

# HCSNet Workshop on Cognitive Science and Text

**Program, Information and Abstracts**

**The Fairmont Resort, Leura,  
New South Wales, Australia  
13-14 December 2007**



**CHARLES STURT**  
UNIVERSITY



# Contents

Welcome .....	2
About HCSNet.....	3
Registration and General Information .....	4
Transport Information .....	6
Program.....	7
Speaker Biographies and Abstracts .....	10
Workshop Contact List .....	24



# Welcome



On behalf of the Australian Research Council's Research Network in Human Communication Science, welcome to the HCSNet Workshop on Cognitive Science and Text. The workshop will focus on the processing of text from a variety of perspectives, with presentations covering research in areas such as visual word recognition, reading and spelling, literacy development, lexical analyses of text, brain imaging and computational modelling. The important aim is to report new data while showcasing the wide variety of state-of-the-art methodologies currently being used in studies of text. We hope the workshop provides an opportunity to bring together those with a common interest in this area to share theories, methods and data.

We sincerely thank all our speakers who have travelled long and far to be here, both from interstate and from overseas. My thanks also to Paul Burnett, Deputy Vice-Chancellor and Vice-President (Research), Charles Sturt University, for opening the workshop, to Linda Cupples and Marcus Taft for chairing the sessions and to all delegates for their attendance and participation. We acknowledge HCSNet, the Centre for Research in Complex Systems (CSU), the Centre for Research and Graduate Training (CSU), the Discipline of Psychology (CSU), and an ARC/ESRC Linkage International Grant 2007-2008 (Arciuli & Monaghan) for support of the event. Cathy Oliver from CSU has provided wonderful administrative assistance in the lead up to and during the workshop – many thanks, Cathy. Thanks also to Rosemary Elliott for administrative support from HCSNet.

I hope you enjoy the papers and discussions and look forward to seeing you at HCSNet events in the future.

Joanne Arciuli  
Charles Sturt University  
Workshop Convenor



# About HCSNet

The ARC Research Network in Human Communication Science – HCSNet - was awarded five years' funding by the Australian Research Council in late 2004. The aim of HCSNet is to promote and facilitate interdisciplinary research in human communication science by connecting leading researchers in language, speech and sonics.

Priority Research Areas in HCSNet are:

- Speech
- Effective Interfaces
- Next-Generation Search Technology
- Human Communication Disorders
- Perception and Action

By generating an explosion of new approaches and knowledge, the network aims to build Australia's reputation as a leader in communication science and technology via advances in areas as diverse as automatic speech recognition, distress call monitoring, hearing prostheses, web interfaces, and data retrieval and data mining systems.

Getting involved in HCSNet is easy: visit [www.hcsnet.edu.au](http://www.hcsnet.edu.au) to sign up as a member of the network. You'll be added to our online profile database, and automatically receive our weekly electronic newsletter, HCSNet Update, which will keep you informed of HCSNet activities, including the annual SummerFest, and events in the range of HCSNet disciplines. Australian-based HCSNet members can apply for funding under our various programs.



# Registration and General Information

## Workshop Venue

The Workshop will be held in the Wentworth Room, Ground Floor, Peppers Fairmont Resort, 1 Sublime Point Road, Leura, New South Wales.

Phone: +61 2 4784 4144; Fax: +61 2 4784 1685

Please refer to page 4 for a venue floor plan.

## Audio Visual Equipment

The Wentworth room is equipped with a data projector, laptop, overhead projector, lectern and microphone, flipchart and whiteboard. Presenters are requested to bring their slides on a USB stick or may bring their own laptop.

## Registration Desk

The registration desk is the place for enquiries related to registration, accommodation, or any information that you require about the workshop, the workshop dinner, or the local area.

The registration desk will be located outside the Wentworth Room and will open at 8.45am. Please proceed to the registration desk upon your arrival to collect your delegate materials (Program, Information and Abstracts Booklet, name tag, pen and notepad).

## Times

Welcome drinks will commence at 6.00pm on Wednesday, 12 December 2007 at Café Bon Ton, 192 The Mall, Corner Megalong Street, Leura. The Workshop will commence at 9.15am on Thursday, 13 December and will conclude at 4.30pm on Friday, 14 December 2007.

## Refreshments and Meals

Morning tea, afternoon tea and lunch are provided for all registrants at the times designated in the program.

## Workshop Dinner

The workshop dinner will be held at 7.00pm on Thursday, 13 December at the Avalon Restaurant, 8-18 Katoomba Street, Katoomba. (Note: the Workshop Dinner cost of \$52.00 per person for 3-courses is payable in cash upon registration at the workshop).

## Financial Matters

For any financial matters relating to the workshop, please see Cathy Oliver at the Registration Desk. Workshop participants who have been awarded travel support and require reimbursement should complete a payment request form and banking authority form which will be available at the Registration Desk, attach their receipts and forward documentation to Rosemary Elliott, HCSNet Administrative Coordinator, Department of Computing, Division of Information and Communication Sciences, Macquarie University NSW 2019. Any additional receipts should be posted to Rosemary as soon as possible after the workshop.



## Car Parking

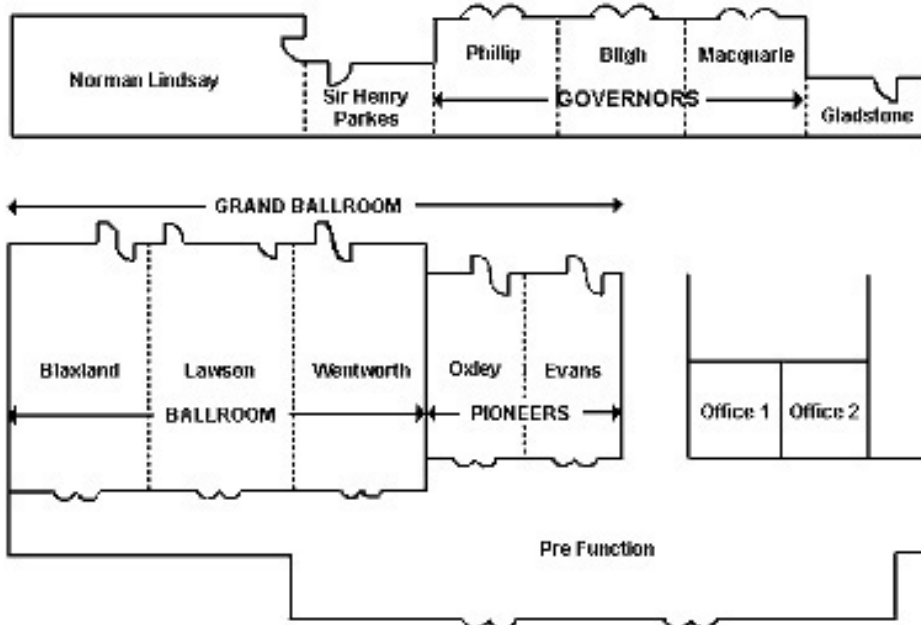
There is plenty of free open-air car parking available at the venue.

## Internet Access

Delegates may purchase a password and username from Reception to enable wireless internet access. The cost is \$25 for 24-hour access or \$10 for 1/2 hour. There are 2 computers in the Resort lounge area for accessing the internet.



Venue Floor Plan



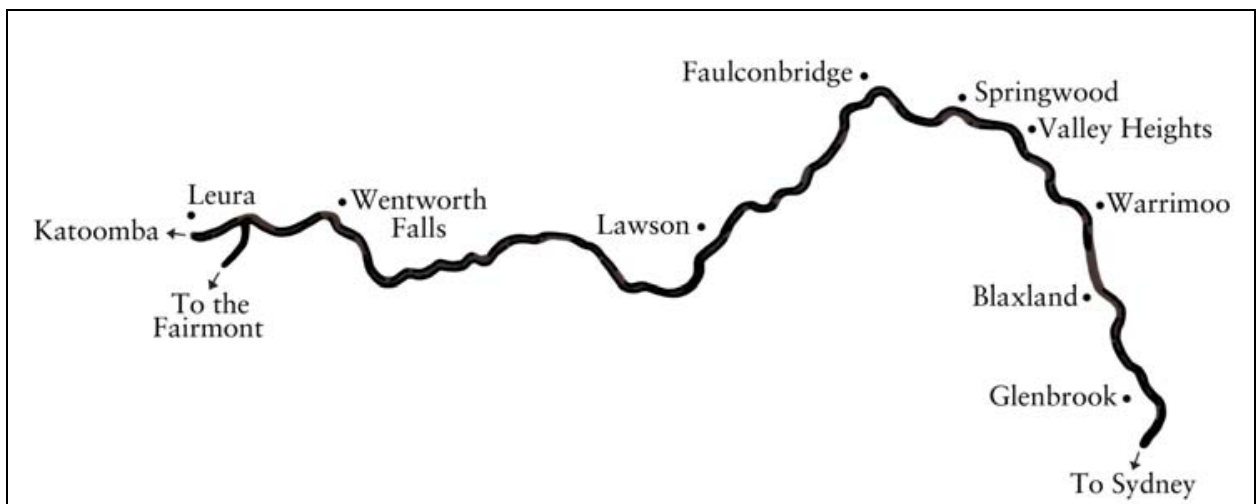
# Transport Information

## Getting to Peppers Fairmont Resort

### By Road

Peppers Fairmont Resort is approximately one and a half hours drive west of Sydney on the M4 and Great Western Highway.

1. Join the M4 Freeway from Parramatta Road Strathfield or at any number of points further West. Stay on Freeway following signs to Penrith. Ignore Penrith exits.
2. Shortly after passing Penrith you begin the climb into the Blue Mountains and soon will see a black and white sign indicating the end of the M4 and commencement of the Great Western Highway (32). Set your odometre to zero at this point. You will pass through or by a number of small villages such as Glenbrook, Springwood etc. Speed limits vary so be aware.
3. After passing through Wentworth Falls and 38.5kms after setting your odometre - you take a left turn onto Scott Avenue, following a blue and white "Fairmont Resort" sign. After 0.9kms, turn left onto Gladstone Rd and another 0.9kms turn left onto Fitzroy Street. Take the next right into Watkins Road. A further 0.3kms on and you will need to turn left onto Sublime Point Road. You will find the entrance to Peppers Fairmont Resort on your right.



Maps with directions for road travel from Sydney to the Resort are also available at <http://www.hcsnet.edu.au/hcsnetevents/2007/cstworkshop>.

### By Train

Train travel from Sydney via the Blue Mountains line to Leura Station takes approximately 2 hours. Timetable and fare information is available from CityRail at <http://www.cityrail.info/timetable/ttable.jsp?line=bm&day=wd&dir=dn>. A taxi from Leura station to Peppers Fairmont Resort will cost about \$10.00 and takes around 7 minutes.

### Taxis

Taxis can be arranged by either the Workshop organisers or the Hotel concierge. Alternatively, you can book your own taxi by calling 133 300 or online at [www.taxiscombined.com.au](http://www.taxiscombined.com.au).



# Program

## HCSNet Workshop on Cognitive Science and Text

Wednesday, 12 December, 2007

<b>6.00pm – 7.30pm</b>	<b><i>Welcome Drinks</i></b>  Café Bon Ton 192 The Mall, Corner Megalong Street, Leura Dress: Smart casual
	<b><i>Dinner</i></b>  Own arrangements



## HCSNet Workshop on Cognitive Science and Text

Thursday, 13 December, 2007

8.45 – 9.15	<p><b>Registration</b></p> <p><i>Arrival Tea &amp; Coffee</i></p>
9.15 – 9.30	<p><b>Welcome Address</b></p> <p><b>Professor Paul Burnett</b> Deputy Vice-Chancellor and Vice-President (Research) Centre for Research and Graduate Training Charles Sturt University</p>
9.30 – 10.30	<p><b>Professor Phil Holcomb</b> Tufts University, USA</p> <p><i>ERP effects of short interval masked associative and repetition priming</i></p>
<b>MORNING TEA</b>	
	<p><b>Session Chair: Associate Professor Linda Cupples</b> Macquarie University</p>
11.00 – 11.30	<p><b>Associate Professor Lyndsey Nickels</b> Macquarie University</p> <p><i>Story writing skills of adults with a history of language impairment</i></p>
11.30 – 12.00	<p><b>Dr Nenagh Kemp</b> University of Tasmania</p> <p><i>Orthographic cues to grammatical category: sensitivity in skilled adult readers</i></p>
12.00 – 12.30	<p><b>Gillian King</b> Murdoch University</p> <p><i>Sentential anomaly provides evidence for right hemisphere sensitivity to message-level information processing</i></p>
<b>LUNCH</b>	
1.30 – 2.30	<p><b>Dr Nada Seva</b> University of York, UK</p> <p><i>Stressing what is important: orthographic cues and lexical stress assignment</i></p>
<b>AFTERNOON TEA</b>	
3.00 – 4.00	<p><b>Dr Kristen Pammer</b> The Australian National University</p> <p><i>What can MEG neuroimaging tell us about reading?</i></p>
7.00 onwards	<p><b>Workshop Dinner</b> The Avalon Restaurant 8-18 Katoomba Street, Katoomba Dress: Smart casual</p>



## HCSNet Workshop on Cognitive Science and Text

Friday, 14 December, 2007

9.30 – 10.30	<p><b>Professor Brian Byrne</b> University of New England <i>Genes and environment in early literacy development: change and continuity from preschool to grade 2</i></p>
MORNING TEA	
	<p><b>Session Chair: Professor Marcus Taft</b> University of New South Wales</p>
11.00 – 11.30	<p><b>Denise Dillon</b> James Cook University <i>Group differences in lexical uses and meanings of 'values in a wet tropics context: a text analysis</i></p>
11.30 – 12.00	<p><b>Megan Gilliver</b> University of New England <i>What's in a name? Preschoolers' noun learning performance in relation to their risk for reading disability</i></p>
12.00 – 12.30	<p><b>Katherine Midgley</b> Tufts University, USA / Aix-Marseille University, France <i>Language effects in second language learners and proficient bilinguals investigated with event-related potentials</i></p>
12.30 – 1.00	<p><b>Dr Lynne Mortensen</b> Macquarie University <i>Organisation and coherence of narrative texts written by adults with a history of language impairment</i></p>
LUNCH	
2.00 – 3.00	<p><b>Professor Sally Andrews</b> University of Sydney <i>Lexical expertise and reading skill: What can spelling tell us about reading?</i></p>
AFTERNOON TEA	
3.30 – 4.30	<p><b>Dr Peter Garrard</b> University of Southampton, UK <i>Cognitive archaeology: language change in spoken and written output predating later dementia</i></p>



# Speaker Biographies and Abstracts

(By Order of Presentation)

## ERP Effects of Short Interval Masked Associative and Repetition Priming<sup>a</sup>

Phillip J. Holcomb<sup>1</sup>, and Jonathan Grainger<sup>2</sup>  
*Tufts University<sup>1</sup>, Aix-Marseille University and CNRS<sup>2</sup>*

Keywords: ERPs, N250, N400, Masked Priming, Semantic Priming, Repetition Priming  
Corresponding author: Phillip Holcomb, pholcomb@tufts.edu, 490 Boston Ave,  
Medford, Ma 02155, USA

<sup>a</sup>This research was supported by HD25889 and HD043251.

In a previous study we used event-related potentials to dissociate semantic (associative) and repetition priming when prime words were masked below (40 ms primes) and above (80 and 120 ms primes) levels of awareness (Holcomb et al., 2005). While robust priming effects were present on the N400 component regardless of the prime duration in the repetition priming experiment, in the semantic priming experiment significant priming effects were only obtained when primes were consciously detected. In the current study we again compared associative and repetition priming, but this time within a single experiment and using a short interval priming paradigm. As in several recent studies we again found robust repetition priming effects on both the N400 and an earlier index of priming, the N250. However, there was no evidence of any priming effect in the semantic/associative condition. The findings are discussed in the context of the functional significance of masked priming effects.



Phil Holcomb received his Ph.D. in Experimental Psychology from New Mexico State University in Las Cruces New Mexico in 1984. His thesis work examined automatic and strategic influences on semantic processing using event-related brain potentials (ERPs) in what were the first experiments to reveal that the N400 component is sensitive to semantic processing at the word level of representation. After New Mexico, Dr. Holcomb moved on to do a post-doc in Cognitive Neuroscience with Helen Neville at the Salk Institute in La Jolla, CA. Dr Holcomb's

research at the Salk continued to use ERPs to study both visual and spoken word processing in normal adults as well as children. In 1988 Dr. Holcomb moved to the Psychology Department at Tufts University in Boston area. In his 20 years at Tufts Dr. Holcomb has continued to pursue questions about the neural basis of written and spoken word processing.



## Story Writing Skills of Adults with a History of Language Impairment

Karen Smith-Lock, Lyndsey Nickels and Lynne Mortensen  
*Macquarie University*

lnickels@maccs.mq.edu.au

Writing text involves skill at many levels. Content must be formulated and appropriate words must be selected and composed into sentences with correct phonological, morphological and syntactic structure. This content must be written and organized according to appropriate discourse structure. Any of these areas individually may provide a source of difficulty. In addition, this difficulty may be exacerbated by the requirement that writing text requires the simultaneous use of linguistic, orthographic, and discourse skills. Given these linguistic and cognitive demands, it would not be surprising if individuals who struggled with oral language acquisition also struggled with writing.

The purpose of this study was to investigate the story writing skills of adults with a history of oral language impairment. It was hypothesized that writing text would pose particular difficulty for adults with a history of language impairment (LI) due to the linguistic and cognitive demands (outlined above) which are both different to, and in some ways more demanding than, the demands of oral discourse. In particular we proposed that this difficulty would manifest itself as reduced grammatical complexity and increased errors in spelling, grammar and punctuation.

We compared the story writing of 10 adults with a history of LI to a group of 51 unimpaired individuals. Participants were asked to write the story of Cinderella. Stories were analysed for length, grammatical complexity and accuracy of grammar, punctuation and spelling. Data were analysed to determine group trends as well as individual profiles. As a group, the adults with LI showed no difference from the comparison group in the length of their stories as measured by total words and total utterances (t-units). The LI group did, however, show reduced grammatical complexity in their writing, as measured by mean length of t-unit. The LI group made more errors in grammar, spelling and punctuation than the comparison group. Individual analyses indicated substantial variability within the LI group. It is concluded that LI in childhood is associated with writing difficulties in adulthood. It appears that story writing is a sensitive tool to assess on-going linguistic impairment.



Lyndsey Nickels is an NHMRC Senior Research Fellow at the Macquarie Centre for Cognitive Science (MACCS). A speech pathologist by training, her research field can be broadly characterised as "the cognitive neuropsychology of language". In other words, she investigates language impairments (both developmental, and acquired as a result of brain damage) and uses these to test the adequacy of cognitive models of language comprehension and production. In addition, the use of these models informs our understanding of language impairments and how best to remediate them. Hence, her research encompasses assessment and treatment of acquired language impairment (aphasia) and impaired literacy (dyslexia) in children and adults.



## Orthographic cues to grammatical category: Sensitivity in skilled adult readers

Nenagh Kemp, *School of Psychology, University of Tasmania*

Jodi Nilsson, *School of Psychology, University of Tasmania*

Joanne Arciuli, *School of Social Sciences and Liberal Studies, Charles Sturt University*

Nenagh.kemp@utas.edu.au

The spelling of many disyllabic English words, especially their endings, holds cues to their grammatical category. These cues extend beyond obvious inflectional endings such as *-ing* for verbs. For example, certain non-morphological letter sequences are strongly associated with nouns (e.g., *-oon*) and others with verbs (e.g., *-erge*). This study extended recent research by Arciuli and Cupples (2006), and confirmed that adults show sensitivity to these cues. Skilled adult readers were significantly more likely to treat pseudowords as nouns when they had noun-like endings (as opposed to verb-like or control endings), and significantly more likely to treat pseudowords as verbs when they had verb-like endings (rather than noun-like endings). In an advance on previous research, this sensitivity was demonstrated across three tasks (sentence construction, sentence judgement, and pseudoword judgement), which required increasingly explicit awareness of grammatical category. Additionally, results showed that sensitivity is partially related to reading ability, but not to spelling ability or grammatical awareness. Implications for the modelling of reading processes are discussed.

---



Nenagh Kemp is a lecturer in the School of Psychology at the University of Tasmania. She joined the School in July 2005, after post-doctoral work at the University of British Columbia on the early detection of language delay, and at the University of Manchester on children's early understanding of grammatical category. She completed her DPhil at the University of Oxford, on the development of children's spelling of morphological patterns. Nenagh's research interests centre on the acquisition and development of spoken language in young children, and the development and understanding of written language in older children and adults. She continues to collaborate with previous colleagues, and (inspired by the fascinating range of spelling errors shown in student essays) is also currently investigating the use of spelling strategies by university students. Recent work on adults' sensitivity to spelling cues to grammatical category is currently being extended to children in primary school.



## Sentential anomaly provides evidence for right hemisphere sensitivity to message-level information processing

Gillian King, *Murdoch University*  
G.King@murdoch.edu.au

The aim of the current study was to partially replicate Faust, Bar-lev and Chiarello (2003) by examining lexical, syntactic and semantic message-level contributions to sentence priming in the left (LH) and right hemispheres (RH). Faust et al (2003) found the RH to be insensitive to message-level semantic information in a congruent context yet sensitive to message-level semantic information in an incongruent context. Two experiments set out to replicate (Experiment 1) and further explicate (Experiment 2) this puzzling finding. Fifty eight (24 males) participants (mean age = 26.6 years) and 45 (14 males) participants (mean age = 27.3 years) were recruited for Experiment 1 and 2 respectively. In both experiments participants made lexical decisions to laterally presented target words or non-words preceded by congruent, congruent-random, incongruent, incongruent-random or neutral sentence fragments. With the exception of the neutral condition, these low constraint sentence fragments contained a lexical associate of the target word. Results for Experiment 1 were similar to that reported in Faust et al (2003). Although LH was found to be dominant in facilitation of context effects for sentence comprehension, RH also showed similar facilitation, albeit attenuated. Experiment 2 partially replicated Experiment 1 to further examine the role of syntax (via word order) in the incongruent condition by replacing congruent-random sentences with incongruent-random sentences. Results revealed two main issues. Firstly RH showed insensitivity to message-level information via syntax for eliciting meaning in the context of congruity (Experiment 1), but not within the context of incongruity (Experiment 2). Secondly, for both hemispheres the effect of priming was completely negated in the incongruent condition (Experiment 1 and replicated in Experiment 2). Results are discussed in terms of theoretical implications for linguistic processing. Directions for future research include examining possible sentential differences in lexical priming as the source of the inhibitory effect in the incongruent condition. As such, the influence of semantically anomalous and syntactically anomalous sentence types may be compared. In addition, the current studies claims may be tested by increasing cognitive load via co-varying sentence length and degree of constraint.

Key Words: Visual fields, word order, syntax, sentence, lexical decision, anomaly, right hemisphere.



I initially trained as a Music Specialist primary school teacher, many moons ago, but instead of teaching, followed my husband around the world having a baby at every port while he managed building contracts. After several years away and with several babies on board, we returned home. Currently, all five of my children live with me four of whom are adults. Since returning from overseas, I have run my own studio teaching piano and singing. It is only over the last six years that I have luxuriated in the world of formal academia. After completing an Honours degree in Psychology, I slipped straight into a Ph.D programme. Research has become a passion, in particularly in the area of

Cognitive Neuroscience. I have found investigating matters that concern how we think completely fascinating and extremely relevant in this world of rapidly developing technology. If we could pin down exactly how the mind processes information, our laboratory would be richer than Bill Gates himself! Artificial intelligence is largely based on a replication of our understanding of left hemisphere processing. Right hemisphere processing however has remained somewhat elusive and is the central focus of my current research.



## Stressing what is important: Orthographic cues and lexical stress assignment

Nada Seva<sup>1</sup>, Padraic Monaghan<sup>2</sup> & Joanne Arciuli<sup>3</sup>

<sup>1</sup>*Department of Psychology, University of York, UK*

<sup>2</sup>*Department of Psychology, Lancaster University, UK*

<sup>3</sup>*Department of Psychology, Charles Sturt University, Australia*

Computational models of reading hypothesise that orthography is converted to phonology via a combination of pronunciation rules and stored lexical representations in dual-route architectures, or via interactions of probabilistic information present in the lexicon in connectionist tradition. We present a connectionist model of stress assignment that learns to map orthography onto stress position for English disyllabic words. The model learned accurately and was able to generalise to novel words. The model exploited probabilistic information for stress assignment of nonwords, though it did not perform as well as a rule-based model. However, the model performed better than the rule-based system on nonwords which tested sensitivity to consonant clusters. The model demonstrated that a probabilistic approach to stress assignment reflects human performance in a number of respects, and carries potential for extending the process of stress assignment through multiple cues from phonological, orthographic, and grammatical sources of information.



I received a BA in General Linguistics from the Faculty of Philology, University of Belgrade, Serbia. In 1998 I have become a member and research assistant in the Laboratory for Experimental Psychology, University of Belgrade where I did research on adult processing of noun morphology, as well as on the construction of the two corpora: Corpus of Serbian language and Electronic corpus of Early Serbian Child Language. I received post-graduate research training in Psychology at the University of Stirling, Scotland and obtained a PhD under the supervision of Dr Vera Kempe in 2006. My thesis explored the facilitating effect of child-directed speech on acquisition of complex grammatical categories like noun gender and case. Currently I am working as a post-doc researcher at the Department of Psychology, University of York on a cross-linguistic investigation of lexical stress assignment using corpus analyses, behavioural testing and computational modelling together with Prof. Padraic Monaghan and Dr Joanne Arciuli.



## What can MEG neuroimaging tell us about reading?

Kristen Pammer  
*Australian National University*

kristen.pammer@anu.edu.au

Learning to read is one of the most cognitively complex tasks we will ever learn to do. Thus understanding the reading process is not just intrinsically interesting, but can give us a number of valuable insights into the relationship between brain processes and cognitive behaviour. MEG neuroimaging allows us to investigate reading processes in terms of the spatial extent of cortical activations when reading, the timing between brain locations, and the frequency dynamics between different cortical areas. The big challenge now for neuroscience is to model all three components of neural behaviour in order to be able to really understand the complexity of human cognition.

---



I did my PhD at Wollongong University, graduating in 1997, exactly 2 weeks after my first daughter was born (it was a very close call). I started at the ANU as a Level A academic in 2006, and am still there now, but have managed to graduate up to Level C. In the meantime I spent 4 years in the UK working at the University of Newcastle (but managed not to acquire a Geordie accent) and at the Helsinki University of Technology in Finland. While I was overseas I learned about MEG neuroimaging. I

now live in Canberra with my 2 daughters, husband, 2 horses and a dog who thinks he's a horse.



## Genes and environment in early literacy development: Change and continuity from preschool to Grade 2

Brian Byrne  
*University of New England*

bbyrne@une.edu.au

In this presentation I extend previous reports of an ongoing, longitudinal behaviour-genetic study of early literacy development to include results from Grade 2. The sample includes MZ and same-sex DZ twin children in Australia, the USA, and Scandinavia, followed from their final preschool year. At second grade there are substantial genetic influences on word reading, reading comprehension, spelling, and orthographic learning, with vocabulary equally affected by genes and shared environment. There are degrees of genetic overlap and genetic independence among these linguistic abilities. For example, reading comprehension is substantially affected by genes that also influence word-level reading skill, to a small extent by genes shared with vocabulary, and by an independent genetic source. As reported in Byrne et al. (in press), Grade 2 orthographic learning is genetically correlated with spelling ability at close to unity, indicating that genes affecting existing spelling ability are the same as those underlying the acquisition of new spelling patterns.

When the data are linked back to relevant preschool levels of phonological awareness, print familiarity, and verbal fluency, there is evidence of both genetic continuity and genetic change over the three-year interval. Word reading, for example, is affected by genes that influence print familiarity and phonological awareness at preschool, but a second genetic factor affecting phonological awareness does not continue to play a role in Grade 2 reading. Word reading is also affected by a genetic source independent of the preschool variables.

Shared environment is a negligible influence on the literacy measures at school. Because members of a twin pair attend the same school, these data indicate that school-level processes have little role in determining individual differences in reading ability in these samples.

### Reference

Byrne, B., Olson, R. K., Hulslander, J., Samuelsson, S., Wadsworth, S., DeFries, J. C., Corley, R., Coventry, W. L., & Willcutt, E., (in press, 2008). A behavioral-genetic analysis of orthographic learning, spelling, and decoding. *Journal of Research in Reading*.



Brian Byrne is Research Professor of Psychology at the University of New England. His undergraduate training was in Sydney as his PhD was from McMaster University in Ontario, Canada. His major recent contributions have been in early literacy and language development, with projects ranging from small-scale simulations of the cognitive steps in mastering the alphabetic principle to the development and field-testing of teaching materials for preschool and kindergarten children. Most recently, he has been

directing a longitudinal behaviour-genetic study of literacy and language growth, using twin children in Australia, the USA, and Scandinavia.



## Group Differences in Lexical Uses and Meanings of 'Values' in a Wet Tropics Context: A Text Analysis

Denise Dillon, David Cottrell, Joseph Reser  
*Department of Psychology, James Cook University, Cairns*  
denise.dillon@jcu.edu.au

People often use the same word while meaning very different things. Individuals build and draw on their own meaning systems according to experiences integrating language and the world. Individual understandings and uses of 'values' are thus influenced by myriad subtle factors relating to an individual's language and meaning system, cultural linguistic conventions, and specialised learning. In addition, there are multiple levels of use, meaning and communication taking place in any specific context.

Text analysis procedures such as correspondence and cluster analysis are often applied to determine something of the meaning of words typically from a single author. This approach began with the analysis of the Bible, and most sources of text have been analysed over the years. Rarely, however, have these procedures been used to look for differences between individuals with different backgrounds and agendas and yet who ostensibly claim to be talking about the same thing. In the current study, we explored the way in which an abstract word, 'values', was used by three interest groups in relation to the Wet Tropics World Heritage Area.

Documents about the Wet Tropics produced by three environmental organisations, involved respectively in research, management and conservation activism, were compared for their use of the word 'values'. Using WordStat text processing software, distributional information in the localised sentence context (keyword frequencies by group and proximal co-occurrence) was explored for clues to differences in the applied meanings of 'values'. Keywords associated with 'values' showed that presence of the expression can predict connotations of economic worth (ECONOMIC, VALUE, RESOURCE), positive and negative attributions (QUALITY, POTENTIAL, THREAT), and physical substance (FOREST, SPECIES, HABITAT, VEGETATION, WATER). Values are additionally associated with environmentally relevant behaviours (ACTIVITY, CONTROL, PROTECTION, CONSERVATION, MANAGEMENT). It thus appears likely that concerns for potential misunderstanding through communication slippage between individual environmental scientists, between social and natural scientists, between public servants and scientists, and between Wet Tropics management and Wet Tropics stakeholders, are well-founded.

It would be misleading to assume that any word use or word association patterns found in the text analyses stem solely from group factors and differences. Differences are often, of course, found to be greater between individuals than between groups, and it is possible, and highly likely, that the expression 'values' is used and conceptualised in diverse ways even within the respective groups. Idiographic approaches would undoubtedly uncover different aspects of use and meaning from those revealed here. In the interests of clarity, it would seem beneficial to develop the habit of using clearer language when discussing issues that involve such a fundamental element of the human condition, that is, the human connection to nature.

**Keywords:** text analysis, meaning in use, distributional information, group differences



I'm in the happy position of just having submitted my PhD thesis, yet also on tenterhooks awaiting marker's reports. David Cottrell and Joe Reser are my supervisors, with David providing psycholinguistics-based guidance and Joe providing environmental discourse-based guidance. The paper I'm presenting is one aspect of my thesis, exploring the matter of how we can usefully access and differentiate meanings, meaning systems and meaning representations between different groups. My tertiary background and interests are a blend of psychology and language. I have a joint degree with majors in psychology and English literature, and my PhD research drew on aspects of both those disciplines, together with information from environmental studies and advances in computational linguistics. While in some ways it was a multidisciplinary endeavour, a cognitive psychology approach predominates and binds the whole together, or so I hope. Aside from text analysis, I'm also interested in concept mapping and social representations.



## What's in a name? Preschoolers' noun learning performance in relation to their risk for reading disability

Megan Gilliver  
*University of New England, Australia*

Current Affiliation: *National Acoustic Laboratories, Australia*

mgilliver@gmail.com

This paper reports the findings of an investigation aimed at gaining a clearer understanding of the nature of vocabulary difficulties previously associated with dyslexia and reading risk. Three studies were conducted to examine preschoolers' access and mastery of syntactic and phonological based processes believed to support word learning. Results are reported for a total of 82 participants, whose reading- risk status was assessed from a composite of measures known to be related to reading development. As expected, reading risk status was found to correlate with participants' ability to recall the phonological form of novel nouns. No relationship was found between risk status and participants' use of syntactic form class cues in interpreting the noun class of novel names in isolation. However, the ability to use form class cues was impaired for at-risk participants on a task that required them to learn both the phonological form and noun class. Findings are discussed in relation to the suggestion that processing, rather than structural, deficits may be at the root of the reported poor performance by at-risk children on vocabulary and other linguistic measures.



I have a background in psychology and linguistics, studying both as an undergraduate at the University of Newcastle. My PhD research (conducted through the University of New England) aimed to provide a clearer understanding of the linguistic characteristics of preschoolers in relation to risk for developmental reading problems. Tasks were specifically designed to assess children's performance on tasks previously associated with reading disability (word learning, phonological recall, and complex syntactic structures) as well as characteristics previously untested in

relation to reading development (prosody production and comprehension of normal and emphatic stress patterns). With a strong ongoing interest in the area of hearing loss, I have recently taken up a position as Research Psychologist at the National Acoustic Laboratories. The research teams of which I am a part are involved in a range of projects examining hearing health behaviour including potential barriers to the prevention of hearing loss, and to successful audiological rehabilitation.



## Language Effects in Second Language Learners and Proficient Bilinguals Investigated with Event-Related Potentials

Katherine J. Midgley,<sup>1,3</sup> Phillip J. Holcomb<sup>1</sup> & Jonathan Grainger<sup>2,3</sup>

1. Tufts University, Medford, MA, USA

2. CNRS, Marseille, France

3. Aix-Marseille University, Marseille, France

kj.midgley@tufts.edu

The present study examines language effects in second language learners. In three experiments participants monitored a stream of words for occasional probes from one semantic category and ERPs were recorded to non-probe critical items. In Experiment 1 L1 English participants who were university learners of French saw two lists of words blocked by language, one in French and one in English. We observed a large effect of language that mostly affected amplitudes of the N400 component, but starting as early as 150 ms post-stimulus onset. A similar pattern was found in Experiment 2 with L1 French and L2 English, showing that the effect is due to language dominance and not language per se. Experiment 3 found that proficient French/English bilinguals exhibited a different pattern of language effects showing that these effects are modulated by proficiency. These results lend further support to the hypothesis that vocabulary acquisition in late learners of L2 involves a very specific set of mechanisms.



In 2005 Katherine Midgley completed her *Mastère de recherche* at the *Université of Provence* under the direction of Jonathan Grainger. Her thesis entitled « *Interactions des langues chez les apprenants des langues secondes : une étude en potentiels évoqués et études comportementales* » explored language interaction in second language learners with event-related brain potentials ERPs and behavioral studies. Her thesis work, to be defended in 2008, continues in this direction, exploring the lexicons of bilinguals and learners using ERPs. Her ongoing studies involve, for the most part, word recognition in bilinguals and learners exploring questions of cognate status, translation priming and language switching with ERPs. Her research is conducted both in France at the *Laboratoire de Psychologie Cognitive* and at Tufts University in the USA and

allows mirror studies on French/English and English/French language populations.



## Organisation and coherence of narrative texts written by adults with a history of language impairment

Lynne Mortensen, Karen Smith-Lock and Lyndsey Nickels,  
*Macquarie Centre for Cognitive Science, Macquarie University*

This paper presents the results of a study that examined text organisation and coherence of stories written by a group of adults with a history of childhood language impairment (LI). The purpose of the study was to extend our knowledge of writing difficulties exhibited by this group, by building upon a previous study that examined clause level phenomena (Smith-Lock & Nickels, 2005; 2006), and to further support the notion that story writing is a sensitive indicator of language impairment. Ten adults (aged 18 to 54) with a history of LI and 30 control participants (aged 18-55 years) were asked to write the story of Cinderella. Stories were analysed for their generic structure, which encompassed obligatory, optional and appropriate ordering of text elements. A cohesion analysis was also undertaken to evaluate the range and diversity of the writers' lexical and grammatical resources for cohesion and their contribution to overall text coherence.

Both group and individual analyses were carried out. The generic structure analysis revealed similar results for both the LI and comparison groups in terms of selection of obligatory and optional elements as well as the ordering of structural elements. With respect to the LI writers, this occurred in the face of significant grammatical and lexical difficulties. The lack of group differences indicated that narrative generic structure was a relative strength for the LI group. Group comparisons for the cohesion analysis yielded similar results, with patterns of lexical and grammatical selection for the different categories of cohesion the same for both groups. One exception was that errors of reference occurred in the LI group only. Patterns of variability within the LI group were greater than in the comparison group with respect to the number of words forming cohesive chains, the appropriate use of grammatical reference, and lexical variety. Thus, patterns of text organisation at the level of generic structure and measures of cohesion did not distinguish the performance of LI writers from the comparison group. Although a wide range of lexico-grammatical skills was evident within the LI group, few LI individuals fell outside the normal range of performance.

Discussion will address the differential strengths and deficits of the LI writers on the Cinderella narrative task, together with the need for data sampling procedures that provide opportunities for writers to employ a range of linguistic choices, ensuring a representative picture of their strengths and deficits.



Lynne Mortensen teaches on the Master of Speech and Language Pathology program and related courses within the Department of Linguistics at Macquarie University. Prior to teaching Lynne worked as a speech pathologist in acute hospital and rehabilitation settings, predominantly in the area of acquired neurological speech and language disorders. Lynne's research interests are in the field of acquired neurogenic communication. Her primary focus is functional language impairment following stroke, traumatic brain injury and dementia and its social implications. Her PhD dissertation examined the written discourse of people with aphasia and cognitive language disorder. Currently she is researching conversational abilities of aphasia speakers, and comparisons of spoken and written language in adults with acquired brain damage, and adults with a history of

language impairment as children.



## Lexical expertise and reading skill: What can spelling tell us about reading?

Sally Andrews

*School of Psychology  
University of Sydney*

According to the lexical quality hypothesis of reading skill, skilled readers rely on high quality lexical representations, defined by their precision and redundancy. Such representations allow automatic retrieval of semantic and phonological information associated with written words without depleting the attentional resources required for comprehension. This paper will report results from an ongoing research program that is evaluating the validity of the lexical quality hypothesis by comparing the performance of adult readers classified on the basis of their reading comprehension and spelling performance. 'Lexical experts', defined by above average performance on both measures, are compared with individuals who are good readers but poor spellers, good spellers but poor readers, and those with below average performance on both measures. One strand of the project is using individual word identification tasks to investigate the precision and redundancy of the lexical representations of the different reading/spelling groups. The second strand uses sentence materials presented under rapid serial visual presentation conditions to determine whether the groups differ in their relative reliance on top-down and bottom-up processes. The results confirm that 'lexical experts' are faster and more accurate in a range of word identification and sentence processing tasks than equivalently good readers who are poor at spelling, consistent with the view that accurate spelling in combination with effective reading is an index of high quality lexical representations. The results of the sentence processing tasks also confirm the prediction that lexical experts are less reliant on top-down context than the other groups. The paper will consider the implications of these findings for understanding the cognitive architecture of the skilled reading system.



Sally Andrews is Professor of Cognitive Psychology and Head of the School of Psychology at the University of Sydney. Her primary research domain is cognitive science, with a particular emphasis on visual word recognition and reading. She has been continuously funded by Australian Research Council since 1990 as Chief Investigator on ten Discovery and Linkage Projects and was part of a team funded by four grants from the National Health and Medical Research Council. She is a Fellow of the Academy of Social Sciences of Australia

and served on the ARC College of Experts panel for Social Behavioural and Economic Sciences from 2003-5. She is a member of the National Committee of Psychology and Macquarie Centre for Cognitive Science Advisory Board. She is an Associate Editor of Memory & Cognition and a member of the Editorial Boards of Psychological Review, Journal of Experimental Psychology: Learning, Memory and Cognition and the Journal of Memory and Language.



## Cognitive Archaeology: Language change in spoken and written output predating later dementia

Peter Garrard

University of Southampton, UK

p.garrard@soton.ac.uk

Alzheimer's disease is the commonest of the neurodegenerative pathologies underpinning the late life decline in cognition that often culminates in devastating global dementia. Effective strategies for prevention or treatment remain to be discovered, but early recognition is acknowledged to be a key requirement for both objectives, as pathological change predates clinical onset by many years.

A syndrome characterised by mild subjective memory difficulties insufficient to disrupt independent function - referred to as mild cognitive impairment (MCI) - is now recognised as a 'pre-Alzheimer's disease' state. This is, however, a very non-specific marker, as only 50-60% of MCI cases progress to a state meeting clinical criteria for Alzheimer's disease within twelve months. A retrospective approach, by contrast, identifies cases of interest with the benefit of hindsight. One such study, using objective linguistic information predating the earliest symptoms, was first described in the context of a longitudinal analysis of the literary output of Iris Murdoch. Murdoch was one of the most celebrated British novelists of the 20<sup>th</sup> century, and was diagnosed with Alzheimer's disease not long after completing her final work *Jackson's Dilemma*. Subsequent analysis has suggested that progressive lexical changes typical of Alzheimer's were present in her writing up to ten years earlier.

The findings of the Iris Murdoch project will be presented and discussed, as will the limitations of the methods used. A modification of the approach will be described, and preliminary results presented from a new study focusing on spoken language records and incorporating contemporary control samples. The corpus that is used for this new analysis, namely transcripts of unscripted debate in the House of Commons in the 1960's and 70's, sheds light on the later political career of another celebrated victim of Alzheimer's disease, British Prime Minister Harold Wilson. The retrospectively dated profile of change in the lexical and stylistic characteristics of his spoken language provide evidence for the possible reasons behind his unexpected (and still unexplained) mid-term resignation from office in May 1976.



Peter Garrard graduated in Classics from Oxford University before starting medical school in Bristol, from which he took a year out to go and work in Mike Gazzaniga's Cognitive Neuroscience Lab in New York City. He survived junior medical training posts in Edinburgh, the West Country, London, Bristol, Cambridge, Norwich and London again. In the later stages he completed a PhD on semantic disorders in neurodegenerative disease in Cambridge (with John Hodges and Karalyn Patterson). In 1999 he joined the Institute of Cognitive Neuroscience, and

from 2001 to 2007 was Senior Lecturer and honorary consultant neurologist at the Institute of Neurology, Queen Square, funded by a Medical Research Council Clinician Scientist Fellowship award. In September 2007 he took up the post of Reader in Neurology at the University of Southampton, where he hopes academic cognitive neurology will flourish over the next few years.



## Cathy Oliver, Charles Sturt University

---



I am a student at Charles Sturt University and have recently completed my third year of study for the Bachelor of Social Science (Psychology) / Bachelor of Teaching (Secondary: English/Drama) double-degree. I have a background in tourism and hospitality having worked in event management within international hotel chains in Australia and overseas for twelve years. Earlier this year I was awarded the Charles Sturt Foundation Social Sciences and Liberal Studies Scholarship. In July 2007, I joined the Charles Sturt University Psycholinguistics Lab as a research assistant working with Joanne Arciuli. I am an avid researcher with a broad interest in many areas of psychology, which I plan to explore and develop with postgraduate study.



## Workshop Contact List

Sally Andrews	University of Sydney	sallya@psych.usyd.edu.au
Joanne Arciuli	Charles Sturt University	jarciuli@csu.edu.au
Terry Bossomaier	Charles Sturt University	tbossomaier@csu.edu.au
Ben Bradley	Charles Sturt University	bbradley@csu.edu.au
Susan Bruck	Macquarie University	sbruck@ics.mq.edu.au
Paul Burnett	Charles Sturt University	pburnett@csu.edu.au
Brian Byrne	University of New England	bbyrne@une.edu.au
Linda Cupples	Macquarie University	Linda.Cupples@ling.mq.edu.au
Robert Dale	Macquarie University	rdale@ics.mq.edu.au
Roger Dean	University of Western Sydney	University of Western Sydney
Denise Dillon	James Cook University	denisedillon@jcu.edu.au
Peter Garrard	University of Southampton, UK	p.garrard@soton.ac.uk
Megan Gilliver	University of New England	mgilliver@gmail.com
Phil Holcomb	Tufts University, USA	pholcomb@tufts.edu
Nenagh Kemp	University of Tasmania	nenagh.kemp@utas.edu.au
Gillian King	Murdoch University	G.King@murdoch.edu.au
Heidi McIntosh	Charles Sturt University	hschwa03@postoffice.csu.edu.au
Katherine Midgley	Tufts University, USA	kj.midgley@tufts.edu
Lynne Mortensen	Macquarie University	Lynne.Mortensen@ling.mq.edu.au
Lyndsey Nickels	Macquarie University	lnickels@maccs.mq.edu.au
Cathy Oliver	Charles Sturt University	coliver@csu.edu.au
Kristen Pammer	Australian National University	kristen.pammer@anu.edu.au
Nada Seva	University of York, UK	ns531@york.ac.uk
Marcus Taft	University of New South Wales	M.Taft@unsw.edu.au
James Thompson	Charles Sturt University	jthompson@csu.edu.au
Gina Villar	Charles Sturt University	gina_villar@optusnet.com.au

