

Memory and Learning: What works?

THURSDAY 1st September 2011

Program Outline	Speakers and Presentations DAY 1
9:00am	Opening address and welcome to country
9:10am	<p>Presentation: Working memory: a cognitive system that supports learning <i>Professor Susan Gathercole, Unit Director, MRC Cognition and Brain Sciences Unit, Cambridge</i></p> <p>Working memory is now recognised as a vital cognitive system that supports learning, particularly during the childhood years. This presentation will provide an overview of the relations between working memory and both other kinds of memory and executive functions, and evidence linking working memory with a range of aspects of academic attainment will be reviewed. The cognitive and behavioural characteristics of children with poor working memory skills will be described, and methods for minimising the learning difficulties associated with working memory problems including both training and classroom interventions will be discussed.</p> <p><i>Brief Biography:</i> Susan Gathercole is a cognitive psychologist with particular interests in memory and learning, both in typically-developing children and children with developmental disorders of learning. She has published over 100 articles on memory and learning, and her current work focuses both on the fundamental deficits underlying difficulties in learning, and on the development and evaluation of programmes of support to overcome these difficulties. Susan has been the recipient of two awards from the British Psychological Society - the Spearman Medal for outstanding early career research in 1989, and the President's Award in 2007 for a distinguished contribution to psychological knowledge. In April 2011, Susan takes on a new role as Director of the MRC Cognition and Brain Sciences Unit at Cambridge</p>
10:30 AM	MORNING TEA BREAK
11:00am	<p>Presentation: Diagnosis and treatment of reading disorders: The role of working memory <i>Tim Hannan, Senior Lecturer and Head of Program, Postgraduate Psychology, University of Western Sydney</i></p> <p>While the need for accurate identification of the presence of developmental learning disorders has long been recognised, educational psychology practice in differential diagnosis has largely remained wedded to the discredited approach of examining intelligence-achievement discrepancies. In recent years, the study of developmental cognitive disorders has identified the importance to differential diagnosis of examining neuropsychological variables, especially in the areas of language and working memory. This paper provides a</p>

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	<p>brief review of the cognitive systems underlying some of the common developmental cognitive disorders, and highlights the critical role of the assessment of working memory and phonology in the identification of developmental reading disorders. The use and diagnostic efficiency of common tests of cognition, language and academic skills will be briefly explored, along with how accurate diagnosis influences the selection and implementation of interventions for reading disorders.</p> <p>Brief Biography: Tim Hannan is a clinical psychologist and neuropsychologist, with over twenty years' experience in psychological practice with children and adolescents. He is a Senior Lecturer and Head of Postgraduate Programs in the School of Psychology at the University of Western Sydney, where he teaches in the areas of clinical psychology, clinical neuropsychology, educational and developmental psychology, and sport and exercise psychology. Tim directed the Australian standardisation projects for the WISC-IV, WIAT-II and CELF-4 from 2003 to 2006.</p> <p>Tim has completed postgraduate qualifications in clinical psychology, clinical neuropsychology, cognitive science and sport psychology, and has presented over 200 workshops and seminars on these topics around Australia and overseas. He is a Fellow of the Australian Psychological Society (APS), and a former National Chair of the APS College of Clinical Neuropsychologists (1999-2001), the APS College of Educational and Developmental Psychologists (2003-2005), and the APS College of Sport Psychologists (2008-2010). Tim was elected to the Board of Directors of the APS in 2010.</p>
12:00pm	<p>Presentation: The role of working memory in mathematics learning and numeracy. Dr John Munro, Head of the Centre for Exceptional Learning in the Department of Learning and Educational Development, University of Melbourne</p> <p>This presentation will examine the role of working memory in typical mathematics tasks, procedures for diagnosing working memory influences on mathematics learning difficulties and intervention strategies for enhancing working memory processes during mathematics learning.</p> <p>Successful mathematics learning makes unique demands on working memory processes. This paper will examine some of these demands and review the research examining the influence of working memory on the various types of dyscalculia. Indicators of mathematics learning difficulties attributable to working memory processes will be identified. Procedures for intervention will include cognitive strategy teaching to enhance encoding and retention and teaching for automatization of mathematics learning.</p> <p>Brief Biography: Dr John Munro is Head Of Studies In Exceptional Learning and Gifted in the Graduate School of Education at The University of Melbourne. He is a trained primary and secondary teacher and a registered psychologist. His research interests, teaching and publications are in the areas of literacy learning and learning difficulties, maths learning disabilities, learning internationally, gifted learning and learning disabilities, gifted learning in African and Asian cultures, gifted mathematics learning, professional learning and school improvement. He is a consultant to several school improvement projects in Victoria and nationally.</p>

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	<p>He was elected a Life Member of the Learning Disabilities Australia and an Honorary Fellow of the Australian Council for Educational Leaders. He was president of the Australian Remedial Education Association and chairperson of the College of Educational and Developmental Psychologists. He developed the VELS English syllabus, the Language Disorders Program for DEECD and the Dyslexia and other Reading Difficulties Support Package for the Victorian Department of Education (DEECD). He has worked extensively in the International Baccalaureate programme, particularly for the Extended Essay and the Theory of Knowledge and was an international consultant to the Primary Years Program.</p>
1:00 PM	LUNCH BREAK
2:00pm	<p>Presentation: Working memory in practice: Identifying and helping children with working memory problems <i>Professor Susan Gathercole, Unit Director, MRC Cognition and Brain Sciences Unit, Cambridge</i></p> <p>This session will be divided into two parts. The first part will focus on how to identify children with poor working memory using both standardised instruments and behavioural profiles, illustrated by case studies. The second part will provide further information on techniques developed to help children with poor working memory, including a classroom intervention and an intensive training program.</p>
3:30pm	<p>Panel Discussion</p> <p>(Professor Susan Gathercole, Dr Paul Hutchins, Tim Hannan)</p>
4:00pm	CLOSE – Day 1 concludes

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Program Outline	Speakers and Presentations DAY 2
9:00am	<p>Children's memory and learning skills: are they vulnerable in the context of brain insult <i>Professor Vicki Anderson, Director, Department of Psychology, Royal Children's Hospital, Professorial Fellow, University of Melbourne and Director, Critical Care and Neuroscience Research, Murdoch Children's Research Institute</i></p> <p>Memory and learning problems are well established consequences of injuries to the mature adult brain. The impact of insult to the developing brain is less clear, but, if they are present, such problems are likely to have a disastrous effect on ongoing knowledge and skill acquisition. This presentation will introduce the concepts of developmental trajectories of memory, learning and attention and their biological bases. It will also consider findings from our recent research, exploring these domains in children with acquired brain insults, and identifying potential risk factors for learning impairment. Finally, the implications of these problems for school and home will be discussed.</p> <p><i>Brief Biography:</i> Professor Anderson is a paediatric neuropsychologist of some 30 years experience. She started her career working at the Royal Children's Hospital, Melbourne, Australia, where she worked as a clinician, and then Co-ordinator of Neuropsychology Services, until taking up a lectureship at the University of Melbourne. In 2002 she was appointed Professor/Director of Psychology at the Royal Children's Hospital, and in 2005 she took up an additional role with the Murdoch Children's Research Institute, as Director, Critical Care & Neuroscience Research. Her interests are in disorders of childhood that impact on the central nervous system, including both developmental and acquired disorders, and child and parent-focussed interventions for this group. Her research group has established the Australian Centre for Child Neuropsychological Studies (CNS), at the Royal Children's Hospital, Melbourne, Australia.</p> <p>She serves as consulting editor on a number of international journals including the Journal of the International Neuropsychological Society, Child Neuropsychology and Developmental Neurorehabilitation. She has been Associate Editor of the APA journal, 'Neuropsychology' and is currently an Associate Editor for the Journal of Neuropsychology, a British Psychological Society Publication. She has published over 200 papers in peer-reviewed journals and four books in the field. She has obtained competitive research grants totalling over \$15 million.</p> <p>She has served on the Board of Governors of the International Neuropsychological Society, and is a fellow of the Academy of Social Sciences of Australia and a fellow of the Australian Society for the Study of Brain impairment.</p>

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10:15 AM	MORNING TEA BREAK
10:45am	<p>Presentation: Consolidating working memory: Enhancing cognitive performance through effective encoding <i>Dr Donna Bayliss, Lecturer, Neurocognitive Development Unit, School of Psychology, University of Western Australia</i></p> <p>Working memory is a strong predictor of educational achievement in children. Despite the large body of literature linking working memory to educational achievement, the specific processes that underlie this association are poorly understood. Given the importance of working memory for educational achievement, a greater knowledge of the mechanisms underlying working memory is crucial for understanding why some children fail to achieve their full learning potential. Recent evidence suggests that memory consolidation may be an important factor contributing to working memory performance in adults. However, little is known about this consolidation process in children and whether it plays a role in children's working memory and cognitive performance.</p> <p>In this presentation, I will discuss what is meant by the term 'memory consolidation' and why it might be important for working memory performance. I will then present the results of my recent research examining this process in children and the role that it plays in working memory performance. I will then discuss some of the practical implications of this research for educators and some potential strategies that may alleviate impairments in memory consolidation.</p> <p>Brief Biography: Dr Bayliss completed her PhD in Psychology at the University of Wollongong in 2003 and then held a post-doctoral research position in the UK working with Professor Alan Baddeley, one of the world's leading authorities on working memory. She is currently a lecturer in the School of Psychology at the University of Western Australia and teaches in the areas of working memory and cognitive development. Much of her recent research has focused on developmental changes in working memory across the primary school years and how this relates to educational achievement. Dr Bayliss currently holds a Discovery Project Grant from the Australian Research Council to examine the process of memory consolidation in children and how this relates to working memory and educational achievement.</p>
11:45am	<p>Presentation: Memory disorders in children with epilepsy: types, evaluation and treatment. <i>Dr Sunny Lah, Senior Lecturer, School of Psychology, The University of Sydney</i></p> <p>Epilepsy is a common, yet complex neurological disorder that often has onset in childhood, and in many cases is a life-long condition. Epilepsy is associated with a very high level of cognitive morbidity, especially persistent memory deficits, which represent the most frequent cognitive complaint in patients with epilepsy. In children, memory deficits may impact academic learning, socialisation and development of independence. As such, they may reduce a child's self-esteem and increase the burden of care on the family. With advances of epilepsy research we are beginning to learn more about different types of memory disorders in children with epilepsy. To date, most research has focused on learning and retention of information over short periods of time and involved children with temporal lobe epilepsy. However, recently, problems with other aspects of memory, such as consolidation of information over long</p>

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	<p>periods of time, reduced stock of knowledge and difficulties in recall of information from the past have come to light. In this presentation current memory assessment practices, their limitations, but also strategies that can be used to minimise the impact of memory disorders on children's functioning will be discussed.</p> <p>Brief Biography - Sunny is a Senior Lecturer in Neuropsychology at the School of Psychology, Sydney University, and a registered practitioner who held the position of Clinical Neuropsychologist at Royal North Shore Hospital, Royal Alexandra Hospital for Children and Sydney Children's Hospital. She qualified in Psychology (with honours) from the University of Zagreb and completed her clinical neuropsychology training and PhD at Macquarie University. She is past chair of the APS College of Clinical Neuropsychologists for NSW. Her clinical and research interests are in developmental and acquired disorders of memory in children and adults, especially children with epilepsy, which has been the focus of her and her students' research since 1998. She is dedicated to determining the underpinnings of memory disorders, but also in finding ways to remediate memory difficulties and minimise their impact on children with epilepsy and their families. Her work has been published in international peer reviewed journals and recognised for its novelty. Moreover, studies into disorders of long term memory in children with epilepsy are a focus of her recently established international research collaboration with the University of Toronto and the Hospital for Sick Children in Toronto, Canada.</p>
12:30 PM	LUNCH BREAK
1:30pm	<p>Presentation: Contributing factors to adolescent sleep disturbance and links with working memory performance. Dr Michael Gradisar, Senior Lecturer in Clinical Child Psychology, School of Psychology, Flinders University.</p> <p>Several physiological and behavioural factors combine which force adolescent sleep schedules to delay with increasing age. With a fixed wake-up time on school mornings, this serves to restrict adolescents' sleep across the school week. It is hypothesised that this restricted sleep affects various frontal regions of the developing adolescent brain. This is compounded by the reduced alertness many adolescent experience on school mornings. This presentation will detail the various contributing factors to adolescent sleep disturbance and the resultant effect on cognitive abilities reliant on the prefrontal cortex (i.e., working memory, fluid intelligence). Time will also be allocated to school-based and individual treatment programs that aim to correct adolescents' sleep/wake schedule and ultimately increase their night-time sleep.</p> <p>Brief Biography - Michael is a Senior Lecturer in Clinical Child Psychology in the School of Psychology at Flinders University, South Australia. His research interests lie in the aetiology, consequences, and treatment of sleep disorders (i.e., insomnia, circadian rhythm disorders) across the lifespan - but with a special focus on paediatric sleep. Michael is a practising clinical psychologist and Director of the Child & Adolescent Sleep Clinic at Flinders University (http://socsci.flinders.edu.au/casc). He teaches entry-level provisional psychologists in the assessment of school-aged children's cognitive abilities and psychological interventions.</p>

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2:30pm	<p>Case Studies – How much is it a memory problem?: Setting priorities in assessment and action <i>Dr Paul Hutchins, Staff Specialist, Child Development Unit, Children's Hospital Westmead and Dr Antoinette Redoblado Hodge, Senior Clinical Neuropsychologist, Child Development Unit, Children's Hospital Westmead</i></p> <p>Current recognition of the major contribution of working memory to learning difficulties inevitably enhances the interpretation of symptoms, how to assess them and how to intervene. All developmental learning disorders overlap and interact in presentation and the need for comprehensive collaborative evaluation and support. Individuals will have differing relative contributions to “He doesn’t remember!” These can include global and specific cognitive difficulties, language impairments, poor motor sequencing, specific disorders in literacy and maths and problems in sustained attention, memory and executive functions.</p> <p>“Attention” and “memory” are not synonymous, and children with “good memory “may still not learn and perform adequately. Setting priorities and targets in intervention and monitoring progress is the essence of collaborative support in therapy, in school as well as medical and psychological treatments.</p> <p>Case discussions in younger children and in adolescents will illustrate practical assessment, profiles of individuals and priorities for interpretation and effective management.</p> <p>Brief Biography – Dr Paul Hutchins is Senior Staff Physician to the Child Development Unit at The Children's Hospital, at Westmead Sydney Australia. He is Senior Paediatric Consultant to The Children's Hospital Education Research Institute, which he helped establish and promotes its concepts, activities and resources. He trained in Britain and Australia with wide experience in general and sub-specialist children's medicine. His particular interests are in communication and behavioural disorders, particularly in language disorders, learning and attention deficits and autism. He vigorously promotes emphasises practical and positive collaboration between children, family, educators and health professionals in clinical practice, policy and teaching. He has lectured widely in Australia, Britain, Europe, Asia and South Africa with various professionals and support groups. He has contributed internationally to guidelines for ADHD management, including collaborative resources for schools. Paul has been intensively involved in undergraduate, postgraduate and community education in the Hospital and outside. He contributes often in the media to promote evidence-based approaches. Past responsibilities in Australia include a home ventilation program, neonatal follow up, child protection and as a physician to special schools. In 2009 he was awarded the Medal of the Order of Australia for his contributions to the interdisciplinary care of complex developmental disorders for children and families.</p> <p>Dr Antoinette Redoblado Hodge is a Senior Clinical Neuropsychologist at the Child Development Unit, The Children’s Hospital at Westmead. She has over 13 year’s experience in conducting neuropsychological assessments and delivering cognitive training programs to young people with a range of learning, developmental, emotional and behavioural issues. She has co-authored a number of articles in published in peer reviewed journals in topics such as, memory, as well as cognitive training.</p>
3:30pm	CLOSING