



2008 Clinical Neuropsychology Newsletter

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Happy New Year to you – I hope that 2009 proves to be both happy and fulfilling. I am pleased to send you our 4th annual newsletter which details what the UNSW Neuropsychology research group has been up to over the past 12 months. In this newsletter you will find updates on many of the projects that we had commenced the year before. Good research takes a while to complete and we have been very busy recruiting and testing research participants for a large number of studies. We have been specifically interested in recruiting people who have suffered acquired brain injuries as well as participants without brain injuries who have similar educational and occupational backgrounds. But in addition we have been conducting research with people who experience schizophrenia and bipolar disorders as well as people who have mild cognitive impairment subsequent to ageing. In 2009 we are extending our research into other clinical conditions such as Aspergers syndrome and people who have surgical lesions to the brain or who have experienced stroke. We are also planning to extend our work into younger people with brain injuries, focusing upon adolescents and the impact of impairments to social cognition in this group.

The aim of this newsletter is to inform you of how your involvement is contributing to our understanding of how the brain processes social and emotional information both before and after a brain injury.

We believe that this type of research is important because social interaction is pivotal to being a friend, student, work mate or family member. Yet many people with acquired brain

disorders find social interaction difficult and this affects not only their social functioning, but also self-esteem, mood, confidence in social situations, rehabilitation efforts and quality of life. Our research aims to increase our understanding of how social and emotional functioning is disrupted by brain injury to improve rehabilitation techniques and practical support to those with a brain injury.

Over the past year a number of research projects have commenced and a number have been completed. This newsletter presents **fifteen** different studies. Each study is described in terms of *what it was about*, *what we did* and *what we found*

Where studies have been submitted for publication, the reference to the article has been provided in case you want to read more about the study. In most cases it takes a long time for articles to be published, so most articles are not immediately available but will be in the next year or so. We have also detailed articles and conference presentations that are accepted for publication.

Many people and agencies have been involved in coordinating and assisting in these research studies. We would especially like to acknowledge the outstanding brain injury rehabilitation teams at Ryde Royal Rehabilitation Centre, Liverpool Hospital and Westmead Hospital.

Several of these projects also represent collaborations with researchers at UNSW and other institutions, in particular, Robyn Tate at the Rehabilitation Studies Unit, University of Sydney, Shane Darke at the National Drug and Alcohol Research Centre, Melissa Green at the Black Dog Institute, Sydney and Marc Pell, McGill University, Montreal.

Finally, as always we must express our deepest appreciation to all the people with a brain injury and their families, as well as our control participants, who have happily given their time and energy to contribute to our research.

Without your willing participation none of this research would have been possible. We sincerely appreciate your involvement and look forward to working with you all again in the future.

Many thanks!



Professor Skye McDonald
UNSW Clinical Neuropsychology
Research team Leader

Contact details: School of Psychology,
University of New South Wales, 2052, NSW
Phone: 02 9385 3029
Email: s.mcdonald@unsw.edu.au



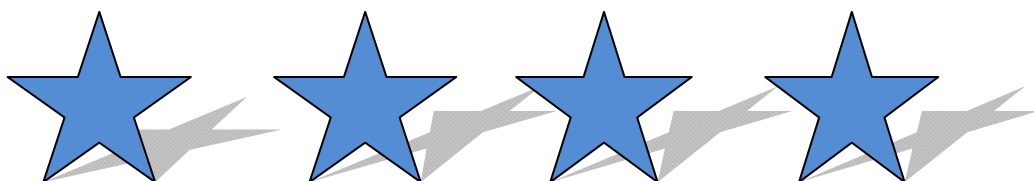
The Brain Sciences Team (L-R: Skye McDonald, Danielle Mathersul, Sophie Li, Lauren Maffina, Charlotte James, Maurice Finn, Cristina Bornhofen, David Tsang)



Participants needed

**We urgently need
new volunteers with
and without brain injury
to help us
with our research**

**We are currently seeking people
aged 17- 60 years. Please contact us
if interested on: 9385 3310**



Research Studies:

1. Recognising vocal expressions of emotion following traumatic brain injury (TBI): Is the 'what' more important than the 'how'?

Investigators: Aneta Dimoska, Skye McDonald, Charlotte James, Robyn Tate, Marc Pell & Kristy Delmas



Aneta Dimoska: Post doctoral fellow

What the study is about:

When listening to a person speak, it is important that we understand the content of what they saying (the "what") and the emotional tone (the "how"). The sentence *"I'm going to work today"* can mean different things depending on how the person expresses this with the pitch and loudness of their voice. Research has shown that TBI can affect a person's ability to understand emotional tone in voice. This may be because TBI causes people to focus more on "what" is being said, forgetting to listen to the "how". In this study, we examined whether removing the content of speech makes is easier for people with TBI to interpret the emotion in voice.

What we did:

We asked 18 people with TBI and 18 non-brain-injured participants to listen to audio recordings of men and women speaking a sentence in an emotional tone (i.e. in a happy, pleasantly surprised, angry or afraid voice). In some recordings, speakers spoke in a made up nonsense language and at other times we muffled the voice so that listeners could only hear the high- and low-pitched variations in the speaker's voice. This made it difficult for participants to hear what was actually being said.

What we found:

We found that participants with TBI were less accurate in judging happy and afraid emotions in voices, compared with non-brain injured participants. Anger was the easiest emotion to identify. However, we found that removing the content of speech did not make it easier for TBI participants to recognise emotional tone. These findings show that emotion recognition problems in people with TBI are not simply due to forgetting to listen to emotional tone. They are impaired their ability to distinguish happy and afraid emotional voices. We will soon be investigating which brain regions are responsible for these problems.

To find out more about this study.

Dimoska, A. , McDonald, S, Pell, M., Tate, R., Bornhofen & James, C. Recognising vocal expressions of emotion following traumatic brain injury: Is the 'what' more important than the 'how'? (submitted)



2. Testing social cognition in schizophrenia and bipolar disorder: Towards an empirically validated approach.

Investigators: Amy Sparks, Melissa Green, Skye McDonald, Charlotte James



Amy Sparkes, Masters (Clinical) Psychology student

What the study is about:

This study investigated emotion perception and theory of mind in individuals with schizophrenia and bipolar disorder. Due to limited ecological validity of conventional measures of social cognition, of specific

interest to this study was whether performance on The Assessment of Social Inference Test (TASIT) in schizophrenia and bipolar disorder participants, is a sensitive measure of the construct of social cognition in these populations. This study also sought to assess whether TASIT has concurrent validity as a measure of real world function.

What we did:

13 individuals with schizophrenia, 10 individuals with bipolar disorder and 12 community controls were recruited for the study. All participants were administered TASIT, conventional measures of social cognition, as well as clinical measures.

What we found:

Participants with schizophrenia performed significantly poorer than controls on TASIT emotion perception tasks. This was particularly so for identifying negative emotions, and they were more accurate in judging negative emotions on TASIT, compared to conventional measures of emotion perception. Participants with schizophrenia were also impaired on TASIT theory of mind tasks, compared to controls. However, they were more accurate in identifying the beliefs of others on conventional measures, compared to TASIT. Preliminary analyses revealed no differences between the bipolar disorder group and controls on all social cognition tasks. The present investigation demonstrated validity of TASIT, as evidenced by an association between TASIT and interpersonal relationship quality with relatives in a schizophrenia and bipolar disorder population.

To find out more about this study:

Green, M., Sparkes, A., James, C., O'Donnell, M. & McDonald, S. (In Press) Cognitive Emotion Regulation in Schizophrenia: Associations with Neurocognition and Social Perception 2009 Society of Biological Psychiatry conference.

3. Are empathy deficits following TBI associated with impaired emotional responsivity?

Investigators: Arielle De Souza, Skye McDonald, Sophie Li, Charlotte James



Arielle De Souza, PhD candidate

What the study is about

This study was also reported in last year's newsletter as we are still collecting data.

People with TBI often find social situations challenging because they can no longer understand and respond to the emotional state of the people they are with. Many also lack normal empathic responses in their social interactions. But are these problems

related? Specifically, emotional processing difficulties including the inability to experience an emotional response to another's situation or display of emotion may be attributable to changes in empathy following TBI. As such, this study is designed to determine whether deficient empathic processing displayed by people with TBI (as measured via self-report empathy questionnaires) is related to deficits in their ability to respond physiologically to emotionally salient stimuli

What we are doing

Metal electrodes are positioned onto the participants face – two on their forehead and two close to their cheek to measure spontaneous mimicry of emotional facial expressions. Probes are also placed onto participants' fingers (to measure skin temperature and heart rate). Slides of faces displaying happy and angry expressions are then presented. The participants are asked to simply view the faces. Additionally, participants are shown a series of pleasant, unpleasant and neutral pictures and are asked to rate how arousing and how pleasant/unpleasant they find these pictures. Finally, participants are required to complete three empathy questionnaires that ask them about their thoughts and feelings in a variety of situations, as well as a measure of depression and anxiety.

What we will find

We are still collecting data on this study but we hope that the results of this study will help extend our knowledge of the emotional processes underlying empathy, as well as improve our understanding and effective treatment.

4. Does a failure to respond to emotional faces in others improve if the person with TBI is reminded to attend?

What the study is about

Investigators: Sophie Li, Skye McDonald, Arielle de Sousa and Charlotte James



Sophie Li, Post Doctoral fellow

What the study is about

In 1890 the eminent psychologist William James suggested that one way that we recognise emotions in ourselves is by our body's responses, e.g. our heart races when we are frightened and the fact that our heart is racing gives us feedback that we are afraid. Furthermore, we have a similar kind of reaction when we see someone else who is frightened. In fact our own face tends to mirror theirs. Maybe these bodily sensations help us recognise fear (and other emotions) in other people.

Some people with TBI don't seem to have this kind of response when viewing facial expressions, possibly because they are not paying attention. We wondered whether we can reinvolve these body and facial reactions in people with TBI if we ask them to pay attention to the face.

What we did.

This study used a very similar set of tasks to those described in Study 3. 20 people with TBI and 20 healthy volunteers were asked to look at faces of people experiencing a variety of emotions while their facial muscles were being monitored using electromyography (EMG).

What we found

Initial results from this study have shown that both people with and without a TBI mimicked the facial expression of a happy face. However, when presented with an angry face there was a difference between the TBI group and the control group. Specifically, the control group mimicked the facial expression of the angry face and the TBI group did not. These results may offer an explanation for why people with a TBI find it especially difficult understanding negative emotions in others.

5. The role of emotion processing in social decision making

Investigators: Michelle Kelly, Skye McDonald



Michelle Kelly, PhD candidate

What the study is about:

People with traumatic brain injury often experience problems making decisions in social situations. This results in them making inappropriate choices that can cause distress to themselves and to their families and friends. One possible reason for this is that they are unable to foresee the outcomes of their decision. Alternatively, they may not be able to process the emotions that come with making the decision, so as to use the emotions to guide their decision. Finally, they may not actually feel any emotion when making the decision. Using electrodes attached to the fingers we can measure whether someone is having an emotional response when they are involved in making a decision. We can also incorporate their knowledge of the outcomes of a decision by asking them what they know about the possible consequences of their decision.

What we are doing:

To simulate decision making we are using a gambling task. We will also incorporate some other tests that assess social information processing and social problem solving. We will also look at what we refer to as “disorders of drive and control”. These are brain functions that allow us to control our everyday behaviour. Finally, we will try and see if problems with thinking, such as memory and attention, also affect decision making.



One of the problem solving tasks

What we expect to find:

While we don't know exactly what we will find yet, we do think there may be some relationship between decision making and other brain functions. Also we know that by investigating decision making, we may be able to find out why some people are unable to make appropriate choices in social situations.

6. Can elderly people with MCI improve their cognitive functioning by doing regular computer-based brain exercises?

Investigators: Maurice Finn, Skye McDonald



Maurice Finn, PhD Candidate

What the study is about:

This study was also reported in last year's newsletter as we are still collecting data.

Elderly people diagnosed with Mild Cognitive Impairment have a much higher risk of developing a dementia compared

with normal older adults. Unfortunately there are no effective means of ameliorating cognitive decline for this group at present. Many studies that have been conducted have focused on teaching older people with cognitive impairment how to improve their recall by using memory strategies. The results to date have been disappointing, possibly because the learning processes required to learn and implement these strategies in daily life are compromised. Another problem with this approach is that a narrow focus on memory neglects other cognitive functions (for example, attention and processing speed) that play an important role in new learning and that are required for successful completion of everyday activities. Some researchers have suggested that learning can be improved via the use of targeted computer-based exercises to stimulate brain plasticity processes. Preliminary studies have indicated there may be some merit in this approach.

What we are doing:

The research is being conducted as part of a PhD in the School of Psychology at UNSW in conjunction with the Geoff and Elaine Penney Ageing Research Unit in the Department of Aged Care & Rehabilitation at Royal North Shore Hospital. Participants (N=20) have been recruited from the Memory Clinic and Geriatric specialty outpatient clinics. A range of cognitive functions are trained including attention, processing speed, visual and spatial memory and executive functions. The computerised cognitive training package has been provided by Lumosity Inc. Participants complete 30 training sessions over a period of 8-10 weeks.

What we expect to find:

The main question we are addressing is, can cognitive functioning be enhanced in a sample of elderly people with MCI? The research will examine the effectiveness of the computer-based exercises in improving cognitive functioning when compared with wait-list controls. It will look at the effect of this intervention on various aspects of cognition using untrained cognitive tasks that tap similar domains. The generalisation of learning to everyday settings and tasks will be measured using self-report questionnaires. It is hoped that the findings will lead to new treatments for this vulnerable group of elderly people.

7. Does the evolutionary age of a threat determine how fast it will be detected?

Investigators: David Tsang, Skye McDonald



David Tsang, Honours student

What the study was about:

One of the most important functions of the brain is to evaluate threats in the environment rapidly so that people may respond as fast as possible. Research has indicated that humans are able to identify and process threatening items (presented in the form of words, pictures and faces etc) more rapidly and accurately than non-threatening items. The brain's priority for threat is an important evolutionary adaptation that increases our chances for survival. It is because of these proposed evolutionary roots that some researchers have suggested that the brain may be more attuned for threats that were recurrent in evolutionary history (e.g. snakes). Thus relatively modern threats (e.g. guns) would take longer for the brain to respond to. However other research suggest that the brain possesses a more flexible system that can build upon the repository of knowledge of ancient threats, hence when a modern item is appraised as being threatening it will be regarded as efficiently as ancient threats in future situations. This study examined the general effects of threat on visual attention and any biases towards either ancient or modern content.

**What we did:**

78 UNSW psychology students viewed a series of rapidly presented (approx. 117ms)

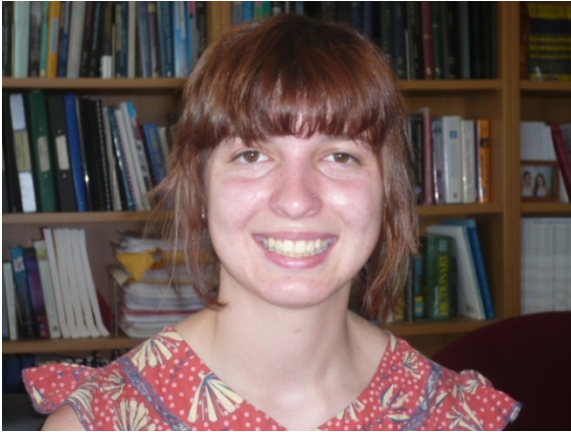
photographic images on a computer screen. Each trial consisted of a chain of images, and in the critical trials a target image was repeated. Participants verbally reported what target images they saw following each trial. Under such time constraints people often only report seeing the repeated item once, a perceptual deficit phenomenon referred to as 'repetition blindness.' Target images were threatening or non-threatening with content of ancient or relatively modern origin.

What we found:

The idea behind this study was that because our brain preferentially attends to threat, the perceptual deficit of repetition blindness would be attenuated when viewing threatening items. Indeed results showed that perceptual deficits were attenuated for threatening images. Findings also supported the idea that the brain had a more flexible system that was not restricted by its evolutionary hardwiring for threat detection. There was an overall superiority effect for modern items as they were more resistant to perceptual deficits in threat and non-threatening conditions when compared to presentations of items that are older in the evolutionary timeline. These results suggest that the brain's threat detection system may actually be able to evaluate modern threats as being more significant than ancient threats. Such an adaptive quality would make sense as the modern gun would have a greater potential to kill than a snake. Results may also have implications for populations that suffer from anxiety, particularly clinical instances of phobic fear where the brain's ability to assimilate knowledge of new threats may be occurring in a maladaptive way.

8. Respecting your elders: stereotypes and their impact on politeness strategies used with older adults

Investigators: Lauren Maffina, Skye McDonald.



Lauren Maffina, Honours

What the study was about:

The study looked at whether people are more or less polite with those who are older or hold higher power than themselves. We also aimed to see how negative stereotypes of older people would affect politeness towards them. Finally, we wanted to see if people were more polite when leaving voicemail or email messages.

What we did:

For this study, we used 78 female first year psychology students who were under the age of 30. They were told that a second fictional experimenter was needed for the experiment but could not attend. Half were informed she was older than the participant, and half were not informed of her age. Half were also told she was a professor (and thus of higher power), and the other half were told she was a lab assistant (and therefore lower power). Participants were

given a short computer task designed to measure negative stereotypes towards older people, and were asked to leave a voicemail message for the fictional experimenter. They were also later asked to send her an email. The voicemail and email messages were then examined to see how polite they were.

What we found:

There were no differences in politeness used by the participants towards the fictional experimenter based on how old they were or how much power they held. There were also no differences in politeness between participants who had a negative stereotype of older adults or those who did not. However, there was a difference in politeness for the voicemail and email messages, with the voicemail messages being more polite than the email messages. These results suggest that people communicate differently across varied forms of communication.

9. Developing a new treatment manual for improving emotion perception

Investigators: Cristina Bornhofen and Skye McDonald



**Cristina Bornhofen,
Post doctoral fellow**

What this study is about:

Based on previous work we have developed a step by step program for remediating emotion perception. We have evidence that this kind of program works. This project is about making the manual into a professional manual that can be distributed to clinicians who wish to treat emotion perception disorders.

What we are doing:

In order to do this we have a number of tasks. We have to produce professional quality photographs of actors expressing a range of emotions to use as training materials for recognising facial expressions, we have to film videoed vignettes of everyday type encounters between people to use as training materials for assisting training to recognise body language and spoken voice. We also need to trial the manual so that new clinicians can follow it easily.

What we have found:

This study is still in progress

**10. Exploring new ways to remediate deficits in emotion perception**

Investigators: Skye McDonald (UNSW), Robyn Tate (University of Sydney), Leanne Togher (University of Sydney) and Cristina Bornhofen (UNSW).

What this study is about

We have already demonstrated that remediation of emotion perception after traumatic brain injury can be successful. What we are now interested in is whether specific strategies can be refined that improve remediation further, or that are particularly useful for people with different kinds of problems. In 2008 we trialled a couple of new approaches with individuals who were referred to our services. These were

1. Examining whether we could improve the ability to *be* more expressive and more appropriate with expressing emotions in a person with traumatic brain injury
2. Examining whether a new form of psychotherapy: mindfulness, could assist in reducing anxiety and focusing attention following brain damage

We are also planning some group programs to see whether we can improve

1. Ability to understand that sometimes when communication people can say one thing and mean another (such as when being sarcastic) and how to recognise this

2. Whether a short intervention can assist with understanding emotion in voice.

We are looking for research participants who have experienced difficulties understanding social situations and who would like to assist us in this new research. We are especially seeking people with severe traumatic brain injuries who experienced their injury 6 months ago or longer and are now living in the community.

11. Moral reasoning in people with severe traumatic brain injury.

Investigators: Kristy Delmas and Skye McDonald

What this study was about:

Some individuals with severe traumatic brain injury (TBI) have a range cognitive and behavioural deficits that have been characterised as “acquired sociopathy”, a disorder proposed to closely resemble psychopathy. These deficits include lack of affect, low levels of empathy and emotional responsiveness, and socially unacceptable behaviour. This study investigated how individuals with TBI make moral judgments and whether this was related to self reported psychopathy, general moral reasoning and emotional responsiveness.

What we did:

19 individuals with TBI participants from the community participated. They were asked to listen to “moral dilemmas” and decide what they would do. They were also to fill in questionnaires about psychopathic tendencies, empathy and general knowledge of right and wrong. They also

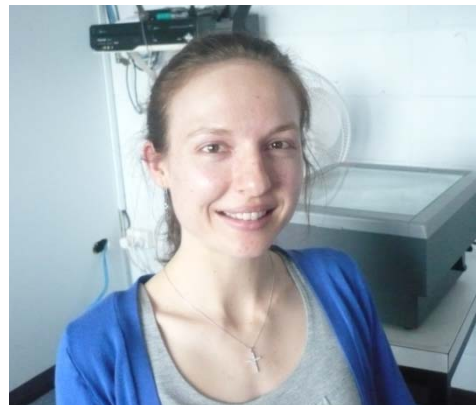
looked at some graphic images and rated how these made them feel.

What we found:

People with TBI, as a group, endorsed more indicators of shallow affect, lack of remorse guilt and reduced empathy (callous affect) than did the control group. They also reported less empathy. This is consistent with other indicators of personality changes that often accompany traumatic brain injury. In most other respects they were the same as the controls. They reported similar levels of moral knowledge, made similar decisions on the moral dilemmas task and had similar levels of emotional responsivity to unpleasant pictures. These results differ from those we have found on previous occasions reflecting the variability of this group. There were also problems with the limited number of moral dilemmas presented, reducing the sensitivity of this measure. We need to look at this interesting facet of social behavior in more detail in follow up studies!

12. Social cognition in people with Aspergers Syndrome.

Investigators: Danielle Mathersul and Skye McDonald



Danielle Mathersul, PhD candidate

What the study is about:

People with Aspergers often have difficulty with aspects of social cognition, such as emotion perception, eye contact, and socially appropriate interactions with other people. One possible explanation for these deficits is that individuals with Aspergers do not find social interactions rewarding, and thus lack the motivation to attend to emotions and behave accordingly. Another possible explanation is that they are unable to understand situations from other people's point of view and consequently are unable to predict the behaviours of others. Alternatively, it has been suggested that an area of the brain important for emotion perception is disrupted in people with Aspergers. Some of these theories make opposing predictions as to the nature of verbal and physiological responses to emotive and socially relevant stimuli by individuals with Asperger's. This study aims to reconcile these discrepancies.

What we are doing:

Automatic (eye blink) and physiological responses (skin temperature, heart rate) to a loud, startling noise will be measured, whilst participants view arousing and emotive images. Previous research has shown that normal healthy individuals show different responses to this noise depending on whether the stimuli are positive or negative. Individuals will also be required to make judgements regarding the approachability and trustworthiness of people as portrayed in pictures. Finally, participants will be asked to decipher simple and complex emotions from films depicting

social interactions (including The Assessment of Social Inference Test (TASIT)), and to make social inferences regarding the character's thoughts, beliefs, intentions and desires.

What we expect to find:

Depending on which theory best explains the social deficits in individuals with Aspergers, it is predicted that they will fail to show either increased startle responses to *negative* images or reduced startle responses to *positive* images. In addition, it is predicted that people with Aspergers *will* have reduced startle to *neutral* images, given their preference for inanimate objects over people. Furthermore, it is predicted they will show deficits on all aspects of TASIT, but particularly the social inference sections. It is hoped that in the future, TASIT may be used as a potential classification tool for Aspergers in clinical settings.

13. Understanding brain damage in people who use illicit drugs.

Investigators: Shane Darke (National Drug and Alcohol Research Centre), Skye McDonald (Psychology, UNSW) and Sharlene Kaye (NDARC)

This study was also reported in last year's newsletter as we are still collecting data.

What the study is about:

People who use heroin and other illicit drugs are at risk of brain damage from drug overdose, alcohol and violence related

trauma to the brain. Such damage may impair thinking, memory, and emotional and behavioural control. These problems are important to consider when working with people in Methadone Maintenance programs but to date there has been no research documenting the effects of such neurological insults in terms of neuropsychological function and everyday behaviour.

What we are doing

We are examining a group of people who have used heroin habitually compared to peers who have not on a wide variety of neuropsychological tests and tests of social cognition. To date we have tested 82 participants (12 controls and 70 heroin users). Of the 70 heroin users, 62 are in treatment (21 from WHOS, 40 from Rankin Court and 1 from a private methadone dispensing pharmacy). Of the 8 not in treatment, 6 were referred from other studies and the remaining 2 heard about the study from friends. Data collection is ongoing.



NEW RESEARCH PROJECTS COMMENCING IN 2009

14. Focusing on adolescents with traumatic brain injuries: assessment and remediation of social perception.

Investigators: Skye McDonald, Robyn Tate and Leanne Togher & Cristina Bornhofen,

What the study is about:

Much of the research from our group has focused on adults who have sustained brain injuries or other kinds of brain disorders. But many of the tasks we have developed are potentially suitable for adolescents who have brain injuries as well. If these tasks translate well to adolescents they could provide some important and much needed assessment and remediation resources. Our task for 2009 will be to determine how sensitive our tests are for this special age group, whether they are appropriate and whether our remediation approaches have anything to offer. We are very excited about working with adolescents and know that we have a lot to learn. We are currently collaborating with the rehabilitation team at Sydney's Children's Hospital, Randwick.

15. Communication disorders following frontal lobe damage: The role of social cognition.

Investigators: Skye McDonald

What the study is about:

This is a project newly funded by the Australian Research Council.

Disorders of communication are common in many clinical conditions including frontal lobe lesions from vascular disorders or space occupying lesions, autism, traumatic brain injury, Alzheimer's disease and frontotemporal dementia. We know little about the factors that influence these problems nor do we know how best to manage them. Intact language (phonology, semantics, syntax) is necessary but not sufficient. Despite adequate language abilities adults with brain damage, specifically frontal lobe damage (FLD), experience difficulties understanding others and making themselves understood. This

can destroy social relationships, leading to isolation and dependence. Communication clearly relies upon a range of abilities in addition to language. But what these are is unclear. According to recent advances in social neuroscience, there are specialised information processing systems within the brain that process explicitly social information, i.e. social cognition.

This project aims to determine whether three constructs of social cognition:

- theory of mind (ToM) (i.e. the ability to infer what others are thinking)
- emotion recognition (i.e. the ability to recognise emotions in others)
- social schema (i.e. knowledge about the social world)

make specific contributions to communication failure in adults with frontal lobe lesions.

What we intend to do:

We will use a series of experimental studies that compare a group of people with frontal lobe damage (FLD) to those who have lesions elsewhere in the brain and healthy controls. Each study examines different kinds of everyday communication tasks (listening to news readers, watching video vignettes, leaving phone messages, describing a holiday, judging the sincerity of a speaker) while carefully manipulating other factors hypothesised to contribute to performance on that task.



Farewell and Good luck! We are sorry to farewell Charlotte James from our team. Charlotte is leaving to take up study at the University of Sydney.



RECENTLY PUBLISHED PAPERS AND CONFERENCE ABSTRACTS

Journal articles

- McDonald, S., Bornhofen, C. & Hunt, C.
Enhancing emotion recognition after severe traumatic brain injury: the role of focused attention and mimicry
[Neuropsychological Rehabilitation](#) (In Press)

- Long, E. & McDonald, S., Tate, R.L., Togher, L. & Bornhofen, C. (2008) Obtaining a valid estimate of social functioning in individuals with a traumatic brain injury: The Social Performance Survey Schedule. Brain Impairment, **9**, 283-290
- McDonald, S., Tate, R., Togher, L., Bornhofen, C., Long, E., Gertler, P., Bowen, R. (2008) The efficacy of social skills treatment for addressing deficits in social skills after severe traumatic brain injury. Archives of Physical Medicine and Rehabilitation, **89**, 1648-1659.
- Bornhofen, C. & McDonald, S. (2008) Emotion perception deficits following traumatic brain injury: A review of the evidence and rationale for intervention. Journal of the International Neuropsychological Society, **14**, 511-525
- Bornhofen, C. & McDonald, S. (2008) Comparison of two approaches to remediating emotion perception deficits after severe traumatic brain injury. Journal of Head Trauma Rehabilitation, **23**, 103-115.
- Bornhofen, C. & McDonald, S. (2008) Evaluation of an emotion treatment program for people with severe traumatic brain injury, Neuropsychological Rehabilitation, **18**, 22-44.
- Conference Presentations**
- Green, M., Sparkes, A., James, C., O'Donnell, M. & McDonald, S. (In Press) Cognitive Emotion Regulation in Schizophrenia: Associations with Neurocognition and Social Perception 2009 Society of Biological Psychiatry conference.
- McDonald, S. & Adams, B. Deficits in Social Problem Solving following Traumatic Brain Injury: Are they related to Theory of Mind, Emotion Identification and Executive Functioning.
- Pell, Marc D., Monetta, L. & McDonald, S. (In press) Effects of Parkinson's disease on social perception and inferencing Paper presented at Academy of Aphasia conference Turku, Finland, October, 2008)
- Hunt, C., McDonald, S. & Henry, J. (2007) Emotional regulation following traumatic brain injury: An experimental examination of disorders of control and drive. Mid-year Meeting of the International Neuropsychological Society, Spain 2007. Journal of the International Neuropsychological Society, **13 (S2)**, 66
- McDonald, S. Tate, R.L. Togher, L., Bornhofen, C, Long, E., Gertler, P., Bowen, R. & McGregor, F. (2008) The effects of social skills training on social behaviour for people with severe, chronic traumatic brain injury: A multi-centre trial. 5th Annual symposium on Neuropsychological Rehabilitation, Iguazu, Brazil, 2008, Brain Impairment, **9**, 228.
- McDonald, S. & Bornhofen, C. (2008) The role of mimicry in enhancing emotion perception following traumatic brain

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Once again we wish to
thank
all of you who have
assisted us in our
research and we look
forward to seeing you
again soon.

