2012 Annual Report
ARC CENTRE OF EXCELLENCE
in Cognition and its Disorders
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As Chair of the Advisory Board, it gives me great pleasure to convey the Advisory Board’s strong endorsement of the 2012 Annual Report of the ARC Centre of Excellence in Cognition and its Disorders (CCD). The Advisory Board provides the CCD with advice concerning increased engagement with stakeholders in the community, reviews the strategic plans for the CCD, and conducts risk analysis. The Advisory Board’s role and relationship to the CCD was clarified this year, as documented in the Advisory Board Charter. As Chair, I would like to take this opportunity to thank the members of the Advisory Board for their contributions and support. In particular, I thank Margot Prior AO, who retired from the Board in June, for her past involvement with the CCD.

This 2012 Annual Report covers the second year of the Centre, a year of considerable activities and achievements. It is clear that the CCD has surpassed expectations with respect to its initial goals. The excellence in research, outreach, and collaboration that was reported in the first year Annual Report has not only been maintained, it has been exceeded in the second year of the CCD.

The Advisory Board is also pleased to have seen the report submitted by the Scientific Committee regarding the research achievements of the CCD in 2012. It is clear from this report that the Centre’s research goals are being actively realised in all five core programs of the Centre. The Advisory Board wholeheartedly supports the assessment of the Scientific Committee regarding the excellent progress shown by researchers, international partners, postdoctoral fellows, and PhD students who make up the ARC Centre of Excellence in Cognition and its Disorders.

We would note more specifically that the Centre’s Annual Workshop was a resounding success, showcasing collaborations within programs and new initiatives for cross-program research, as well as involving five members of the Scientific Committee, who were keynote speakers and active participants in all workshop events. In addition, we compliment the CCD on its numerous outreach activities, including a range of workshops and conferences that have drawn attendance from so many stakeholder organisations. Finally, we are pleased to recognise the leadership of the Director and Chief Operations Officer, who have demonstrated a clear understanding of the issues confronting the CCD, and who have effectively developed and implemented policies that will promote the future success of the CCD.

Associate Professor Laurent Rivory  
Chair, Advisory Board | February 2013
I am delighted to present the second Annual Report for the ARC Centre of Excellence in Cognition and its Disorders (CCD). This report documents the significant accomplishments of the CCD members throughout 2012, a year during which the Centre built on its achievements of the first year of the Centre. This year we continued to support research and research training in cognitive science, as well as hosting a variety of academic and community focused events.

Across various institutions that make up the CCD there are currently 215 Centre members, including 85 PhD candidates, 16 Centre research fellows and 11 research support staff. The research publications, external grants and outreach efforts of these CCD members are listed elsewhere in this report, so I will not summarise them here, but I would like to note that the CCD sponsored and, in many cases, hosted a series of events in 2012 involving representatives from our stakeholder organisations and from the community (see Hosted Events). The CCD brought the community and researchers together through a number of public lectures, co-hosted by Macquarie University and The University of Western Australia, featuring internationally prominent scholars.

To promote academic discussion within the five CCD programs, each of the programs conducted a workshop in 2012 to introduce new program members and highlight new research projects. These workshops were in addition to the usual series of invited talks, research seminars and discussion group meetings that were held throughout the year. Our Annual Workshop provided additional opportunities for cross-program interactions, which the CCD encourages through the Cross Program Support Scheme, which funded three new projects in 2012.

Another of the Centre’s primary aims is to support the development of early career researchers in cognitive science. The CCD recruited an additional five postdoctoral fellows in 2012: Dr Kate Crookes, Dr Louise Ewing, Dr Michael Iverson, Dr Markus Neumann and Dr Jacopo Romoli.

The outreach activities of the Centre have been evolving over our first two years, and I am pleased with the level of engagement our Centre has achieved with stakeholders, researchers from regional universities, as well as with industrial partners and community groups. The Centre also sponsored two of the major Australasian academic conferences: the Australasian Experimental Psychology Conference, and the Australasian International Conference on Speech Science and Technology.

Another commitment of the CCD is to take full advantage of the wisdom and expertise of the Scientific Committee and the Advisory Board. Five members of the Scientific Committee accepted invitations to be keynote speakers at the Annual Workshop in August. Following the Annual Workshop, the COO, Dr Lisa Yen, and I had a full day of meetings with both the Scientific Committee and the Advisory Board. We are making considerable progress in formalising the Centre’s relationship with the Advisory Board, whose role and responsibilities are now clearly stated in the Advisory Board Charter. We are grateful for the leadership shown by the Advisory Board Chair, Associate Professor Laurent Rivory, and we look forward to contributions from two new board members, Professor Philip Newall and Professor Peter Davies.

I want to take this opportunity to give special thanks to Professor John Hodges for the leadership he has provided to the Memory Program. John officially stepped down from the role of Program Leader in January 2013, but we are pleased he will continue to contribute as a Chief Investigator. Replacing John is Associate Professor Olivier Piguet, who has gained an international reputation for his investigations into the cognitive changes in emotion processing and in memory which are associated with frontotemporal dementia. We welcome Olivier to the Research Management Committee, and to playing a leadership role in the Memory Program in 2013.

As 2012 drew to a close, the CCD administering node was preparing for relocation into the new Australian Hearing Hub building at Macquarie University. This is an important next step for the Macquarie node, because it will bring all of the CCD researchers together. As a Centre, we are also looking forward to collaborating with researchers from hearing organisations across Australia who are also relocating to this world-class facility. The CCD is keen to pursue new opportunities for collaborative research on the connections between hearing loss and the development of language and reading in children, and on the effects of hearing loss in ageing.

To conclude, the CCD has reached a new level of maturity in its second year, and we look forward to the years to come.
ARC Centres of Excellence are prestigious research hubs in which experts from across the nation work in collaboration to extend Australia’s international standing in areas of national priority. The ARC Centre of Excellence in Cognition and its Disorders (CCD) offers unique opportunities for interdisciplinary and international collaborative research in the study of cognition, its disorders and their treatment.

The mission of the Centre is to coordinate research in five areas of cognition: belief formation, language, memory, person perception, and reading.

The five CCD research areas, belief formation, language, memory, person perception, and reading, were chosen because they are well-understood from a theoretical point of view and because Australia has outstanding researchers in these areas. The five research programs will directly inform the assessment and interventions for a range of cognitive disorders, including dyslexia, specific language impairment, autism, dementia and schizophrenia.

Structure

The ARC Centre of Excellence in Cognition and its Disorders brings together an extensive network of Australian and international research institutions. The administering node of the CCD is Macquarie University, with additional nodes at The University of New South Wales and at The University of Western Australia. There are two other Australian institutions, University of New England and The University of Sydney, plus nine international partner institutions: The University of Auckland, New Zealand; University of Oxford, UK; MRC Cognition and Brain Science Unit, Cambridge, UK; Cardiff University, UK; the University of Hong Kong, Hong Kong; Institute of Education, University of London, UK; Royal Holloway, University of London, UK; University of Kansas, USA; and The University of York, UK.

Governance + Management

The Director, Distinguished Professor Stephen Crain, is responsible for scientific leadership and strategic direction. The Chief Operations Officer, Dr Lisa Yen, is responsible for the operational management of the CCD. The CCD Research Management Committee comprises of the Director, the Chief Operations Officer, and the Program Leaders. This Committee is responsible for the Centre’s goals, policies, and performance indicators. The progress, future directions and outreach activities of the CCD are reviewed by an international Scientific Committee composed of eminent scholars in cognitive science, and by an Advisory Board with representatives from academia and key community/advocacy organisations.
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Belief Formation Program

The Belief Formation Program aims to advance understanding of the disorders that are associated with higher-order cognition, i.e., delusions and other psychiatric symptoms. To meet this aim, research in this program uses a range of methodologies (e.g., hypnosis, cognitive neuropsychiatry, experimental psychology) and encourages cross-disciplinary perspectives that bring together cognitive scientists, philosophers and psychiatrists.

Aberrant beliefs, including those involving unusual experiences of one's own body

Glenn Carruthers, Max Coltheart, with Xiaojing Gao, Rachel Robbins (University of Western Sydney), Regine Zopf and Kristina Musholt

This research focuses on beliefs about and experiences of one's own body using a well-known technique (the rubber hand illusion). In the studies, an artificial hand is touched in synchrony with one's own hand, such that people come to experience the artificial hand as if it were their own real hand. Recent work has focused on explaining the occurrence of this odd experience in terms of changes in the perception of similarity between the artificial hand and one's real hand. This experience of something being a part of one's body is also at play in a variety of cognitive disorders. For example, a delusion called 'somatoparaphrenia' arises when stroke patients come to believe that a part of their body, e.g., their left arm, is not their own arm but, in fact, someone else's. In addition to work on self-consciousness, we have broader interests in free-will, consciousness, sexism (in particular the role of gender based parenting stereotypes) and the influence of cognitive biases on political thinking.

What can associative learning theory tell us about delusional beliefs?

Robyn Langdon, Max Coltheart, Melissa Green, Robert Ross, Oren Griffiths (The University of New South Wales), Mike Le Pelley (The University of New South Wales) and Richard Morris (Neuroscience Research Australia)

Prediction error plays a role in the generation of some delusional beliefs. Seeing a familiar face (e.g., a spouse) evokes a strong response in the autonomic (emotional) nervous system. Previous studies have shown that this response does not occur in people with Capgras delusion (because of specific neuropsychological impairment). How could such people explain the prediction error that occurs when they see someone who looks just like their wife but without experiencing an emotional response? We suggest that the explanation that occurs to them is: she must be a stranger, even though she looks like my wife. The patient predicts an emotional response to occur when the familiar face is seen, but this prediction fails, triggering the delusional thought.

Prediction error is also a central concept in associative learning theory, where failures of prediction are critical triggers for new learning. The formation of a delusional belief is a kind of new learning. Langdon and Coltheart have been studying prediction error and delusions with Drs Oren Griffiths and Mike Le Pelley (experts in associative learning). Together, they have been reviewing studies of delusional belief and abnormal prediction error in order to determine whether associative learning theory might inform further development of the two-factor theory. Griffiths, Langdon and Coltheart with PhD candidate Robert Ross, have also been conducting behavioural studies of the belief revision that normally occurs when non-delusional people perform associative learning tasks. Dr Melissa Green and her associates Drs Mike Le Pelley and Richard Morris have been developing associative learning paradigms to study erroneous causal associations in people with schizophrenia.

Hypnosis research

Amanda Barnier, Rochelle Cox, Michael Connors, Vince Polito, Luke Freeman, Robyn Langdon, Max Coltheart, Emily Connaughton, Martha Turner (University College London, UK), Nora Breen (Royal Prince Alfred Hospital) and Lisa Bortolotti (University of Birmingham, UK)

This research uses hypnosis to model a variety of clinical conditions such as delusions, hallucinations, and confabulations. These pathological symptoms occur in both neuropsychological and psychiatric conditions, such as dementia, stroke, and following traumatic brain injury. However, the scientific study of these clinical conditions has proven challenging because they typically co-occur with other symptoms and impairments. To overcome these challenges, researchers at the CCD Hypnosis
Laboratory have been developing hypnotic models of clinical conditions. Hypnotic suggestions can create unusual experiences that are compelling and believed with conviction, similar to clinical cases. As such, hypnotic can create temporary, reversible ‘virtual patients’.

Hypnotic delusions and confabulations
This year we investigated whether hypnotic can model ‘folie a deux’, which is the transference of delusional ideas from a ‘primary’ individual to one or more ‘secondary’ individuals. In our research the ‘primary’ individual was a confederate, who displayed delusional ideas and attempted to transmit them to hypnotised subjects. The first delusion was mirrored-self misidentification, where the confederate claimed that their reflection in the mirror was a stranger. The second delusion was the expressed belief that people in the room next door were playing Jingle Bells. The confederate was portrayed as being either ‘credible’ or ‘interesting’. Many high hypnotizable individuals adopted the confederate’s beliefs and the confabulated evidence used to support them. Subjects who interacted with a credible confederate went beyond the suggested delusional belief and reported that their own reflection was also a stranger. This is the first demonstration that hypnotised subjects will respond to suggestions that have not come directly from the hypnotist.

Hypnotic olfactory hallucinations
Most previous research on hallucinations in schizophrenia has focused on auditory hallucinations. However, olfactory hallucinations (smelling odours that are not present) can be particularly distressing for patients who experience them. We examined whether olfactory hallucinations could be modelled using hypnotic. We found that highly hypnotizable subjects hallucinated the suggested odours and also confused the source of these imagined odours as predicted by a source-monitoring model. The findings further confirm that hypnotic can serve as a useful analogue for studying less prevalent psychiatric symptoms, such as olfactory hallucinations.

The two-factor theory of delusional belief
Robyn Langdon, Max Coltheart, Emily Connaughton, with Jakob Howhy (Monash University), Philip Gerrans (The University of Adelaide), Dominic Murphy (The University of Sydney), Matthew Large (The University of New South Wales) and Olav Nielsen (The University of Sydney)

Since the beginning of this century, Associate Professor Robyn Langdon and Emeritus Professor Max Coltheart have been developing a cognitive-neuropsychiatric theory intended to explain how various types of delusional belief arise. According to their theory, any delusion can be explained by discovering the answers to two questions. First: what caused the delusional idea to occur in the first place? Second: why does the patient nevertheless persist in believing that the delusional idea is true when the patient’s family, friends and clinicians insist that it is false?

The two-factor theory has been applied successfully to a number of delusions, including Capgras delusion, which is the delusional belief that a loved one, typically a spouse, has been replaced by a look-alike stranger, and Cotard delusion, which is the delusional belief that one is dead - a belief that the patient insists is true despite being able to tell the doctor that he or she is dead. These are monothematic delusions, however - that is, delusions concerning a single idea.

They are also delusions with bizarre belief content. So, along with our associates, we are now considering how the two-factor theory might (or might not) be applied to delusions with more mundane belief content (e.g., delusional jealousy) and to polythematic delusions, such as are found in schizophrenia. This year Coltheart initiated a cross-disciplinary workshop, Philosophy of Psychiatry, to bring together cognitive neuroscientists and philosophers to discuss these issues, culminating in a Special Issue of Mind & Language (in press).

Langdon and psychiatrists Drs Matthew Large and Olav Nielsen have also been studying cases of ‘folie a deux’ (shared delusions). These delusions typically have more mundane belief content and reveal the role that ‘social contagion’ plays in the transference of a delusional belief from a ‘primary’ partner to a ‘secondary’ partner in ‘folie a deux’ delusions.

A novel social cognitive training program for people with schizophrenia
Pamela Marsh, Robyn Langdon, Max Coltheart, Melissa Green and Anthony Harris (Westmead Hospital), with Vince Polito and several interns

Dr. Pamela Marsh’s postdoctoral research focuses on the development of SoCog. This is a novel treatment program for the profound social impairments found in schizophrenia. Social impairments are not improved by the medications prescribed to treat schizophrenia and are identified by people with schizophrenia, their carers, and clinicians as one of the greatest unmet treatment needs. During real-world social interactions, people constantly rely on social cognitive abilities to understand what others might be thinking or feeling.

SoCog comprises two independent training programs: emotion recognition training (SoCog-ERT) and mental-state reasoning training (SoCog-MSRT). These programs are based on a suite of games presented within a social atmosphere with small groups of participants focusing on the specific social cognitive problems experienced by people with schizophrenia. SoCog-ERT aims to improve the ability of people with schizophrenia to accurately recognize other people’s facial expressions of emotion and SoCog-MSRT encourages flexible thinking about others’ likely thoughts, the tolerance of ambiguity, and thoughtful consideration of other people’s perspectives within social contexts.
From 2008-2012, we have been testing the efficacy of SoCog at Cumberland Hospital (Westmead, Sydney). We have found promising improvements in the social abilities of participants. In 2012, Marsh trained clinicians to use SoCog within additional Sydney hospitals. This research was funded in part by an Australian Rotary Mental Health Grant (2008-2010), by the Schizophrenia Fellowship of New South Wales (2009), and by the CCD.

This research is developing intervention programs that will directly benefit health care and social welfare in Australia by reducing the social isolation experienced by so many people with schizophrenia. This focus is in alignment with the objectives of the CCD to inform the treatment of different cognitive disorders, including schizophrenia, with the aim of reducing the high social cost of such cognitive disorders.

Hearing Voices

Simon McCarthy-Jones

The meanings and causes of hearing voices that other people cannot hear (auditory verbal hallucinations) have been debated for thousands of years. Voice-hearing has been both revered and condemned, and understood as a symptom of illness as well as a source of otherwise extraordinary communication. Those hearing voices have been considered mad, potential prey for practitioners who could not convince just people with unusual experiences, and have been belittled, stereotyped or accepted, as well as isolated, treated or ignored. This book explores voice-hearing in the heart of the world through contemporary experiences, examining how power, politics, gender, medicine and religion have shaped the meaning of hearing voices. Who hears voices today, what these voices are like and their potential impact on contemporary research. Cutting-edge neuroscience is integrated with current psychological theories to consider what may cause the voices and the future of research in voice-hearing is explored.

Simon McCarthy-Jones is a postdoctoral fellow at Macquarie University’s Center for Cognitive Science, in Sydney, Australia.

The book brings together contributions from biological and psychological research, and, more originally, it documents the history of hearing voices and the meaning of such experiences. Dr McCarthy-Jones’s book is grounded in scientific research and comprehensively researched historical material. The book is a multi-layered, and Dr McCarthy-Jones shares us with his very narrative. The book will appeal to modern “voice-hearers”, clinicians, and scholars of auditory hallucinations.

Flavie Waters, The University of Western Australia

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Auditory hallucinations

Simon McCarthy-Jones

People sometimes hear voices that other people cannot hear, termed ‘auditory verbal hallucinations’. Dr Simon McCarthy-Jones has been studying the phenomenology of these hallucinations (i.e., the nature of the experience), their causes (e.g., the role of trauma, genetic contributors and associated neural activity), potential interventions (including cognitive behavioural therapy and neurofeedback techniques) and the meaning of the experience for the voice-hearer (including co-writing articles with people with personal experience of voice-hearing). This work involves collaborations with associates from the USA and the UK and with national collaborators from the Universities of New South Wales, Melbourne and Western Australia, and Monash University. To promote the international study of voice-hearing, McCarthy-Jones also leads a number of working groups associated with the International Consortium on Hallucination Research.

The Language Program

The Language Program investigates language in typically developing children and adults, and in children and adults with language disorders (e.g., specific language impairment, aphasia). The program engages in theoretically-driven assessments of the linguistic competence of typically developing children as well as children and adults with language impairments, using a range of methodologies, including behavioural and brain imaging techniques (e.g., comprehension and production tasks, eye-tracking, MEG).

The acquisition of morphological representations in typically developing children and those with specific language impairment

Katherine Demuth, Nan Xu, Ekaterina Tomas, Themby Dube, Kiri Mealings and Karen Smith-Lock

This project focuses on the development of morpho-syntactic representations in typically developing children and those with specific language impairment (SLI), with special emphasis on inflectional morphemes such as plurals, possessives, third person singular, and the past tense. It examines some of the morphological skills that are acquired relatively late by typically developing children, and whether this is due to problems of articulation/motor control or if it could be due, instead, to incomplete representations of phonemes and grammatical morphemes. By comparing the performance of children with SLI to that of both age-matched and language-matched controls, we gain a better understanding of the factors that contribute to the late acquisition of linguistic skills in both populations.

Development of phonological representations in SLI children

Susan Lin, Katherine Demuth, Felicity Cox, Mark Harvey (The University of Newcastle), Ivan Yuen, Nan Xu, Vasfiye Geçkin, Simón Gonzalez, Ekaterina Tomas, Kiri Mealings and Kelly Miles

Children with specific language impairment (SLI) are generally characterised as having language delay. By and large, these children have language skills akin to children much younger than they are, rather than children their own age. Theoretically, there are several aspects of linguistic structure that may contribute to this delay. We are investigating the interactions between phonology (sound patterns and structures) and morphology (formation of words) in typically developing as well as SLI children, with a particular focus on those features that are acquired late. The goal is to understand the root cause of late acquisition of language skills in both populations. This year, we have focused on late emerging speech sounds such as "l," "r" and "sh" in typically developing children, using ultrasound imaging to see into children’s mouths while they are speaking. We found that children are sometimes able to produce adult speech sounds using different parts of their tongues than adults generally use. This may be due to incomplete physiological development. We expect future comparative work with SLI children to be extremely informative, as SLI is generally characterised as being a cognitive disorder, rather than a physiological one.

How children with specific language impairment interpret logical words

Stephen Crain, Rosalind Thornton, Karen Smith-Lock, Peng Zhou and Drew Khlentzos

This research project investigates how English-speaking children with specific language impairment (SLI) understand combinations of logical words. Consider sentence (1).

(1) The fox didn’t eat both the carrot and the capsicum. English-speaking children interpret (1) in exactly the same way as adults do, i.e., to mean that the fox ate both the carrot and the capsicum. This finding is intriguing because children’s non-adult interpretation is valid in other languages of the world (e.g., Japanese, Mandarin Chinese), but not in English. Now consider sentence (2), where the logical word only appears with and.

(2) Only the fox ate both the carrot and the capsicum. English-speaking children interpret (2) in exactly the same way as adults do, i.e., to mean that the fox ate both vegetables, and no one else did. Moreover, Japanese-speaking children and adults, and Mandarin-speaking children and adults interpret sentences like (2) in the same way.
This project studies the comprehension of sentences like (1) and (2) by English-speaking children with SLI. The research hypothesis is that children with SLI will understand sentences like (1) and (2) in the same way as typically developing children. So far, the findings of our studies are consistent with the research hypothesis. Such findings suggest that children with SLI and typically developing children assign the same meanings to complex sentences with logical words.

Modal development in first language acquisition

Vincenzo Moscati, Stephen Crain, Rosalind Thornton, Peng Zhou, Likan Zhan and Jacopo Romoli

Languages have different ways to refer to situations besides the actual here and now. We often talk about states of the world that could be - but are not - real. For example, we use modal verbs can or may to express possible, but not actual, events.

This research project investigates how the modal system develops in children. The aim is to identify those features of language development that are invariant across languages, in contrast to the specific properties that vary from language to language.

As an example, the number of modals varies across languages. In English, three different modals (must, need, have to) can be used to express necessity. If children experience difficulties with modality, therefore, this could be due to the richness of the modal paradigm - a language specific property. However, it is also possible that children have difficulties in acquiring modal expressions in all languages, even in languages with a simpler modal paradigm. In Italian, for instance, a single modal verb (dovere) covers the meanings of all three English modals. If Italian and English children show the same developmental pattern, this could be an indication of a difficulty that is specific to the meanings conveyed by modal expressions. Following this logic, this project aims to identify the milestones in the development of modality across languages.

Cognitive neuropsychology of language

Lyndsey Nickels, Britta Biedermann, Kati Renvall, Saskia Kohnen, Lisi Beyersmann, Catherine Mason, Hana Burianová, Nora Fieder, Trudy Krajenbrink, Anastasiya Romanova and Vishnu Nair

Language can be impaired as a result of stroke, traumatic brain injury, or dementia. Taken together, acquired language impairments are known as aphasia. Cognitive neuropsychology uses these language impairments to inform theoretical models of language processing. This research examines the factors affecting language learning and language use in unimpaired populations and those with language impairments. Three factors that affect learning and processing of words include bilingualism, proper versus common nouns, and mass versus count nouns.
Several projects investigate not only how language breaks down in aphasia but also what this can tell us about how language works. For example, people with aphasia often have trouble distinguishing the singular versus the plural endings on words. When naming pictures, one person said 'socks' when shown a picture of just one sock, but said 'log' when shown a pile of logs, 'scissor' for 'scissors', and 'sheep' for (several) 'sheep'. Understanding why these errors occur, will help us understand how words are stored in our minds. Another project examines differences between word classes (nouns and adjectives) in normal speakers and in people with aphasia. A further project investigates how spelling breaks down, how it responds to treatment and what this can tell us about how information flows between levels of representation in our minds.

**Treatment of aphasia**

Lyndsey Nickels, Karen Croot, Amanda Osborne (Royal Rehabilitation Centre Sydney), Belinda McDonald (St. Joseph’s Hospital), Cathleen Taylor (War Memorial Hospital) and Kati Renvall

This research project aims to develop and evaluate effective treatments for aphasia, both when it is as a result of stroke or brain injury (non-progressive aphasia) and when it is as a result of a progressive brain disorder. We have had a longstanding interest in treatments that can improve the ability of people with aphasia to retrieve the words they need to communicate. Four specific projects are underway. One project examines whether techniques that have proven effective with people with aphasia, following stroke, are also effective in people with a progressive aphasia (a form of dementia). This project aims to enable people with progressive aphasia to find the words they need to communicate in daily life, even as their language deteriorates over time.

A second project was based at Royal Rehabilitation Centre, Sydney. The project examined whether an intensive aphasia therapy (Constraint Induced Aphasia Therapy) was effective when carried out in a less intensive form, more suitable for clinical settings. Not only was the treatment found to be effective in this form, but a form of the treatment which did not restrict the participants to just using speech (unconstrained) proved to be as effective as the standard (constrained) form. This research was presented at the recent International Aphasia Rehabilitation Conference.

Treatment for word retrieval has focused mainly on concrete nouns (e.g., names of everyday objects), but people with aphasia need to be able to retrieve many other kinds of words. A third project investigates new treatments designed to improve the ability in people with aphasia to retrieve the words they need to express emotions (e.g., frustrated, delighted).

Finally, a project at St Joseph’s Hospital, Auburn, examines the effectiveness of an aphasia group in improving word retrieval and conversation, and whether such a group treatment is more effective when supplemented with a treatment aimed at improving specific vocabulary that is useful in conversation.

**The interaction between logical operators and different components of meaning in child language**

Jacopo Romoli, Stephen Crain, Rosalind Thornton, Peng Zhou and Vincenzo Moscati

The overarching goal of this research project is to investigate knowledge about the meanings of words and sentences, and how to best represent this knowledge in theoretical models. The questions in this area lie at the core of studies of cognition and naturally connect with the general goals of the Language Program: how is knowledge of the meaning of words and sentences acquired, and how is it used in communication in interaction with contextual information?

This research fits with various existing projects on logical operators in child language and in language disorders, and it is very much in line with the cross-linguistic perspective taken by researchers in the Language Program. The research plan for 2012 investigated how logical operators, in particular negation, interact with different components of meaning such as presuppositions, scalar implicatures and the inferences associated with predicates like think and want in English, and the corresponding predicates in other languages. New studies on negation are related to the ongoing project on the production and comprehension of negative sentences by typically developing children and by children with specific language impairment (SLI).

**Effective grammar treatment for children with specific language impairment**

Karen Smith-Lock, Suze Leitâo, Lyndsey Nickels Genevieve McArthur, Anne Castles, Polly Prior (West Coast Language Development Centre), Safiyyah Aziz, Louise Cleary and Lydia Timms

This project aimed to identify the key techniques in successful treatment of grammatical word endings (possessive s, past tense ed and present tense s). The project tested the effectiveness of language treatment in a community setting, in order to answer a certain central question about specific language impairment (SLI): do SLI children learn better when the quantity of grammatical input is increased, or is learning facilitated more by providing explicit feedback when they commit errors? To answer this question, children received one of two treatment techniques: indirect or direct feedback. In indirect feedback, treatment involved modelling of the correct grammatical target, whereby the clinician...
repeated a child’s utterance and corrected any errors but did not explicitly draw attention to the error or require the child to correct himself (recasting). In contrast, the direct feedback procedure provided the child with structured feedback and opportunities to self-correct, including a forced choice of correct versus incorrect responses and direct requests for repetition. Preliminary findings suggest that the direct feedback procedure, in which the child was asked to repeat the correct response, was more successful in improving performance.

Factors affecting the comprehension of complex sentences by children with specific language impairment

Karen Smith-Lock, Stephen Crain, Anna Notley, Louise Delane and Shannon Golding

Comprehension of complex sentences is a challenge for young typically developing children and for children with specific language impairment (SLI). Several explanations have been proposed. This project examined the comprehension of relative clauses, as in (1) below, in 6 and 7-year-olds with SLI, with the aim of determining which factors might facilitate comprehension of relative clauses in children with SLI.

(1) The koala pushed the parrot that jumped over the dingo/fence.

Performance on an act-out task proved to be unrelated to any of the standard language or cognitive measures that were collected, including phonological processing, working memory, non-verbal IQ, expressive or receptive language. However, the performance of approximately one third of children improved in response to certain experimental manipulations, such as replacing the animate NP ‘dingo,’ by an inanimate NP, ‘fence.’ The findings suggest that comprehension of syntax develops independently of other cognitive functions.

How children interpret two negations in a single sentence

Rosalind Thornton, Stephen Crain, Anna Notley, Peng Zhou and Vincenzo Moscati

This project explores children’s understanding of sentences with two negative words. Languages can differ in how such sentences are interpreted. In languages like English and Mandarin Chinese, two negative words typically cancel each other out. For example, if someone says ‘The princess ate nothing at the party,’ someone else could contradict this by saying ‘The princess didn’t eat nothing at the party,’ meaning that the princess did eat something. In languages like French and Italian, however, two negative words combine to convey a single negation, so the double negation sentence would still mean the princess ate nothing.
Memory Program

The Memory Program investigates the cognitive systems and brain structures underlying various forms of memory, including autobiographical memory, episodic memory and semantic memory. The program uses experimental neuropsychological methods, as well as structural and functional brain imaging, in both normal subjects and in patients with progressive brain pathologies such as dementia.

Memory in the dementias

John Hodges, Olivier Piguet, Greg Savage and Michael Hornberger

The inability to recall personal recent life events (episodic memory) is an early and prominent symptom of Alzheimer’s disease. In a series of studies, we have demonstrated that patients with frontotemporal dementia (FTD), the second most common form of dementia in younger people, also have significant impairments in episodic memory. This finding is clearly of clinical relevance for the accurate diagnosis of these disorders.

In this project, cognitive tests are used to elucidate the nature of the memory problems in patients with Alzheimer’s disease and in patients with FTD.

We are developing new memory tests to differentiate these diseases based on the specific aspects of memory that are affected. This approach will improve our ability to characterise memory dysfunction in various disorders, including Parkinson’s disease, and to assess the risk of developing dementia in people with emerging memory problems.

Elucidating episodic memory circuits

Michael Hornberger, Glenda Halliday (The University of New South Wales), Olivier Piguet and John Hodges

In addition to the episodic memory deficits observed in frontotemporal dementia (FTD) and in Alzheimer’s disease (AD), our neuroimaging work indicates that the hippocampus and other medial temporal lobe structures crucial to optimal episodic memory functioning are affected in both FTD and in AD. While the posterior cingulate cortex appears critical for memory performance in AD, damage to the frontal lobe contributes to poor memory performance in FTD. More specifically, contextual retrieval of past events appears to be related to prefrontal cortex regions, while orientation in space and time appears to be related to posterior brain regions.

In this project, we are measuring a number of brain structures, which form part of the ‘circuit of Papez’ (thalamus, fornix and mammillary bodies) and are known to support memory functioning. This project combines structural neuroimaging and postmortem tissue investigations. This cutting edge approach will not only allow us to identify the location and severity of pathological changes, but also the type of pathology affecting these structures.

Imagining the future

Muireann Irish, Donna Rose Addis, John Hodges and Olivier Piguet

The episodic memory system enables us to remember personal events from our recent past. These memories are essential for our sense of self and continuity over time. The same memory system is instrumental in allowing us to imagine possible personal events in the future. Damage to the episodic memory system, therefore, prevents us from imagining the future, as well as remembering the past. Our recent work was instrumental in demonstrating that damage to the brain’s semantic memory system (anterior and lateral temporal lobe regions) impacts on the ability to think about the future. Semantic memory, our memory for facts and general knowledge, is essential for the ability to imagine the future, presumably by providing the scaffolding necessary for the construction of future events. These researchers at The University of New South Wales and at The University of Auckland are collaborating in a series of studies designed to reveal the cognitive and neural underpinnings of future thinking.
Imagining the future in clinical populations

Muireann Irish, Suncica (Sunny) Lah, Donna Rose Addis, Laurie Miller, John Hodges and Olivier Piguet

Studies are underway to investigate the abilities of clinical groups to imagine the future. The clinical groups include temporal lobe epilepsy, transient epileptic amnesia, and subtypes of frontotemporal dementia (FTD). In preliminary studies, we have found that FTD patients, who present with marked changes in social cognition and atrophy of the frontal lobes, are as impaired as Alzheimer’s disease patients at remembering the past and imagining the future. In contrast, patients with semantic dementia can remember events from their recent past, but they experience marked impairment in imagining future events. We are now exploring the brain structures critical for future thinking in these syndromes using brain-mapping techniques.

Memory systems in paediatric clinical populations

Suncica (Sunny) Lah, Michael Gascoigne and Laurie Miller

Development of brain structures is a protracted process. Some of the structures central to memory (e.g., hippocampus) become functional in the first decade of life while other structures that contribute to memory performance, such as the frontal lobe white matter, are not fully mature before the third decade of life. Consequently, brain disorders in children, such as epilepsy or traumatic brain injury, result in different patterns of cognitive deficits to those seen in adults, due to interference from the developmental neural and cognitive processes taking place in childhood and adolescence.

We are conducting a series of studies investigating various aspects of memory in children with epilepsy or with acquired traumatic brain injury, such as autobiographical memory, accelerated long-term forgetting and future thinking. In addition to mapping the pattern of memory deficits, these studies aim to establish how these deficits evolve over time in the context of brain maturation. Another focus is to identify the variables contributing to everyday memory difficulties in children with epilepsy.

Episodic memory re-training

Laurie Miller, Kylie Richardson, Zoe Thayer and Suncica (Sunny) Lah

We continue to use and evaluate a memory training program that was developed at Royal Prince Alfred Hospital and The University of Sydney to help neurological outpatients (Radford et al., 2010). Dr Miller coordinates the program, which is now being run at the three major teaching hospitals in Sydney as well as in NSW Correctional Facilities. This is a six-week course, in which a neuropsychologist guides a group of participants through memory exercises and teaches them about external memory aids and lifestyle factors that affect memory. To test the effectiveness of training, participants are assessed before and after the program using objective memory tests and questionnaires about everyday memory. This course has received excellent results on satisfaction surveys and has proved useful on both self-evaluations and objective measures of memory.

2012 Annual Report
How does race affect face processing?
Kate Crookes, William Hayward, Nadine Kloth and Gillian Rhodes

We are all experts at recognising faces, but our expertise is normally greater with some types of faces than others. In particular, we may have much more experience with faces from one ethnic group than from others. The other-race effect, better memory for own- than other-race faces, is well established and widely replicated across different countries and ethnicities. However, the processes that underlie this effect are still much debated. We have been running behavioural and eye-tracking studies in Perth and Hong Kong with ethnically White and ethnically Chinese participants, to investigate how differences in the race of a face affect our abilities to process the information within it. Our studies have investigated differences between own- and other-race faces in the reliance on holistic versus analytic processing, attention allocation and social categorisation. An understanding of this phenomena and how it may be overcome is becoming increasingly important in our increasingly global society.

A second strand of our research, exploring race affects on face processing, focuses on differences observed between Caucasian and Asian participants in eye-movement patterns when looking at faces. While Caucasian participants tend to fixate the eye region of a face, Asian participants look more toward the nose region. While the two ethnic groups show equivalent expertise for face recognition it may be achieved by different strategies. These results question a general assumption that basic perceptual processes such as face perception are culturally universal. We have found the difference in eye movement patterns exists for both front-view and three-quarter-view faces suggesting Asian participants are fixating the nose rather than the centre of the stimulus. Future studies will explore possible explanations for these different patterns. These studies help us understand what is truly universal in face perception.

Person perception in autism spectrum conditions
Louise Ewing, Eleni Avard, Andrew Calder, Frances Caulfield, Michael Ewbank (MRC Cognition and Brain Sciences Unit, UK), Chiara Fiorentini, Linda Jeffery, Daphne Maurer, Romina Palermo, Elizabeth Pellicano, Ainsley Read, Gillian Rhodes, Mel Rutherford, Raliza Stoyanova (MRC Cognition and Brain Sciences Unit, UK), Elizabeth Taylor, Jennifer Walsh and Mark Vida

Individuals with autism and their family members (representing the broader autism phenotype) often experience face-processing difficulties. Our overarching research goal is to understand the mechanisms that underlie the face- and person-processing atypicalities associated with autism. This research should provide an evidence base for researchers and clinicians to develop targeted interventions to enhance person perception, and ultimately, to enhance social functioning and quality of life in individuals with autism.

A current focus of our research is adaptive processes in autistic person perception: whether atypical coding and updating of face representations might contribute to the observed difficulties recognising and discriminating between identities. Studies in this area are being conducted with children and adults with autism, and their “unaffected” family members - using both behavioural and neuroimaging data collection techniques. We are also investigating the perception of dynamic social cues communicated via the faces, e.g., emotional expression and eye gaze. We are particularly interested in how these cues might interact and influence person perception judgments of identity and social attributes (e.g., trustworthiness) in these populations.
The development of person perception mechanisms

Linda Jeffery, Eleni Avard, Samantha Bank, Nichola Burton, Kate Crookes, Elinor McKone, Elizabeth Pellicano, Samantha Petrovski, Cameron Rathbone, Ainsley Read, Gillian Rhodes and Elizabeth Taylor

Adults have highly developed person perception skills that are critical to guiding everyday social interactions. Adults are able to effortlessly read subtle cues from the face in particular about identity, gender, ethnicity, age, attractiveness, emotional state and focus of attention. This exquisite expertise with faces emerges slowly during development, with performance on many face perception tasks improving throughout childhood. However, the source of improvement is controversial. We are studying whether children’s difficulties could be caused by their use of different visual processing mechanisms as compared to those used by adults. One possible source of children’s difficulties is failure to code faces in a way that is robust to changes in viewpoint (e.g., profile versus face-on), resulting in particular difficulty in recognising faces seen from new viewpoints. However, we have recently shown that eight year-old children’s face coding is as robust to view changes as that of adults (Jeffery, Rathbone, Reid, & Rhodes, 2012). This result suggests that children code faces using the same mechanisms as adults and is consistent with a growing body of evidence suggesting that improvements in face recognition performance with age are not due to changes in the mechanisms of face perception and may be due to more general cognitive changes.

Faces are considered the primary source of subtle social information about individuals, but the body also contributes, particularly in conveying cues from distances where the face is too small to extract detailed information. The contribution of body cues to person perception has received relatively little attention, but intriguing parallels between face and body perception are emerging. For example, we have recently shown that norm-based coding, a critical mechanism of face perception, is also used to code body identity. We are therefore interested in how body recognition skills develop through childhood and whether this development parallels that of face perception.

Intriguingly, it has been found that body selective brain regions show little change during development, whereas brain regions sensitive to faces appear to become larger and more face-selective with age. This finding suggests that body recognition skills might mature earlier in children than do face perception skills. To test this proposition we directly compared face-only and body-only recognition performance in children aged six and ten and in adults, and we found that both skills show the same rate of development. This result is consistent with the view that body perception and face perception rely on similar processes that show a similar pattern of development.
Processing and integration of different social signals in faces

Nadine Kloth, Gillian Rhodes, Linda Jeffery, Lindsey Short (Brock University, Canada), Eleni Avard, Ainsley Read and Elizabeth Taylor

Faces are important social stimuli that engage specialised neural resources and processing mechanisms. Earlier research has shown that faces also receive privileged attentional resources, possibly from a separate attention system with a capacity limit of one face at a time. In addition to this general preference for faces over other stimuli, it is plausible that some faces stand out even more than others when presented as a group. A number of studies suggest that highly attractive faces might have such outstanding qualities. Facial attractiveness is an important factor in mate choice situations, and it has been shown that looking at attractive faces activates brain regions involved in the processing of reward.

In a study examining influences of attractiveness on gaze perception we found earlier that participants are biased to perceive attractive, but not unattractive, faces as looking at them. In a more recent study, we have now investigated whether facial attractiveness also biases an observer’s attention. In this experiment, participants were first presented with a pair of faces differing in attractiveness levels. After the faces had disappeared, a letter was presented at one of the two locations previously occupied by the faces. Participants were asked to ignore the faces and to simply indicate the identity of the subsequently presented letter. The analysis of the reaction times required to do this task revealed that participants were faster to correctly respond to the target letter when it was presented at the screen location that was previously occupied by an attractive face rather than a face of only intermediate attractiveness. This finding revealed that participants’ attention was biased towards the more attractive face of the two, so that a subsequent target presented at the same location could be processed faster. Together with recent reports of attentional biases to faces with specific emotional expressions, our data suggest that certain social signals can make a face more relevant and “outstanding” compared to its simultaneously presented competitors. This systematic bias towards specific facial characteristics might be an important mechanism that facilitates the reliable detection of particularly meaningful social signals.

Ensemble coding for faces

Markus F Neumann, Romina Palermo and Gillian Rhodes

A face conveys an abundance of information about a person, such as his or her gender, current emotional state, and identity. Humans are able to precisely extract such information in a glance, and apparently without much effort, when viewing a single face. However, humans are often confronted with multiple faces at once, e.g., a teacher standing in front of the class. These daily life situations may require a different style of information processing. Specifically, one might be interested in gaining information about characteristics for the entire group at once, for example the average emotion in the crowd at a given moment (the current “vibe”). Depending on the context, this could be more relevant than getting information about a single individual’s state. The existence of a cognitive mechanism that promotes extraction of average information from face crowds at the expense of encoding individual exemplar information has recently been described as ensemble coding for faces. Interestingly, this averaging mechanism is not limited to extraction of expression, but has also been found for identity information in face group.

In the present project we are interested in exploring this phenomenon in more detail. Recently, we have conducted a series of experiments in which, for the first time, robust ensemble coding was found even when using famous face sets. Here, we intend to initially replicate these novel findings in an Australian student population. Two research lines are planned to follow-up on the basic experiment. Research line one will investigate determinants of ensemble coding for faces, e.g., how timing and set size parameters affect ensemble coding for faces. Research line two will then examine individual differences in ensemble coding for faces, and specifically probe the idea that ensemble coding may act as a compensatory route in people who experience deficits in face identity recognition, e.g., people with developmental prosopagnosia (c.f. Leib et al., 2012).

Insights into face processing mechanisms from congenital prosopagnosia

Romina Palermo, Linda Jeffery, Nichola Burton, Shahd Al-Janabi, Eleni Avard, Chris Benton, Andy Skinner, Gillian Rhodes, Elinor McKone and Daphne Maurer

People with congenital prosopagnosia present with severe, life-long deficits in recognising the identity of familiar people from their faces, but no known history of brain injury. Our recent work has focused on discovering the perceptual mechanisms that may be disrupted in this developmental form of prosopagnosia. Adaptive face coding is a perceptual mechanism in which identity is coded relative to an average or ‘norm’ face, and is reflected by face aftereffects. We found that a group of adults with prosopagnosia displayed a significant face identity aftereffect. However, their impression of the identity of the neutral average face was not significantly shifted by adaptation, suggesting that adaptive coding of identity is abnormal in prosopagnosia. There are many different types of face aftereffects, which code different face attributes, such as eye gaze, expression or head direction. We are currently investigating the specific types of face aftereffects that are impaired in people with congenital prosopagnosia. This will help us to understand how the perceptual mechanisms involved in face processing are organised.
Planned research projects are: a) are face aftereffects impaired in congenital prosopagnosia, b) ensemble coding in typical adults and those with congenital prosopagnosia, c) perception and recognition of familiar and unfamiliar face, and d) genetics of congenital prosopagnosia.

Adaptive processes in person perception

Gillian Rhodes, Nichola Burton, Andrew Calder, Linda Jeffery and Nadine Kloth

In everyday life, we use a wealth of social cues from faces to guide our interactions with others. This research program investigates the perceptual foundations of our ability to "read" these cues and to distinguish among thousands of faces despite their perceptual similarity. Our work with face aftereffects suggests that faces are coded relative to perceptual norms or averages that are adaptively tuned by experience (Armann et al., 2011; Rhodes & Leopold, 2011). Exposure to a face updates the norm, shifting it temporarily towards characteristics of that face, and selectively biases perception towards an identity with opposite characteristics. Norm-based coding may allow us to see past the shared structure of all faces, to those characteristics that define individuals and those variations in their appearance associated with different emotional and attentional states.

We are investigating the scope and functional role of adaptive, norm-based coding in person perception. Specifically, we address the following questions: What aspects of faces and bodies are coded relative to norms? Why is norm-based coding used for some aspects, but not others, such as viewpoint and gaze direction? How is face adaptation functionally related to recognition and discrimination performance in typical children and adults? Is adaptive coding compromised in developmental disorders, such as autism and congenital prosopagnosia, in which face processing is impaired?
The Reading Program uses theoretical models of reading as the basis for investigating how children learn to read, why some children have so much difficulty (developmental dyslexia), and how such difficulties are best treated. These models are applied to the understanding and treatment of the different kinds of reading disorders that are seen in formerly skilled readers after brain damage (acquired dyslexia). The neural basis of both normal and impaired reading can be investigated using brain-imaging techniques such as event related potentials (ERP).

Subtypes of developmental dyslexia

Anne Castles, Saskia Kohnen, Genevieve McArthur, Lyndsey Nickels, Yvette Kezilas and Naama Friedmann

Cognitive models of reading suggest that not all children should have the same type of reading problem. In fact, there should be as many different types of developmental dyslexia as there are components of the model. Until recently, little research has gone beyond two basic subtypes of dyslexia - Surface Dyslexia, which is a difficulty in acquiring whole-word representations, and Phonological Dyslexia, which is a difficulty in acquiring letter to sound rules. We have begun to explore different patterns of developmental dyslexia in much greater detail and to develop tests specifically designed to target impairments that may previously have gone unnoticed.

We have found a considerable heterogeneity even within the subtype categories of children with the same broad label exhibiting quite different underlying impairments. We have also discovered new subtypes previously undiagnosed in English, such as Letter Position Dyslexia in which children make many migration errors in reading (e.g., reading slime as smile) and also have some difficulties in spelling. The next step is to determine how these different reading problems are best treated. We have begun working on this in the case of Letter Position Dyslexia. We are carrying out a training study in which we are teaching children with Letter Position Dyslexia and controls to spell two sets of words. The teaching is visual (i.e., copying) in one phase and oral (i.e., oral spelling) in the other phase. If poor coding of the visual input is responsible for poor spelling in Letter Position Dyslexia, we should find that learning new spellings is more successful for children with Letter Position Dyslexia when the learning occurs with auditory, rather than visual, input. We should also find that learning outcomes via the visual modality are poorer for children with Letter Position Dyslexia than controls.

Orthographic learning in typically developing readers

Anne Castles, Lyndsey Nickels, Saskia Kohnen, Eva Marinus, Hua-Chen Wang and Kate Nation

This ongoing research project explores how children acquire representations of individual written words. A series of experiments investigated whether new written word representations are acquired more easily when words are regularly spelled than when they are irregularly spelled. Children in Grade 2 learned new written words in the form of inventions by the mad scientist, Professor Parsnip (e.g., a ‘jait’ is a machine for polishing flowers). Sometimes the learned pronunciations of the words directly matched their spellings (e.g., ferb pronounced ‘ferb’) but sometimes they did not (e.g., cleap pronounced ‘clap’).

We then assessed the quality of the representations that the children had acquired for those new words. We found that orthographic representations appeared to be better and more easily acquired for the regular words than for the irregular ones. In a second study, we showed that learning for the two types of item was predicted by different reading and language factors.

The Spelling Training Study

Saskia Kohnen, Lyndsey Nickels, Kaitlin Moore, Kristina Barisic, Trudy Krajenbrink and Yvette Kezilas

This training study is designed to find out how to improve spelling training targeting words with irregular spellings (e.g., enough, biscuit). Many children with spelling difficulties find it hard to remember these word specific spellings. Rather than teaching every single word, we are investigating techniques that may lead to improvements for some kinds of untrained words. Over the course of the year we collected training data from 14 children. This will allow us to answer which types of words are most likely to improve without specific training.
Temporal attention in developmental dyslexia

Nicholas Badcock, Genevieve McArthur, Hanli Uys, David Badcock (The University of Western Australia), Kathryn Preece, Kate Glenn, Yvette Kezilas, Linda Larsen, Kristy Jones and Joanna Kidd

The overarching goal of this research is the understanding and treatment of developmental disorders with an emphasis on developmental dyslexia. We have been examining temporal attention as measured using the fore period paradigm. In 2012 we have run a series of experiments, examining the measurement of temporal attention in adults and using these findings to examining cognitive preparation in children with developmental dyslexia in comparison with their typically developing peers.

We have also conducted a literature review, examining temporal attention in dyslexia as measured in the attentional blink paradigm. This focuses on the physical properties that influence task performance and critically, the difference between dyslexic and typical readers.

The Reading Training Study: Phases 1 & 2

Genevieve McArthur, Anne Castles, Saskia Kohnen, Max Coltheart, Linda Larsen, Kristy Jones, Thushara Anandakumar, Erin Barriball, Hua-Chen Wang and Pip Eve

The aim of the Reading Training Study (RTS) is to determine how to best help children who, for no apparent reason, have great difficulty learning to read (developmental dyslexia). In Phase 1 of the study, 100 children with dyslexia were allocated to one of three training groups, conducted over 16 weeks. One group had phonics training (i.e., reading with the letter-sound rules) followed by sight-word training (i.e., reading whole words by sight). A second group had the same training, but in the reverse order. And a third group received ‘mixed training’ (i.e., phonics training and sight-word training on alternative days). Children were tested before and after each treatment. The results revealed that phonics plus sight-word training had significant effects on reading skills regardless of the order of training. Further, phonics training had its largest effect on reading tasks that require letter-sound reading, and sight-word training had its largest effect on reading tasks that require reading words by sight. These results indicate that 16 weeks of training can improve the reading skills of children with dyslexia, and that different types of training should be used to train different reading problems.

In Phase 2 of the RTS, the phonics and sight word training were updated to be run on the state-of-the-art online LiteracyPlanet platform (www.literacyplanet.com). The study will be completed in 2013.

How do children learn to read fluently?

Eva Marinus, Anne Castles, Saskia Kohnen, Genevieve McArthur, Xenia Schmalz and Hua-Chen Wang

The goal of this research is to find out how children become proficient readers who can quickly and effortlessly recognise words. An additional aim of the research is to develop reading interventions based on the insights gained via word recognition experiments, and, subsequently, to test whether these instructions and interventions are effective. The research goals are closely related to three of the aims of the CCD, namely, developing and extending theories of cognitive systems; developing and implementing accurate and informative diagnostic tests; and informing the development of effective treatment for cognitive disorders. During the year we focused on informing the development of effective treatment for cognitive disorders by conducting a reading fluency training study. In this study we have examined whether children with dyslexia can be helped to read more fluently by making them aware of the syllabic structure of words.

Computational modelling of reading

Max Coltheart, Serje Robidoux, Stephen Pritchard, Ami Sambai, Derek Besner, Kathleen Rastle, Claudio Mulatti, Steven Saunders and Lisa Cicerchini

This project has been devoted, in part, to programming the second version of the DRC computational model of reading, DRC 2.0. Programming has been completed and testing of the DRC 2.0 model involving new experimental
studies of reading aloud and visual word recognition was begun in 2012. This empirical work is being carried out in three overseas laboratories - Besner’s lab at the University of Waterloo, Canada, Rastle’s lab at Royal Holloway, University of London, UK and Mulatti’s lab at the University of Padova, Italy. Four experiments investigating how letter position is coded by the reading system were completed in 2012.

Work is underway on a second project, aimed at developing a DRC-style computational model of reading aloud and visual word recognition in Japanese. Japanese represents a unique challenge for modelling because it uses three different writing systems, rather than the single, alphabetic, writing system used by languages that were previously modelled using the DRC computational model of reading. This work is supported by a two-year postdoctoral research fellowship awarded in 2012 to Dr Ami Sambai by the Japanese Society for the Promotion of Science. Other research investigates the picture-word interference effect using a version of the DRC model that can simulate picture naming as well as reading aloud, and we are carrying out cluster analyses of people’s nonword reading responses, and examining the implications for different computational models.

Order matters: A computational model of letter position coding

Serje Robidoux, Max Coltheart, Sachiko Kinoshita, Derek Besner (University of Waterloo, Canada), Saskia Kohnen, Anne Castles and Stephen Pritchard

This project is focussed on early letter and character string processing in dyslexia, with an eye towards developing and implementing a computational model of dyslexias. The general strategy is to marry computational modelling with traditional experimentation to develop, implement, test, and revise theories of visual word recognition, letter identification, and letter-position coding.

While skilled readers can effortlessly identify letters and order them, letter-position coding is not a trivial problem. Friedmann and Gvion (2001) reported results from several dyslexic adults who had no trouble with letter identification, but struggled to order letters correctly. Friedmann & Rahamim, 2007, and Kohnen et al., 2012, have also reported similar problems in some dyslexic children. These letter-position dyslexics find anagram words especially difficult. For example, letter-position dyslexics might read ‘warp’ and ‘pirates’ as ‘warp’ and ‘parties’. Letter-by-letter reading (Fiset et al., 2005) is another form of dyslexia that is characterised by a strong sensitivity to letter-confusability, which results in very slow “one letter at a time” reading of words (which skilled readers do not do). Results like these show that letter identification and letter-position coding is not bullet-proof.

In the first part of this project, we began a series of experiments designed to better understand the role of early visual processes in letter coding, and what factors and features of the visual input can disrupt it. We have run experiments designed to test whether or not visual similarity between two adjacent letters would influence processing. For example, is LCOAL easier to identify as local than LOACL (where the OC pair is visually similar, but the CA pair is not)? These results suggest that in skilled reading with clear stimuli there is very little difference. In future studies we will examine whether skilled readers can be made to behave like letter-position dyslexics using more difficult reading conditions, and how visual overlap between letters (A versus H) compares to visual overlap between letters and digits (e.g., A versus 4) using so-called ‘leet’ strings (such as M4T3R14L for material).
Cross Program Research

Our Cross Program Research projects bring together researchers from different Programs to encourage innovation and advances in cognitive science research. Some projects use magnetoencephalography (MEG), a brain imaging technique, to better understand the time-course of brain responses to particular types of stimuli, such as words, sentences, pictures and faces. Such collaborative projects are supported through our internal Cross Program Support Scheme.

MEG study of auditory change detection

Fabrice Bardy (HEARing CRC), Shu Yau, Jon Brock and Blake Johnson

Electroencephalography (EEG) and MEG studies of auditory perception in disorders such as autism, schizophrenia, language impairment, and dyslexia typically focus on the mismatch negativity response. Participants hear a sequence of identical “standard” sounds containing occasional “deviant” sounds. The mismatch negativity is calculated by subtracting the brain response to standard sounds from responses to the deviant.

Unfortunately, the mismatch response is not particularly reliable, so it is not suitable for measuring differences between individuals. In his PhD, Fabrice Bardy has been using EEG to measure a brain response, known as the Acoustic Change Complex, to subtle changes within continuous sounds. This is more reliable than the mismatch response and provides a more direct measure of auditory change detection. With Shu Yau, Jon Brock, and Blake Johnson, Bardy is now running an equivalent MEG study. Preliminary results indicate that the Acoustic Change Complex can also be detected using MEG. The advantage of using MEG rather than EEG is that it allows clearer differentiation of responses originating in the left and right hemispheres of the brain.

MEG studies of auditory processing in autism

Jon Brock, Shu Yau, Yatin Mahajan and Blake Johnson

Atypical auditory processing is a common feature of autism. Many individuals show hypersensitivity to auditory stimuli and some have exceptional pitch discrimination skills. There is also evidence, both from first-hand accounts and from experimental studies, that autistic individuals often have difficulty processing sounds in complex acoustic environments, particularly with regard to following speech against a noisy background.

None of these features are incorporated in diagnostic criteria, but the fact they are nevertheless associated with autism indicates that there is, at some level, a causal relationship between atypical auditory perception and the ‘core’ diagnostic symptoms of the disorder. Understanding the underlying neurocognitive mechanisms of atypical auditory perception should therefore provide important insights into the origins of autism.

In one recently completed study, Dr. Jon Brock and Associate Professor Blake Johnson used MEG to investigate auditory brain responses in a group of 10 autistic children, aged between 8 and 12 years. The stimuli used were noise bursts presented to both ears. On some trials, a timing difference was introduced between the two ears, leading to the illusory perception of a tone. For typically developing children, the brain responses to the illusory tone began around 250 milliseconds after its onset. Brock and Johnson had predicted that autistic children would not respond to the tone at all, but in fact they showed an early response, at around 50 milliseconds, which has not previously been found in any other group. Dr Yatin Mahajan, Brock and Johnson are conducting a follow-up study to investigate the neural origins of this atypical brain response and determine how it relates to atypical perception of sounds.

In a separate study, PhD student Shu Yau has been using MEG to measure brain responses of autistic children to simple speech sounds (the vowel /a/) and similar nonspeech sounds. All typically developing children and most autistic children show low frequency “theta” oscillations in response to both speech and nonspeech sounds. However, Yau has identified a subgroup of autistic children who show reduced theta responses to speech sounds coupled with increased higher-frequency “alpha” responses to nonspeech sounds.
Cognitive-neuropsychiatric research on disorders of belief and memory

Robyn Langdon, Max Coltheart, Greg Savage, Emily Connaughton, with Hana Burianová and Muireann Irish

Cognitive-neuropsychiatric research develops models of higher-order cognition to explain psychiatric and related symptoms and, in turn, tests these models by seeing how well they explain individual cases. A prominent approach in cognitive neuropsychiatry is intensive single case studies.

We have been using this approach to study patients with misidentification delusions so as to develop a better model of person identity processing. Person identity processing is a complex skill, requiring integration of information from multiple sources, including face, voice, and gait. This process of person identification is impaired in someone with Capgras delusion. Research to date on Capgras delusion has focused primarily on models of face processing, however, with limited investigation of processing identity from other sources. So PhD student Connaughton, with Langdon and Coltheart, has been developing a battery of tasks to study person identity processing from both face and voice. Our tasks assess unconscious processing of familiarity via changes in skin conductance and pupil size. In ongoing work we are combining these tasks with tests of conscious person identification to study patients with Capgras delusion and other misidentification delusions.

Connaughton, Langdon, Coltheart and Savage have also been investigating belief and memory in a single case of ‘jamais vu’, with the assistance of Burianová and Irish. Our patient with ‘jamais vu’ recognises situations as having been encountered in the past but appears to have lost the sense of familiarity associated with past events. Such cases illustrate interesting dissociations between belief and memory. Our on-going in-depth study of this patient will also involve brain-imaging techniques.

Enculturated cognition and its disorders

Richard Menary, John Sutton, Max Coltheart, Nicolas Bullot, Greg Downey (Macquarie University), Regina Fabry (Johannes Gutenberg University of Mainz, Germany) and Richard Heersmink

The main goal of this research is to theoretically and empirically examine the effects that cultural practices, tools and systems of representation on cognitive mechanisms, encompassing two sub-projects:

Narrative, Belief and Theory of Mind: this research relates to the Belief Formation and Memory Programs, and here the main goal is to distinguish the role that narratives play in social cognition, especially theory of mind and disorders of the self. Research questions include: What is the role of narrative in confabulation? How do narratives influence the sense of self? What are the mechanisms responsible for narratives in these cognitive contexts? Is there a narrative route in the dual factor theory of delusion?

Cognitive Practices: this research broadly relates to the Reading Program and explores the notion that humans have shown a remarkable capacity to invent cognitive tools that capitalise on the environment. The main research question is: What are the various ways in which such tools transform our fundamental cognitive mechanisms and cognitive skills? Humans have only very recently (in evolutionary terms) developed writing systems for language and mathematics. The abilities to read and write and perform complex mathematical calculations are not evolutionary endowments. There are no neural circuits that have evolved specifically for reading and writing and there is no neural module for algebra; yet humans are capable of learning to read and write and solve algebraic equations. How is this possible? The project will develop a theoretical model of how the enculturation of the brain gives rise to a transformed set of cognitive systems that make reading, writing and mathematical cognition possible.

Neural mechanisms of inhibitory control of vocalisation in aging and dysflueny

Andrew Etchell, Paul Sowman and Blake Johnson

As human beings we rely on speech as the most effective and flexible means of communicating our ideas and sharing our experiences and knowledge. During conversation the speech control system precisely coordinates nearly 100 muscles to produce 6 syllables per second. To achieve this, a delicate balance must be struck between excitatory impetus and inhibitory suppression so that the onsets and offsets of speech are both rapid and flexibly controlled. A significant role is played by mechanisms of executive control that allow the speaker to decide on one course of verbal action rather than another and rapidly select between competing speech motor plans. A central component is the capacity to inhibit initiated speech at almost any point in the production process. A clear understanding of the neural mechanisms of response inhibition in general is yet to be established. Furthermore, the underpinnings of response inhibition in the vocal domain are virtually unknown. This project is using MEG to elucidate the neural mechanisms that support vocal response inhibition and examining how these mechanisms are affected in aging and by disorders of fluency such as stuttering.

Development of face perception

Blake Johnson, Jon Brock, Gillian Rhodes, Wei He, Romina Palermo, Linda Jeffrey and Nadine Kloth

Some investigators maintain that full maturation of the abilities to perceive faces occurs as late as adolescence, while others suggest that it happens much earlier, in the preschool years. In support of the late development hypothesis, recent neuromaging studies have reported that an adult face-specific brain response is absent in children. However these researchers used adult sized brain imaging systems, which are not optimal for
measuring brain activity from the much smaller heads of young children. This project examines the question of when face perception attains adult capacities by measuring face-specific responses in pre-schoolers aged 3-5 years, using the unique child MEG brain imaging system at the CCD, which has been custom-built for use with pre-school aged children.

Powering up the right hemisphere when words fail: Augmenting melodic intonation therapy (MIT) with non-invasive brain stimulation to treat left hemisphere function

William (Bill) Thompson, Paul Sowman, Greg Savage, Lyndsey Nickels, and John Hodges

People who have difficulty speaking fluently can sometimes vocalise words fluently while they are singing, as depicted in the award-winning film ‘The King’s Speech’. Why could the King speak fluently when he sang even though he stuttered badly while speaking under normal circumstances? In this investigation, we are investigating whether a type of singing therapy called ‘melodic intonation therapy’ (MIT) can promote verbal fluency in individuals who have difficulty speaking following damage to the left cerebral hemisphere - a disorder known as non-fluent aphasia. Whereas speaking is typically associated with left-hemisphere brain activity, singing is associated with right-hemisphere activity. Singing may assist with verbal fluency by recruiting the right-hemisphere to assist with verbal fluency when the left-hemisphere is damaged.

During singing therapy, we will also electrically stimulate the right hemisphere using a non-invasive technique called transcranial magnetic stimulation (TMS). The research is motivated by emerging evidence that brain stimulation combined with behavioural therapy can be an effective treatment for non-fluent aphasia. However, existing evidence is preliminary and needs further examination and corroboration.

In our study, a sample of individuals with non-fluent aphasia following stroke will undergo two series of therapy sessions spread across two weeks. In one series, we are administering melodic intonation therapy (MIT) after applying intermittent theta bursts (TMS) to the right inferior frontal gyrus (IFG), including the RH homolog of Broca’s area. In the other session, we are administering MIT after ‘sham’ TMS (control condition). Verbal fluency is then assessed, along with other behavioural measures. Applying TMS prior to MIT should enhance neuronal excitability in regions engaged by MIT, augmenting the therapeutic benefits of MIT for verbal fluency.
Perception in Action

Research in Perception in Action is conducted by an extremely productive and highly valued team of cognitive scientists in the Department of Cognitive Science at Macquarie University. This team does not receive funding from the ARC Centre of Excellence in Cognition and its Disorders (CCD), however, their research complements that of the CCD research programs, which is why we include representative project summaries in this Annual Report.

Agent tracking and its disorders: A theory of the cognitive mechanisms, errors, and ethics involved in the identification of human individuals

Nicolas Bullot and Anina Rich

Humans track each other with remarkable precision. We rapidly gather and update mental records of others - their identity, mental states, personalities and personal histories. The ability to track other humans is a prerequsite for predicting, understanding, and controlling the behaviour of other people; yet fundamental questions remain about the processes that underlie these abilities. We feel that progress requires a unified multidisciplinary approach to the study of the underlying cognitive and neurological mechanisms that we employ to track human agents. The project goal is to develop and test a cognitive theory that provides a theoretical framework for understanding and investigating agent tracking. The studies we proposed combine research in naturalistic philosophy and in cognitive psychology, as well as the social sciences (e.g., surveillance studies). We proposed empirical tests of the theory’s predictions. Finally, the project will be augmented by conceptual analysis, in the tradition of analytic philosophy of cognition and the philosophy of science.

Towards understanding visual perception of the body: Neuroimaging and behavioural studies

Regine Zopf and Mark Williams

A central question in cognitive neuroscience is how embodiment (i.e., having the kinds of bodies we have) influences our physical actions and how this shapes our perception of the world. This project aims to enhance our understanding of the influences of the body on perception, and its neural underpinnings. More specifically, the project investigates how information from the hands influences how healthy observers, as well as amputees, perceive external objects. In order to understand the neural mechanisms that underlie the use of our hands to manipulate objects, we use neuroimaging techniques to demarcate the neural representations of hand form and hand orientation, paying special attention to brain areas that have been found to be recruited in planning and controlling actions.
The ARC Centre of Excellence in Cognition and its Disorders (CCD) places great importance on its higher degree research training program and regularly hosts seminars and workshops with national and international guest speakers. These academic meetings are discussion-oriented and focus on topics relevant to the work of the Centre, with local and overseas researchers presenting papers for discussion and allowing Centre students to interact with authorities in their fields of research.

The CCD provides the opportunity to undertake a multidisciplinary PhD from a wide range of backgrounds including Psychology, Linguistics, Speech Pathology, Psychiatry, Clinical Psychology, Philosophy, Audiology, Artificial Intelligence and Experimental Phonetics/Laboratory Phonology. Most PhD candidates complete their thesis in the journal article format, allowing them to submit articles ready for publication prior to thesis submission. This gives students the opportunity to build their research track record during their PhD candidature, and positions them well for future academic employment.

Each of the three nodes, Macquarie University, The University of New South Wales and University of Western Australia, have scholarships available to fund postgraduate PhD candidates with exceptional research promise as they undertake their research project at the CCD.

Congratulations to our 2012 PhD graduands: Dr Bhuvanesh Awasthi, An investigation into visually guided reaching to low spatial frequency faces; Dr Samantha Baggott, The upside of anger: Attention and the processing of emotional facial expressions; Dr Marissa Calleja, Interactions between working memory and attention: An investigation of category-level effects and task-demands; Dr Lincoln Colling, Predicting the action of other agents; Dr Sharpley Hsieh, Memories and feelings of music in the dementias; Dr Anna Notley, The scope of logical expressions in child language; Dr Hua-Chen Wang, How children learn to read; Dissecting the process of orthographic learning; and Dr Regine Zopf, Body representations and cues for body ownership: Neural processing and influences on perception and action. Also to our PhD/Masters graduands: Dr Louise Ewing, The trouble with faces: Mechanisms underlying face processing atypicalities in autism; Dr Alexandra Clare Vakili, Cognitive rehabilitation of attention in people with traumatic brain injuries, and our DPsy graduands: Dr Zoe Fitzgerald, The pathophysiology of accelerated long-term forgetting in epilepsy; and Dr Katie Leach, Does attention modulate face aftereffects in children with autism?

We also extend congratulations to our Masters graduands: Andrew Jones, Memory profiling in the early detection of Alzheimer’s disease; Vanessa Leung, Masking primed of associate - recognition; Kellie Williamson, Naturalising the group mind: The cognitive life of small groups and teams; and Sicong Tu, Consolidation processes in episodic memory.

This year our Centre recruited 28 new students from Australia and overseas.

2012 Annual Report
PhD

Nobuaki Akagi
PhD, Macquarie University
Distinguished Professor Stephen Crain and Associate Professor Rosalind Thornton
Questions and disjunction in child language.

Shahd Al-Janabi
PhD, Macquarie University
Dr Matthew Finkbeiner and Dr Jason Friedman
Neuronal global workspace theory.

Shasha An
PhD, Macquarie University
Associate Professor Rosalind Thornton, Distinguished Professor Stephen Crain and Dr Peng Zhou
Constraints on interpretation in Mandarin Chinese.

Bhuvanesh Awashti
PhD, Macquarie University
Associate Professor Mark Williams, Dr Jason Friedman and Dr Brad Duchaine (University College London, UK)
An investigation into visually guided reaching to low spatial frequency faces.

Samantha Baggott
PhD, Macquarie University
Associate Professor Mark Williams, Associate Professor Anina Rich and Associate Professor Romina Palermo
The upside of anger: Attention and the processing of emotional facial expressions.

Erin Banales
PhD, Macquarie University
Associate Professor Genevieve McArthur and Dr Saskia Kohnen
Working memory training in children with dyslexia.

Benjamin Börschinger
PhD, Macquarie University
Professor Mark Johnson, Professor Anette Frank (Heidelberg University, Germany) and Dr Diego Molla-Aloid (Macquarie University)
Computational models of human language acquisition.

Nichola Burton
PhD, The University of Western Australia
Professor Gillian Rhodes and Dr Linda Jeffery
The structure of expression-space: How do we visually represent facial expressions?

Marissa Calleja
PhD, Macquarie University
Associate Professor Anina Rich and Dr Matthew Finkbeiner
Interactions between working memory and attention: An investigation of category-level effects and task demands.

Nathan Caruana
PhD, Macquarie University
Dr Jon Brock and Associate Professor Blake Johnson
Brain mechanisms of attention and social cognition in autism.

Leidy Janeth Castro-Meneses
PhD, Macquarie University
Associate Professor Blake Johnson and Dr Paul Sowman
Temporal cortical dynamics in two disorders of childhood development: Specific language impairment (SLI) and developmental stuttering (DS).

Leone Chare
PhD, The University of New South Wales
Professor Glenda Halliday (The University of New South Wales), Professor John Hodges and Professor Jillian Krill (The University of Sydney)
Clinical predictors for underlying pathology in frontotemporal dementia.

Hui Chen
PhD, Macquarie University
Professor Katherine Demuth and Associate Professor Felicity Cox
Acquisition of vowel length contrasts in monolingual and bilingual Australian-English speaking children.

Yao-Ching (Rocco) Chiou
PhD, Macquarie University
Associate Professor Anina Rich and Dr Matthew Finkbeiner
The influence of language experience on synaesthesia: Evidence from psychophysics and cross-language comparison.

Danielle Colenbrander
PhD, Macquarie University
Professor William (Bill) Thompson, Professor John Sutton and Associate Professor Mark Williams
Predicting the action of other agents.

Michael Connors
PhD, Macquarie University
Associate Professor Amanda Barnier, Emeritus Professor Max Coltheart and Associate Professor Robyn Langdon
Delusions and hypnosis.

Aline Cordonnier
PhD, Macquarie University
Associate Professor Amanda Barnier and Professor John Sutton
Autobiographical, social and collective memory.

Marshall Dalton
PhD, The University of New South Wales
Associate Professor Olivier Piquet and Dr Michael Hornberger
Characterisation of episodic memory deficits in frontotemporal dementia.

Peter de Lissa
PhD, Macquarie University
Associate Professor Genevieve McArthur, Dr Jon Brock and Professor Anne Castles
Using fixation-related potentials to investigate cognitive processes.
Bianca de Wit  
PhD, Macquarie University  
Associate Professor Sachiko Kinoshita,  
Associate Professor Genevieve McArthur and  
Dr Nicholas Badcock  
A fresh look on semantic priming effects.

Sithembinkosi Dube  
PhD, Macquarie University  
Professor Katherine Demuth and Dr Jon Brock  
Neuro-physiological processing of morphosyntax in younger L2 learners of English.

Andrew Etchell  
PhD, Macquarie University  
Dr Paul Sowman and Associate Professor Blake Johnson  
Brain dynamics and sensorimotor integration associated with speech.

Mirko Farina  
PhD, Macquarie University  
Professor John Sutton, Dr Richard Menary and  
Dr Greg Downey, Macquarie University  
Extend mind, DST, neuro constructivism, complementarity.

Nora Fieder  
PhD, Macquarie University  
Professor Lyndsay Nickels and Dr Britta Biedermann  
Neurological disorders.

Yong Zhi Foo  
PhD, The University of Western Australia  
Professor Gillian Rhodes and Professor Leigh Simmons  
Do facial sexual dimorphism and skin color signal good health in humans?

Vasfiye Geçkin  
PhD, Macquarie University  
Associate Professor Rosalind Thornton,  
Distinguished Professor Stephen Crain and  
Professor Barbara Höhle (University of Potsdam, Germany)  
Bilingual language acquisition.

Wei He  
PhD, Macquarie University  
Associate Professor Blake Johnson, Dr Jon Brock and  
Professor Wei Wang (Zhejiang University, China)  
Development of early face processing in the human brain.

Jan (Richard) Heersmink  
PhD, Macquarie University  
Professor John Sutton and Dr Richard Menary  
Cognitive science and philosophy.

Sharpley Hsieh  
PhD, The University of New South Wales  
Associate Professor Olivier Piguet and  
Professor John Hodges  
Memories and feelings of music in the dementias.

Qandeel Hussain  
PhD, Macquarie University  
Professor Katherine Demuth and  
Associate Professor Felicity Cox  
Phonological processes underlying loanword incorporation into Punjabi.

Anne Jäger  
PhD, Macquarie University  
Associate Professor Robyn Langdon and  
Emeritus Professor Max Coltheart  
Meta-cognitive features associated with schizophrenic delusion in obsessive compulsive disorders with and without delusional ideation.

Vishnu Kaleekal Krishnankutty Nair  
PhD, Macquarie University  
Professor Lyndsey Nickels and Dr Britta Biedermann  
Executive function and novel word learning in bilinguals.

Yvette Kezilas  
PhD, Macquarie University  
Professor Anne Castles and Dr Saskia Kohnen  

Neha Khetrapal  
PhD, Macquarie University  
Associate Professor Rosalind Thornton and Dr Jon Brock  
Language acquisition in autistic and typically developing children.

Loes Koelwijn  
PhD, Macquarie University  
Associate Professor Anina Rich and Professor Krish Singh (Cardiff University)  
Neural mechanisms of visual attention and saliency.

Janna (Trudy) Krajenbrink  
PhD, Macquarie University  
Professor Lyndsey Nickels and Dr Saskia Kohnen  
Generalisation effects in treatment of acquired language disorders.

Fiona Kumfor  
PhD, The University of New South Wales  
Associate Professor Oliver Piguet and  
Professor John Hodges  
Emotion processing and its effects on cognition in frontotemporal dementia.

Linda Larsen  
PhD, Macquarie University  
Associate Professor Genevieve McArthur,  
Professor Lyndsey Nickels, Dr Saskia Kohnen and  
Professor Anne Castles  
The effect of treating the non-lexical reading route.

Samantha Leivers  
PhD, The University of Western Australia  
Professor Leigh Simmons and Professor Gillian Rhodes  
How do men judge and respond to perceived female infidelity?

Min (Maggie) Liao  
PhD, Macquarie University  
Associate Professor Rosalind Thornton and  
Distinguished Professor Stephen Crain  
Children's acquisition of 'shenme' in Chinese.

Xuejing Lu  
PhD, Macquarie University  
Professor William (Bill) Thompson and  
Associate Professor Blake Johnson  
Audio-visual integration in congenital amusia.
Lars Marstaller
PhD, Macquarie University
Associate Professor Blake Johnson and Dr Paul Sowman
Gestures and cognition.

Christopher McCarroll
PhD, Macquarie University
Professor John Sutton and Dr Richard Menary
Memory and the self.

Jonathan McGuire
PhD, Macquarie University
Associate Professor Robyn Langdon, Emeritus Professor Max Coltheart and Professor Catriona Mackenzie (Macquarie University)
Moral decision making.

Kiri Mealings
PhD, Macquarie University
Professor Katherine Demuth and Dr Robert Mannell
Sibilant grammatical morphemes and hearing impaired children: An investigation into their delayed acquisition.

Amanda Miller Amberber
PhD, Macquarie University
Professor Lyndsey Nickels, Associate Professor Rosalind Thornton, Emeritus Professor Max Coltheart and Distinguished Professor Stephen Crain
Language switching in bilingual aphasia and bilingual dementia.

Hock Beng (Tommy) Ng
PhD, Macquarie University
Associate Professor Blake Johnson and Dr Jon Brock
Neuromagnetic brain activity associated with the coordination of movement and anticipatory postural adjustments in bimanual load lifting.

Anna Notley
PhD, Macquarie University
Distinguished Professor Stephen Crain and Associate Professor Rosalind Thornton
The scope of logical expressions in child language.

Mehdi Parviz
PhD, Macquarie University
Professor Mark Johnson and Dr Diego Molla-Aliod (Macquarie University)
Using machine learning to understand the causes of neural responses.

Vince Polito
PhD, Macquarie University
Associate Professor Amanda Barnier, Emeritus Professor Max Coltheart, Associate Professor Robyn Langdon, Dr Rochelle Cox and Dr Erik Woody (University of Waterloo, UK)
Agency and hypnosis.

Stephen Pritchard
PhD, Macquarie University
Emeritus Professor Max Coltheart, Professor Anne Castles and Dr Eva Marinus
Incorporating learning mechanisms into the dual-route cascaded (DRC) model of reading aloud and word recognition.

Monica Ricci
PhD, Macquarie University
Associate Professor Greg Savage, Associate Professor Genevieve McArthur and Dr Laurie Miller
Episodic memory: Normal and pathological rates of forgetting.

Anastasiia Romanova
PhD, Macquarie University
Professor Lyndsey Nickels and Dr Kati Renvall
Word class effects on representation and processing in non-brain-damaged speakers and people with aphasia.

Melanie Rosen
PhD, Macquarie University
Professor John Sutton and Professor Peter Menzies
Philosophy of dreams.

Robert Ross
PhD, Macquarie University
Associate Professor Robyn Langdon
Cognitive theory of delusions.

Sharon Savage
PhD, The University of New South Wales
Professor John Hodges, Associate Professor Olivier Piguet and Dr Michael Hornberger
Cognitive retraining in frontotemporal dementia (FTD) and related disorders.

Stephane Savanah
PhD, Macquarie University
Professor John Sutton, Professor Peter Menzies, Dr Mitch Parsell (Macquarie University) and Dr Glenn Carruthers
The threshold of self-consciousness.

Xenia Schmalz
PhD, Macquarie University
Professor Anne Castles and Dr Eva Marinus
How do children learn to read? Unravelling the development of automatic word recognition.

Amanda Selwood
PhD, Macquarie University
Associate Professor Amanda Barnier and Professor John Sutton
Autobiographical memory and collaborative remembering in twins and siblings.

Usha Sivaranjani Sista
PhD, Macquarie University
Associate Professor Mark Williams and Dr Jason Friedman
The involvement of mirror systems in mimicking learning.

Yanan Sun
PhD, Macquarie University
Professor William (Bill) Thompson and Associate Professor Blake Johnson
Music and specific language impairment (SLI): From music processing to music intervention.

Huizhen (Joann) Tang
PhD, Macquarie University
Associate Professor Blake Johnson and Distinguished Professor Stephen Crain
Rhythmic patterning of speech comprehension and production: Role in language acquisition.
Marie (Misia) Temler  
PhD, Macquarie University  
Associate Professor Amanda Barnier,  
Professor John Sutton and Dr Doris McIiwain (Macquarie University)  
Social contagion of autobiographical memory.

Ekaterina Tomas  
PhD, Macquarie University  
Professor Katherine Demuth and  
Associate Professor Rosalind Thornton  
Morphological acquisition in SLI.

Marina Trakas  
PhD, Macquarie University  
Professor John Sutton and Professor Jerome Dokic (École des Hautes Études en Sciences Sociales)  
Theories of memory implications for metacognition.

Leslie van der Leer  
PhD, Royal Holloway, University of London, UK  
Dr Ryan McKay  
The causes and consequences of systematic deviations from rational belief formation.

Mark Vida  
PhD, McMaster University, Canada  
Professor Daphne Maurer  
The development of sensitivity to the direction of gaze.

Jennifer Walsh  
PhD, Macquarie University  
Dr Mel Rutherford  
Examining face processing mechanisms in autism spectrum disorder.

Hua-Chen Wang  
PhD, Macquarie University  
Professor Anne Castles,  
Associate Professor Genevieve McArthur,  
Emeritus Professor Max Coltheart and  
Professor Lyndsey Nickels  
How children learn to read: Dissecting the process of orthographic learning.

Kimberly Weldon  
PhD, Macquarie University  
Associate Professor Mark Williams and  
Associate Professor Anina Rich  
Functional consequences of glaucoma for the human brain.

Kellie Williamson  
PhD, Macquarie University  
Professor John Sutton, Emeritus Professor Max Coltheart,  
Dr Nicolas Bullot and Dr Rochelle Cox  
Naturalising the group mind: The cognitive life of small groups and teams.

Louise Ewing  
PhD/MPsy(p)(AppDev), The University of Western Australia  
Professor Gillian Rhodes and Dr Elizabeth (Liz) Pellicano  
The trouble with faces: Mechanisms underlying face processing atypicalities in autism.

Likan Zhan  
PhD, Macquarie University  
Distinguished Professor Stephen Crain and  
Associate Professor Drew Whitenzoes  
Are we logic? An experimental study of if-conditional.

Regine Zopf  
PhD, Macquarie University  
Associate Professor Mark Williams,  
Associate Professor Greg Savage, Professor Max Coltheart  
Body representations and cues for body ownership: Neural processing and influences on perception and action.

Combined Masters + PhD

Adam Bentvelzen  
PhD/MClinNeuro, Macquarie University  
Associate Professor Greg Savage,  
Associate Professor Genevieve McArthur,  
Professor William (Bill) Thompson and  
Dr Nicholas Badcock  
Hemispheric specialisation for nonverbal memory processing.

Emily Connaughton  
PhD/MClinNeuro, Macquarie University  
Associate Professor Robyn Langdon,  
Emeritus Professor Max Coltheart and Dr Nora Breen  
(Royal Prince Alfred Hospital)  
Delusions in traumatic brain injury.

Erika Contini  
PhD/MClinNeuro, Macquarie University  
Associate Professor Mark Williams, Dr Jennifer Cornish (Macquarie University) and  
Associate Professor Sharon Naismith (The University of Sydney)  
Preventing depression and cognitive decline in the elderly: The effects of novel pharmacotherapies on white matter connectivity.

Dr Louise Ewing and Professor Gillian Rhodes
Sally Finnie  
MPhl/DClinNeuro, Macquarie University  
Associate Professor Greg Savage,  
Associate Professor Peter Schofield  
(University of Newcastle) and Professor Dick Stevenson  
(Macquarie University)  
Specificity of an olfactory stress test performance in several neurological disorders.

Michael Gascoigne  
DCP/PhD, The University of Sydney  
Dr Suncica (Sunny) Lah and Dr Belinda Barton  
(The University of Sydney)  
Long term memory in children with epilepsy.

Tania Malouf  
PhD/MClinNeuro, Macquarie University  
Associate Professor Robyn Langdon,  
Professor Edwin (Arthut) Shores (Macquarie University),  
Emeritus Professor Max Coltheart and Dr Kasey Metcalf  
(Liverpool Hospital)  
Loss of insight after traumatic brain injury.

Genevieve Quek  
PhD/MClinNeuro, Macquarie University  
Dr Matthew Finkbeiner and Dr Paul Sowman  
The role of attention in nonconscious processing. Comparing faces and non-faces.

Tracey Shaw  
PhD/MClinNeuro, Macquarie University  
Dr Melanie Porter, Associate Professor Robyn Langdon and  
Emeritus Professor Max Coltheart  
Social processing in Fragile X syndrome.

Doctoral

Georgina Avery  
DClinPsych/MSc, The University of Sydney  
Dr Suncica (Sunny) Lah and Dr Laurie Miller  
Autobiographical memory and emotion in patients with frontal lobe lesions.

Deepa Bapat  
DClinPsych, Macquarie University  
Dr Jennifer Batchelor (Macquarie University) and  
Dr Melanie Porter  
Whole figure rotations in the Rey Complex Figure.

Jamie Campbell  
DClinPsych, Macquarie University  
Dr Jennifer Batchelor (Macquarie University),  
Dr Melanie Porter, Dr Ilana Hepner and Dr Laurie Miller  
Age and sex effects of typographical memory.

Frances Caufield  
DClinPsych, The University of Western Australia  
Professor Gillian Rhodes and Dr Louise Ewing  
Facial trustworthiness judgments in typical adults, typically developing children, and children with autism.

Cliff Deyo  
DClinNeuro, Macquarie University  
Associate Professor Robyn Langdon and  
Associate Professor Edwin (Arthut) Shores (Macquarie University)  
Semantic memory deficits in pre-prodromal psychosis.

Zoe Fitzgerald  
DClinPsych, Macquarie University  
Dr Laurie Miller, Dr Zoe Thayer (Royal Prince Alfred Hospital) and Dr Jennifer Batchelor (Macquarie University)  
The pathophysiology of accelerated long-term forgetting in epilepsy.

Katie Leach  
DClinPsych, The University of Western Australia  
Professor Gillian Rhodes, Dr Linda Jeffery and  
Dr Elizabeth (Liz) Pellicano  
Does attention modulate face aftereffects in children with autism?

Meryn Lechowicz  
DClinPsych/MSc, The University of Sydney  
Dr Suncica (Sunny) Lah, Dr Laurie Miller, Dr Muireann Irish and  
Dr Donna Rose Addis  
Remembering the past and constructing the future in patients with temporal lobe epilepsy.

Donna McCade  
DClinNeuro, Macquarie University  
Associate Professor Greg Savage, Dr Jennifer Batchelor  
(Macquarie University) and  
Associate Professor Sharon Naismith (The University of Sydney)  
Social cognition and mild cognitive impairment.

Vince Ozenham  
DClinPsych, Macquarie University  
Associate Professor Greg Savage, Dr Jen Broek and  
Professor Dominic Rowe (Macquarie University)  
Eye movement abnormalities and dementia in Motor Neuron disease.

Robyn Petersen  
DClinNeuro, Macquarie University  
Associate Professor Robyn Langdon and  
Associate Professor Romina Palermo  
Social cognitive abilities of people with borderline personality disorder.

Shelley Simpson  
DClinNeuro, Macquarie University  
Associate Professor Robyn Langdon and  
Dr Jennifer Batchelor (Macquarie University)  
Neuropsychological profile of very-late-onset schizophrenia versus late-onset psychotic depression versus chronic schizophrenia.

Masters

Thushara Anandakumar  
MClinNeuro, Macquarie University  
Associate Professor Robyn Langdon  
Belief bias reasoning in the maintenance of delusional beliefs.

Jillian Attewell  
MClinNeuro, Macquarie University  
Associate Professor Robyn Langdon  
Predictors of behavioural symptoms in Huntington’s disease.

Andrew Jones  
MClinNeuro, Macquarie University  
Associate Professor Greg Savage  
Memory profiling in the early detection of Alzheimer’s disease.
Vanessa Leung  
MClinNeuro, Macquarie University  
Associate Professor Greg Savage  
Masked priming of associate-recognition.

Colleen Murphy  
MClinPsy, Macquarie University  
Associate Professor Robyn Langdon  
Poor social functioning in schizophrenia: Understanding the role of automatic facets of social cognition.

Jordan Taylor  
MPhil, Macquarie University  
Professor John Sutton and Dr Nicholas Bullot  
Imagination, imagery, perception and the self.

Sicong Tu  
MSc, University of New South Wales  
Dr Michael Hornberger and Associate Professor Olivier Piguet  
Consolidation processes in episodic memory.

Honours

Samantha Bank  
BA (Hons), The University of Western Australia  
Dr Linda Jeffery  
Do body recognition skills develop earlier than face recognition skills?

Cory Bill  
BA (Hons), Macquarie University  
Associate Professor Rosalind Thornton  
Pragmatics versus logic: How is the logical rule of ‘weakening’ interpreted in natural language by children and adults?

Jennifer (Jenn) Bröckhuijse  
BPych (Hons), Macquarie University  
Associate Professor Amanda Barnier and Dr Celia Harris  
Sowing what you will reap: Intimate couples remembering together.

Amelia English  
BA (Hons), The University of Sydney  
Dr Suncica (Sunny) Lah  
Episodic memory and open ended problem solving in children and adolescents.

Luke Freeman  
BSc (Hons), Macquarie University  
Associate Professor Amanda Barnier and Dr Rochelle Cox  
Modelling ‘folie a deux’ using hypnosis.

Lindsay Hogg  
BSc (Hons), The University of Western Australia  
Professor Gillian Rhodes and Dr Louise Ewing  
Face processing and autism-like traits.

Jessica Lewandowsky  
BSc (Hons) The University of Western Australia  
Associate Professor Romina Palermo and Dr Linda Jeffery  
The contribution of holistic coding and adaptive coding to individual differences in expression recognition ability.

Ellen Maclaine  
BA (Hons), The University of Western Australia  
Associate Professor Romina Palermo  
Are attentional biases to facial expressions associated with trait hypomania?

Kelly Miles  
BA (Hons), Macquarie University  
Professor Katherine Dernuth  
The licensing of codas in early speech: Evidence for the emergence of minimal words.

Samantha Petrovski  
BSc (Hons), The University of Western Australia  
Dr Linda Jeffery  
Are identity aftereffects present following adaption to dynamic faces?

Stephen Pond  
BSc (Hons), The University of Western Australia  
Dr Nadine Kloth and Professor Gillian Rhodes  
Is face gender coded with reference to a norm?

Susannah Shields  
BA (Hons), The University of Western Australia  
Professor Gillian Rhodes  
Under what conditions does the cross race effect disappear? The influence of multi-stimul presentation paradigm on social categorisation and attention.
**HOSTED EVENTS**

**Philosophy of psychiatry**

24 - 25 February
Macquarie University

Keynote speakers
Dr Philip Gerrans
The University of Adelaide

Dr Jakob Hohwy
Monash University

Associate Professor Dominic Murphy
The University of Sydney

Professor Jennifer Radden
University of Massachusetts, USA

This workshop was co-hosted by the CCD and the Centre for Agency, Values, and Ethics (CAVE). The two day workshop was a forum to discuss the philosophy of psychiatry. The first day consisted of a series of talks and responses, and the second day focused on Professor Jennifer Radden’s recent book “On Delusion (Thinking in Action)”. Following the workshop, Associate Professor Robyn Langdon and Emeritus Professor Max Coltheart edited a Special Issue of Mind & Language incorporating the contributions by Coltheart, Langdon, Drs Jakob Hohwy and Philip Gerrans and Associate Professor Dominic Murphy, and a response from Professor Jennifer Radden.

**Distributed cognition and distributed agency**

14 + 16 March
Macquarie University

Keynote speakers
Associate Professor Amanda Barnier
Macquarie University

Professor Erik Myin
University of Antwerp, Belgium

Associate Professor Robert Rupert
University of Colorado, USA

Sponsored by the CCD, Centre for Agency, Values, and Ethics (CAVE) and the Australian Research Council, this workshop enabled theoretical and empirically-informed talks which broadened our understanding of the nature and mechanisms of distributed or embodied cognition. Also addressed was the integration of environmental resources (social and cultural, as well as material and technological) into cognitive practices. Sixteen papers were presented at the workshop, including eight by graduate students. Among the outcomes of the workshop was a special issue of the international journal Review of Philosophy and Psychology on distributed cognition and memory research co-edited by Professor John Sutton. Both Dr Menary and Professor Sutton have been invited to offer keynote presentations at a related conference at the University of Antwerp in June 2013.

**Auckland Memory symposium**

19 April
The University of Auckland

Keynote speakers
Dr Jessica Andrews-Hanna
University of Colorado Boulder, USA

Professor Morris Moscovitch
University of Toronto, Canada

This workshop was held at The University of Auckland, a partner institution of the CCD. Professor Morris Moscovitch gave a keynote address “Memory and the brain: Past, present and future” with Dr Jessica Andrews-Hanna concluding the day with a keynote address “Beyond the ‘resting state’: The role of the default network in internally-directed thought”. The workshop also provided a forum for discussion of various issues in memory research. Topics included autobiographical memory, semantic dementia, memory in epilepsy, and episodic memory.

**ARC CENTRE OF EXCELLENCE** in Cognition and its Disorders
Social ontology and collective intentionality: An interdisciplinary workshop

3 - 4 May
Macquarie University

Keynote Speakers
Professor Kirk Ludwig
Indiana University, USA
Professor Seumas Miller
Charles Sturt University and The Australian National University

The workshop was sponsored by The Centre for Agency, Values, and Ethics (CAVE), the CCD and the School of History and Philosophy, The University of New South Wales. This interdisciplinary workshop brought together researchers in social ontology mainly from Australasia, but also welcomed contributors from various continents. Fifteen papers were presented, including five by graduate students, and the program included speakers from Toronto, Princeton, Wellington, Tasmania, and Leipzig in addition to the distinguished keynote speakers. As a result of the success of this workshop, the international Collective Intentionality Conference is considering Australia as its venue in 2016. Meanwhile researchers from CCD and CAVE continue to collaborate on a range of projects linking social ontology with the cognitive sciences.

Listening to voices: The past, present and future of the experience of hearing voices

26 - 27 July
Macquarie University

Nearly 400 people attended this highly successful two day event held at Macquarie University. The workshop consisted of a diverse mix of mental health consumers, mental health professionals, carers and researchers to participate in the Listening to Voices workshop. This workshop focussed on the experience of hearing voices that other people cannot hear, referred to as ‘auditory verbal hallucinations’ or simply ‘hearing voices.’ A major emphasis of the workshop was centred on those who have been troubled by voices. Notably, many of the speakers have themselves had such experiences, and their expertise, passion and ability to inform, design and provide services was apparent. Over the course of two days there were 17 presentations, and panel discussions were held at the conclusion of both days.

Thanks to the generosity of many sponsors, including the CCD, Mental Health Council of Australia, Department of Health and Ageing, North Sydney Local Health District, Richmond PRA, Schizophrenia Research Institute and Schizophrenia Fellowship NSW, the workshop was a free event, removing barriers to attendance for professionals and more importantly for consumers.

Annual workshop of the ARC Centre of Excellence in Cognition and its Disorders

8 - 9 August
Macquarie University

Keynote speakers
Professor Martin Brüne
Ruhr-University of Bochum, Germany
Professor Jason Mattingley
The University of Queensland
Professor Yukio Otsu
Kojo University, Japan
Professor Daniel Schacter
Harvard University, USA
Professor Ovid Tseng
National Yang-Ming University, Taiwan

This workshop was held at the Macquarie University node of the CCD and was a forum to learn about and discuss research developed by each of the five programs - Belief Formation, Language, Memory, Person Perception and Reading.

The workshop consisted of keynote addresses by five of the CCD Scientific Committee members as well as 12 talks by Centre early career researchers. A successful student poster session was held on the first evening facilitating exchange between the keynote speakers, as well as CCD researchers and students. The workshop was attended by over 120 CCD members and received extremely positive feedback on the highly innovative form and research content.
Theories, assessment and treatment of reading and spelling disabilities

24 August
Macquarie University

Keynote speakers
Professor Anne Castles
Macquarie University
Dr Saskia Kohnen
Macquarie University
Dr Eva Marinus
Macquarie University
Associate Professor Genevieve McArthur
Macquarie University
Professor Lyndsey Nickels
Macquarie University

This professional development workshop presented information on reading and spelling development, as well as the assessment and treatment of reading and spelling problems in children to members and delegates of Learning Difficulties Australia from partner schools involved in reading and spelling studies conducted by researchers in the Reading Program of the CCD. This event was attended by more than twenty teachers and learning support staff from more than ten different schools.

John Alexander MP tour of the Australian Hearing Hub

28 August
Macquarie University

Federal Member for Bennelong, John Alexander OAM MP, visited Macquarie University where he learned more about The Australian Hearing Hub completed in late 2012. He toured the new facility, where three brain imaging systems will be located, along with a number of other University departments, research centres and related organisations.

After touring the new facility, Mr Alexander described The Australian Hearing Hub as “a great asset to the University, Australia and to many people around the world who will benefit. The initiative by Macquarie University to build The Australian Hearing Hub should be recognised as creating a centre where all stakeholders can interact and combine their resources to establish world leadership in this field. It is of great interest to see, during construction, the tremendous amount of thought, planning and consultation that has been given to the development of this facility.”

Confessions and reflections of the black sheep of the learning disabilities field

11 September
Macquarie University

Keynote speaker
Professor Linda Siegel
University of British Columbia, Canada

This well attended free public lecture was sponsored by Macquarie University’s Special Education Centre (MUSEC), the CCD, and Learning Difficulties Australia. Professor Siegel is an eminent psychologist and educator who is an international authority on reading and learning disabilities, who explained how the education systems in all countries have failed to adequately address the problems of students with learning disabilities. Anti-social behaviour, homelessness, mental health problems, and even suicide, often result. In this presentation, Professor Siegel explored the reasons for this shocking state of affairs and went on to describe a system that teachers can use to help rectify the situation.
Evidence-based assessment and intervention for reading difficulties: Making the right decisions

12 September
Macquarie University

Keynote speakers
Associate Professor Genevieve McArthur
Macquarie University

Professor Linda Siegel
University of British Columbia, Canada

In this workshop, hosted by Learning Difficulties Australia (LDA), Professor Siegel addressed the issue of early identification of reading difficulties and evidence-based approaches to the whole-class teaching of reading and the Tier 2 intervention approaches to young students. Associate Professor McArthur then discussed the process of making evidence-based decisions in the identification and treatment of reading difficulties.

Neurodevelopmental disorders: Are our current diagnostic labels fit for purpose?

2 October
The University of Western Australia

Keynote speaker
Professor Dorothy Bishop
University of Oxford, UK

The Institute for Advanced Studies and the School of Psychology, The University of Western Australia, and the CCD co-hosted a free public lecture by Professor Dorothy Bishop on “Neurodevelopmental disorders: Are our current diagnostic labels fit for purpose?” In this lecture Professor Bishop discussed the use of diagnostic labels that may be applied to developmental difficulties (e.g., ADHD, dyslexia), and in particular the contrasts between ‘dyslexia’ and ‘specific language impairment’ (SLI).

Defining good outcomes for autistic people: What are ‘we’ striving for?

27 November
The University of Western Australia

Keynote speaker
Dr Elizabeth (Liz) Pellicano
Institute of Education, University of London, UK

The School of Psychology and the CCD hosted a free public lecture by Dr Elizabeth Pellicano on “Defining good outcomes for autistic people: What are ‘we’ striving for”. In this presentation, Dr Pellicano discussed some of the social and ethical implications of issues surrounding what is a good intervention or a desirable outcome for people with autism spectrum disorders and further considered who should get to make these decisions.
Human Sciences Perspectives on scaffolding memory across the lifespan

28 - 29 November
Macquarie University

Keynote speakers
Professor Suparna Rajaram
Stony Brook University, USA
Associate Professor Elaine Reese
Otago University, New Zealand

This workshop, sponsored by the Macquarie University Faculty of Human Sciences and the CCD, focused on the possibility that people, objects and technologies are utilised to “scaffold” individual, internal memories. The workshop was a great success, with higher than anticipated registrations and attendance of 75 individuals from across Macquarie University and the community. The international keynote speakers provided stimulating and interesting perspectives on the cognitive and developmental bases of human memory. The audience was broad and multidisciplinary, with participants ranging across the social sciences, humanities, economics, medicine, etc. The multidisciplinary workshop allowed for valuable discussion and idea sharing across disciplinary boundaries, and sought new perspectives and research directions. Overall, this workshop achieved its aims by showcasing research, cementing local and international collaborations, and providing vibrant, interdisciplinary discussion in this important new area of research.

Memory: The thread of life

28 November
Macquarie University

Keynote speaker
Professor Suparna Rajaram
Stony Brook University, USA

This associated public lecture followed on from the “Human Sciences Perspectives on scaffolding memory across the lifespan” workshop in the evening. This was also well attended, with 76 registrations from across Macquarie University and the general public. The public lecture was introduced and chaired by Lynne Malcolm, producer and presenter of ABC Radio National’s ‘All in the Mind’ program. Professor Suparna Rajaram discussed the many important ways in which memory and memories shape us across our lives: as students learning in the classroom; as adults working, living and loving; if we experience brain damage which selectively impairs some forms of memory; and as we age and our memories start to decline. Professor Rajaram shared experiences from her own life as a memory researcher, as well as the ideas, methods and findings that have led to her research interest in the costs and benefits of people remembering together.

Youth hearing voices: Understanding and supporting young people who hear voices

3 December
Macquarie University

This half day workshop focused on the pioneering work of Professor Marius Romme and Dr Sandra Escher who, over the past 25 years, have developed an approach to working with children and young people who have had experiences hearing voices. The approach is based on acceptance and understanding of the meaning behind these experiences. The workshop focused on their current research, an approach that begins with accepting the experiences and the practices/tools for supporting and working with young voice hearers. The final talk of the day was given by Kelly Comans, a young voice-hearer, who gave an inspiring presentation based on her own experiences. The workshop was sponsored by Hearing Voices Network NSW and InsideOut Associates, and supported by staff from the CCD.
14th Australasian International Conference on Speech Science and Technology (SST)

3 - 6 December
Macquarie University

Keynote speakers
Professor Anne Cutler
Max Planck Institute for Psycholinguistics, Germany

Associate Professor Janet Fletcher
The University of Melbourne

Associate Professor Jim Patrick
Cochlear Ltd

Professor James Scobbie
Queen Margaret University, UK

Dr Stefanie Shattuck-Hufnagel
Massachusetts Institute of Technology, USA

The 14th Australasian International Conference on Speech Science and Technology was hosted by Macquarie University. This biennial event fosters collaboration among speech scientists, engineers, psycholinguists, audiologists, linguists, speech/language pathologists and industrial partners. This year the conference included workshops on speech perception and production. The success of the event was due in large part to the contributions of industrial and academic sponsors, including the CCD, whose financial support made it possible to invite world-renowned researchers. The home countries of the more than 150 participants included Thailand, Germany, Brazil, Japan, the United States, and the United Arab Emirates.

Searching for autism in the social brain

5 December
Macquarie University

Keynote speaker
Professor Kevin Pelphrey
Yale University, USA

A public lecture was given by Professor Kevin Pelphrey (Yale Child Study Centre) on the ‘social brain’ in autism and was sponsored by the Macquarie University Faculty of Human Sciences. Professor Pelphrey described his laboratory’s research using functional neuroimaging to identify the brain mechanism for social perception in typically developing children and adults. He then went on to describe their efforts to chart the development of these social brain mechanisms in children with autism, as well as their unaffected siblings. Over 180 people attended this free public lecture. Feedback from attendees was overwhelmingly positive, with many parents and clinicians commenting on the need for more events of this kind.

What is autism?

5 December
Macquarie University

Keynote speakers
Associate Professor Cheryl Dissanayake
La Trobe University

Thomas Kuzma
Stakeholder

Dr Elizabeth (Liz) Pellicano
Institute of Education, University of London, UK

Professor Nicole Rinehart
Monash University

Dr Giacomo Vivanti
LaTrobe University

Associate Professor Andrew Whitehouse
Telethon Institute for Child Health Research

This CCD-sponsored free workshop was attended by over 150 people, including researchers, students, teachers, and clinicians, as well as people with autism and their families.

Presenters included a young man with autism, as well as leading autism researchers from around Australia, and a CCD Partner Investigator, Dr Elizabeth Pellicano (Centre for Research in Autism and Education, Institute of Education, University of London). Each of the presentations addressed the question “What is autism?” from a different perspective. This was followed by a discussion of forthcoming changes to autism diagnosis and definitions, with a panel of leading clinicians including Professor Stewart Einfeld (The University of Sydney) and Professor Rhosel Lenroot (The University of New South Wales).

L to R: Dr Stefanie Shattuck-Hufnagel (Massachusetts Institute of Technology), Professor Jim Scobbie (Queen Margaret University), Associate Professor Jim Patrick (Cochlear Ltd), Associate Professor Janet Fletcher (The University of Melbourne), Professor Katherine Demuth, Associate Professor Felicity Cox, Professor Anne Cutler (Max Planck Institute for Psycholinguistics, Germany)
First scientific meeting of the Australasian Society for Autism Research (ASfAR) conference

6 - 7 December
Macquarie University

Keynote speakers
Professor Patricia (Pat) Howlin
Institute of Psychiatry, King’s College London, UK

Dr Elizabeth (Liz) Pellicano
Institute of Education, University of London, UK

Professor Kevin Pelphrey
Yale University, USA

Macquarie University hosted the inaugural scientific meeting of the Australasian Society for Autism Research (ASfAR), organised and supported by the CCD. Professor Pelphrey and Dr Pellicano gave keynote presentations, as did Professor Pat Howlin of the Institute of Psychiatry, King’s College London, who was a guest of The University of Sydney. A further 75 short presentations were presented by researchers and research students from Australia, New Zealand, Japan, and Singapore. In total, 140 people attended the event which was held over the two days.

Attendees included a number of local clinicians and autism therapists, as well as representatives from the Department of Families, Housing, Community Services, and Indigenous Affairs.

The Emergence of Meaning book launch

13 December
Macquarie University

An intimate book launch was held at the Macquarie University Co-op Bookshop for Distinguished Professor Stephen Crain’s new book ‘The Emergence of Meaning’ published by Cambridge University Press. The Executive Dean of the Faculty of Human Sciences, Professor Janet Greeley, generously sponsored the event, which was officially launched by Emeritus Professor Brian Byrne (School of Behavioural, Cognitive and Social Sciences, The University of New England).

L to R: Emeritus Professor Brian Byrne, Distinguished Professor Stephen Crain and Professor Janet Greeley (Macquarie University)
Neuronauts

The Neuronauts Brain Science Club is a registry of young people (0 to 17 years) who are interested in taking part in research on the mind and brain. By signing up to the register, ‘Neuronauts’ have access to details of currently advertised CCD research projects. They can use the register to sign up so they can take part in these studies that are designed to help researchers in cognitive science discover how our minds and brains develop as we grow up.

To advertise the newly established Neuronauts register, a stall was set up at the Pregnancy, Babies and Children’s Expo held on the 24-26 May at Darling Harbour, Sydney. The Neuronauts exhibit was clearly a success, with over 150 families joining the register, either signing up on the days of the stall or online soon after.

The CCD Recruitment Coordinator and Neuronauts Club Administrator, is Dr Marion Kellenbach. She has been involved in developing the Neuronauts Brain Science Club with assistance from several core coordinators including Associate Professor Genevieve McArthur, Dr Nicholas Badcock and Dr Jon Brock. Full details of the Neuronauts Brain Science Club, and the Neuronauts register, are available online: https://www.ccd.edu.au/neuronauts/

Neuronauts exhibit at Pregnancy, Babies and Children’s Expo
Women in Science Day

Dr Marion Kellenbach, along with Dr Regine Zopf, Dr Britta Biedermann, and Dr Lisa Yen hosted a booth which exhibited cognitive science research at the ‘Women in Science’ Day held in March at Macquarie University. The event was aimed at Year 10 - 12 high school students, providing them the opportunity to visit Macquarie University and attend information tables and booths representing various groups from across the university. Students who visited the booth learned about research topics and methods in cognitive science and they were able to try out the Rubber Hand Illusion - the topic of Dr Zopf’s PhD and postdoctoral research.

Engagement

CCD’s hosted events and outreach activities have provided numerous opportunities for our Centre members to develop and enhance links with stakeholders and the community. Representatives from the following industry, community and peak body organisations have been involved in CCD activities and events in 2012:

- AD Instruments
- Advanced Bionics
- AEIOU Foundation
- Alzheimer’s Australia NSW
- Amaze (Autism Victoria)
- Autism Queensland
- Autism Spectrum Australia (Aspect)
- Australasian Cognitive Neuroscience Society (ACNS)
- Australasian Society for Autism Research (ASAR)
- Australasian Society for Psychophysiology, Inc.
- BESA
- Cochlear
- College of Educational and Developmental Psychologists
- CSIRO
- Daughterly Care
- Department of Families, Housing, Community Services, and Indigenous Affairs
- Department of Health and Ageing
- Elekta
- Hearing Voices Network NSW
- HCSNet
- InsideOut Associates
- Intervention Services for Autism and Developmental Delay
- LEARN Foundation for Autism
- Learning Difficulties Australia
- Literacy Planet
- Mental Health Council of Australia
- North Sydney Local Health District
- Northern Sydney Home Nursing Service
- NSW Government Health
- Oticon
- Phonak
- Respite Day Centres
- Richmond PRA
- Schizophrenia Research Institute
- Schizophrenia Fellowship NSW Inc
- SDN Children’s Services
- SR Research Eyelink
- Symbiotic Devices
- The Art Gallery of New South Wales
- The HEARingCRC
- The Lawrence Wilson Art Gallery
- Therapy Focus
- Western Australian Department of Education, School Psychology Service
- Western Australian Register for Autism Spectrum Disorders
- Mental-State Reasoning Training (MSRT) and Emotion Recognition Training (ERT). She also organises and chairs the graduation ceremonies for every graduating class. To date, eight ceremonies have been held. Participants at these ceremonies have included the participants in the Life Skills program at Cumberland Hospital. All participants are awarded a certificate of completion. Recent award presenters include Emeritus Professor Max Coltheart and Professor Anne Castles. These ceremonies acknowledge the achievements of the participants and also showcase CCD research and training programs to the broader community.

Dr Marsh has also provided training workshops for clinicians at the Prevention, Early Intervention & Recovery Service of Westmead Hospital, as well as at Concord, St Vincent’s and Prince of Wales Hospitals. Dr Marsh continues to promote the needs of patients to receive better treatment for their social functioning difficulties. Dr Marsh has given presentations to clinical audiences at Grand Rounds (Prince of Wales Hospital), Inservice Mental Health Rehabilitation Team (St Vincent’s Hospital), and the Clinical Forum (Brisbane Metro South Health Service District).

Dr Marsh also contributes to psycho-education on social cognition and poor social functioning in schizophrenia by speaking to many consumer/carer audiences, such as the Consumer Network, Cumberland, and the NSW Schizophrenia Fellowship.

Belief Formation

Social cognition and poor social functioning in schizophrenia

Dr Pamela Marsh runs two training programs at Cumberland Hospital: Mental-State Reasoning Training (MSRT) and Emotion Recognition Training (ERT). She also organises and chairs the graduation ceremonies for every graduating class. To date, eight ceremonies have been held. Participants at these ceremonies have included the participants in the Life Skills program at Cumberland Hospital. All participants are awarded a certificate of completion. Recent award presenters include Emeritus Professor Max Coltheart and Professor Anne Castles. These ceremonies acknowledge the achievements of the participants and also showcase CCD research and training programs to the broader community.

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Dr Marsh also contributes to psycho-education on social cognition and poor social functioning in schizophrenia by speaking to many consumer/carer audiences, such as the Consumer Network, Cumberland, and the NSW Schizophrenia Fellowship.
Involvement in the voice-hearing community

Dr Simon McCarthy-Jones has played an active role in the voice-hearing community through his involvement with both mental health professionals and carers/consumers. He convened a symposium at the British Association for Behavioural and Cognitive Psychotherapies Annual Conference, held in Leeds, UK on 29 June. The symposium was entitled 'Cognitive behavioural therapy for auditory verbal hallucinations ('hearing voices'): from causes to effects in clinical practice'. The focus was on psychological therapies for people with auditory verbal hallucination, with talks by Dr McCarthy-Jones, and by Drs Charles Fernyhough (Durham University, UK), Guy Dodgson (Newcastle University, UK), and Mark Hayward (Sussex University, UK).

Dr McCarthy-Jones also serves as an advisor to the Hearing Voices Network NSW, a registered charity whose primary objective is to establish, facilitate and support self-help groups for voice hearers throughout Metropolitan Sydney, as well as in regional NSW.

Dr McCarthy-Jones also gave talks on voice-hearing at the Royal North Shore Hospital, Concord Centre for Mental Health, the universities of Sydney, New South Wales and Wollongong, Liverpool Hospital, and the "Voices, Conversations & Transformations" conference held in Melbourne.

Language

Indigenous languages

Professor Katherine Demuth and Dr Susan Lin spent the final week of June collecting data from speakers of Kaytetye in Barrow Creek, Northern Territory (located 280 km north of Alice Springs), for a project entitled 'Understanding the sounds of Kaytetye'. This project is designed to better understand how the complex sounds of this and other Arandic languages are produced.

To conduct this research, Professor Demuth and Dr Lin used a portable ultrasound recording technique to create videos of the speakers’ tongues while they spoke. These recordings will facilitate creation of language materials for preservation of the language, and will shed light on why many complex sounds of the language are missing in child-directed speech. This project is timely, as many of these languages are no longer being passed on to the next generation, and may soon be lost.

This collaborative project is funded by the Australian Institute of Aboriginal and Torres Strait Islander Studies and the CCD, and involves researchers from the University of Queensland, The University of Newcastle, Macquarie University, and members of the Northern Territory schools.

International Doctorate in Experimental Approaches to Language and Brain (IDEALAB)

Macquarie University is the first Australian University to be named as a partner in a prestigious Erasmus Mundus Joint Doctorate Program, known as IDEALAB (International Doctorate in Experimental Approaches to Language and Brain). The IDEALAB PhD exchange program is funded by the European Commission’s Education, Audiovisual and Culture Executive Agency. Macquarie partners with four European universities (Potsdam, Germany; Groningen, The Netherlands; Trento, Italy; Newcastle, UK).

The Macquarie node of IDEALAB is directed by Professor Lyndsey Nickels with supervisors drawn from the CCD Language Program, and more widely across the university. Applications are invited every November for enrolment in the program beginning in the following October. The first cohort of eight Erasmus-Mundus funded students enrolled in October 2012, and will arrive at Macquarie University in 2013. The student research topics are diverse, including research on developing improved...

Community

Since 2005, Associate Professor Robyn Langdon has been a member of the Schizophrenia Research Unit, a part of the Sydney South West Area Health Service, and as an executive panel member of Cognition and Connectivity Panel set up as part of the Schizophrenia Research Institute. She has also acted as Treasurer since 2008 for the Australasian Society for Psychiatric Research, a peak body for psychiatric and mental health across Australia and New Zealand.

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OUTREACH + Links

language assessments for use during awake neurosurgery, using eye tracking to understand language impairments in aphasia, and developing treatments for problems experienced by aphasic patients in producing verbs and sentences. Further details are available on the IDEALAB website: http://www.em-idealab.com

Regional universities

This year the CCD maintained contact with the University of New England’s Language and Cognition Research Centre (LCRC). The LCRC includes one CCD Chief Investigator, Emeritus Professor Brian Byrne (Reading Program) and two CCD Associate Investigators, Associate Professor Drew Khlentzos and Dr Inés Antón-Méndez (Language Program). The Macquarie University node of the CCD hosted Emeritus Professor Byrne and Associate Professor Khlentzos on various occasions throughout the year.

In March of this year, Distinguished Professor Stephen Crain, Professor Anne Castles and Emeritus Professor Byrne also attended a meeting of the National Committee for Brain and Mind, which Distinguished Professor Crain chairs, to seek support for a joint CCD/UNE initiative: Cognitive Science in the Public Interest.

Community

Professor Lyndsey Nickels has a longstanding collaboration with clinicians at St. Joseph’s Hospital, War Memorial Hospital and the Speech Pathology Service at the Royal Rehabilitation Centre Sydney. The collaboration includes trialling group aphasia treatments and assessing treatment and management strategies for progressive aphasia, with the collaborations resulting in publications and external grant funding. Professor Nickels meets regularly with clinicians at these and other institutions to provide professional development seminars and informal discussions, and contributes to professional development workshops for several of the NSW health regions and for Speech Pathology Australia. Professor Nickels also serves as the invited Academic member of the NSW Speech Pathology Evidence Based practice group (Adult Language).

Dr Karen Smith-Lock plays an active role in mentoring speech pathologists in clinical practice. In April, Dr Smith-Lock and Dr Suze Leitao conducted a workshop for speech pathologists, teachers and education assistants at the West Coast Language Development Centre in Perth, Western Australia. The workshop focussed on treatment techniques for teaching aspects of language structure to children diagnosed with specific language impairment. Dr Smith-Lock currently assists two speech pathologists from the Department of Education Western Australia to develop measurement tools to assess the success of programs that are currently in place in schools. Dr Smith-Lock’s research projects provide professional development and hands-on training are provided to administrators, speech pathologists, teachers and educational assistants in the public school system.

The CCD Language Program continues to serve as an ad-hoc resource for speech pathologists and clinical neuropsychologists: clinicians are encouraged to use Centre facilities for discussions and to seek advice in the assessment and rehabilitation of clients. Clinicians can phone, email and visit the CCD, and researchers encourage requests to provide seminars and professional development courses.

Memory

High school students

Dr Donna Rose Addis is actively engaged in introducing science to high school students by sharing her expertise in memory research. She is also involved in the LENScience “Students as Researchers” program, both as a mentor and as an invited speaker. This program focuses on student-led scientific investigations, and includes many students of Maori or Pacific heritage. Dr Addis described her involvement in this program in a televised interview on “Inspiring Islanders” on Tagata Pasifika (TVNZ) in New Zealand (http://www.youtube.com/watch?v=w4KoB8i7kbY&list=UU3FEv9wtw-ky7zgRMrC70dW&index=20&feature=plcp)

Marshall Dalton, a PhD candidate at The University of New South Wales, participated in the ‘Scientists in Schools’ program run by the CSIRO. He visited high school science classes and taught students about the brain and the nervous system, covering First cohort of IDEALAB students at Potsdam University

ARC CENTRE OF EXCELLENCE in Cognition and its Disorders
topics that ranged from neuroanatomy, to the neuroscience of memory, language and personality. This program is aimed at helping to engage and motivate students in learning science, and to broaden their awareness of the exciting career opportunities available in the sciences. He has also been involved in helping to organise school visits, and to guide visiting high school groups through Neuroscience Research Australia (NeuRA).

**Community**

Dr Addis was a co-organiser and co-presenter of the public event “Mind Reading?” This was a live magnetic resonance imaging (MRI) event, held as part of Brain Awareness Week (March). She was also an invited speaker on “Memory” at the Howick Women’s Dinner Club (July) and at the PACIFICA “Women of Influence” event (June), a judge for the 2012 Prime Minister’s Emerging Scientist Prize held by the Royal Society of New Zealand (August), as well as co-organiser for the “Older people and Cognition” stream at the New Zealand Gerontology Association Conference (September). Dr Addis was also involved in the filming of a segment on memory for the science documentary “Through the Wormhole with Morgan Freeman” (Discovery Science Channel), http://science.discovery.com/tv/through-the-wormhole/.

Dr Laurie Miller and colleagues recently published a Memory Training Program that is now being used with the following groups: epilepsy patients at hospitals such as Royal Prince Alfred, Westmead, and Prince of Wales Hospital, elderly people with memory concerns; and prison inmates. Data was gathered on the effectiveness of this program for these clients. The Memory Training Program manual is available for purchase through the Australian Society for the Study of Brain Impairment.

Marshall Dalton has been awarded the Australian Rotary Health Ron Nichol dementia scholarship. Dalton is involved with a number of Australian Rotary Health community outreach activities, and makes regular visits to the Rotary club of Glenhaven to update members of the club on the progress of his research and to give presentations aimed at informing members of the club about the brain and about different types of dementia.

**Person Perception**

**Community**

In April, Professor Gillian Rhodes and Associate Professor Romina Palermo presented at a symposium on ‘The Art and Science of Face Perception’, held in conjunction with the 39th Australian Experimental Psychology Conference (hosted by The University of New South Wales), and coincided with the exhibition of the Archibald, Wynne and Sulman Prizes at the Art Gallery of New South Wales. Their presentations focused on the insights experimental psychology can provide into the perception of faces and of portraiture.

Dr Linda Jeffery presented “The Science of Face Perception: A beginner’s guide” and Professor Rhodes presented “Hot or Not? The Psychology and Biology of Beauty” at a half-day symposium entitled “Portraiture, Science and Beauty” focussing on the science behind interpreting faces and portraits. This June symposium was co-hosted by the CCD and by The University of Western Australia’s Lawrence Wilson Art Gallery and School of Psychology.

In June, Dr Louise Ewing and Associate Professor Palermo presented at the Lawrence Wilson Art Gallery as part of the ‘Friday Talks & Conversation’ series. These talks explored difficulties in face processing, particularly as seen in autism spectrum disorders and in prosopagnosia.

Dr Elizabeth (Liz) Pellicano engages with the autism community as an expert advisor for “Ambitious about Autism”, a charity for children and young people with autism based in the UK. Dr Pellicano acts both as a member of the external advisory group for Ambitious about Autism and as an advisory group member for the Ambitious about Autism Peer Awareness program.

**Reading**

**LiteracyPlanet**

www.literacyplanet.com

Researchers in the CCD Reading Training Study are involved in an online reading training program developed in Queensland, LiteracyPlanet. Based on human and animal training studies, we have found that learning any task draws upon four necessary ingredients: attention, motivation, repetition and feedback. Based on findings from reading research, we have found that learning to read new words requires two special skills: the ability to use letter-sound rules (i.e., phonics) and the ability to read whole words by sight. LiteracyPlanet is a training program that is designed to impart all of these necessary elements to students. It engages their attention with sophisticated graphics; it motivates them to practice their reading skills by rewarding them with points that can be used to buy clothes for their avatar or buy online games; it encourages students to repeat exercises many times to fine-tune the skills that they have mastered (and earn more points!); and it provides highly engaging feedback for students, as they progress. LiteracyPlanet includes dozens of exercises that train students’ letter-sound reading and sight-word reading.

**High school students**

Dr Nicholas Badcock visited Normanhurst Boys High School in May to present an introduction to psychology to approximately 40 Year 11 and Year 12 students who are considering a career in the field. The students and their teachers learned about the career opportunities which are available to Psychology graduates. Dr Badcock provided
students an overview of his career path that has taken him from schooling in Tasmania, to tertiary studies at The University of Western Australia, to a postdoctoral fellowship appointment at The University of Oxford (UK), to his current CCD postdoctoral research position at Macquarie University.

**MOTIf**

www.motif.org.au

The Macquarie Online Test Interface (MOTIf) is an online facility designed to automatically administer, score, and provide reports for cognitive tests developed by researchers in the CCD Reading Program, including Associate Professor Genevieve McArthur, Professor Anne Castles, Dr Saskia Kohnen and Professor Lyndsey Nickels, in collaboration with Pip Jones (Deepend). MOTIf tests are available online at no charge to registered teachers, clinicians and researchers. The test results of each MOTIf user are stored in a secure and private database. MOTIf includes seven cognitive tests, available in a range of fully automated and pdf forms, with automatically generated standardised scores (age norms). As of October 2012, there were over 1800 registered users, with over 2600 participants, from 10 different countries.

**Community**

Professor Anne Castles is the Chair of the Steering Committee for the NSW Centre for Effective Reading, a committee that provides support for rural and remote primary-school students with complex reading difficulties and their teachers. Professor Castles and Professor Lyndsey Nickels are both members of the Council for Learning Difficulties Australia (LDA).

Associate Professor Genevieve McArthur was invited by four forums to speak on evidence-based assessments and treatments of dyslexia: Dyslexia SPELD Foundation in Perth; MULTILIT (www.multilit.com.au), Sydney, Learning Difficulties Australia (LDA) Workshop, Sydney, and at a roundtable meeting with Minister Peter Garrett (Minister of Education) and Barry McGaw (head of Australian Curriculum, Assessment and Reporting Authority), Sydney.

In August, Professor Castles presented at a symposium entitled “Hallowed Ground: The Future of Reading”, hosted by the Australian Library and Information Association (ALIA) Sydney, in collaboration with the City of Sydney Library. This event explored issues around the future of reading in Australia.

With Professor Max Coltheart, Professor Castles presented an overview of theories of reading and reading development and methods used in the diagnosis of reading difficulties at a Professional Development Workshop run for ~100 staff from 33 Catholic primary schools in the southern region of Sydney on 11 October.

The CCD Reading Program is also host to a large Reading Training Study led by Associate Professor McArthur, which provides treatment to all eligible children with reading difficulties, as well as free assessments, written reports, and ongoing advice. A Reading Program newsletter was distributed to all participating schools, as well as to interested teachers, clinicians and professionals. In addition, a spelling training study was led by Dr Saskia Kohnen, to assess children with spelling difficulties and to provide free training to eligible poor spellers. All children received free assessments, written reports and advice about further training.

Emeritus Professor Brian Byrne has been invited to a meeting of the Dutch Dyslexia Program (DDP), which is in the final stages of its 10 year project, funded by the Netherlands Organisation for Scientific Research (NWO).

**Perception in Action**

**High school students**

Dr Regine Zopf presented on “Cognitive Science and Illusions” to three groups of high school students visiting Macquarie University as part of “The Macquarie Experience Program” (November and December). These one-hour interactive presentations were designed to give students the opportunity to learn about several visual and multisensory illusions.

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**Outreach + Links**

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COLLABORATIONS

Our researchers have strong links with international and national researchers. In addition to the five national collaborating institutions and nine international partner institutions, researchers at the CCD have developed and maintained collaborations with research partners from over 100 institutions in 16 countries. This collaboration section highlights both the links between researchers within the CCD, and the connections with leading international and national researchers.

Dr Donna Rose Addis
Dr Adam Brown (New York University, USA), on future thinking in PTSD.
Professor Emeritus Michael Corballis (The University of Auckland, New Zealand), on fMRI studies on future thinking.
Dr Kelly Giovanello (University of North Carolina, USA), on fMRI studies of autobiographical and episodic memory.
Professor Daniel Schacter (Harvard University, USA), on fMRI studies of future thinking in young and older adults.
Associate Professor Lynette Tippett (The University of Auckland, New Zealand), on autobiographical memory and identity in aging, dementia and depression.

Associate Professor Amanda Barnier
Professor David Balota (University of Washington, USA), Dr Roger Dixon (University of Alberta, Canada), Professor Suparna Rajaram (Stony Brook University, USA) and Professor William Hirst (The New School, USA), with Associate Professor Greg Savage and Professor John Sutton on individual, collaborative, social and collective memory.
Dr Adam Brown (New York University School of Medicine, USA), Dr Nora Breen (Royal Prince Alfred Hospital), Dr Lisa Archibald (University of Western Ontario, Canada) and Dr Martha Turner (University College London, UK), with Emeritus Professor Max Coltheart, Dr Rochelle Cox and Associate Professor Robyn Langdon, on hypnotic analyses of clinical delusions.
Professor Peter Halligan and Dr David Oakley (Cardiff University, UK) on instrumental uses of hypnosis, including hypnotic analogues of neuropsychological and neuropsychiatric conditions.
Professor Erik Woody (University of Waterloo, Canada) on conceptualising and measuring individual differences in hypnotic ability.

Dr Jon Brock
Dr Lisa Archibald (University of Western Ontario, Canada) and the speech pathology team at Royal Far West Children’s Hospital, on comparing phonological memory skills in children with autism and specific language impairment.
Professor Valisa Eapen (The University of New South Wales and the Liverpool Autism Specific Early Learning and Care Centre), to develop ways of testing preschoolers with autism using MEG.
Professor Rhoshel Lenroot (The University of New South Wales), on a study of brain oscillations and neurotransmitters in adolescents with autism.
Professor Kate Nation, using eye-tracking to investigate language comprehension in children with autism.

Emeritus Professor Brian Byrne
Dr Erik Willcutt and Dr Richard Olson (University of Colorado, Boulder, USA) and Dr Stefan Samuelsson (Linköping University, Sweden), on studies of genetic and environmental influences on mathematics, literacy and attention in elementary and high-school twins.

Professor Anne Castles
Dr Helene Deacon (Dalhousie University, Canada) on longitudinal studies of orthographic learning.
Professor Naama Friedmann, on their jointly-authored book on subtypes of developmental dyslexia.
Professor Kate Nation, on their joint ARC Discovery Project on orthographic learning processes in children.
Professor Sheena Reilly, Professor Margot Prior, Associate Professor Melissa Wake, Professor John Carlin and Dr Lesley Bretherton (The University of Melbourne and the Murdoch Children’s Research Institute), on an NHMRC project, the Early Language in Victoria (ELVS) study.

Emeritus Professor Max Coltheart
Ms Anika Fiebich (Ruhr-University Bochum, Germany) on theories of theory of mind.
Dr Martina Jovev (The University of Melbourne) on emotion recognition in borderline personality disorder.
Ms Noemie Moreau (Neuropsychology Clinic, Aix-en-Provence, France) on delusional misidentification.
Professor Kathy Rastle and Dr Betty Mousikou, Dr Claudio Mulatti and Professor Derek Besner (University of Waterloo, Canada), on computational modelling of reading aloud.

Dr Rachel Robbins (University of Western Sydney) on body cues to person recognition.

Dr Alessio Toraldo (University of Pavia, Italy) on the early visual-processing stages of reading.

Dr Patrizio Tressoldi, Dr Francesco Sella and Professor Carlo Umilta (University of Padova, Italy) on the contributions of brain imaging to our understanding of cognition.

Professor Akira Uno (University of Tsukuba, Japan) on cognitive mechanisms of reading Japanese, and dyslexia in Japanese children.

Distinguished Professor Stephen Crain

Dr Cathy Foley, Dr Marcel Bick, Dr Emma Mitchell and Mr Alex Katsaros (CSIRO), on developing a liquid helium recovery system for the MEG brain imaging systems to be located at the Australian Hearing Hub.

Professor Liqun Gao (Beijing Language and Culture University, China), with Associate Professor Rosalind Thornton on the acquisition of logical words in Mandarin Chinese and in English.

Dr Takuya Goro (Ibaraki University, Japan), on the acquisition of logical words in Japanese and in English.

Professor Gen Uehara (Kanazawa Institute of Technology, Japan), with Associate Professor Blake Johnson on developing the world’s first MEG brain imaging system for measuring brain responses in people with cochlear implants.

HEARing CRC, Sydney Cochlear Implant Centre, National Acoustic Laboratories, Cochlear Ltd, with Associate Professor Blake Johnson on the cortical evaluation of implant performance and on cognitive development in children with hearing disorders.

Professor Liqun Gao (Beijing Language and Culture University, China), Dr Wen Yu, (The Special Educational School of Haidian District, China) with Associate Professor Rosalind Thornton and Dr Peng Zhou established the International Center for Child Language Health (ICCLH) where they are conducting studies on language acquisition and assessing children with language disorders in China.

Professor Maria Teresa Guasti, with Associate Professor Rosalind Thornton on organising a workshop entitled ‘Innovations in the study of language acquisition and language impairment’ to be held at the International Congress of Linguists, Geneva, Switzerland in July 2013.

Dr Mitsuru Kikuchi (Kanazawa University, Japan), Professor Liqun Gao (Beijing Language and Culture University, China) and Associate Professor Blake Johnson on a collaborative project to study children with autism spectrum disorders using child MEG systems to measure functional brain connectivity.

Professor Katherine Demuth

Dr Teresa Ching (National Acoustics Laboratory), on the phonetics/phonology of the speech of children with hearing loss.

Dr Jan Edwards (University of Wisconsin, USA), on children’s phonological development, including non-standard dialects.

Dr Michael Frank (Stanford University, USA), on looking at modelling word learning as a function of social interactions.

Dr Mark Harvey (The University of Newcastle), on the articulatory phonological of coronal consonants in English and Arandic languages.
Dr Sally Hewat (The University of Newcastle), on stuttering and phonological disorders.
Dr Barbara Höhle (University of Potsdam, Germany), on phonological, morphological and syntactic development in typically developing children and those with hearing loss/language delay.
Dr Caroline Jones (University of Western Sydney), on Indigenous child speech.
Dr Letitia Naigles (University of Connecticut, USA), on the language system of children with autism; infant looking methods, and eyetracking.
Dr Susan Purdy (The University of Auckland, New Zealand), on the speech of children with hearing loss.
Dr Megha Sundara (University of California, USA), on infant speech perception and grammatical morphology across typical, bilingual, SLI and hearing loss populations.
Dr Rachel Theodore (University of California, USA), on phonological and morphological development, and effects of phonotactic probability.
Dr Myfany Turpin (The University of Auckland, New Zealand), on brain imaging of motor function in pre-school aged children.

Professor Peter Halligan
Professor David Oakley (University College London, UK), on the neuroscience of hypnosis.
Professor Paolo Bartolomeo (Salpêtrière Hospital, France and Università Cattolica del Sacro Cuore, Italy), on neglect.
Dr Quinton Deele (Institute of Psychiatry, Kings College London, UK), on suggested limb paralysis.
Dr Vaughan Bell (Institute of Psychiatry, Kings College London, UK), on hysteria and hypnosis.

Professor John Hodges
Dr Thomas Bak (The University of Edinburgh, UK), on cognition in motor neuron disease.
Associate Professor Kirrie Ballard (The University of Sydney), on language studies in dementia.
Professor Matthew Kiernan (The University of New South Wales), on cognition in motor neuron disease.
Professor Jillian Kril (The University of Sydney) and Professor Glenda Halliday (The University of New South Wales), with Associate Professor Olivier Piguet on pathology and anatomy of memory.
Dr Facundo Manes (Instituto de Neurología Cognitiva, Argentina), on collaborative studies of cognition in frontotemporal dementia.
Professor Peter Nestor (University of Cambridge, UK), on semantic dementia.
Professor Karalyn Patterson (University of Cambridge, UK), on semantic memory.
Dr Katya Rascovsky and Associate Professor Murray Grossman (University of Pennsylvania, USA), on frontotemporal dementia.
Professor Chris Rowe (The University of Melbourne), with Associate Professor Olivier Piguet on Positron Emission Tomography imaging in the dementias.
Professor Adam Guastella (The University of Sydney) and Associate Professor Philip Ward (The University of New South Wales), to examine the effect of Oxytocin on social cognitive abilities in people with schizophrenia.
Dr Adam Guastella (The University of Sydney) and Associate Professor Philip Ward (The University of New South Wales), on the relationship between gamma-aminobutyric acid (GABA) levels and neural oscillations in autism.

Associate Professor Blake Johnson
Associate Professor Douglas Cheyne (University of Toronto and Toronto Hospital for Sick Children, Canada), on imaging of motor function in pre-school aged children.
Dr Michael Hautus (The University of Auckland, New Zealand), on brain mechanisms of auditory scene analysis
Professor Andrew Heathcote and Dr Scott Brown (The University of Newcastle), on acquisition of expertise in spatial imagery.
Associate Professor Drew Khentzos, Professor Ovid Tseng (National Yang-Ming University, Taiwan), Professor Thomas Lee and Professor Liquan Gao (Beijing Language and Culture University, China), with Distinguished Professor Stephen Crain and Associate Professor Rosalind Thornton on the emergence of logic in child language.

Professor Rhosel Lennoot (The University of New South Wales), on the relationship between gamma-aminobutyric acid (GABA) levels and neural oscillations in autism.
Dr Penelope McNulty and Professor Caroline Rae (The University of New South Wales), on imaging of brain recovery after stroke.

Associate Professor Robyn Langdon
Professor Ian Apperley (University of Birmingham, UK), on assessing automatic facets of social cognition in people with schizophrenia.
Professor Martin Brüne (Ruhr-University Bochum, Germany), on the relationship between poor social cognition and social behavioural problems in schizophrenia.
Dr Adam Guastella (The University of Sydney) and Associate Professor Philip Ward (The University of New South Wales), to examine the effect of Oxytocin on social cognitive abilities in people with schizophrenia.
Dr Ryan McKay, with Emeritus Professor Max Coltheart and Professor Gillian Rhodes to combine techniques from behavioural economics and experimental psychology to investigate the pertinent facial characteristics when assessing the trustworthiness of others, and the role of paranoia in this process.
Associate Professor Ulrich Schall, Professor Patricia Michie and Dr Juanita Todd (The University of Newcastle), Associate Professor Philip Ward (The University of New South Wales) and Dr Helen Stain (The University of Sydney) to identify predictors of transition to psychotic illness in at-risk young people.
COLLABORATIONS

Dr Petter Johansson (University of Zurich, Switzerland), on religion and prosocial behaviour; shared delusions.

Professor Richard Stevenson (Macquarie University) on odour processing and olfactory hallucinations in schizophrenia including cognitive and clinical neuropsychological approaches.

Drs Olav Nielsen (The University of New South Wales) and Matthew Large (The University of New South Wales) on shared delusional beliefs leading to homicide.

Dr Genevieve McArthur
Dr Florin Hutzler and Stefan Howelka (University of Salzburg, Austria) with Peter de Lissa on a project using fixation-related potentials (FRPs) to compare sentence processing in Austrian and Australian readers.

Dr Betty Mousikou, with Dr Nicholas Badcock on a project validating a converted gaming EEG headset (Emotiv) as a portable ERP measurement device.

Associate Professor Romina Palermo, Dr Florian Hutzler and Stefan Howelka (University of Salzburg, Austria) with Peter de Lissa on a project using fixation-related potentials to investigate the brain responses to eyes in faces.

Professor Maggie Snowling and Professor Charles Hulme (The University of York, UK), on auditory processing in children with spoken language and reading impairments.

Dr Ryan McKay
Professor Peter Brugger (University Hospital Zurich, Switzerland), on unrealistic optimism and caloric vestibular stimulation.

Professor Daniel Dennett (Tufts University, USA), on evolution and religion.

Professor Ernst Fehr and Dr Charles Efferson (University of Zurich, Switzerland), on religion and prosocial behaviour; shared delusions.

Dr Petter Johansson (University College London, UK), on religion and choice blindness.

Professor Ara Norenzayan, Professor Joe Henrich, Dr Jon Lonman and Dr Miriam Mathews (The University of British Columbia, Canada), on ritual and group cohesion.

Professor Bill Swann (The University of Texas, USA), on identity-fusion and ritual.

Professor Harvey Whitehouse (University of Oxford, UK), on religion and morality; ritual and group cohesion.

Dr Laurie Miller
Dr Amee Baird (The University of Newcastle), on memory and music in neurology patients.

Prof Skyle MacDonald (The University of New South Wales), on the effects of focal frontal lobe lesions on communication.

Dr Anna Mitchell (University of Oxford, UK), on the role of the thalamus in memory (comparing human and nonhuman primates).

Associate Professor Armin Mohamed (The University of Sydney and Royal Prince Alfred Hospital), on epilepsy and its relationship to cognition and mood.

Dr Eneida Mioshi (The University of New South Wales), on carer burden in dementia.

Professor Louise Sharpe (The University of Sydney), on studies of mood in patients with epilepsy.

Professor Richard Stevenson (Macquarie University), on olfaction, gustation and synaesthesia in patients with focal brain lesions.

Dr Ybrand van der Werf (VU University Medical Centre and Netherlands Institute for Brain Research, The Netherlands), on sleep and cognition in epilepsy.

Professor Kate Nation
Professor Kim Plunkett (University of Oxford, UK), on predicting reading outcomes in school-age children from measures of vocabulary in infancy.

Professor Lyndsey Nickels
Dr Wendy Best (University College London, UK) and Professor David Howard (Newcastle University, UK), on common methodological failings in single case study treatment research.

Professor David Howard (Newcastle University, UK), on persistence of activation in the language system.

Associate Professor David Copland, Dr Tony Angwin, Dr Katie McMahon, Dr Shiree Heath and Dr Anna Holmes (The University of Queensland), on using fMRI to evaluate different treatments for word retrieval impairments following brain damage.

Dr Karen Croot and Cathleen Taylor (War Memorial Hospital), on intervention for individuals for progressive language disorders.

Associate Professor Kirrie Ballard (The University of Sydney) and HDR student Dominique Scholl on intervention in aphasia and apraxia of speech.

NHMRC Centre for Clinical Research Excellence in Aphasia Rehabilitation: a large network of aphasia researchers nationally and internationally, with Dr Kari Renvall.

Professor Barbara Höhle (The University of Potsdam, Germany), Professor Roelien Bastiaanse (Groningen University, The Netherlands), Professor David Howard (Newcastle University, UK), Professor Gabriele Miceli (University of Trento, Italy) on the International Doctorate in Experimental Approaches to Language and Brain (IDEALAB).

Professor Naama Friedmann on lexical syntactic impairments in aphasia.

Professor Brenda Rapp (Johns Hopkins University, USA) and Dr Saskia Kohnen on their jointly edited special issue of Cognitive Neuropsychology on using intervention to inform cognitive theory.

Professor Niels Schiller (Leiden University, The Netherlands) and Dr Antje Lorenz (University of Münster, Germany) with Dr Britta Biedermann on the representation and processing of plural information.

Dr Samantha Siyambalapitya (Griffith University) with Dr Britta Biedermann on bilingual language representation.

Dr Elizabeth (Liz) Pellicano
Dr Geoff Bird (Birkbeck College, UK), on susceptibility to social influence in autism.
Professor David Burr (University of Florence, Italy), on number perception in autism, perceptual adaptation, motion processing and Bayesian decision theory.

Dr Andy Calder, on eye-gaze perception in autism.

Professor Tony Charman (Institute of Education, University of London, UK), re-mapping autism research.

Dr Chiara Fiorentini, on face processing in autism.

Professor Nancy Kanwisher, Dr Kami Koldewyn and Dr Yuhong Jiang (Massachusetts Institute of Technology, USA), on attention and executive function in autism.

Dr Kristine Krug (University of Oxford, UK), on social conformity in monkeys, typical children and children with autism.

Dr Will Mandy (University College London, UK), on autism awareness training in mainstream schools.

Dr Andreas Mojzisch (Georg-August-University Göttingen, Germany), on social conformity in monkeys, typical children and children with autism.

Mr Ari Ne’eman (Autistic Self Advocacy Network, USA), on ethical and social implications of autism research.

Professor Gillian Rhodes, on face processing in autism.

Professor Marc Stears (University of Oxford and the Institute for Public Policy Research, UK), on ethical and social implications of autism research.

**Associate Professor Olivier Piguet**

Associate Professor Kay Double (The University of New South Wales), on cognition in Parkinson’s disease.

Dr Michael Hornberger, on neuroimaging studies of memory and cognition in the dementias.

Professor Skye McDonald (The University of New South Wales), on emotion processing in traumatic brain injury.

Professor Alan Pegna (Geneva University Hospital, Switzerland), on emotion processing in temporal lobe epilepsy.

Associate Professor Åsa Petersén (Lund University, Sweden), on eating behaviour in the dementias.

Associate Professor Katherine Samaras (Garvan Institute of Medical Research), on eating behaviour in frontotemporal dementia.

Dr Marc Sollberger (Basel University Hospital, Switzerland), on social cognition in major depressive disorders.

Dr Gabrielle Todd (University of South Australia), on cognition in Parkinson’s disease.

**Professor Gillian Rhodes**

Dr Chris Benton (University of Bristol, UK), on norm-based coding of facial expression.

Dr Andy Calder, on integrating facial cues and perception of eye gaze, and on neural adaptation and autism-spectrum traits.

Dr Michael Ewbank (Cambridge University, UK), on integrating facial cues and perception of eye gaze, and on neural adaptation and autism-spectrum traits.

Dr Chiara Fiorentini, on face perception in the broader autism phenotype.

Professor William Hayward, on how does race affect face processing?

Professor Daphne Maurer, on face processing in adults with autism spectrum disorder, and the effect of early visual deprivation on the later development of face processing.

Dr Cathy Mondloch, on attentional biases in face perception.

Professor Elinor McKone, on development of face perception mechanisms.

Associate Professor Romina Palermo, on face processing in developmental prosopagnosia.

Dr Elizabeth (Liz) Pellicano, on face processing in autism spectrum disorder and broader phenotype.

Professor Mel Rutherford, on face processing in adults with autism spectrum disorder.

Professor Leigh Simmons, on evolutionary mechanisms of person perception and facial appearance and health.

Dr Andy Skinner (University of Bristol, UK), on norm-based coding of facial expression.
Professor Michael Webster (University of Nevada, USA), on adaptation to face gender.

Dr Jeremy Wilmer (Wellesley College, USA), on heritability of face preferences: a twin study.

**Associate Professor Greg Savage**

Professor David Ames and the Australian Imaging, Biomarkers and Lifestyle Study of Ageing Research Group, Melbourne and Perth, on understanding the development of Alzheimer’s disease.

Dr Chris Baker (National Institute of Mental Health, USA), on neuroimaging of brain plasticity.

Professor Paul Fitzgerald, Dr Kate Hoy and Dr Jerome Maller (Monash Alfred Psychiatry Research Centre) on neurocognition in treatment-resistant depression.

Professor Paul Fitzgerald and Professor Susan Rossell (Monash Alfred Psychiatry Research Centre), on understanding auditory-verbal hallucinations in schizophrenia.

Professor Stuart Graham, Dr Mojtaba Golzan and Dr Carolyn Orr (Macquarie University), on retinal biomarkers of early Alzheimer’s disease.

Professor Michael Morgan (Macquarie University), on neuroimaging of brain plasticity.

Associate Professor Sharon Naismith (Brain and Mind Research Institute), on emotion recognition in Mild Cognitive Impairment.

Professor Dominic Rowe (Macquarie University), on memory functioning in Parkinson’s disease and prediction of dementia in motor neurone disease.

Associate Professor Peter Schofield (The University of Newcastle), on olfaction and the early detection of Alzheimer’s disease.

Dr Carolyn Wilshire (University of Wellington, New Zealand), on language difficulties in Alzheimer’s disease.

Professor Stephen Wood (University of Birmingham, UK), on memory and endocrine functioning in first-episode psychosis.

**Associate Professor Rosalind Thornton**

Professor Maria Teresa Guasti, on syntax acquisition in typically developing children and children with Specific Language Impairment.

Dr Hirohisa Kiguchi (Miyagi Gakuin Women’s College, Japan), on ellipsis in English and Japanese.
**VISITORS**

**Academic Visitors**

**Professor David Burr**
Department of Psychology, University of Florence, Italy
12 December 2011 - 25 January 2012, The University of Western Australia

**Professor Jennifer Radden**
Philosophy Department, University of Massachusetts, USA
25 January - 5 March, Macquarie University

**Professor Ludo Verhoeven**
Behavioural Science Institute, Radboud University Nijmegen, The Netherlands
30 January - 17 February, Macquarie University

**Dr Adam Brown**
Department of Child and Adolescent Psychiatry, New York University, USA
13 February, Macquarie University

**Professor Mabel Rice**
Child Language Doctoral Program, University of Kansas, USA
20 February - 4 March and 2 - 5 July, Macquarie University

**Dr Jakob Hohwy**
School of Philosophical, Historical and International Studies, Monash University
24 - 25 February, Macquarie University

**Associate Professor Dominic Murphy**
Unit for History and Philosophy of Science, The University of Sydney
24 - 25 February, Macquarie University

**Dr Philip Gerrans**
Department of Philosophy, University of Adelaide
24 - 25 February, Macquarie University

**Dr Markus Neumann**
General Psychology and Cognitive Neuroscience, Friedrich Schiller University of Jena, Germany
27 February - 23 March, The University of Western Australia

**Dr Petroula Mousikou**
Department of Psychology, Royal Holloway, University of London, UK
28 February - 31 August, Macquarie University

**Dr Ami Sambai**
Graduate School of Comprehensive Human Sciences, University of Tsukuba, Japan
5 - 19 March, Macquarie University

**Associate Professor Genevieve McArthur**
Department of Cognitive Science, Macquarie University
12 - 15 March, The University of Western Australia

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*L to R: Emeritus Professor Max Coltheart, Professor Jennifer Radden (University of Massachusetts) and Associate Professor Robyn Langdon*
Associate Professor Robert Rupert
Department of Philosophy, University of Colorado, USA
13 - 16 March, Macquarie University

Associate Professor Drew Kh lentzos
School of Social Science, University of New England
13 - 16 March and 7 - 9 November, Macquarie University

Dr Andrew Calder
MRC Cognition and Brain Sciences Unit, University of Cambridge, UK
16 - 20 April, The University of Western Australia

Professor Michael Webster
Department of Psychology, University of Nevada, USA
16 - 27 April, The University of Western Australia

Dr Carolyn Wilshire
School of Psychology, Victoria University of Wellington, NZ
16 - 29 April, Macquarie University

Professor Morris Moscovitch
Department of Psychology, University of Toronto, Canada
17 - 19 April, University of Auckland, NZ
30 April - 3 May, Neuroscience Research Australia, The University of Sydney and The University of New South Wales

Dr Chiara Fiorentini
Research School of Psychology, Australian National University
26 - 27 April, The University of Western Australia

Professor Ken Forster
Department of Psychology, University of Arizona, USA
12 June - 1 July, Macquarie University

Professor Roy Kessels
Donders Institute for Brain, Cognition and Behaviour, Radboud University Nijmegen, The Netherlands
12 June - 28 August, Macquarie University

Dr Simone Favelle
School of Psychology, University of Wollongong
21-22 June, The University of Western Australia

Dr Megan Willis
School of Arts and Science, Australian Catholic University
28 June, The University of Western Australia

Dr Mina Johnson-Glenberg
Learning Sciences Institute, Arizona State University, USA
6 - 20 July, Macquarie University

Professor Marc Brysbaert
Department of Experimental Psychology, Ghent University, Belgium
9 July - 3 August, Macquarie University

Professor Martin Brüne
Department of Psychiatry, Ruhr University of Bochum, Germany
30 July - 11 August, Macquarie University

Professor Naama Friedmann
School of Education, Tel Aviv University, Israel
1 August - 3 September, Macquarie University

Dr Christine Guo
Selective Vulnerability Research Lab, University of California San Francisco, USA
6 August, Neuroscience Research Australia

Professor Jason Mattingley
Queensland Brain Institute, The University of Queensland
6 - 10 August, Macquarie University

Professor Yukio Otsu
Institute of Cultural and Linguistic Studies, Keio University, Japan
6 - 10 August, Macquarie University
VISITORS

Professor Daniel Schacter
Department of Psychology, Harvard University, USA
6 - 10 August, Macquarie University

Professor Ovid Tzeng
Institute of Neuroscience, National Yang-Ming University, Taiwan
6 - 10 August, Macquarie University

Emeritus Professor Brian Byrne
School of Behavioural, Cognitive and Social Sciences, University of New England
7 - 9 August, 26 - 28 November and 13 December, Macquarie University

Dr Akira O’Connor
School of Psychology and Neuroscience, University of St Andrews, UK
15 August - 7 September, Macquarie University

Professor Dorothy Bishop
Department of Experimental Psychology, University of Oxford, UK
2 October, The University of Western Australia

Professor Liqun Gao
The Center For Studies of Chinese as a Second Language, Beijing Language and Culture University, China
12 - 14 November, Macquarie University

Professor Fengying Wang
Department of Obstetrics and Gynecology, Xuanwu Hospital of Capital Medical University, China
12 - 14 November, Macquarie University

Professor Mei Wang
College of Special Education Beijing Union University, China
23 - 30 November, Macquarie University

Professor Suparna Rajaram
Department of Psychology, Stony Brook University, USA

Associate Professor Elaine Reese
Department of Psychology, Otago University, NZ

Dr Anne Scharling Rasmussen
Department of Psychology and Behavioural Sciences, Aarhus University, Denmark

Professor Janice Keenan
Institute for Behavioral Genetics, University of Colorado, USA

Professor Richard Olson
Institute for Behavioral Genetics, University of Colorado, USA

Dr Elizabeth (Liz) Pellicano
Department of Psychology and Human Development, Institution of Education, University of London, UK
26 - 30 November, The University of Western Australia

Associate Professor Robyn Langdon
Department of Cognitive Science, Macquarie University
3 - 4 December, The University of Western Australia

Professor Kevin Pelphrey
Yale Child Neuroscience Laboratory, Yale University, USA
3 - 7 December, Macquarie University

Professor Niels Schiller
Centre for Linguistics, Leiden University, Germany
9 - 21 December, Macquarie University

L to R: Emeritus Professor Brian Byrne, Professor Janice Keenan (University of Colorado) and Professor Richard Olson (University of Colorado)
Student Visitors

Mr Arjun Sen  
Epileptology Department, University of Oxford, UK  
23 January - 25 June, Neuroscience Research Australia

Ms Zoe Plympton  
Centre for Cognitive Science, University of Wisconsin-Madison, USA  
1 February - 30 June, Macquarie University

Mr Amir Sadeghi  
School of Literacies and Arts in Education, University of Canterbury, NZ  
13 February - 31 August, Macquarie University

Mr Luc Charmet-Mougey  
Ecole Normale Supérieure, Paris Descartes University, and School for Advanced Studies in the Social Sciences, France  
27 February - 30 September, Macquarie University

Mr Sam Wilkinson  
Department of Philosophy, The University of Edinburgh, UK  
9 April - 4 May, Macquarie University

Ms Francesca Woolgar  
Department of Psychology, The University of Warwick, UK  
23 July - 31 August, Macquarie University

Ms Katherine Storrs  
School of Psychology, The University of Queensland  
26 - 27 September, The University of Western Australia

Ms Jo Lane  
Department of Psychology, Australian National University  
27 September, The University of Western Australia

Ms Liz Metcalf  
Department of Psychology, Australian National University  
27 September, The University of Western Australia

Ms Theresa Raiser  
Department of Linguistics, Ludwig-Maximilians University of Munich, Germany  
16 October - 14 December, Macquarie University

Ms Katherine Storrs  
School of Psychology, The University of Queensland  
26 - 27 September, The University of Western Australia

Ms Jo Lane  
Department of Psychology, Australian National University  
27 September, The University of Western Australia

Ms Liz Metcalf  
Department of Psychology, Australian National University  
27 September, The University of Western Australia

Ms Theresa Raiser  
Department of Linguistics, Ludwig-Maximilians University of Munich, Germany  
16 October - 14 December, Macquarie University
Distinguished Professor
Stephen Crain,
Associate Professor
Blake Johnson,
Dr Elisabeth Harrison
Establishment of the International Center for Child Language Health at Beijing Haidian Special Education School
Happy Online, 6 September

Dr Sharpley Hsieh
Dementia and words that convey emotion
Dementia Today, 15 August
Dementia can drain words of meaning
We Speak News, Greater Kashmir, News Track India, 27 July
Times of Oman, 29 July
Times of India, 11 September
Dementia yields mixed results in comprehension test
Australian Ageing Agenda, 31 July
Emotion words lost in dementia
Ageless Design, Alzheimer’s Daily News, 26 July
Science Alert, 27 July
Emotionally descriptive words lose meaning with semantic dementia
Health Central, 2 August
Everyday words that describe feelings lost in dementia
Alzheimer’s Reading Room, 26 July
Women’s Brain Health, Takkarr, Medical Xpress, 27 July
e! Science News, 26 July

Dr Muireann Irish
Back to the future’ grant success
NeuRA webpage, 9 November
Considering the role of semantic memory in episodic future thinking:
Evidence from semantic dementia
Dementia Today, 16 August
Dementia patients can’t see their future
ABC Science, 22 May
Dementia patients reveal how we construct a picture of the future
Medical Express, 23 May
Dementia Today, 16 August
Dementia research provides new insights into how we imagine future events
Dementia Forum, 13 July
Future-planning brain areas found
Science Alert, 23 May
Newodrome, 27 July
General knowledge and future thinking linked in brain
The Conversation, 23 May
Semantic dementia patients can’t see the future
Neurology Update, 22 May
Semantic memory is critical for episodic future thinking
Alzheimer Europe, 23 May
Social skills linked to daydreaming brain
ABC Science, 2 March

Dr Saskia Kohnen,
Professor Anne Castles
Dyslexic condition turns slime into smile
ABC Science, 3 August

Musical study challenges long-held view of left brain-right brain split
Science News, 3 June
Medical Xpress, 4 June
Therapy Toronto, Heath Canal, 5 June
Study with music challenges theory about right-brain and left-brain functions
Medical News Today, 6 June
Words that describe feelings get lost in dementia
Alzheimer’s Reading Room, 26 July
Women’s Brain Health, Takkarr, Medical Xpress, 27 July
Science News, 26 July

Dr Donna Rose Addis
Meet Dr Donna Rose Addis
The Psych Talk over Tea Time, Brain Breaking, 8 March
Truth or lie? Can MRI help scientists read our minds
SciBlogs, 9 March

Associate Professor
Amanda Barnier
Why did I forget?
Super Living Online, 16 April
You are getting sleepy?
Daily Life, 17 April

Dr Jon Brock
Redefining autism in the DSM-5
The Conversation, 25 October
Rocket ship brain scanner
Cracking the Enigma: An Autism Research Blog, 3 July

Professor Anne Castles,
Associate Professor
Genevieve McArthur
‘Brain-training’ … or learning, as we like to call it
The Conversation, 5 October

Emeritus Professor Max Coltheart
Weird neuroscience: How education hijacked brain research
The Conversation, 10 December

Distinguished Professor
Stephen Crain
Science holds healthcare solutions, Beijing Language and Culture University Public Lecture
39 Health, 9 September
China Healthcare, 10 September
China.com, 19 September
MSN Health, 21 September
SoHu Health, 22 September

2012 Annual Report
Dr Laurie Miller
One size does not fit all: Face emotion processing in frontotemporal dementia
Dementia Today, 29 July

Professor Cathy Mondloch
What’s in a face?
Psychology Today, 5 November

Associate Professor
Romina Palermo
I should know you: ‘Face blindness’ and the problem of identifying others
The Conversation, 16 August

Professor William (Bill) Thompson
New study on tone deaf people reveals relationship between music and everyday life
Tone Deaf, 1 November

Associate Professor Mark Williams
Out of sight, but still in mind: The mysteries of peripheral vision
The Conversation, 24 May

Dr Olivier Piguet
Neural basis of music knowledge: evidence from the dementias
Dementia Today, 23 August

Professor Gillian Rhodes, Professor Leigh Simmons
Been cheating? It’s written all over your face
The University of Western Australia News, 5 December

Can women tell if a man will cheat on them just by looking at a photo? Researchers claim there is a ‘kernel of truth’ in the idea
Science & Tech, Mail Online, 7 December

Women can judge sexual unfaithfulness from unfamiliar men’s faces
Have I Got News For You, 7 December

Professor Annette Castles, Dr Hua-Chen Wang
Top team from the get-go
The Sydney Morning Herald, 1 September

Emeritus Professor Max Coltheart
Brain program heads this way
The Sydney Morning Herald, 18 June

Disability groups aim for high-tech help
The Sydney Morning Herald and The Melbourne Age, 23 April

Jessica Minns
Distinguished Professor
Stephen Crain
Hearing Hub leads world
The Northern District Times, 12 September

Macquarie Hearing Hub
Bennelong Update, Spring

Print

Dr Donna Rose Addis
Imagining the future invokes your memory: Why we tend to predict rosy times ahead (Herbert, W. & Addis, D.R.)
Scientific American Mind, p62, 1 May

Mind reading? Communicating the boundaries of brain imaging
NZ Science Teacher, p129, 18 March

American Scientist, 100 (3) p210-217, 1 June

NSF gives clinical students a shot at winning graduate fellowships (Carpenter, S. & Addis, D.R.)
Science 336, p972, 25 May

Associate Professor
Amanda Barnier
Shared recall
New Scientist, 6 October

Total recall: The masters of memory
The Sydney Morning Herald, 16 March

You are getting sleepy
Good Weekend, The Sydney Morning Herald, 17 April

Vaughan Bell: Hypnosis is no laughing matter
The Guardian, 22 July

Learning lines
Illawarra Mercury, 25 August

Monkey see, monkey do. Monkey read?
Science Now, 12 April

Professor Anne Castles
Experts question effectiveness of program
The Sydney Morning Herald, 5 November

Top team from the get-go
The Sydney Morning Herald, 1 September

Emeritus Professor Max Coltheart
Brain program heads this way
The Sydney Morning Herald, 18 June

Disability groups aim for high-tech help
The Sydney Morning Herald and The Melbourne Age, 23 April

Distinguished Professor
Stephen Crain
Hearing Hub leads world
The Northern District Times, 12 September

Macquarie Hearing Hub
Bennelong Update, Spring
Professor John Hodges
Strengthening the diagnosis of dementia
The NeuRA Magazine, Autumn

Dr Sharpley Hsieh
Language and emotion linked in the brain
COSMOS Magazine, August/September

Words that describe feelings lost in dementia
News Medical, 27 July

Dr Sharpley Hsieh, Dr Muireann Irish
News in brief
The NeuRA Magazine, Winter

Dr Muireann Irish
Profile
Fight Dementia News, Alzheimer’s Australia Dementia Research Foundation, 1 October

Dementia research provides new insights into how we imagine future events
Fight Dementia News, Alzheimer’s Australia Dementia Research Foundation, 12 July

Diagnosing dementia: A brief overview of the cognitive neuroscience
CAPA Quarterly, 1 November

Imagining the future
NeuRA Magazine, 1 October

Dr Simon McCarthy-Jones
Do schizophrenics deserve organ transplants? Some docs say no
Huffington Post, 3 July

Associate Professor Romina Palermo
Real life stories: I can’t recognise my own face
That’s Life Magazine, 12 October

Professor Gillian Rhodes
States of mind
Global Vision: Research Vision Report

Professor Gillian Rhodes, Professor Leigh Simmons
Deep voices may indicate a low sperm count, research shows
The Daily Telegraph, 5 January

Face reveals naked truth
Illawarra Mercury, 11 December

Taking faithfulness at face value
Life & Style, The Sydney Morning Herald, 6 December

Associate Professor Anina Rich
Synaesthesia
Cosmos, 1 January

Professor William (Bill) Thompson
Music and emotion
The Australian Financial Review, 31 October

Study: Music, language’s common evolutionary roots lie in emotion
Los Angeles Times, 30 October

Dr Nan Xu
Consonant pressure
The Northern District Times, 29 March

Radio

Dr Donna Rose Addis
Memory
Summer Nights - Radio New Zealand National, 20 January

Our changing world
New Zealand National, 5 April

Remembering the future (White, M.)
New Zealand Listener, 17-18 January

Amanda Miller Amberber
The bi-lingual brain all in the mind
ABC Radio National, 21 October

Associate Professor Amanda Barnier, Dr Celia Harris
Memory: Thread of life
All in the Mind, ABC Radio National, 16 December

Associate Professor Amanda Barnier, Emeritus Professor Max Coltheart, Dr Rochelle Cox
Hypnotic delusion
All in the Mind, ABC Radio National, 25 November

Professor Anne Castles
The Anowsmith Method
Stateline, ABC 1, 16 November

Associate Professor Felicity Cox
Accents
ABC Radio, 7 December

Interviewed as speech and accent expert
Radio National Drive, 13 July

Distinguished Professor Stephen Crain
Establish of the International Center for Child Language Health in Beijing
Language and Culture University FM100.6, AM828, 5 September

Dr Sharpley Hsieh
Musical study challenges long-held view of left brain-right brain split
National Radio News, Radio 2GB, 21 May

Dr Muireann Irish
Dementia patients reveal how we construct a picture of the future
Radio 2GB, Radio 2UE, 21 May

Dr Linda Jeffery
The science of face perception
6PR Nightline, 9 August

Dr Saskia Kohnen
"Smile”--not “slime”--letter position dyslexia
ABC Brisbane, 10 August
Television

Dr Donna Rose Addis
Inspiring islanders
Tagata Pasifika, 27 September

Through the wormhole with Morgan Freeman
Discovery Channel, 20 June

Professor William (Bill) Thompson
The longest day: To hell and back in 25 hours
Channel Ten, 25 August

Online Resources

Cracking the enigma: an autism research blog
http://crackingtheenigma.blogspot.com.au

Macquarie Online Test Interface
http://www.motif.org.au/

Neuronauts Brain Science Club
http://www.ccd.edu.au/services/neuronauts/

Prosopagnosia Research
http://www.maccs.mq.edu.au/research/projects/prosopagnosia/

Synaesthesia Research

Western Australia Register for Autism Spectrum Disorders
http://www.autismwa.org.au/

**MEDIA + Publicity**

**Associate Professor Romina Palermo**
Prosopagnosia: Face-blindness
ABC Drive, 17 August

**Professor John Sutton, Associate Professor Amanda Barnier**
Remembering together
All in the Mind, ABC National Radio, 27 May

**Professor John Sutton, Dr Richard Menary**
Extending the mind the philosopher’s zone
ABC Radio National, 25 March

**Professor William (Bill) Thompson**
Emotions in voice linked to pitch
ABC Radio PM, 31 October

More than tone deaf
Radio New Zealand National, 14 November

The impact and influence of music on our minds
Radio 720 WGN Chicago, 27 August

Tone deaf shed light on origin of language
ABC Adelaide, ABC Gold, Tweed Coasts Drive, 30 October

**Television**

**Online Resources**
Prosimy in the acquisition of language: A grouping mechanism across modalities? *
Dr Marina Nespor
Department of Psychology
University of Milano-Bicocca, Italy
16 January, Macquarie University

Improving visual and auditory stimulation events for real-time.
Johannes Höhne
Machine Learning Laboratory
Berlin Institute of Technology, Germany
17 January, Macquarie University

Issues in diagnosis and treatment of logopenic and nonfluent progressive aphasia. *
Dr Karen Croft
School of Psychology
The University of Sydney
6 February, Macquarie University

Reading acquisition in a transparent orthography.
Professor Ludo Verhoeven
Behavioural Science Institute
Radboud University Nijmegen, The Netherlands
7 February, Macquarie University

Schwa lab and parsing the web. (CLaS-CCD Research Colloquium Series 2012) *
Dr James Curran
School of Information Technologies
The University of Sydney
17 February, Macquarie University

The acquisition of word order in wh-questions in English and Norwegian: A comparison of usage-based and rule-based learning. *
Professor Marit Westergaard
Faculty of Humanities, Social Sciences and Education
University of Tromsø, Norway
22 February, Macquarie University

Evidence for selection in the evolution of human communication.
Associate Professor Nicolas Fay
School of Psychology
The University of Western Australia
23 February, The University of Western Australia

Surveillance and of nature: Monitoring beyond the human.
Professor Kevin D Haggerty
Criminology and Sociology
University of Alberta, Canada
23 February, Macquarie University

Beyond search: Enabling biomedical knowledge discovery through natural language processing. *
Dr Karin Verhooij
Biomedical Informatics Team
NICTA
24 February, Macquarie University

Attentional capacity limitations in face perception: Processing face sets.
Dr Markus Neumann
General Psychology and Cognitive Neuroscience
Friedrich Schiller University of Jena, Germany
1 March, The University of Western Australia

Toward an epigenetics of specific language impairment: Looking for links among growth, genes, and impairments. *
Distinguished Professor Mabel Rice
Department of Speech-Language & Hearing
University of Kansas, USA
2 March, Macquarie University

Sight-word and phonics training in children with dyslexia.
Associate Professor Genevieve McArthur
ARC Centre of Excellence in Cognition and its Disorders, Department of Cognitive Science
Macquarie University
15 March, The University of Western Australia

Norwegian determiners in English- Norwegian bilingual acquisition and attrition. *
Professor Marit Westergaard
Faculty of Humanities, Social Sciences and Education
University of Tromsø, Norway
22 February, Macquarie University

F0 peak alignment discrimination by adolescent cochlear implant users. *
Colleen Holt
Department of Otolaryngology and Department of Audiology and Speech Pathology
The University of Melbourne
15 March, Macquarie University

Adding years to your life (or at least looking like it) - adaptation and the perception of facial age.
Professor Michael Webster
Department of Psychology
University of Nevada, Reno, USA
19 March, The University of Western Australia

I see what you said! Infant perception of cross-modal AV congruency for native and non-native consonants. *
Professor of Research
The MARCS Institute
The University of Western Sydney
19 March, Macquarie University

Faulty filters in schizophrenia: What can automatic attributions of relevance teach us about impaired inferential processes?
Dr Juanita Todd
School of Psychology
The University of Newcastle
27 March, Macquarie University

Language, sequencing and the human brain: a cross-linguistic perspective. *
Professor Ina Bornkessel-Schleswesky & Professor Matthias Schleswesky
Max Planck Institute for Human Cognitive and Brain Sciences, Germany
Johannes Gutenberg-University, Germany
28 March, Macquarie University

What German and Chinese have in common: A neurocognitive perspective on cross-linguistic similarities and differences. *
Professor Ina Bornkessel-Schleswesky & Professor Matthias Schleswesky
Max Planck Institute for Human Cognitive and Brain Sciences, Germany
Johannes Gutenberg-University of Mainz, Germany
30 March, Macquarie University

The rostro-caudal functional organisation of lateral Prefrontal Cortex.
Ben Crittenden
MRC Cognition and Brain Sciences Unit
University of Cambridge, UK
3 April, Macquarie University
When size matters: The complex world of the fragile X gene and its developmental phenotypes. 
Professor Kim Cornish  
School of Psychology and Psychiatry  
Monash University  
17 April, Macquarie University

More than just grammar: Cognitive abnormalities in individuals with nonfluent aphasia.  
Dr Carolyn Wilshire  
Department of Psychology  
Victoria University of Wellington, New Zealand  
19 April, Macquarie University

The endogenously active brain: The need for an alternative cognitive architecture.  
Professor William Bechtel  
Department of Philosophy, Center for Chronobiology, and Interdisciplinary Program in Cognitive Science  
University of California, San Diego, USA  
6 June, Macquarie University

Machine translation for language preservation: Improving access to knowledge and heritage for small languages.  
Professor David Chiang  
Information Sciences Institute  
University of Southern California, USA  
18 May, Macquarie University

Smaller models for better performance: Learning unsupervised generative models with a sparse prior.  
Ashish Vaswani  
Information Sciences Institute  
University of Southern California, USA  
18 May, Macquarie University

Implicit learning in the acquisition of grammatical structure.  
Dr Evan Kidd  
Department of Psychology  
Australian National University  
28 May, Macquarie University

Distinguishing self from world: Implications for schizophrenia.  
Dr Thomas Whitford  
School of Psychology  
The University of New South Wales  
29 May, Macquarie University

Visual word superiority redux: A functional measure of workload capacity orders several types of word and non-word structures.  
Distinguished Professor James Townsend  
School of Psychological and Brain Sciences  
Indiana University, USA  
12 June, Macquarie University

How many words can we read at once?  
Professor Ken Forster  
Department of Psychology  
University of Arizona, USA  
19 June, Macquarie University

Up, down, round and round: Matching faces across changes in axis and rotation.  
Dr Simone Favelle  
School of Psychology  
University of Wollongong  
21 June, The University of Western Australia

The faces of schizotypy.  
Dr Emma Barkus  
School of Psychology  
University of Wollongong  
26 June, Macquarie University

Beyond explicit recognition: The influence of facial expressions on behaviour.  
Dr Megan Willis  
School of Psychology  
Australian Catholic University  
28 June, The University of Western Australia

The broadest problem in science: Our publishing system.  
Associate Professor Alex Holcombe  
School of Psychology  
The University of Sydney  
3 July, Macquarie University

SLI children’s knowledge of plurifunctional forms of DO.  
Distinguished Professor Mabel Rice  
Department of Speech-Language & Hearing  
University of Kansas, USA  
4 July, Macquarie University

Perceiving facial expressions: Insights from normal population and autism.  
Dr Chiara Fiorentini  
School of Psychology  
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26 April, The University of Western Australia

The cognitive neuroscience of recent and remote spatial memory in humans and rodents: Constructing scenes and cognitive maps.  
Professor Morris Moscovitch  
Department of Psychology, University of Toronto, Canada  
Rotman Research Institute, Canada  
2 May, Neuroscience Research Australia

The study of cognitive aging with neuroimaging methods.  
Professor Cheryl Grady  
Department of Psychology and Psychiatry, University of Toronto, Canada  
Rotman Research Institute, Canada  
8 May, Macquarie University

Faster algorithms for Max-Product Message-Passing.  
Dr Tiberio Caetano  
Statistical Machine Learning Group NICTA  
9 May, Macquarie University

Optimization in machine learning: An overview.  
Professor Stephen J Wright  
Computer Sciences Department  
University of Wisconsin-Madison, USA  
13 May, Macquarie University

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Professor Stephen J Wright  
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University of Wisconsin-Madison, USA  
13 May, Macquarie University
What do we expect to remember? Insights from fMRI studies of recognition memory.  
Dr Akira O'Connor  
School of Psychology  
University of St Andrews, UK  
21 August, Macquarie University

Parsing spoken language.  
Professor Mari Ostendorf  
Electrical Engineering  
University of Washington, USA  
21 August, Macquarie University

Quotatives down under: Be like in cross-generational Australian English speech.  
Assistant Professor Celeste Rodríguez Louro  
Department of Linguistics  
The University of Western Australia  
29 August, Macquarie University

Coining words for new concepts in Australian languages: A survey.  
Professor Jane Simpson  
School of Language Studies  
Australian National University  
10 September, Macquarie University

Skilled perception: Contributions of knowledge, emotion, and perceptual strategy.  
Dr Kim Curby  
Department of Psychology  
Macquarie University  
18 September, Macquarie University

You look different, somehow.  
Kate Storrs  
School of Psychology  
The University of Queensland  
27 September, The University of Western Australia

Beyond the Dirichlet and Pitman-Yor Processes.  
Professor Yee Whye Teh  
Department of Statistics  
University of Oxford  
28 September, Macquarie University

Cognitive dysfunction in Parkinson’s Disease: Computational and empirical data.  
Ahmed Moustafa  
The MARCS Institute and School of Social Sciences and Psychology  
University of Western Sydney  
2 October, Macquarie University

Audiovisual interaction in school-aged children: A speech in noise paradigm measured using cortical auditory evoked potentials.  
Pia Gyldenkerne  
Department of Linguistics  
Macquarie University  
22 October, Macquarie University

Training theory of mind in autism.  
Dr Sander Begeer  
School of Psychology  
The University of Sydney  
30 October, Macquarie University

With or without speech: Indigenous sign languages from Central Australia.  
Dr Jennifer Green  
School of Languages and Linguistics  
The University of Melbourne  
12 November, Macquarie University

Discrete non-parametric methods.  
Dr Wray Buntine  
Statistical Machine Learning Group  
NICeTA  
21 November, Macquarie University

Abstraction networks for terminologies: Helping to manage “big knowledge”.  
Dr Michael Halper  
College of Computing Sciences  
New Jersey Institute of Technology, USA  
22 November, Macquarie University

Evaluating optimal models of information processing in visual cortex.  
Associate Professor John Serences  
Department of Psychology  
University of California, San Diego, USA  
26 November, Macquarie University

Pre-membering perception.  
Professor Anna Christina (Kia) Nobre  
Department of Experimental Psychology  
University of Oxford, UK  
27 November, Macquarie University

Why children differ in their reading and related skills: answers from identical and fraternal twins.  
Professor Richard Olson  
Department of Psychology  
University of Colorado, USA  
27 November, Macquarie University

Explaining altered sensation and perception in autism.  
Dr Elizabeth (Liz) Pellicano  
Centre for Research in Autism and Education (CRAE) and Department of Psychology and Human Development Institute of Education, University of London, UK  
4 December, Macquarie University

Morphological priming in speech production: There’s butter in butterfly but no corn in corner.  
Professor Niels Schiller  
Leiden Institute for Brain and Cognition and Leiden University Center for Linguistics  
Leiden University, The Netherlands  
11 December, Macquarie University

Development and plasticity of multimodal interactions: Vision, audition, touch and action.  
Professor David Burr  
Department of Psychology, University of Florence  
CNR Institute of Neuroscience  
11 December, The University of Western Australia
PUBLICATIONS

Belief Formation Program

Books

Book Chapters

Periodicals

ARC CENTRE OF EXCELLENCE in Cognition and its Disorders


Language Program

Books


Book Chapters


Periodicals


Periodicals


Reading Program

Book Chapters


Periodicals


2012 Annual Report


Perception in Action

Book Chapters


Periodicals


Finkbeiner, M., & Coltheart, M. (In Press). Dismissing subliminal perception because of its famous problems is classic 'baby with the bathwater'. Behavioral and Brain Sciences.


Zapf, R., Savage, G., & Williams, M.A (In Press). The crossmodal congruency task as a means to obtain an objective behavioural measure in the rubber hand illusion paradigm. Journal of Visualized Experiments.

Other Programs

Book Chapters


Periodicals


Keynote + Invited Presentations


Conference Papers

Addis, D.R. (2012, June). From autobiographical memory to the default network and back. In D.R. Addis (Chair), Exploring (dys)function of the default network: Implications for internally-
guided cognition. Symposium conducted at the International Society for Behavioural Neuroscience Annual Meeting, San Francisco, USA.


Geckin, V. (2012, October). When angry giraffe traded and lost his 'the'. Acquisition of the English article system by bilingual children. Paper presented at the 5th Generative Approaches to Language Acquisition-North America (GALANA5), University of Kansas, Lawrence, USA.


**Posters**


De Wit, B., & Kinoshita, S. (2012, November). Reconsidering the automatic spreading activation process in semantic priming. Poster session presented at the 53rd Annual Meeting of the Psychonomic Society, Minneapolis, USA.

Dube, S., Demuth, K., & Kuefler, F. (2012, December). The role of prosodic cues in L2 perception of the 3rd person singular -s. An online grammaticality judgment task. Poster session presented at the 14th Annual International Conference on Speech Science and Technology (SIST), Sydney.


Fiona Kumfor
Other Invited Presentations


Crain, S. (2012, May). When I was a child… I reasoned like a child. Invited colloquium at the Academia Sinica, Taipei, Taiwan.


Marstaller, L. (2012, June). Neural processes underlying the production of co-speech gestures. Invited presentation given at the Workshop on Language and Brain, Beijing Language and Culture University, Beijing, China.

McArthur, G. (2012, December). Evidence-based assessments and treatments of dyslexia. Invited presentation given at the round table meeting with Minister Peter Garrett (Minister of Education) and Barry McGaw (Head of Australian Curriculum, Assessment and Reporting Authority), Sydney.

McCarthy-Jones, S. (2012, March). Listening to voices: Where are we in our attempts to help people with distressing auditory verbal hallucinations? Invited colloquium at the University of Wollongong, Wollongong.
AWARDS, RECOGNITION
+ Grants

Awards

Dr Donna Rose Addis
Early Career Research Excellence Award, University of Auckland

Adam Bentvelzen
Postgraduate Research Fund (PGRF) Vice Chancellor’s Recommendation, Macquarie University

Robin Blumfield
Faculty of Human Sciences Red Balloon Award for “Exemplary effort in customer service”, Macquarie University

Rocco Chiou
Postgraduate Research Fund (PGRF) Vice Chancellor’s Recommendation, Macquarie University

Aline Cordonnier
Postgraduate Research Fund (PGRF) Vice Chancellor’s Recommendation, Macquarie University

Dr Karen Croot, Christine Taylor and Professor Lyndsey Nickels
ACQ Editor’s Prize for the paper of the highest merit published in 2011 in ACQuiring Knowledge in Speech, Language and Hearing for the paper “Clinical assessment of progressive aphasias.”

Dr Louise Ewing
Postdoc award for best presentation, Australasian Society for Autism Research (ASSAR) Inaugural Scientific Meeting

Michael Gascoigne
NSW Agency for Clinical Innovation (ACI) Neurosurgery Network Allied Health Travel Scholarship

Vasfiye Geçkin
Travel grant to attend the 22nd Annual Conference of the European Second Language Association, held in Poznań, Poland

Wei He
Postgraduate Research Fund (PGRF) Vice Chancellor’s Recommendation, Macquarie University

Professor John Hodges
Feda Newcombe Prize, British Neuropsychological Society

Qandeel Hussain
Australian Linguistic Society’s Susan Kaldor Scholarship to attend the Linguistic Society of America’s summer school at the University of Michigan, USA

Dr Muireann Irish
Paper of the Month in May for “Considering the role of semantic memory in episodic future thinking: evidence from semantic dementia” published in Brain.

Associate Professor Genevieve McArthur
Faculty of Human Sciences Red Balloon Award for “Exemplary effort showing exceptional commitment to her research team and their wellbeing”, Macquarie University

Professor Lyndsey Nickels, Robyn Bishop and Lesley McKnight
Faculty of Human Sciences Red Balloon Award for “Exemplary effort in the management and delivery of IDEALAB Higher Degree Research program”, Macquarie University

Genevieve Quek
Postgraduate Research Fund (PGRF) Vice Chancellor’s Recommendation, Macquarie University

Ekaterina Tomas
Judges’ Choice Award, Faculty of Human Sciences “Three Minute Thesis” (3MT) competition, Macquarie University

People’s Choice Award, Macquarie University “Three Minute Thesis” (3MT) competition, Macquarie University

Dr Alexandra Woolgar
Early Career Researcher Grant Income Award, Faculty of Human Sciences Research Awards, Macquarie University

2012 Annual Report
**Shu Yau**
Student award for best presentation, Australasian Society for Autism Research (ASfAR) Inaugural Scientific Meeting

**Astrid Zeman**
People’s Choice Award, Faculty of Human Sciences “Three Minute Thesis” (3MT) competition, Macquarie University

**Dr Peng Zhou**
US National Science Foundation Travel Fellowship for Generative Approaches to Language Acquisition North America 5, held in Lawrence, USA

**Promotions**

**Dr Jon Brock**
Promotion to Senior Lecturer (Level C)

**Associate Professor Felicity Cox**
Promotion to Associate Professor (Level D)

**Dr Rochelle Cox**
Promotion to Lecturer (Level B)

**Dr Eva Marinus**
Promotion to Lecturer (Level B)

**Dr Pamela Marsh**
Promotion to Lecturer (Level B)

**Dr Simon McCarthy-Jones**
Promotion to Lecturer (Level B)

**Dr Richard Menary**
Promotion to Senior Lecturer (Level C)

**Associate Professor Romina Palermo**
Promotion to Associate Professor (Level C)

**Associate Professor Olivier Piguet**
Promotion to Associate Professor (Level D)

**Associate Professor Anina Rich**
Promotion to Associate Professor (Level D)

**New External Appointments**

**Professor Anne Castles**
Chair, Steering Committee, NSW Centre for Effective Reading. (2012 continuing)

**Emeritus Professor Max Coltheart**
Member, Australian Academy of Science Sectional Committee 12. (2012 - 2015)

**Dr Karen Croot**
Visiting Fellowship, Center for Advanced Studies, Ludwig-Maximilians-University, Munich, Germany. (2012 - 2013)

**Dr Celia Harris**
Associated International Fellow, Center on Autobiographical Memory Research, Aarhus University, Denmark. (2012 continuing)

**Dr Muireann Irish**
Elected Member, International Society for Behavioural Neuroscience (iSBN). (2012 continuing)

**Associate Professor Blake Johnson**
Visiting Professor, Beijing Language and Culture University International Centre for Child Language Health. (2012)

**Associate Professor Caroline Jones**
Vice President, Australian Linguistic Society. (2012 - 2013)

**Associate Professor Robyn Langdon**
Member, National Health and Medical Research Council (NHMRC) Assigners Academy. (2012 continuing)

**Professor Lyndsey Nickels**
Faculty Member, NHMRC Research Translation. (2012 continuing)

**Dr Elizabeth (Liz) Pellicano**
Advisory Group Member, Ambitious about Autism Peer Awareness programme. (2012 - 2013)
Steering Group Member, Assistive learning technologies for the Centre for Research into Assistive Learning Technologies, Kellogg College, University of Oxford, UK. (2012 continuing)
External Advisory Group Member, Ambitious about Autism UK. (2012 continuing)

**Associate Professor Olivier Piguet**
Member, NSW Brain Bank Network Scientific Review Committee. (2012 continuing)
Founding Member, International Society for Frontotemporal Dementias. (2012 continuing)

**Dr Peng Zhou**
Deputy Director, International Centre for Child Language Health (ICCLH), Beijing Language and Culture University. (2012 continuing)

**Editorial Appointments**

**Associate Professor Amanda Banner**
Editor, Memory Studies. (2006 continuing)
Associate Editor, Australian Journal of Clinical and Experimental Hypnosis. (2004 continuing)

**Professor Anne Castles**
Editorial Board, Scientific Studies of Reading. (2002 continuing)
Editorial Board, Cortex. (2011 continuing)
Associate Editor, Cognitive Neuropsychology. (2010 continuing)

**Associate Professor Veronika Coltheart**
Consulting Editor, Journal of Experimental Psychology. (2002 continuing)

**Distinguished Professor Stephen Crain**
Editorial Board, Journal of Child Language. (2005 continuing)
Editorial Board, Biolinguistics. (2006 continuing)
Advisory Board, Language Acquisition. (2003 continuing)
Executive Board, Society for Language Development. (2002 continuing)
Editorial Board, Semantics and Pragmatics. (2008 continuing)
Advisory Board, Tokyo Conference on Psycholinguistics (TCP). (2011 continuing)
Editorial Advisory Board, English Linguistics, English Linguistics Society of Japan. (2010 continuing)

**Professor Katherine Demuth**
Editorial Board, Language Acquisition. (2011 continuing)
Editorial Board, Language Learning and Development. (2003 continuing)
Consulting Editor, Linguistics. (2001 continuing)

**Dr Matthew Finkbeiner**
Guest Editor, Cognitive Neuropsychology. (2008 continuing)
Guest Editor, Acta Psychologica. (2008 continuing)

**Dr Celia Harris**
Editorial Assistant, Memory Studies. (2007 continuing)
Professor William Hayward
Associate Editor, Visual Cognition. (2009 continuing)

Professor John Hodges
Editorial Board, Cognitive Neuropsychiatry. (1997 continuing)
Editorial Board, Aphasiology. (2000 continuing)
Editorial Board, Cognitive Neuropsychology. (2002 continuing)
Associate Editor, Journal of Alzheimer’s Disease. (2010 continuing)
Editorial Advisory Board, Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration. (2011 continuing)

Professor Mark Johnson
Editorial Board, Computer Speech and Language. (2009 - 2012)

Associate Professor Sachiko Kinoshita
Associate Editor, Quarterly Journal of Experimental Psychology. (2005 continuing)
Associate Editor, Journal of Experimental Psychology: Learning, Memory and Cognition. (2012 continuing)

Associate Professor Robyn Langdon
Associate Editor, British Journal of Clinical Psychology. (2011 continuing)
Editorial Board, Cognitive Neuropsychiatry. (2012 continuing)
Guest Editor, Cognitive Neuropsychiatry. (2010 continuing)

Dr Suze Leitão
Editorial Board, Child Language Teaching and Therapy. (2003 continuing)

Associate Professor Genevieve McArthur
Editorial Board, Scientific Studies of Reading. (2009 continuing)
Academic Editor, PLoS-One. (2011 continuing)
Academic Editor, PeerJ. (2012 continuing)

Dr Ryan McKay
Book Reviews Editor for Cognitive Neuropsychiatry. (2009 continuing)
Editorial Board of Topor: An International Review of Philosophy. (2012 continuing)

Professor Cathy Mondloch
Associate Editor, Journal of Experimental Child Psychology. (2011 continuing)

Professor Lyndsey Nickels
Associate Editor, Aphasiology. (2003 continuing)
Editorial Board, Cognitive Neuropsychology. (2010 continuing)
Editorial Board, Cognitive Neuropsychology. (2010 continuing)
Editorial Board, Brain Impairment. (2009 continuing)

Dr Elizabeth (Liz) Pellicano
Editor, Autism. (2011 continuing)

Associate Professor Olivier Piguet
Editorial Board, Frontiers in Dementia Research. (2010 continuing)
Publication Committee Member, Brain Impairment. (2005 continuing)

Professor Kathleen Rastle

Professor Gillian Rhodes
Member Advisory Committee, International Association for the Study of Attention and Performance. (2011 continuing)

Professor Leigh Simmons
Associate Editor, Behavioural Ecology and Sociobiology. (1996 - 2012)
Associate Editor, Proceedings of the Royal Society of London, Biological Sciences. (2008 continuing)
Editor, Advances in the Study of Behavior. (2008 continuing)
Editor-in-Chief, Behavioural Ecology. (2012 continuing)

Professor John Sutton
Co-Editor, Memory Studies (Sage). (2006 continuing)
Editorial Board, Philosophical Psychology. (2006 continuing)
Editorial Board, Neuroethics. (2008 continuing)
Editorial Board, Scan: Journal of Media Arts Culture. (2004 continuing)
Co-Editor, Memory Studies (Palgrave Macmillan book series). (2009 continuing)

Ms Marina Trakas
Editorial Assistant, Memory Studies. (2012 continuing)

Associate Professor Mark Williams
Academic Editor, Public Library of Science (PLoS)-One. (2008 continuing)

Dr Peng Zhou
Associate Editor, International Journal of English Linguistics. (2012 continuing)
Alzheimer’s Australia Dementia Research Foundation Grant (2011 - 2012) “The future looks bright - Episodic future thinking as a diagnostic aid in frontotemporal dementia and Alzheimer’s Disease” Irish, M., Piquet, O., & Hodges, JR. ($333,000)

Alzheimer’s Australia Dementia Research Foundation Victoria Grant (2012) “What kinds of support systems help people to remember in daily life, especially as their memories start to fail?” Harris, C., Barner, A., Savage, G., & Sutton, J. ($449,495)


ARC Discovery Early Career Research Award [DE120100814] (2012 - 2014) “Hypnotic illusions and clinical delusions: How closely and usefully can hypnosis model delusional beliefs” Cox, R.E. ($375,000)

ARC Discovery Early Career Research Award [DE120100898] (2012 - 2014) “The brain that adapts itself: flexible processing in an ever-changing world” Woolgar, A ($375,000)


ARC Discovery Project Grant [DP0984558] (2009 - 2013) “Integrating holistic processing and face-space approaches to the perception of facial identity” McKone, E., Edwards, M., & Aimola Davies, A.M. ($475,000)


ARC Discovery Project Grant [DP0985138] (2009 - 2012) “Learning to read words: Beyond alphabetic skills” Castles, A., & Nation, K. ($200,000)


ARC Discovery Project Grant [DP1093279] (2010 - 2012) “Prefrontal and medial temporal lobe cortices’ interactions to episodic long-term memory” Piquet, O., Hodges, J., & Hornberger, M. ($327,000)

ARC Discovery Project Grant [DP1096160] (2010 - 2014) “The emergence of logic in child language” Crain, S., Johnson, B., Khentzos, D., Tseng, O., Lee, T.H-T., & Gao, L-Q. ($601,000)


ARC Discovery Project Grant [DP111000799] (2011 - 2014) “Speech production in language-impaired speakers: Informing theoretical models and clinical practice regarding grammatical processing” Biedermann, B., & Schiller, N. ($401,509)

ARC Discovery Project Grant [DP110100850] (2011 - 2014) “Perceptual and psychosocial factors associated with individual differences in face identity and face expression processing” McKenzie, E., Palermo, R., O’Keary, R., & Moore, T. ($414,000)

ARC Discovery Project Grant [DP110102479] (2011 - 2013) “Phonological effects on the development of inflectional morphology” Cox, F., & Shahtrick-Huflag, S. ($205,000)

ARC Discovery Project Grant [DP110102506] (2011 - 2013) “Computational models of synergies in human language acquisition” Johnson, M., Demuth, K., & Frank, M. ($368,000)

ARC Discovery Project Grant [DP110102593] (2011 - 2013) “Incremental syntactic parsing and coreference resolution” Johnson, M.E., & Steedman, M. ($395,000)

ARC Discovery Project Grant [DP110103822] (2011 - 2013) “Using generalisation to better treat poor spelling” Kohnen, S., Nickels, L., & Rapp, B. ($240,000)

ARC Discovery Project Grant [DP110104202] (2011 - 2013) “Make up your mind! - Dissociating the roles of orbitofrontal cortex and striatum in human decision making” Hombernger, M., Hodges, J., & Lewis, S. ($1,005,000)

ARC Discovery Project Grant [DP120100187] (2012 - 2014) “Point of View in Personal Memory: a philosophical study of perspective in remembering and imagining” Sutton, J. ($114,000)


ARC Discovery Project Grant [DP120101014] (2012 - 2014) “Moral reasoning and mental illness: Towards a model of moral judgment and moral accountability” Langdon, R., & Bruene, M. ($180,000)

ARC Discovery Project Grant [DP120102414] (2012 - 2014) “A behaviour-genetic study of the NAPLAN results” Coventry, W., Byrne, B., & Olsson, R. ($1,525,851)

ARC Discovery Project Grant [DP120102589] (2012 - 2013) “Gaze perception and adaptation” Clifford, C.W., & Calder, A.J. ($284,000)


ARC Future Fellowship [FT0909151] (2009 - 2013) “Imaging genetics in schizophrenia and bipolar disorder: shared neurocognitive endophenotypes” Green, M. ($514,800)
ARC Future Fellowship (FT10100631) (2011 - 2015) “Poor social functioning in schizophrenia: Understanding its causes and developing better treatment.” Langdon, R. ($564,019)

ARC Future Fellowship (FT120100020) (2012 - 2016) “Why remembering together is crucial as we age.” Barnier, A. ($583,734)


Australian Institute of Aboriginal and Torres Strait Islander Studies Research Grant [2011000049] (2012 - 2013) “Understanding the sounds of Kayteey and how to teach them.” Turpin, M., Ross, A., Demuth, K., & Harvey, M. ($24,495)


Canada Research Chair, Tier II (2012 - 2017) Canada Research Chair in Social Perceptual Development Rutherford, M.D. ($489,000)

Endeavour Postgraduate Award (2012 - 2016) Department of Industry, Innovation, Science, Research and Tertiary Education (DIISRTE). Hussain, Q. ($228,000)

ESRC Large Grant (2011 - 2013) “Ritual, Community, and Conflict.” (£4 million grant at the University of Oxford to cover research time at RHUL, £230,562). McKay, R.


Hong Kong Research Grants Council (General Research Fund) (2011 - 2014) “Understanding the basis for the own-race advantage in face recognition.” Hayward, W., Caldara, R., & Rhodes, G. ($123,977)


Institute Jean Nicod, France (2012) Travel Grant ($1500). Tiakas, M.


Macquarie University Discovery Early Career Research Award Start-Up Grant (2012) “Hypnotic illusions and clinical delusions: How closely and usefully can hypnotic model delusional beliefs.” Cox, R.E. ($25,000)


Macquarie University Faculty Grant Writing Support Scheme (2012) “How best to treat dyslexia in children with ADHD.” Kohnen, S., McArthur, G., & Castles, A. ($5,000)

Macquarie University Faculty of Human Sciences Perspectives Series (2012) “Scaffolding memory across the lifespan.” Harris, C. ($8,000)


Macquarie University Faculty of Human Sciences Seeding Fund (2012) “Exploring children’s sensitivity to discourse/ prosodic information.” Demuth, K., Sharma, M., & Xu, N. ($10,000)

Macquarie University Faculty of Human Sciences Seeding Fund (2012) “Just sleep on it: Lexical consolidation effects in written word learning.” Castles, A., Nation, K., & Gaskell, G. ($19,427)

Macquarie University Faculty of Human Sciences Visiting Fellowship (2012) “Visit of Professor Kevin Pelphrey, Yale University, USA.” Brock, J., & Pelphrey, K. ($3,500)

Macquarie University Faculty of Human Sciences Visiting Fellowship (2012) “Visit of Professor Kevin Pelphrey, Yale University, UK.” Harris, C., & O’Connor, A.R. ($6,000)

Macquarie University Future Fellowship Start-Up Grant (2012 - 2013) “Developing better treatments for language disorders.” Nickels, L. ($200,000)

Macquarie University Future Fellowship Start-Up Grant (2012 - 2013) “Why remembering together is crucial as we age.” Barnier, A. ($149,212)


Macquarie University Future Fellowship Start-Up Grant (2011 - 2012) “Poor social functioning in schizophrenia: Understanding its causes and developing better treatment.” Langdon, R. ($149,904)

Macquarie University New Staff Grant (2012) “Carrying out complex tasks: what is the brain doing when we make mistakes?” Woolgar, A. ($19,600)


AWARDS, RECOGNITION


Macquarie University Research Development Grant (2012 - 2014) "Using magnetoencephalography (MEG) to examine neurological activation during emotion processing in anxious children." Hudson, J., Broeren, S., Johnson, B., & Dodd, H. ($44,840)

Macquarie University Research Development Grant (2012 - 2014) "Towards understanding body representations and their influences on perception, cognition and behaviour: The role of visual information and awareness." Zopf, R., & Williams, M. ($40,532)


Macquarie University Research Fellowship (2012 - 2015) "Shared remembering and memory compensation in older couples." Harris, C. ($259,917)


Macquarie University Research Fellowship (2011 - 2014) "Using generalisation to improve treatment of spelling difficulties?" Kohlen, S. ($270,641)

Macquarie University Research Infrastructure Block Grant Scheme (2012) "Upgrade of child magnetoencephalography (MEG) system." Johnson, B.W., Crain, S., Thornton, R., Demuth, K., Block, J., Sowman P., Zhou, P., & Johnson, M. ($100,000)


Macquarie University Safety Net Grant (2012) "Embodied Skills in Culture and History: an integrative study in cognitive theory and the humanities." Sutton, J., McIwain, D., Downey, G., & Tribble, L. ($25,000)

Macquarie University Safety Net Grant (2012) "Improving word retrieval for people with aphasia." Nickels, L., & Smith-Lock, K.M. ($15,000)

Medical Research Council (2012 - 2015) "I do not see the world as others do do" Diminished perceptual adaptation, hypo-priors and autism." ($383,132). Pellicano, E., & Burr, D.


Macquarie University Research Development Grant (2012 - 2014) "The Parkinson's Progression Markers Initiative" Marek, K. (site investigators: Rowe, D., Savage, G., & Magnusson, J.) ($1,200,000)

National Institutes of Health/National Institute for Child Health & Human Development (2006 - 2012) "Longitudinal Twin Study of Early Reading Development." Olson, R.K. & Byrne, B. ($1,500,000)

NHMRC Clinical Career Development Fellowship (Level 2) (2012 - 2015) "Improving diagnosis of early frontotemporal dementia syndromes." Piguet, O. ($432,000)

NHMRC Project Grant [1003139] (2011 - 2013) "Eating disturbance and hypothalamic function in frontotemporal dementia." Piguet, O., Samaras, K., & Hodges, J. ($475,000)


NHMRC Project Grant [630489] (2010 - 2012) "Progressive aphasia and amyloid deposition: A multidisciplinary approach to improving dementia diagnosis." Hodges, J., Rowe, C., Piguet, O., Pike, K., Ballard, K., & Villemagne, V. ($510,700)

NHMRC Project Grant [632689] (2010 - 2012) "The impact of circadian disturbances on sleep quality, cognition and psychiatric symptoms in neurodegenerative disease." Lewis, S., Naismith, S., Rogers, N., & Hodges, J. ($479,700)

NCHD R01 HD057606 (2008 - 2013) "Constraints on phonological and morphological development." Demuth, K., & Shattuck-Hufnagel, S. ($1,395,024)

North Sydney Local Health District (2012) "Listening to voices: The past, present and future of the experience of hearing voices." McCarthy-Jones, S. ($3,000)

Nuffield Foundation Grant (2012 - 2015) "Infant vocabulary measures as predictors of reading skills in later childhood." (£150,000). Nation, K., & Plunkett, K.

Richmond PRA (2012) "Listening to voices: The past, present and future of the experience of hearing voices." McCarthy-Jones, S. ($2,000)

Schizophrenia Fellowship New South Wales (2012) "Listening to voices: The past, present and future of the experience of hearing voices." McCarthy-Jones, S. ($15,000)

Schizophrenia Research Institute (2012) "Listening to voices: The past, present and future of the experience of hearing voices." McCarthy-Jones, S. ($2,000)

The Centre for Language Sciences (CLaS) Seed Grant (2012) "Investigating young children’s sentence processing abilities using EEG." Demuth, K., McMahon, C., Sharma, M., Johnson, B., Peter, V., & Miles, K. ($10,000)

The Economic and Social Research Council quota award (2010 - 2013) "Probing the sensory atypicalities in autism." (£56,500). Pellicano, E.


WeWelcome Trust Medical Humanities Strategic Award (08/455/Z/12/Z) (2012 - 2015) "Hearing the Voice." (£1,007,708).


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## INCOME + Expenditure

### INCOME

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC Centre of Excellence Grant</td>
<td>$3,164,494</td>
</tr>
<tr>
<td>Cash Contributions by Node</td>
<td>$1,797,787</td>
</tr>
<tr>
<td>Macquarie University $^{1,2}$</td>
<td>$1,473,899</td>
</tr>
<tr>
<td>The University of New South Wales</td>
<td>$150,000</td>
</tr>
<tr>
<td>The University of Western Australia $^{3}$</td>
<td>$173,888</td>
</tr>
<tr>
<td>Other Income</td>
<td>$11,060</td>
</tr>
<tr>
<td><strong>TOTAL INCOME</strong></td>
<td><strong>$4,973,341</strong></td>
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*Accumulated funds at the end of 2011: $2,062,637*

### EXPENDITURE

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries</td>
<td>$2,665,562</td>
</tr>
<tr>
<td>Scholarships</td>
<td>$258,869</td>
</tr>
<tr>
<td>Equipment</td>
<td>$408,456</td>
</tr>
<tr>
<td>Travel/Professional Development</td>
<td>$267,494</td>
</tr>
<tr>
<td>Maintenance/Consumables</td>
<td>$212,482</td>
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<tr>
<td>Other Expenditure $^{4}$</td>
<td>$615,965</td>
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<td><strong>TOTAL EXPENDITURE</strong></td>
<td><strong>$4,428,828</strong></td>
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*Accumulated funds at the end of 2012: $2,607,150*

### NOTES

1. Includes $500,000 brought forward from 2016/2017 to contribute to NSW Science Leveraging Fund Helium Recovery System project.
2. $180,000 of 2013 commitment received in 2012.
3. Additional $26,500 committed for PhD fees in 2012.
4. Includes $482,988 in research salaries contracted to the Centre in an arrangement between The University of New South Wales and Neuroscience Research Australia (NeuRA).
## PERFORMANCE Indicators

### Research Findings

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURE</th>
<th>TARGET</th>
<th>OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of research outputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Books</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Book Chapters</td>
<td>25</td>
<td>60</td>
</tr>
<tr>
<td>Journal Articles</td>
<td>80</td>
<td>267</td>
</tr>
<tr>
<td>Quality of journal articles (IF &gt; 2)</td>
<td>30</td>
<td>161</td>
</tr>
<tr>
<td>Keynote and invited presentations at major meetings</td>
<td>15</td>
<td>37</td>
</tr>
<tr>
<td>Commentaries about Centre achievements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media Releases &amp; Articles</td>
<td>15</td>
<td>126</td>
</tr>
<tr>
<td>Web of Science citations for: CIs Castles, Crain, Coltheart, Hodges, Rhodes</td>
<td>200</td>
<td>&gt;3000</td>
</tr>
</tbody>
</table>

### Research Training + Professional Education

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURE</th>
<th>TARGET</th>
<th>OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training sessions organised by the Centre</td>
<td>15</td>
<td>29</td>
</tr>
<tr>
<td>Number of attendees at Centre training sessions</td>
<td>57</td>
<td>~270</td>
</tr>
<tr>
<td>New postgraduate students</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>New postdoctoral researchers</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>New honours students</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Postgraduate completions, completion times</td>
<td>8, 3yr 6mth</td>
<td>16, 3yr 8mth</td>
</tr>
<tr>
<td>Number of Early Career Researchers (within 5 years of PhD)</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>Mentored high school and visiting students</td>
<td>7</td>
<td>14</td>
</tr>
</tbody>
</table>

### International, National and Regional Links + Networks

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURE</th>
<th>TARGET</th>
<th>OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>International visitors</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>National and international workshops organised by the Centre</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Visits to overseas laboratories</td>
<td>30</td>
<td>31</td>
</tr>
<tr>
<td>Interdisciplinary research supported by the Centre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross-program experiments/papers</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Cross-program/ interdisciplinary PhD supervision</td>
<td>20%</td>
<td>28%</td>
</tr>
</tbody>
</table>

### National Benefit

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURE</th>
<th>TARGET</th>
<th>OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribution to the National Research Priorities and the National Innovation Priorities</td>
<td>6</td>
<td>Contributed to: A healthy start to life: Reading, Language and Person Perception Programs; Ageing well, ageing productively: Memory, Belief Formation and Language Programs</td>
</tr>
</tbody>
</table>
## End-user Links

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURE</th>
<th>TARGET</th>
<th>OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government, industry and business briefings</td>
<td>10</td>
<td>34</td>
</tr>
<tr>
<td>Public awareness programs</td>
<td>3</td>
<td>3: High school visits Website hosted events</td>
</tr>
</tbody>
</table>

### Website

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURE</th>
<th>TARGET</th>
<th>OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Events</td>
<td>12</td>
<td>&gt; 12</td>
</tr>
<tr>
<td>Research outcomes</td>
<td>4</td>
<td>&gt; 4</td>
</tr>
<tr>
<td>Website hits</td>
<td>10,000</td>
<td>24,726</td>
</tr>
<tr>
<td>Public talks given by the Centre</td>
<td>10-15</td>
<td>14</td>
</tr>
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</table>

## Organisational Support

### Performance Indicators

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURE</th>
<th>TARGET</th>
<th>OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total annual cash contributions from Collaborating Organisations</td>
<td>$1,115,756</td>
<td>$1,797,787</td>
</tr>
<tr>
<td>Total annual in-kind contributions from Collaborating Organisations</td>
<td>$1,091,809</td>
<td>$1,417,039</td>
</tr>
<tr>
<td>Total annual cash contributions from Partner Organisations</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Total annual in-kinds contributions from Partner Organisations</td>
<td>$94,664</td>
<td>$94,664</td>
</tr>
<tr>
<td>Total annual other research income</td>
<td>$7,798,000</td>
<td>$11,224,391</td>
</tr>
<tr>
<td>New collaborations with institutions/industry</td>
<td>3</td>
<td>2: Kanazawa University, LiteracyPlanet</td>
</tr>
</tbody>
</table>

## Governance

### Performance Indicators

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURE</th>
<th>TARGET</th>
<th>OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific Committee</td>
<td>4</td>
<td>6: see Governance</td>
</tr>
<tr>
<td>Advisory Board</td>
<td>10</td>
<td>9: see Governance</td>
</tr>
<tr>
<td>Advisory Board meetings</td>
<td>2</td>
<td>1: 10 Aug</td>
</tr>
<tr>
<td>Recruit (or retain) new staff and students across the five research programs</td>
<td>39</td>
<td>50</td>
</tr>
<tr>
<td>Research Management Committee meetings</td>
<td>1</td>
<td>5 meetings; plus Director and COO visits to UWA/UNSW nodes</td>
</tr>
</tbody>
</table>

## Centre-specific Performance Indicators

### Participation at peak body meetings and information sessions

- Cognitive Science in the Public Interest Program
  - Target: 10
  - Outcome: 41

### Educational Outreach Program

- Expanded to focus on cognitive science in the public interest, led by CI Byrne, and working with the National Committee for Brain and Mind (Crain, Chair). Centre members submitted >10 articles to 'The Conversation' (see Media + Publicity).

### Rural Outreach Program

- Pilot workshop held in 2011. In 2012, links with UNE continued to develop through visits and collaborative projects (CI Byrne, Ais Khlentzos and Antón-Méndez).
ACKNOWLEDGEMENTS

Collaborating Organisations

Partner Organisations

ARC CENTRE OF EXCELLENCE in Cognition and its Disorders