearly been identified for at least the last 20 years. However, despite the range of recommendations and guidelines that have been developed, until recently, little effort has been given to the process of turning these into practical assessment tools which can accurately assess and reflect the cognitive abilities of the individuals being tested. This paper will primarily focus on the practical matters associated with the cognitive assessment of indigenous people and draw on the experiences the presenters have had as well as some of the theoretical work that has been conducted. A secondary focus will be on the immediate research needs in this area and a brief discussion of the authors' opinions in relation to this. The authors' conclusions are that the assessment of indigenous clients is a unique field requiring practitioners who are sensitive to both the individual and cultural needs of the client they are assessing. Additionally, the authors conclude that significant research is required in this area to ensure that any assessments conducted are indeed indicative of the assessed individual's abilities.

The Proof of the Pudding… An Evidence-Based Approach to the Practice of Clinical Neuropsychology

Robyn Gordon and Heidi Muenchberger

Rehabilitation and Aged Care Services, St Vincent's Hospital, Lismore NSW

Recently Tate (1999) called on clinical neuropsychologists working in rehabilitation to initiate evidence based research to establish valid standards of practice in management and/or rehabilitation of neuropsychological dysfunctions. This study examines current practices in provision and content of recommendations for management of cognitive dysfunctions, clients' perceptions and evaluations of the process adopted, clients' perceptions of the usefulness of various recommendations, and self-reports of strategies adopted in longer-term management of cognitive disability. The study comprises: (1) Survey of neuropsychologists who attended the 2000 CCN Conference; (2) Retrospective survey of clients attending the outpatient clinic at St Vincent's Hospital in Lismore over a 14 month period; (3) Follow-up telephone interview with respondents in client survey; (4) Focus group discussion with members of a stroke support group. The results are

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

discussed in terms of implications for standards of clinical practice in providing information to clients, and clients' perceptions of the value of particular strategies suggested. In a Rehabilitation context, we seek to provide meaningful information and helpful strategies for clients' management of neuropsychological impairments. Studies of this type can further develop the clinical role of the neuropsychologist in this area, whilst addressing issues of professional accountability.

PAPER SESSION 4: MULTIDISCIPLINARY ADVANCES IN PAEDIATRIC ASSESSMENT

Dynamic Assessment of Tongue Function in Children with Dysarthria Associated with Acquired Brain Injury Using Electromagnetic Articulography

Bruce Murdoch, J Goozee and Louise Cahill

Department of Speech Pathology and Audiology, University of Queensland, Brisbane QLD

The study to be presented is the first to use a new physiological device, the electromagnetic articulograph, to assess articulatory dysfunction in children with acquired brain injury. Two children with dysarthria subsequent to acquired brain injury participated in the study. One child, a female aged 12 years 9 months exhibited a mild-moderate ataxic dysarthria following traumatic head injury while the other, a male aged 13 years 10 months, demonstrated a moderate-severe flaccid-ataxic dysarthria also following traumatic head injury. The speed and accuracy of their tongue movements was assessed using the Carstens AG100 electromagnetic articulograph. Movement trajectories together with a range of quantitative kinematic parameters were estimated during performance of ten repetitions of the lingual consonants /t, s, k/ and consonant cluster /kl/ in the word initial position of single syllable words. A group of ten non-neurologically impaired children served as controls. Examination of the kinematic parameters, including movement trajectories, velocity, acceleration, deceleration, distance travelled and duration of movement, revealed differences in the speed and accuracy of the tongue movements in both children with acquired brain injury compared to those produced by the non-neurologically impaired controls. The results are discussed in relation to contemporary theories of the effects of acquired brain injury on neuromuscular function. The implications of the findings for the treatment of articulatory dysfunction in children with motor speech disorders associated with acquired brain injury are highlighted.

A Physiological and Perceptual Analysis of Lip and Tongue Function in Children Subsequent to Traumatic Brain Injury

Louise Cahill, Bruce Murdoch and D Theodoros

Department of Speech Pathology and Audiology, University of Queensland, Brisbane QLD

The lip and tongue function of 24 children who had sustained a traumatic brain injury was assessed using both instrumental and perceptual techniques. A battery of perceptual evaluations including the Frenchay Dysarthria Assessment, the Assessment of Intelligibility of Dysarthric Speech and a perceptual analysis of a speech sample was administered. A physiological analysis of lip and tongue function was performed using lip

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

and tongue transduction systems. The results from these assessments were compared to those achieved by a group of 24 non-neurologically impaired subjects, matched for age and sex. The traumatic brain injury (TBI) subjects demonstrated significant impairment in many areas of lip and tongue function. In addition, sub-clinical impairment was noted in some areas of lip function in the non-dysarthric TBI subjects. These results are discussed in relation to the pathophysiology of TBI in childhood, and the implications of these findings to the treatment of articulatory impairment following TBI in childhood are also discussed.

Paediatric Traumatic Brain Injury and Procedural Memory

Heather Ward[1], David Shum[1], G Wallace[2] and Jacqui Boon[2]

[1]School of Applied Psychology, Griffith University, Mt Gravatt, Brisbane QLD
[2]Mater Children's Hospital, Brisbane QLD

This study investigated the effects of paediatric traumatic brain injury (TBI) on procedural memory. Fifteen children and adolescents with moderate to severe TBI and 15 matched controls were compared on learning and retention on two procedural memory tasks: motor-perceptual (rotary pursuit) and cognitive (mirror reading). These tasks were conducted over a series of blocks, one of which was delayed. Three explicit-memory tasks were also completed: (1) recall of items from the rotary pursuit; (2) recognition tests of the same items; and (3) recognition test of the words from mirror reading. The results showed that on the two procedural tasks, those in the TBI group learned at a similar rate and retained equally well after a 30 minute delay as the controls. In contrast, on the explicit-memory tasks those in the TBI group recalled fewer rotary-pursuit items and recognized fewer mirror-reading words than the controls. These findings, suggesting that children with moderate to severe TBIs have impaired explicit memory but not procedural memory, are consistent with findings from the adult TBI literature (eg. Cohen & Squire, 1980; Ewert, Levin, Watson & Kalisky, 1989), and provide further evidence of an explicit-implicit memory dissociation that is evident from childhood.

Task Switching: A. Behavioural and Event-Related Potential Measures in Adults

Frini Karayanidis, L Jenkins , L Fox and P. Hazell

University of Newcastle, Newcastle NSW

Rogers and Monsell (JEP:G,1995,124,207–231) developed a predictable task-switching paradigm to investigate processes related to task-set reconfiguration. In adults, they identified two components of task switching: an anticipatory component reflecting activation of endogenous processes and a stimulus-triggered component reflecting activation of exogenous processes. The current study aimed at testing whether a modified paradigm designed for use in children produces the same behavioural and event-related potential (ERP) components of task switching as defined by Rogers and Monsell and Karayanidis et al., (Int. J. Psychophysiol, 2000,35,32–33), respectively. Eighteen adults responded to two simple classification tasks in a predictable, alternating sequence (Animal/Plant; Straight/Curved Line). The rate of stimulus presentation was manipulated by varying the response-stimulus interval (RSI) from 150 to 1200ms in different blocks. Switch cost was calculated as Switch – No-Switch responses.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

Behavioural data showed a significant increase in RT for Switch vs. No-switch trials and a reduction in switch cost with increasing RSI. ERPs showed evidence of a switch-related positivity (D-Pos), developing after the response to a stimulus and in anticipation of a switch in task-set, and a switch-related negativity (D-Neg), developing after stimulus onset. These results confirm the presence of both anticipatory and stimulus-triggered processes related to task-set reconfiguration with this new paradigm.

Task Switching: B. Behavioural and Event-Related Potential Measures in Children

L Jenkins, F. Karayanidis, L Fox and P. Hazell
University of Newcastle, Newcastle NSW

Attentional control processes are largely under the control of the pre-frontal cortex, an area that does not fully develop until well into adolescence. The development of attentional processes through middle childhood has not been adequately investigated. Rogers and Monsell (JEP:G,1995,124,207–231) identified two components of task switching: an anticipatory component reflecting activation of endogenous processes related to attentional control and a stimulus-triggered component reflecting activation of exogenous processes. The current study investigated attentional control in 6–12 year old children using a modification of Rogers and Monsell's predictable task-switching paradigm (see Karayanidis et al., this conference). Twenty children responded to two simple classification tasks presented in a predictable, alternating sequence. The response-stimulus interval (RSI) varied from 150 to 1200ms in different blocks. RT was greater for Switch vs. No-switch trials. The effect of switching reduced with increasing RSI. Children showed a smaller effect of RSI than seen in adults. Children showed a post-stimulus switch-related negativity (D-Neg) as seen in adults. However, the post-response switch-related positivity (D-Pos), believed to be associated with anticipatory task-set reconfiguration processes, was not clearly developed in children. These findings suggest that children are less dependent on endogenous and more dependent on exogenous processes than adults.

SYMPOSIUM 1: ADVANCES IN PAEDIATRIC NEUROPSYCHOLOGY: IMPLICATIONS FOR DIAGNOSIS AND TREATMENT

Effects of Methylphenidate on Attention Skills in Children With Attention Deficit/Hyperactivity Disorder

Genevieve Lajoie[1], Vicki Anderson[12], Peter Anderson[2], Alan Tucker[3], Ian Robertson[4] & Tom Manly[5]

[1]*Department of Psychology, University of Melbourne, Melbourne VIC*
[2]*Department of Psychology, Royal Children's Hospital, Melbourne VIC*
[3]*Department of Psychology, Victoria University, Melbourne VIC*
[4] *Trinity College, Dublin*
[5]*MRC Cambridge, UK*

This study investigated the effects of methylphenidate on children with Attention Deficit Hyperactivity Disorder (ADHD). The study employed the conceptual framework of attention described by Posner and Peterson (1990). Components of attention studied included: sustained attention,

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

selective attention, divided attention, shifting attention, and speed of information processing. Fifteen children (12 boys and 3 girls) with a diagnosis of ADHD, according to the DSM-IV criteria, and ranging in age from 8 to 11 years participated in the study. Children's attentional abilities were evaluated using the Test of Everyday Attention for Children (TEA-Ch: Manly et al., 1999). A double blind counter balanced repeated measures design approach was employed to tap on-off medication effects. Results revealed that ADHD participants performed consistently more slowly whilst on medication. In contrast, accuracy levels were higher on a range of attention tests and domains whilst children were on methylphenidate. These findings suggest advantages and disadvantages of medication for ADHD and argue that children's attentional profiles should be carefully evaluated prior to prescribing methylphenidate.

Combining Neuropsychological Assessment and Neuroimaging Techniques to Enhance Understanding of Childhood Brain Dysfunction

Elisabeth Northam

Royal Children's Hospital, Melbourne VIC

The use of combined neuropsychological assessment and neuroimaging techniques (e.g. MRI, MRS, fMRI) to study phenomena of interest to neuropsychologists greatly enhances the explanatory power of our research endeavours. This presentation will describe preliminary findings of a study currently in progress at the Royal Children's Hospital. Using this combined methodology, the project will define the neuropsychological and neuropathological correlates of early-treated hydrocephalus across development. Reference will be made to another completed study which has used a combination of neuropsychological assessment and neuroimaging to study children with PKU and to a proposed study examining changes in central nervous system function following severe hypoglycaemia as a function of age/stage of neuromaturation.

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

Jennifer Neale[1], Rani Jacobs[1], Andrew Kornberg[1], Lloyd Shield[1], & Vicki Anderson[12]

[1]*Department of Psychology, Royal Children's Hospital, Melbourne VIC*
[2]*Department of Psychology, University of Melbourne, Melbourne VIC*

Acute disseminated encephalomyelitis (ADEM), is an autoimmune inflammatory disease of the central nervous system, that most commonly affects children and young adults and usually occurs following a virus or vaccination. ADEM predominantly affects the white matter of the brain and spinal cord, although grey matter may also be involved. The aim of this study was to investigate information processing and attentional skills in children who have experienced ADEM. Eighteen children between the ages of 5 and 15 years, who had suffered from ADEM in the past 6 years, were enrolled in the study. A control group, consisting of 24 children, stratified for age with the clinical sample was also recruited. Overall, there was a trend toward a poorer performance on both speed of processing and attentional measures, for children who had experienced ADEM. Within the ADEM group, severity of the disease (i.e. greater area of white matter affected), was associated with outcome. Further, children who experienced

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

ADEM prior to five years of age, a period of rapid myelination, were more vulnerable to speed of processing and attentional problems, and experienced poorer functional outcome as measured by educational achievement and behavioural measures, than age matched controls.

Behavioral Ratings in Children With Focal Frontal Brain Lesions: Initial Impressions Using the BRIEF

Rani Jacobs[1], Vicki Anderson[12] & Simon Harvey[1]

[1]Department of Psychology, Royal Children's Hospital, Melbourne VIC
[2]Department of Psychology, University of Melbourne, Melbourne VIC

The Behavioral Rating of Executive Function (BRIEF), a questionnaire designed to tap behavioral aspects of executive functions in children, was administered to 36 children aged 7–15 years, with MRI evidence of a focal lesion involving either the prefrontal cortex (frontal group, $n = 22$) or posterior cortical regions (extra-frontal group, $n = 14$). Results from children within the frontal group were also compared with an age and gender matched normative sample. Children in the frontal group were consistently rated as having more problems than the control and extra-frontal groups. Within the frontal group, there was a trend toward a greater frequency of problems for children with right-sided lesions. Preliminary results indicate that the BRIEF maybe a useful measure for identifying functional implications of executive dysfunction in children, and in differentiating between specific clinical populations.

What is the Relationship Between Nonverbal Learning Disorder and Asperger's Syndrome?

Bridget Ryburn[1], Vicki Anderson[23] and R Wales[1]

[1]The Victorian Rehabilitation Centre, Glen Waverley VIC
[2]Department of Psychology, University of Melbourne, Melbourne VIC
[3] Department of Psychology, Royal Children's Hospital, Melbourne VIC

An important clinical and research issue concerns whether or not the Syndrome of Nonverbal Learning Disabilities (NLD) provides a useful description of the neuropsychology of children with Asperger's Syndrome. Children aged between eight and fourteen years were recruited to form two groups; 1) children with Asperger's Syndrome diagnosed using DSM-IV criteria ($n = 16$), 2) normal controls without a history of neurological or psychiatric difficulties ($n = 20$). Each child was administered a battery of neuropsychological tests that utilised those measures favoured by Rourke in his research into NLD. Although children with Asperger's Syndrome were found to have psychosocial difficulties consistent with the model, they were not found to display a profile of cognitive performances that would be consistent with NLD. In particular, they did not have substantial problems with spatial or problem solving tasks versus verbal tasks. Furthermore, although they demonstrated problems with motor and tactile tasks, the expected pattern of difficulties was not evident. The implications of this finding for the diagnosis of NLD and Asperger's Syndrome will be discussed.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

PAPER SESSION 5: NEUROPSYCHOGICAL MEDICINE

Laterality of Emotional Dysfunction Following Brain Surgery According to Gender

David Andrewes, Sophie Aitken, Christine Parr, Ben Harris and Andrew Kaye
Department of Psychology, University of Melbourne, Melbourne VIC

Thirty-seven male (20 Left lesion, 17 Right lesion) and 60 female (30 Left lesion and 30 Right lesion) brain surgery patients and 48 extra cerebral neurosurgery and cancer patient controls were rated by their partners on the Emotional and Social Dysfunction Questionnaire (ESDQ). The groups and lateralised sub-groups were equivalent for age, education and time since surgery. A combined MANOVA analysis of the Anger, Helplessness, Indifference, Inappropriate and Fatigue Scales indicated a significant main effect for gender (< .01). Post-hoc Sheffe comparison of left versus right lesion ratings for the Female group indicate higher ratings of both groups on the Anger scale compared to controls (< .01). However there were also greater dysfunctional ratings of the Left lesioned group on the Helplessness (< .05) and Indifference (< .05) scales compared to the Right and Controls. In contrast the Males showed more emotional problems following a right lesion. Both Left (< .001) and Right (< .01) brain lesioned Male groups performed more poorly compared to controls on the Anger scale. On the Inappropriate scale the Male group with Right lesions were rated more poorly compared to the Left (< .01) and compared to controls (<. 001). The results follow previous studies finding more negative affect associated with left lesions and more inappropriate behaviour following right lesions however this is the first time that laterality differences have been gender related.

Cognitive Flexibility and Working Memory Within Verbal Problem-Solving: A Comparison Between Patients With Anterior and Posterior Lesions

David Andrewes, P Dettering and R Alpitsis
Department of Psychology, University of Melbourne, Melbourne VIC

Fifteen patients with frontal and 16 with posterior lesions (matched for age, intelligence, memory, reading speed and laterality of lesion) were compared on a computerised verbal solutions test with 15 orthopaedic controls. The test required subjects to solve a convergent solution from a series of clues, through a yes/no recognition response. Three conditions varied according to the nature of the preceding hint (two priming a solution and one neutral). In a "shift-set condition" the hint misled the subject towards a solution which was alternative to an equally correct proffered solution thus requiring the subject to think flexibly. A significant interaction between condition and groups showed the patients with frontal lesions to be slower and less accurate in the "shift-set" condition only, when compared to the other two groups. In a condition in which a working memory component was added and the clues were removed directly after presentation, the posterior patient also declined in the shift-set condition compared to the controls.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

Working Memory and Conduction Aphasia: A Case Study

Bruce Byrne[1 2] and David Andrewes[2]

[1] *School of Medical Sciences, RMIT University, Melbourne VIC*
[2]*Department of Psychology, University of Melbourne, Melbourne VIC*

In this present study a verbal problem-solving paradigm, which has previously demonstrated an ability to differentiate the effect on working memory in frontal brain-damaged patients compared with posterior patients, was tested with a recovered conduction aphasic patient, BR (Byrne & Andrewes, 2000). BR demonstrated a significant reduction in several sub-tests of the WAIS-R, including digit span forward ($p < .05$), digit span backward ($p < .05$) and arithmetic ($p < .05$). With the latter subtest, BR demonstrated a poorer response when the calculations were spoken to him than when they were written down; demonstrating a reduced working memory capacity. The results showed that despite the presence of his conduction aphasia, BR demonstrated similar values to controls in all the verbal problem-solving tasks, despite BR's apparently reduced phonological capacity. This indicates that BR may have been utilising an alternative system to the phonological loop in carrying out these verbal problem-solving tasks.

Perception of Natural, Dynamic Emotional Displays by CVA Patients With Damage to the Left or Right Hemisphere

Rebecca Bowen and Skye McDonald

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

Differential impairment in the ability to recognise emotions has been reported following both right and left hemisphere lesions. Such a disorder has significant implications for the sufferer since emotional cues are integral to normal communication. And yet, the ecological validity of previous research has been limited by both the nature of the stimuli — usually static images of posed facial expressions, and the response demands made upon the subject — who is usually required to choose from a multi-choice array of descriptors. These paradigms introduce difficulties for both the aphasic left hemisphere patient and the visuospatially disordered right hemisphere patient. In this study, 10 RCVA patients and 10 LCVA patients and 10 normal control subjects were asked to interpret both static images (photographs) and spontaneous, dynamic emotional expressions (videoed vignettes) choosing between two descriptors only for each vignette. Both groups were normal with respect to their performance on both tasks. There was a trend for poorer performance of the RCVA group for negative emotions alone, on the photos but not the videos. A case study confirmed that one RCVA patient experienced differentially greater difficulty identifying negative emotions. This was more pronounced for photos compared to videos. This difficulty was exacerbated during follow up testing when he was asked to identify emotions choosing between 7 descriptors (the standard paradigm). These results support previous research that attributes the right hemisphere with a specific role in the processing of negative emotions. They also suggest that even natural displays of emotion may be difficult for (some) RCVA patients to comprehend, but that conventional paradigms may increase the difficulty level due to other, non-emotion related factors.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

Does Interferon Beta-1A (Rebif™) Stabilise the Neuropsychological Status of People with Multiple Sclerosis?

Wendy Longley[1], J McLeod[2], J Pollard[2] and A McDougal[3]

[1]*MS Society of NSW*
[2]*University of Sydney*
[3]*Liverpool Hospital*

In 1994 two multicentre, double-blind, placebo-controlled collaborative clinical phase III trials of interferon beta-1a (Rebif™) in multiple sclerosis (MS) commenced in Canada, United Kingdom, Europe and Australia. Of the 300 people with MS recruited into these trials, 50 were based in Sydney. Most (44) of these people also agreed to take part in an adjoining study into the neuropsychological effects of interferon Beta-1A. These people were seen by one of us (WAL) for neuropsychological assessment at baseline and then annually, for four years. In addition, a non-neurological control group of 16 people was recruited. These control subjects were also seen for annual neuropsychological assessments, for a period of three years. The results of this neuropsychological study will be discussed in the context of the following: (1) there is alarming new evidence that permanent neurological impairment may begin at the *onset* of MS, rather than later in the course as originally thought; and (2) the new "immunotherapies" for MS are proving to be at least partially successful in the slowing of the *neurological* progression in MS.

PAPER SESSION 6: SPECIAL SESSION

Evolution and Executive Functioning: Why our Toolboxes are Empty

Roy Sugarman

Department of Psychiatry, Adelaide University, Adelaide SA

The author examines the evolution of working memory and executive functioning, citing the various works of Barkley, Damasio, Prigatano and Gazzaniga amongst others as starting point, and tightly defines emotional inhibition, self-regulation and executive function. Using split-brain studies, the author further investigates the nature of social functioning as an outcome of working memory, and explores current ideas of human consciousness in these terms. Finally the author addresses the flaws inherent in using available methods of evaluating executive functions in western and nonwestern settings, with suggestions for a more integrated understanding of human heteromodal information processing.

PAPER SESSION 7: DEVELOPMENTAL NEUROPSYCHOLOGY

Executive Functions in Children with Tourette's Syndrome and Attention Deficit Hyperactivity Disorder: Paradoxical Effects of Complexity

Maggie Bailey, Gina Geffen and A Carroll

Cognitive Psychophsyiology Laboratory, Department of Psychiatry and School of Psychology, University of Queensland, Brisbane QLD

Whereas Shallice's supervisory attention system (Shallice et al., 1991) predicts that increases in complexity of problem solving tasks would decrease performance accuracy, an alternative view is that tasks that require

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

more capacity are associated with less distractibility (Lavie 1995). Verbal and motor response inhibition was investigated in children with Tourette's syndrome (TS+, $N = 50$) with or without co-morbid attention deficit hyperactivity disorder (ADHD), an ADHD group ($N = 50$) and normal controls ($N = 50$), matched for age and IQ. Three measures of executive functioning, (Stroop Colour Word, Contingency Naming and Tower of London) and a measure of suppressing irrelevant motor responses were obtained using the Sustained Attention to Response Task (SART). Rather than poorer performance on the tasks conceptualized as placing greater demands on the limited attention capacity, children with ADHD and TS showed compromised performance relative to controls on the less demanding, "easier" tasks, in line with Lavie 's (1995) formulation. The ADHD group showed more deficits than the TS group. These results indicate that when external task demands fully occupy attention, even children with clinically compromised attention systems respond normally.

Executive Functioning and Repetitive Behaviours in Autism

Dana Wong[1], M Maybery[1], J Hallmayer[1], N Petterson[1], A Maley[1], W Hill[1] and D Bishop[2]
[1] Department of Psychology, University of Western Australia, Crawley WA

Impairments in aspects of executive functioning (EF) such as planning, flexibility, and working memory have been found in children with autism. It has been proposed that executive dysfunction may be a primary cognitive deficit of autism, of particular explanatory value with regard to repetitive behaviours which are characteristic of autism such as stereotyped movements, routines, and rituals. Autistic children's performance on EF tasks, as compared with other cognitive tasks, has been found to show the strongest association with the nature and severity of repetitive behaviours. One problem with an EF account of repetitive behaviours in autism is that executive dysfunction has also been found in other disorders in which repetitive behaviours are symptomatic. However, if the broad domain of EF is divided into multiple components, particular patient groups may show different profiles of strength and weakness. This study measured the performance of autistic children and IQ-matched controls on tasks purported to measure different aspects of EF (the Tower of London, a set-shifting task, a go-nogo inhibition task, and two ideational fluency tasks), and examined the relationship between results on these tasks and different types of repetitive behaviour. Results will be discussed in the context of both theories of autism and conceptual models of EF.

"We have Splinter Skills, One Part of Us is Gifted, the Other Part is Mentally Retarded"

Jacqueline Boon
Paediatric Neurorehabilitation, Mater Children's Hospital, Brisbane QLD

The precocious and eloquent speech characteristic of a non-verbal learning disorder often masks the deficiencies in integrating complex social information and the ability to adapt to novel and new situations. In this respect, twins diagnosed with hydrocephalus, mild cerebral palsy, and non-verbal learning disorder presented with peculiarities of self-awareness alongside a lack of insight in social situations ("the difference between knowing and doing"). Only following a psychiatric admission did the seriousness of their complex skills and deficits and the need for early remedia-

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

tion become fully apparent. Child and Youth Mental Health Team Assessment, including neuropsychological investigation, highlighted the disabling nature of a non-verbal learning disorder that had not been diagnosed earlier. Management involved activities in the CYMHS Day Programme, School and Home liaison, Community Re-integration and behavioural contracts. Success was variable with regular revisions until referral to Adult Mental Health Services. According to Rourke (1987), a Non-Verbal Learning Disorder is a specific disability impacting on school performance and social-emotional development. This syndrome has also been identified in children with congenital absence of the corpus callosum, moderate-severe head injuries, untreated hydrocephalus, significant resection of the right cerebral hemisphere and long-term sequelae following cranial irradiation. The importance of addressing these particular difficulties across the lifespan should not be underestimated.

The Unusual Relationship Between Age and Cognitive Functioning in Children with Duchenne Muscular Dystrophy

Sue Cotton, N Voudouris and S Crewther

School of Psychological Science, La Trobe University, Bundoora VIC

The purpose of this paper was to utilise the data from a meta-analysis of 40 studies to examine the relationship between cognitive functioning and age in children with Duchenne Muscular Dystrophy (DMD). Individual Wechsler Intelligence Scale (WIS) profiles were obtained for 1146 individuals ranging in age from 2 to 27 years (M = 12.26 years, SD = 4.07). On the basis of age, children were divided into four groups using an age quartile-split method; 2–9 years, 9–11 years, 11–14 years and 14–27 years. No differences between the age groups were noted for full-scale intelligence quotient (FIQ) and performance intelligence quotient (PIQ), however, children older than 14 years had significantly higher verbal intelligence quotients (VIQ) as compared to children younger than 9 years of age. Children older than 14 years also performed better on the subtests Information, Similarities, Arithmetic, Comprehension, Picture Arrangement, and Block Design, than younger children. No age group differences were observed for the subtests Vocabulary and Object Assembly. The results are examined with respect to the methodological issues in this literature including educational opportunities and factors that affect disease progression and mortality, problems associated with cross-sectional studies and issues with measurement. The need for longitudinal research is highlighted.

PAPER SESSION 8: AGEING

Non-Drug Treatments for Frontal Lobe Impairment with Behavioural Disturbance: Can They Be Used In Geriatric Residential Care Settings?

Philip Dingjan

Aged Psychiatry Program, St Georges Hospital, Melbourne VIC

Cerebral dysfunction is common amongst residents in community geriatric facilities. Diagnoses of: the dementias, chronic schizophrenia, alcoholism, and post stroke depression/mania are common. Residents with these diagnoses frequently demonstrate disruptive, challenging behaviours leading to an increased risk for higher rates of prescribed medication or

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

moving to more restrictive specialist accommodation settings. In Alzheimer's dementia, support and education for family carers from expert sources concerning the nature of the dementing illness and clear instruction for management approaches results in reduced carer stress and more effective caring in at-home settings. However, patients with prominent frontal lobe dysfunction tend to exhibit more extreme behavioural disturbance requiring movement to institutional settings earlier. Also, frontally compromised patients often lack the more easily recognised frank cognitive deficits associated with posterior cortical lesions. These factors may bias professional carers, who operate without the continuity of the family carer, to interpret behavioural disturbance as deriving from personality factors rather then cerebral disease, thus misdirecting management approaches. Therefore, can psychological interventions to reduce behaviour problems in residentially based geriatric patients with significant compromise in frontal systems functions be effective? And, can neuropsychological assessment data better inform the design of such programs? These issues are explored through worked case examples and practice recommendations made.

MRI Correlates of "Normal" Brain Ageing in the Ninth and Tenth Decades of Life.

Tanya Lye[1], D Grayson[1], Hayley Bennett[1], Olivier Piguet[1], H Creasey[1] and Tony Broe[2]

[1]Centre for Education and Research on Ageing, Concord Hospital, Sydney NSW
[2]Prince of Wales Medical Institute, Sydney NSW

MRI-based volumetry was employed to investigate whether hippocampal volumes were selectively correlated with memory performance in 102 community-dwelling individuals aged between 81 and 94 years. Participants were assessed on a variety of clinical and experimental instruments, as well as undergoing a neurological examination. An extensive medical history was obtained from an informant to confirm details of each participant's functional ability. Three measures of the hippocampus were compared to determine which measures were predictive of memory functioning: (1) hippocampal volumes adjusted by whole brain volumes; (2) hippocampal volumes adjusted by total intracranial volume; and (3) visual ratings of the hippocampus. All hippocampal measures were found to be significant predictors of delayed recall of short stories, although whole brain adjusted hippocampal volumes and visual ratings of the hippocampus were the best predictors of memory functioning in this group. Hippocampal measures were generally not associated with performance in other cognitive domains. When the sample was reduced to include only the most cognitively healthy participants, the left hippocampal volume (whole brain adjusted) remained a significant predictor of retention of short stories. These findings suggest that hippocampal volumes are selectively correlated with memory functioning in healthy individuals in their ninth and tenth decade of life.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

The Central Executive, Age-related Involution and Brain Damage

Geoffrey Fox[1] and S Roodenrys[2]

[1]*Psychologist in Private Practice, Lighthouse Beach NSW*
[2]*University of Wollongong*

The prefrontal cortex supports three cognitive functions: a temporally retrospective function of short-term memory, a temporally prospective function of anticipatory set or preparation, and a protective function of inhibitory control of interference. The functions of the prefrontal cortex are essentially executive functions. Tests thought to be adversely affected by frontal lobe dysfunction, (Auditory Verbal Learning, Hand Movement, Stroop, and Serial Reversals) gave six scores. Five groups were compared — young controls (CTL1 n = 13), old controls (CTL2 n = 17), young adult trauma victims (TBI n = 14), intellectually disabled young adults (IDA n = 15) and old dementing adults (ARD n = 15). While the differences in mean scores between contiguous groups were not significant, the differences reached statistical significance between more distant groups.

The results obtained by CTL2 showed a decreasing efficiency in the executive process compared to CTL1. IDA and ARD have a different pattern of more serious deficits, while mild TBI has effects, which fall between these two extremes. This group of simple tasks makes it possible to identify older adults who may be in the early stages of pathological aging, and younger adults who are victims of brain damage. They also imply that the prefrontal cortex is the first to show effects of age-related involution.

Assessing Cognitive Impairment through Observation of Everyday Tasks within an Acute Stroke Unit

Elizabeth Caldwell and Colette Zemljic

Occupational Therapy Department, Princess Alexandra Hospital, Brisbane QLD

Evidence based practice in the treatment of stroke patients includes rapid response by a dedicated multi-disciplinary team with expertise in the management of stroke rehabilitation. In recognition of this an Acute Stroke Unit was established at the Princess Alexandra hospital in October 1997.

In addition to the recognised benefits of Acute Stroke Units, the need to identify patients with higher-level cognitive-perceptual deficits has become apparent. Such patients are often of employment age and typically have complex occupational goals including return to work and driving. Occupational therapists within this setting utilise functional assessment to identify deficits as they impact on performance of daily living tasks. Chapparo and Ranka's (1997) 'Perceive, Recall, Plan and Perform (PRPP) System of Task Analysis' is an effective framework for this process. This paper will discuss the benefits of this system within an Acute Stroke Unit and will utilise a case study to highlight the process.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

PAPER SESSION 9: COGNITIVE DYSFUNCTION IN SCHIZOPHRENIA

Suppression of Pre-potent Motor Responses in Schizophrenia

Gina Geffen and Joanne Oram

Cognitive Psychophysiology Laboratory, University of Queensland, Brisbane QLD

Impairments in both sustained and selective attention have been implicated in schizophrenia. Patients with clinical diagnoses of schizophrenia ($N = 56$) and matched controls ($N = 46$), completed the Sustained Attention to Response Task. Participants responded to single digits presented for 250 ms every 1150 ms on a computer screen for 4.3 minutes. They were required to withhold the mouse clicking response to the digit 3 (11% of trials). Relative to controls, participants with schizophrenia missed clicking to digits other than 3 more often, and also had higher false positive ("oops") rates. Their correct responses were slower on average, with greater variability in timing. Speed of response was unrelated to neuroleptic medication dosage. In both groups, reaction times (RT) before "oops" responses were significantly faster than RT before appropriately withheld responses, confirming previous findings that rapid responding, representing automaticity, produces errors. The schizophrenia group showed greater RT differences between correctly withheld and "oops" responses, indicating fragility in sustaining controlled processing. Following "oops" responses, both schizophrenia and control participants slowed down equally indicating normal regain of control. The slowness, variability in RT and rapid transition from controlled to automatic processing implicate dysfunction of the fronto-striatal system in schizophrenia.

Cognitive Deficits Underlying Symptom Dimensions in Schizophrenia

Joanne Oram[1], Alison Cameron[1], Gina Geffen[1], David Kavanagh[2], John McGrath[3] and Laurie Geffen[1]
[1]Cognitive Psychophysiology Laboratory, University of Queensland, Brisbane QLD
[2]Department of Psychiatry, University of Queensland, Brisbane QLD
[3]Wolston Park Hospital, Brisbane QLD

Three symptom clusters have been consistently identified in schizophrenia. The aim of this study was to assess the cognitive correlates of the positive, negative and disorganised symptom dimensions. A comprehensive battery of cognitive tests was administered to 52 out-patients who met DSM-III-R criteria for schizophrenia. Symptomatology was assessed by the Positive and Negative Syndrome Scale (PANSS). Items identified by previous factor analytic research as most representative of the symptom dimensions were used to assign dimension ratings to patients. Linear regression analyses were performed to examine the extent to which dimension scores predict cognitive test performance. The contribution of demographic variables was also examined. The results indicated that severity of negative symptoms correlated with reduced production of words during a verbal fluency task, impaired ability to hold letter and number sequences on-line and manipulate them simultaneously, and compromised visuospatial working memory under distraction-free conditions. Severity of disorganisation symptoms was linked to impaired spatial working memory ability during distracting conditions, failure of inhibition during a verbal fluency task and with perseverative responding on a test of set shifting ability. Severity of positive symptoms was uncorrelated with any of the measures examined.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

The present study supports the validity of three distinct symptom dimensions in schizophrenia and provides evidence regarding the different cognitive correlates of each of these dimensions.

Electrophysiological Evidence of Impaired Visuospatial Working Memory in Schizophrenia

Alison Cameron[1], Gina Geffen[1], M Wright[2], John McGrath[3] and Laurie Geffen[1]

[1]*Cognitive Psychophysiology Laboratory, University of Queensland, Brisbane QLD*
[2]*Queensland Institute of Medical Research, Brisbane*
[3]*Wolston Park Hospital, Brisbane QLD*

Behavioural measures of working memory impairment suggest that it is a core neurocognitive abnormality in schizophrenia. Participants were 50 patients with schizophrenia and 42 well controls, matched in terms of age, gender, and estimated IQ. EEG recordings from 25 scalp locations, as specified by the international 10-20 system, were examined while participants completed a delayed response working memory task. The task required participants to either touch the location of a visible target (perceptual trials) or its remembered position (memory trials) after a delay of 1 or 4 seconds. Distractor stimuli identical to the target were presented during the delay on 50% of trials. Wave forms from perceptual trials were subtracted from memory trials to reveal a slow negative-going difference waveform that reflected working memory maintenance. Relative to controls, the schizophrenia groups demonstrated a reduced difference waveform within the epoch 400–800 ms during distraction-free conditions. Distraction prolonged this effect for a further 400 ms. The electrophysiological evidence that schizophrenia patients show impaired maintenance of information in working memory that becomes more pronounced under conditions of distraction supports behavioural evidence that this may be a trait marker of the illness.

Assessment of Premorbid Cognitive Ability in Patients with Schizophrenia

Sarah Farmer[1], Maria Hennessy[1] and John Allan[2]

[1]*School of Psychology, James Cook University, Townsville QLD*
[2]*Psychiatry, Townsville General Hospital, Townsville QLD*

The assessment of premorbid intelligence, or previous level of cognitive ability, has been examined extensively in relation to organic diseases of the brain, particularly Dementia of the Alzheimers Type. However, it is only recently that this area has been investigated in relation to patients diagnosed with schizophrenia. Numerous studies have found that vocabulary and word knowledge are relatively resistant to neurological damage, and correlate highly with general intelligence. To date, studies assessing premorbid intelligence in schizophrenia have generally used only one or two measures of previous ability. This paper examined intellectual functioning in patients with schizophrenia in comparison to a matched control group, using a number of purported measures of premorbid intelligence (AUSNART, CCRT, STW, WRAT3 Reading subtest, PPVT-3) as well as a measure of current cognitive functioning (WAIS-III). The PPVT-3 has not been used to assess premorbid cognitive ability thus far. No significant differences were found between groups for performances on the AUSNART, CCRT or

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

WRAT3. These tests also had significant correlations with WAIS-III Full Scale IQ and Verbal IQ, thus supporting their use as 'hold' tests of premorbid IQ in an Australian population. This study also found further support for the validation of the AUSNART.

POSTER SESSION

Remote Memory Function in Alzheimer's Disease

Darryl Bounty[1], Catherine Haslam[12] and David Shum[3]

[1]Division of Psychology, Australian National University, Canberra ACT
[2]University of Exeter, UK
[3]School of Applied Psychology, Griffith University, Mt Gravatt, Brisbane QLD

One of the features of Alzheimer's Disease is a deterioration in memory function characterised by an inability to learn and retain novel information. However, there is another aspect of this function, remote memory, that is not often considered in the context of this progressive condition. This reflects in part our relatively poor understanding of remote memory function in Alzheimer's Disease and our inability to examine aspects of this function given the lack of standardised tests. In this paper we present results of a study in which remote memory and other cognitive functions were examined in a small sample of patients diagnosed with early Alzheimer's Disease. Remote memory was tested using the Autobiographical Memory Interview (AMI) and a Famous Faces and Events Battery recently developed by Shum and O'Gorman (manuscript under review) for use in Australia. Results indicate that patients with Alzheimers Disease have greater difficulty in accessing remote memories, though interestingly of the measures employed the AMI was most diagnostic. These findings highlight the importance of considering remote memory function when making a diagnosis of Alzheimer's Disease.

Dual Task Interference and Decision Making by People with Brain Injury

Roger Rees

Special Education and Disability Studies, Flinders University, Adelaide SA

Sixty subjects with diagnosed frontal lobe brain injury (34 males, 26 females, mean CA 29 years) were assessed to identify their responses when asked to commence new tasks. The observations and assessment took place over two years. It was observed that when subjects with diagnosed frontal lobe damage were asked to commence new activities, they often experienced severe difficulty in giving up their current activity. A state of inertia was observed to exist as the subjects with ABI clung to former activities and resisted participation in new activity. Participation in new activity appeared to be compromised by the presence of behaviours and thought processes associated with the former activities. An interaction effect between former activities and thought processes was considered to contribute to a person's state of inertia, rigidity for some subjects, and withdrawal for others. The perceived presence of two activities contributed to "dual task interference". The presentation demonstrates that there were three clusters of subjects who could either reject or subsume former activities in order to commence a new activity. Three case scenarios are presented. The first group demonstrates severe resistance to change. A second

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

group demonstrated intact reaction to change, in that they could achieve closure on former activities. The third group demonstrated that their response to change was degraded. This means that they required much cuing and support for the former activity to be subsumed, so that their participation in new activities could commence. Pie graphs are used to distribute the subjects' responses into categories. Similarly, pie graphs are used to demonstrate the resources required to facilitate subjects in their participation in community based activities as they change from one task to another. The presentation concludes with the observation that the nature of dual task interference subject by subject provides a measure of the resources that are required to facilitate participation and learning in community based rehabilitation by people with frontal lobe brain injury.

Static and Dynamic Assessment Practices after Head Injury

Roger Rees

Special Education and Disability Studies, Flinders University, Adelaide SA

Two contrasting methods of assessing persons with acquired brain injury are presented. These include static assessment, which refers to the standardised manner in which tests are presented. The second assessment strategy used is described as dynamic assessment. This measures a person's capacity to respond to instruction, and to sustain meaningful interactions. Dynamic assessment is considered to indicate the types of interventions required to facilitate learning. Eighteen subjects with severe brain injury who were long termed unemployed, but who were mobile and verbal were assessed using static and dynamic assessment procedures over a period of 24 months. The mean chronological age of the group was 22.5 years, and the assessed post trauma full scale WAIS-R IQ was 95. Factors considered to contribute to effective community rehabilitation were identified by selection of 15 priority items from the literature. Evaluation of the role of static and dynamic assessment in relation to facilitating rehabilitation took place when involved professionals were asked to score the priority items according to whether the features were: "fundamental for rehabilitation" or "rarely occurred", or were of "no account" in rehabilitation. A contrast between client and professional goals regarding rehabilitation is presented. Results demonstrated that the functions of static and dynamic assessment appeared polarised. Dynamic assessment processes were considered to focus on identifying a person's intact cognitive skills rather than highlighting their deficits. It is considered that dynamic assessment processes helped empower people with brain injury. On this basis the capacity to empower a person disabled by brain injury and therefore to facilitate their acquisition of skills should be an important criterion for evaluating assessment processes used in rehabilitation.

Effects of Changing Contexts on Language and Communication of People with Brain Injury

Michelle Bellon

Special Education and Disability Studies, Flinders University, Adelaide SA

The language and communication of four subjects with acquired brain injury were observed and recorded to examine how changing contexts impact their language production and use. Four contexts were identified.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

The first was in the participants' homes, and characterised by isolation, minimum levels or support and cueing, with low levels of structure. The second and third contexts were intervention periods. Context 2 was a fully supported three-day camp with one-to-one mentor support, stimulating activities, and a high level of cueing, structure and predictability. Context 3 was a highly structured post-camp period, back in the participants' homes and community, with sustained high levels of structure, support, cueing, planned activities, and regular feedback. The final context was a return to the more 'usual' situation (context 1), as the support of context 3 became unsustainable. A return to frequent periods of isolation, reduced support, structure and feedback due to fewer resources occurred, as well as the reduction in social networks and community involvement. Language data relating to each participant was acquired by examination of medical and psychological records, participant observation, and video recordings. Levels of reliability were achieved through a comparison of different observer and participant observer recordings. Likewise, consistency between contexts was achieved by recording different observer perceptions of these contexts. Of particular focus was the impact that factors such as self-esteem, cognitive functioning, depression and mood swings, and structured social networks played in determining the effective use of language and communication in social settings. It was concluded that the language and communication levels did vary considerably from context to context. Despite 'organic' damage from brain injury, language and communication could be shaped by the environment, and in particular, the personal supports received within these environments. Significant positive language was observed in the structured intervention contexts (2 and 3), where a high level of support and cueing, certainty and predictability, and rewarding activities were present. However, observations in the contexts characterised by isolation, low levels of structure, support and cueing (contexs 1 and 4) found that the language and communication was negative and inappropriate. These findings were consistent for all participants. The research highlights the importance of sustained intervention that is individualised. The mentor based intervention was observed to facilitate ongoing participation in social and recreational activities which inturn shaped and enhanced each person's use of positive language.

The NCHIS Lifestyle Questionnaire — A Goal-Setting Tool

Sue Packer

North Coast Head Injury Service, Coffs Harbour NSW

One of the main roles of the North Coast Head Injury Service (NCHIS) is to assist clients with brain injury to devise and pursue their own rehabilitation goals within the community. This process requires a certain amount of executive functioning in persons who usually have compromise to one or more areas of executive function. Clinical experience suggests that it may be useful to provide clients with a structure or framework of several life areas in which to start thinking about possible goals and to revisit them at intervals. Such a framework is provided by the NCHIS Lifestyle Questionnaire, which has been revised and renamed to enhance its usability. Initial results are reported on the reliability and validity of this measure from a Motor Accidents Authority part-funded study of a group of TBI and

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press

other ABI clients collected over 12 months. Comparisons with Quality Of Life and Community Integration measures will be presented as well as a discussion of an alternative visual analogue form of the Lifestyle Tool and its relevance in relation to adaptive behaviour scales.

https://doi.org/10.1375/brim.2.1.50 Published online by Cambridge University Press