

Newsletter

2016
11th Edition

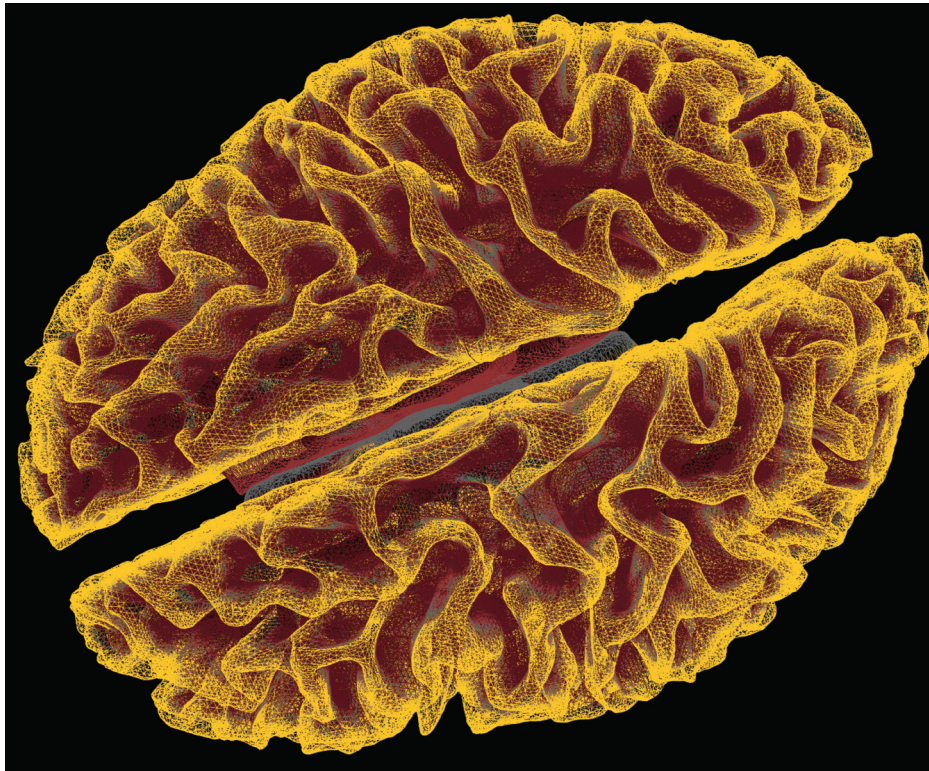


Image of the brain from our TBI research

I hope you are having a happy and healthy start to 2017! Here at the University of New South Wales (UNSW), our Clinical Neuropsychology Research Team is already off to a positive and busy start.

It is my pleasure to present you with our annual newsletter detailing our research activities in brain injuries and disorders over the past 12 months. The aim of our newsletter is to provide you with an overview of what has been happening - the kind of research we do, the people involved, the projects we conduct and who has assisted us. But more importantly, 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, as well as what treatment techniques we are trialling.

We hope you find our newsletter informative. Any feedback that you wish to provide is most welcome.

Best wishes,

Professor Skye McDonald
Clinical Neuropsychology Research Team Leader
School of Psychology, UNSW



Brain Sciences
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THIS EDITION

In this 11th edition of our newsletter, you will read about successfully completed studies, ones that are currently in progress, and new research that will be conducted later this year. Each study is described in terms of *what it is about, what we did, what we found and what our findings mean.*

Where studies have been submitted for publication, the reference to the article and target journal has been provided, in case you are interested in reading 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 on page 26.

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OUR LAB

A SNEAK PEAK

Clinical Groups

We conduct research into disorders that arise from brain dysfunction due to structural damage (such as brain injury) or developmental conditions (such as autism spectrum disorders). We are interested in the kind of disorders people experience whether they are a result of acquired brain injury due to trauma (such as a car accident) or stroke or due to degenerative conditions (e.g. Parkinson's disease). Our interest in developmental conditions is mainly in the area of autism spectrum disorders but also extends to other psychiatric conditions.

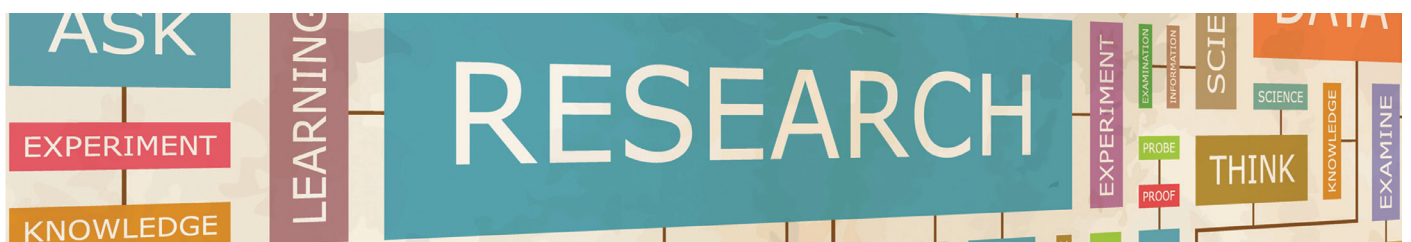
Mainly, we are interested in discovering what causes problems that get in the way of everyday function. We are especially interested in why problems occur in interpersonal interactions and everyday communication. This type of research is particularly important because many people who have a brain disorder can find social interaction difficult. These difficulties often reduce self-esteem, mood and confidence in social situations. They can also make it difficult for people to benefit from rehabilitation and, ultimately, reduce quality of life.

Our research aims to increase our understanding of how social and emotional functioning is disrupted by a brain injury. We want to do this in order to improve rehabilitation techniques and practical support to those with a brain disorder. We believe that this type of research is important because social interaction is pivotal to being a friend, student, work mate or family member.

Type of Research

Our research has a number of streams looking at (1) social cognition and communication (2) emotional disorders and (3) remediation. In each case, we are interested in how these disorders impact upon everyday functioning. Over the past few years, we have had a particular interest in psychophysiology. This field provides us with techniques that allow us to measure bodily reactions to external events (like changes in heart rate and skin temperature). Through these measures, we have a clearer understanding of how people respond emotionally to significant events.

It is important to mention that people with acquired brain injuries experience a range of difficulties that makes them quite a varied group. Even though we know this is the case, we typically analyse the results of all the people with brain injuries together, due to the impossibility of recruiting participants with exactly the same types of injuries. Doing this allows for us to draw conclusions about the type of difficulties the group as a whole experience, but does not highlight unique difficulties experienced by any one individual. We recognise that it is a combination of the group and individual pictures that will best contribute towards our understanding of brain injury. For this reason, we are planning to begin several single-case studies this year, as well as continue with further group research.



Research Team

Our dedicated research team is led by renowned Professor Skye McDonald with the able assistance of Dr Jacqueline Rushby. Dr Rushby provides extensive expertise in psychophysiological techniques and is a sought after mentor for everyone in the lab.

We have welcomed three new postdoctoral fellows into our lab: Travis Wearne, Emily Trimmer and Katie Osbourne-Crowley. Emily and Katie both completed their PhD's in this lab and we thrilled that we have been able to keep hold of them. We will however be farewelling Katie soon as she moves to London and another postdoctoral position there.

There are four PhD students in the research team who are all tremendous additions to the lab: Matt Gerathy, Christopher Sufani, Emma Kornfeld and Anneli Cassel. This year we will have the following honours students in the lab: Edward Ho, Abbie Lucien, Wendy Chen, Rebecca El-Helou, Emma Hubel, Grace Wei and Nicolas Chand.

We are very fortunate to have recently welcomed two new research assistants into the lab: Emily Wilson and Poss Logan, both are available to answer any queries about our research program Emily Wilson emily.j.wilson@unsw.edu.au and/or Poss Logon poss.logan@unsw.edu.au. We also have three outstanding part-time research assistants in the lab: Katie Dalton, Frances De Blasio, and Jessica Darke.

Our lab is unique in that we partner with the Moving Ahead Centre of Research Excellence in Brain Recovery. Through this partnership, we work closely with many leading and well known academics in the field of brain injury, as well as our associate staff: Melinda Lyne (Administration Assistant) and Lillian Darke (Casual Projects Officer).

To hear more about the research we conduct and to meet our team members, please visit our website below.

<http://www2.psy.unsw.edu.au/Users/smcdonald/people.html>

Lab Successes

In 2016 our lab completed 7 studies, attended many conferences, and won several awards.

- Our new postdoc Travis Wearne was awarded the prestigious Australian Psychological Society prize for the best PhD!
- Anneli Cassel and Emma Kornfeld were both awarded highly contested Australian Postgraduate Award scholarships for their PhD's.
- Katie Osbourne-Crowley submitted and had her PhD passed in 2016 and has been offered a postdoctoral fellowship at University College London, in the Neurology Department.
- Emily Trimmer submitted her PhD thesis at the end of 2016.
- Emily Trimmer, Emma Kornfeld, Christopher Sufani won travel awards to attend the Australasian Society for Psychophysiology Conference held at Central Queensland University in Adelaide in December 2016.

Congratulations to our team on such a successful year!

Alumni Update - Life after the Lab

This past year, we bid adieu to our brilliant research assistant, Samantha Allen and our wonderful project officer, Crystal Yau. Samantha has commenced her Masters in Clinical Psychology at University Technology Sydney. Crystal is a Senior Student Administration Office at the University of Sydney. We would like to thank both Samantha and Crystal for being such inspiring and tireless members of our lab. We are sorry to have said goodbye and we wish them all the best in their new positions.

Our wonderful volunteers Kelly Kershaw and Brianna Lees have also moved on to new roles. Kelly has recently commenced honours in the Neuroscience department at UNSW. Brianna is working as a research assistant at the National Drug and Alcohol Research Centre.

One of our honours students, Anouk Zijlstra, recently completed her studies, and we would like to take this opportunity to congratulate Anouk on her great efforts.



Samantha Allen



Crystal Yau



Brianna Lees



Kelly Kershaw



Anouk Zijlstra

COMPLETED

@ UNSW

The effect of visual masks on responses to emotional faces

By Emma Kornfeld, Samantha Allen, Jacqueline Rushby and Skye McDonald

What the study is about:

The processing of facial identities and expressions occurs quickly and efficiently because faces are an important part of communication. For this study, we examined whether people can process someone's facial expression, like a frown or a smile, before they are even conscious of it. In order to look at these "pre-conscious responses" we quickly show a photo of a facial expression, then cover it with a mask - which usually prevents the observer from being aware of what they saw. The kind of mask that we use is important. If the mask is another face, for example with a neutral expression, then people seem less likely to be aware of the emotional face than if it were masked with an image that was not a face. In this study, we decided to look at whether processing of facial expressions changed due to different types of masks.

What we did:

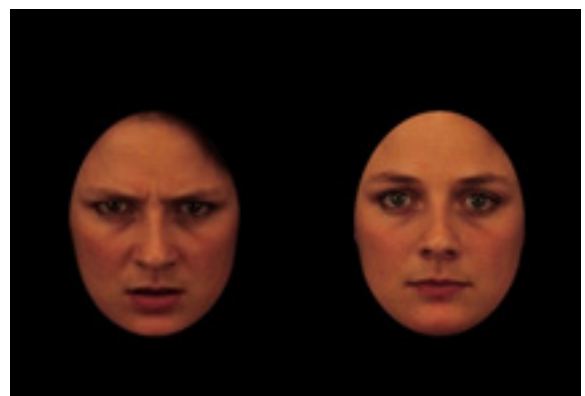
Thirty-five university students viewed a series of briefly presented emotional faces, which were masked by either a scrambled image, or a neutral face. While they were watching these images, we measured their brain activity (EEG), their facial muscle responses (EMG) and their arousal (skin conductance). From their EEG measured brain activity, we derived event related potentials (ERPs) in order to examine specific responses to the images. We then compared these responses for both of the mask types. We also looked at whether responses to happy or angry faces changed depending on whether they were masked by a neutral face or pixelated image.

What we found:

We did not find any differences in facial muscle responses or arousal levels between the two mask types, or happy and angry faces. However while most event related potentials did not differ between mask types or emotion, the N250 (which is thought to reflect processing of the emotions of faces) was significantly larger in response to faces that were masked by the scrambled image relative to those that were masked by the neutral face.

What our findings mean:

Although there were no differences for facial muscle responses or arousal levels, a larger N250 for faces masked by a scrambled image suggests that this kind of mask did not 'mask' the emotional face like the neutral face did. Our findings suggest that processing of emotional stimuli can occur before we are conscious of seeing these stimuli, even when these stimuli are masked by non-emotional images.



Picture: An angry face followed by a neutral face mask

STUDIES

@ UNSW

Normative data for the TASIT-S: A comparison between Australian and North American performance

By Skye McDonald, Samantha Allen, Cynthia Honan, Cristy Padgett, Fiona Kumfor, Olivier Piguet, Jessica Hazelton

What the study is about:

Social cognition refers to the way people process and interpret information about other people and social situations to make social judgements. The Awareness of Social Inference Test (TASIT) is a clinical measure of Social Cognition that has been found to be sensitive to a number of groups including TBI, fronto-temporal Dementia, Alzheimer's disease and Stroke. However, the TASIT has been criticised for its lengthy administration time (90 minutes) and its lack of applicability in other English-speaking countries due to the use of actors with Australian accents. Recently a shortened version of the TASIT was developed (TASIT-S) and we decided to compare Australian and American participants performance on this new measure.

What we did:

We had 161 Australian participants and 181 U.S. participants complete the TASIT-S. U.S. participants were recruited via M-Turk and completed an online version of qualtrics. Australian participants data originated from the dataset used to formulate the TASIT-S by Honan et al. (2016). All participants were reimbursed for their participation equivalent to the minimum wage in that country.



Picture: A summary of the components of the TASIT-S items.

This means the TASIT-S could be a suitable test of social cognition in the US. Additionally US participant's data could be useful in establishing a normative data set for the test.

To read more about this study:

Honan, C. A., McDonald, S., Sufani, C., Hine, D. W., & Kumfor, F. (2016). The awareness of social inference test: development of a shortened version for use in adults with acquired brain injury. *The Clinical Neuropsychologist*, 30(2), 243-264.

What we found:

There were no significant differences between the responses of U.S. participants from that of Australian participants on any of the three parts of the TASIT-S. Additionally there were no differences between genders.

What our findings mean:

U.S. participant's performance does not seem compromised by a difficulty perceiving the Australian accents of the actors in the TASIT-S.

Changes in brain white matter after a traumatic brain injury may be linked to problems with social cognition

By Skye McDonald, Katie Dalton, Jacqueline Rushby and Ramon Landin-Romero

What the study is about:

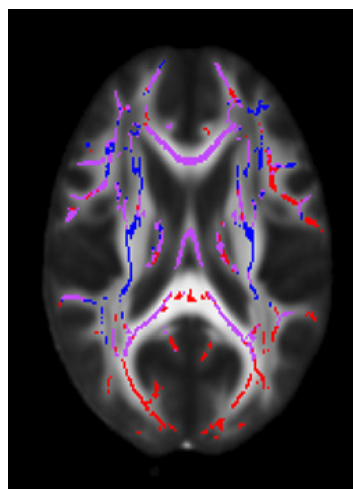
The circumstances of a traumatic brain injury can differ greatly between people. Different areas of the brain are affected depending on the site of injury, yet problems with understanding social and emotional cues is a common issue following an injury. Therefore, there must be common areas in the brain that are affected, regardless of the nature of the injury. Damage and change to grey matter (the brain tissue involved with information processing) can be obvious, whereas change to white matter (the brain tissue which forms connections and facilitates communication between regions) may not be as obvious, and can occur far from the original injury location. In this study we explored the network of white matter in the brain to see how changes may affect social cognition abilities after a brain injury.

What we did:

A group of people with a traumatic brain injury and a control group completed The Awareness of Social Inference Test (TASIT) and had diffusion MRI scans. Using neuroimaging software, areas across the brain that showed differing white matter characteristics were highlighted, to indicate common areas of change after a brain injury. These changes were then examined to see if they were related to TASIT performance.

What we found:

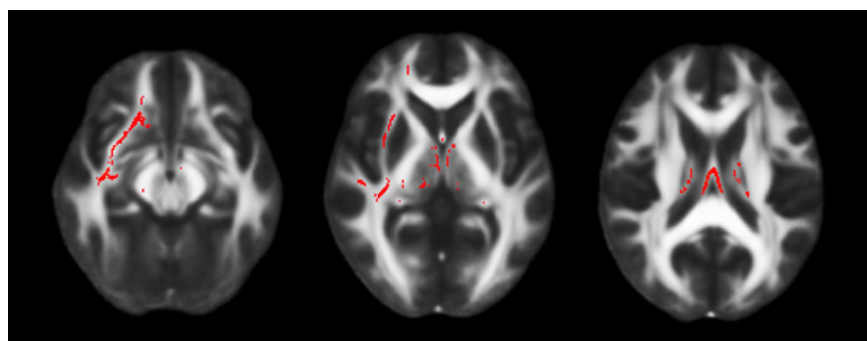
TASIT scores revealed those with brain injuries were not able to assess emotions and social meanings as well as control participants. By comparing the brains with injuries to the control brains, we found that a large number of white matter tracts across the brain had changes in their structural nature. When these regions were examined with TASIT scores, some specific areas were found to be related to TASIT performance: the corpus callosum (central white matter tract across the brain which communicates information across hemispheres), the fornix (small central fiber bundle, important in memory recall), and the thalami (a deep brain structure involved in processing emotional information).



Picture: A view through the middle of the brain of the areas of white matter fibers that were different between the control and brain injury participants. The colours depict different structural changes, with purple showing areas of most common change after a traumatic brain injury.

What our findings mean:

This research shows there are common areas in the brain that are affected after a traumatic brain injury. Changes to these particular white matter structures may be causing the emotional and social changes seen after a traumatic brain injury. It is necessary to understand why and how these changes occur in order to find ways to improve social and emotional outcomes for people with a traumatic brain injury.



Picture: Three different views through the brain showing the areas that were related to TASIT performance (seen in red).

Disrupted communication: Does damage to the corpus callosum impair emotion identification and social cognition?

By Skye McDonald, Katie Dalton, Jacqueline Rushby and Samantha Allen

What the study is about:

The corpus callosum (CC) is a large bundle of white matter fibers which connects the two hemispheres of the brain. Due to its midline location, the stress put on the CC during a head injury can cause damage to the fibers, which can impair communication between brain regions. Emotion and social cognition are complex tasks which utilise many different regions across the brain. It is likely the social and emotional cognition deficits, commonly seen after a traumatic brain injury, may be influenced by the decreased connection between regions across the two hemispheres of the brain. In this study, we examined the structural quality of the three sections of the corpus callosum, and how changes related to performance in an emotion and social cognition task.

What we did:

Diffusion MRI scans were obtained for a group of 17 people who had suffered a traumatic brain injury, along with 17 control participants. Participants also completed The Awareness of Social Inference Test (TASIT) to gauge their emotion identification and social cognition abilities. Using diffusion tensor imaging, the structures of the three regions of the corpus callosum were examined and compared between brain injury participants and controls. Additionally, these measurements were correlated with TASIT performance.

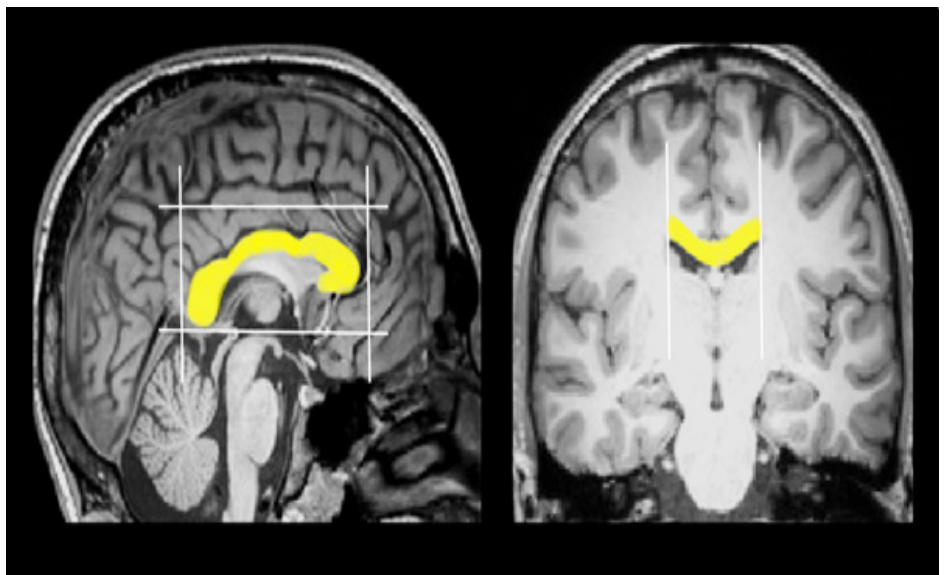
What we found:

Participants with a brain injury had structural changes in all three regions of the corpus callosum compared to the control participants. Additionally, TASIT results revealed reduced performance for emotion identification and social cognition for those who had sustained a brain injury compared to control participants. When structural changes and TASIT performance were examined together, all regions of the corpus callosum were related to social cognition performance, and emotion perception was involved with the posterior corpus callosum.

What our findings mean:

This work indicates that changes do occur in the corpus callosum following a traumatic brain injury, and the social deficits seen in traumatic brain injury may be due to the reduced ability for the corpus callosum to communicate information between the necessary brain regions. More work needs to be done to determine whether the reduced communication between brain hemispheres is a large contributor to social deficits observed, or whether there are more brain areas involved.

Picture: A side and front view of the corpus callosum, seen in yellow.



Emotion recognition depends on experience of emotion and not emotional expressivity

By Travis Wearne, Katie Osborne-Crowley, Hannah Rosenberg, Marie Dethier, Roy Kessels, Fred Westbrook, Skye McDonald

What the study is about:

The ability to recognize how other people feel is crucial in a variety of social situations. Difficulty in recognizing emotion is commonly reported in traumatic brain injury. In this study, we tested whether problems identifying emotion in others is related to problems expressing or feeling emotion in oneself. This ties into theories of emotion perception that suggest we simulate someone else's expression in ourselves as a means to understand it.

What we did:

Individuals with a brain injury as well as control participants were asked to view a series of real-time interactive faces of happiness, anger and sadness and asked to select what emotion best described how the person in the picture was feeling. We then asked participants to produce an emotional facial expression based on the presentation of happy, sad and angry stimuli (photos, words and stories) and asked them to rate their subjective feelings of anger, sadness and happiness on a 7-point scale ranging from “not at all” to “very intensely”.

What we found:

We found the same pattern of results for happy, sad and angry emotions. That is, the ability to identify emotion in others depends on the subjective experience of that emotion and not on the ability to express that emotion in oneself (i.e. your ability to identify happiness in others depends on your ability to feel happiness rather than express happiness). Interestingly, we also found that of all the variables and stimuli examined, cognitive function and the ability to experience emotion from a story mostly predicted emotion recognition. This suggests that our ability to recognize emotion is also aided by context and other information in the stimuli.

What our findings mean:

When we identify an emotion in someone else, we rely on our ability to experience that emotion within ourselves. We are currently conducting a follow-up study using physiological and facial muscle movements to objectively measure whether simulation and experience of emotion are involved in recognizing emotion in others.



Anxiety and empathy in people with autism spectrum disorder

By Emily Trimmer, Skye McDonald, Danielle Mathersul and Jacqueline Rushby

What the study is about:

Many people with Autism experience anxiety in their day-to-day lives and Anxiety Disorders are some of the most commonly co-diagnosed disorders in individuals with Autism, especially Social Anxiety Disorder. Indeed, there are many similar characteristics in both diagnoses, including social isolations, avoidance and heightened arousal. As many of the social difficulties seen in Autism also occur in people with anxiety, it may be the case that anxiety plays a role in the social difficulties seen in people with Autism.

What we did:

Individuals aged 16 or older with a diagnosis of ASD and matched controls completed a Faux Pas task in which they had to identify and understand a social faux pas in a conversation between two people. Participants also completed a number of questionnaires measuring anxiety and empathy in order to examine the relationship between these two concepts.

What we found:

Individuals with Autism performed worse than controls on the Faux Pas task. They also scored much higher than controls on both measures of anxiety and lower than controls on measures of empathy (specifically cognitive empathy, which involves perspective taking and understanding what another person is thinking and feeling). Anxiety was found to be related to cognitive empathy indicating that those with higher levels of anxiety have more difficulty understanding what other people think and feel.



What our findings mean:

Anxiety is an important factor to consider when understanding the social difficulties in people with Autism. By assessing and treating anxiety in these individuals, social understanding and empathy may improve.

Empathy for pain in autism spectrum disorder

By Emily Trimmer, Skye McDonald and Jacqueline Rushby

What the study is about:

Emotional empathy refers to the ability to experience an emotional response in response to another person's feelings. This process involves both an automatic physical response in the body (e.g., increased heart rate or arousal) as well as a subjective appraisal (e.g., feeling sad or worried) of that response. Individuals with Autism have been shown to have difficulty with some aspects of empathy, however, it is unknown which components are impaired. Examining empathy for pain allows us to explore these components in people with Autism.

What we did:

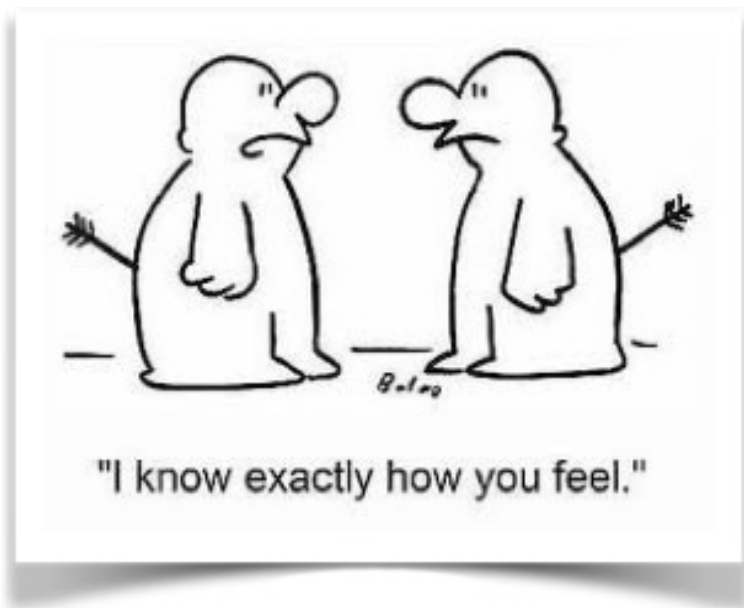
Individuals aged 16 or older with a diagnosis of Autism and matched controls watched short videos displaying a painful needle prick to an observed hand as well as other videos displaying non-painful scenarios such as a cotton tip being applied to the hand or a needle prick to an apple. Both physical responses (hand muscle response, arousal and heart rate response) as well as subjective appraisal (perceived intensity, unpleasantness and distress associated with the observed pain) were recorded in participants and compared between painful and non-painful videos.

What we found:

Individuals with Autism responded with less arousal to the painful videos compared with the non-painful videos than the control participants, but similar levels of hand muscle activation. Those with Autism also rated the pain as less intense and less unpleasant than the control individuals.

What our findings mean:

Individuals with Autism appear to show reduced emotion contagion (experiencing the same emotions as another person due to mimicking that person's emotional expression) when viewing other people in painful situations. This may be because they find painful stimuli less intense and less unpleasant than controls. This shows that both automatic and subjective processes involved in empathy for pain are interrelated and that both are affected in people with Autism.



STUDIES IN PROGRESS

@ UNSW

Investigating empathy impairments following traumatic brain injury

By Katherine Osborne-Crowley, Skye McDonald and Jacqueline Rushby

What the study is about:

People with traumatic brain injury may have difficulty empathising with others. Specifically, people with a brain injury can lack ‘emotional empathy’, or the ability to feel what another person is feeling. Of course, this can have significant impacts on their ability to maintain friendships and romantic relationships. Research suggests that people automatically and subconsciously mimic other people’s emotions, and that this mimicked expression sends feedback signals to the brain to help the person feel what the other person is feeling. In fact, previous research in people with brain injury suggests that this feedback mechanism may be impaired after a TBI. That research showed that when asked to pose emotional expressions in the face and body (eg happy, sad, angry), participants with a TBI did not report feeling the associated emotion to the same extent as did healthy control participants. We are looking to further investigate this impairment in this feedback mechanism after TBI in a study we are running currently. One way we are extending on past research in this current study is to investigate the role that physiology might play in this impaired feedback system. For instance, we would expect in healthy controls that posing an emotional expression would cause detectable changes in heart rate and skin conductance, and that these bodily changes may play an important role in generating the feeling of the associated emotion. Thus, we aim to determine whether our participants with TBI show the expected physiological changes when they pose emotional expressions, and whether these physiological changes (or lack of changes) relates to subjective reporting of feeling the emotion.

What we are doing:

We are currently recruiting participants who have experienced a traumatic brain injury to attend 2 two-and-a-half-hour testing sessions, approximately 1-2 weeks apart. In these sessions, electrodes will be attached to the fingers of participants to measure heart rate and skin conductance. Participants will be given instructions to move muscles in their face and body to create various emotional expressions (eg an angry expression involves a furrowed brow, clenched teeth and clenched fists). Participants will be then asked to report on how holding the postures made them feel on a variety of different scales. Participants will also be asked to report on their empathic abilities. Finally, participants will complete a range of neuropsychological tests measuring processing speed, memory and cognitive ability. This study also involves a number of other tasks which will test related hypotheses.

What are our next steps:

This study is currently underway and we are approximately half way through testing. We are still recruiting participants with a brain injury to participate.

For more information about this study:

If you are interested in participating, or would like to find out more information, please contact Katie by email at k.osbornecrowley@unsw.edu.au or by phone (Mondays and Wednesdays only) at (02) 9385 3590.

Introducing ‘SIFT IT’: The Social Thinking Therapy! Is it possible to treat social cognitive difficulties after brain injury?

By Anneli Cassel, Skye McDonald and Michelle Kelly

What the study is about:

Understanding emotions, understanding that other people think or feel things differently to ourselves, and thinking and feeling from another’s perspective are all skills associated with social cognition. There are many reasons why some people find it more difficult to do these things, and having a brain injury is one of them: the regions in the brain that can be damaged through injury often affect the areas we know are important for social cognition. What is less well understood is whether it is possible to treat these social cognitive deficits after such an injury, in order to help people socialise more easily. We have therefore recently developed a treatment called SIFT IT: The Social Thinking Therapy to see if it is possible to treat, and improve, these skills.

What we are doing:

We are looking to find out whether SIFT IT therapy works in a couple of trials. The first trial is looking into the therapy as a group program, with about four participants in each group. The second trial is looking into the therapy as a 1:1 treatment. We want to find out if people with brain injuries find benefit from a treatment that focuses on understanding other peoples’ thoughts and feelings and understanding how other peoples’ perspectives can be similar or different to their own. Ultimately, we want to see if this has any impact on peoples’ “normal lives” and whether it helps peoples’ relationships with their family, friends, work colleagues, and whomever else they interact with day to day.

What are our next steps:

We have started looking for participants to take part in the group treatment. We think it will take a bit over a year to complete the first trial looking at whether SIFT IT works as a group therapy. Towards the end of this year, we will start looking for people to take part in the second, individual therapy, trial. Once we have collected this data, we will be able to see whether this kind of treatment shows promise at treating social cognitive difficulties in this population. If it does, it will one day help clinicians use this knowledge in rehabilitation settings so that more people can have the opportunity to benefit from social cognition treatment.

For more information about this study:

Cassel, A., McDonald, S., Kelly, M. & Togher, L. (2016). Learning from the minds of others: A review of social cognition treatments and their relevance to traumatic brain injury. *Neuropsychological Rehabilitation*. doi: <http://dx.doi.org/10.1080/09602011.2016.1257435>.

If you’re interested in staying in the loop about this study, or if you think you might be interested to take part in the treatment, please contact Anneli Cassel at: anneli.cassel@unsw.edu.au.



Validating a cognitive enhancement protocol using brain stimulation

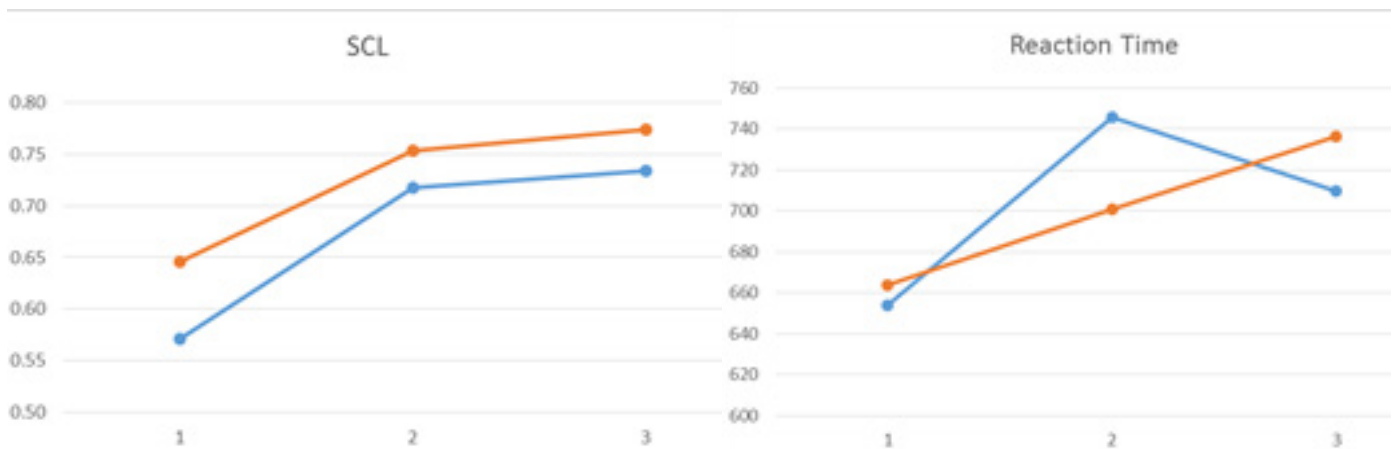
By Jacqueline Rushby, Frances De Blasio, Katie Osborne-Crowley, Travis Wearne, Colleen Loo and Skye McDonald

What the study is about:

Transcranial direct-current stimulation (tDCS) is a painless and relatively safe form of non-invasive brain stimulation (NIBS) that modulates spontaneous cortical brain activity. tDCS uses weak electric currents delivered by scalp electrodes over a targeted cortical area to induce sustained changes in membrane potential and excitability of cortical cells and fibers. While tDCS is showing great promise as a tool to understand how information is processed, methodology is still to be refined and is not yet standardized, and to date reports in the literature show some striking inconsistencies. It is currently unclear which regions of the brain are the best to stimulate for specific tasks, how long the stimulation should last, as well as what strength of stimulation is best. For the current study we investigated which of three brain locations were better at improving memory.

What we did:

Ninety three undergraduate participants were randomly assigned to one of three stimulation groups (focal frontal, broad frontal, and broad parietal), in which they received both an active/real stimulation session and a sham/placebo stimulation session (1-2 weeks apart), while they completed a simple memory task. As well as behavioural performance, changes in mood, and arousal (measured by brain electrical activity and skin conductance level) were examined.



What we found:

To date, preliminary results indicate that skin conductance level (SCL) is increased for active (red line) relative to sham (blue line) irrespective of region of stimulation (left figure). In contrast only broad frontal stimulation was associated with a decrease in error-rates and faster reaction-times (right figure). We are continuing to process and analyse the other measures we collected, and expect to publish the research later this year. The outcomes from this study will help us to design better therapeutic studies for our participants with brain injuries.

I see what you feel: an investigation of affective facial mimicry

By Edward Ho, Christopher Sufani, Jacqueline Rushby and Skye McDonald

What the study is about:

Smile! Facial expression is an important tool for us to convey non-verbal messages to one another. This process involves an automatic mimicry mechanism, known as the facial feedback hypothesis. When we perceive an expression from others, our faces automatically mimic that expression and this influences our emotions. However, individuals with autistic spectrum disorder or a traumatic brain injury have an impaired ability to respond to others' facial expressions. In this study, we wanted to explore whether facial mimicry is sufficient to lead to a change in neurophysiological activation. Also, we wanted to explore if training in facial mimicry could enhance performance in an emotion recognition task and if this training is a plausible intervention to improve emotion recognition ability in other clinical populations. In turn, we would be able to confirm if the facial feedback hypothesis can adequately explain our emotion perception abilities.

What we are doing:

We are recruiting 90 participants from age of 18-40 years old and recording their physiological changes, including brain waves and skin conductance levels, throughout the experiment. Participants are randomly allocated into three groups: one active mimicry group and two observation only groups. For the first group, participants are instructed to observe and mimic a series of angry facial expression pictures. For the other two groups, they are instructed to observe either a series of angry or neutral facial expression pictures only. After mimicry or observation phase, all participants will be asked to identify the underlying emotions from a series of facial expressions, including happy, angry, disgusted and surprised.



Picture: An example of the facial expressions used in this study.

What we expect to find:

The outcomes of this study are expected to provide an insight into the relationship between facial mimicry and emotion perception. It will also help us to understand the underlying physiological mechanism of the processes involved and it could form the basis of an intervention aimed at enhancing individuals' abilities in emotion perception.

For more information about this study:

If you are interested in participating, or would like to find out more about this study, please contact Edward Ho at edward.ho@unsw.edu.au

Biofeedback as a way of modulating emotional regulation for individuals with severe traumatic brain injury

By Travis Wearne, Samantha Allen, Katie Osborne-Crowley, Emily Trimmer, Jacqueline Rushby and Skye McDonald

What the study is about:

Emotions are a normal aspect of everyday life, but following a brain injury, an individual may lose the capacity to control their emotional behaviour or their emotions may be out of proportion to the situation. Heart rate variability is thought to reflect a person's capacity to regulate their emotions and behaviour. Heart rate variability can be improved by biofeedback, a method that teaches individuals how to control their physiological output with breathing techniques. This study aims to examine whether multiple sessions of heart rate variability biofeedback can alter emotional and behavioural output for people with TBI.

What we are doing:

Individuals with severe traumatic brain injury recruited to the study undergo 6 sessions of HRV biofeedback training. Both before and after the treatment phase, participants complete cognitive tests related to drive and control, mood questionnaires and have their heart rate variability recorded: (a) at rest, (b) in response to emotional stimuli (angry & sad films) and (c) during a cognitive task, the paced auditory serial addition test (PASAT). We do this to elicit emotional responding.



What we expect to find:

We anticipate that repeated biofeedback training to regulating HRV for individuals with TBI can directly improve:

- (a) Initiation and drive
- (b) Emotional and cognitive control
- (c) Emotion regulation to anger-inducing material
- (d) Symptoms of depression and anxiety

For more information about this study:

So far we have recruited 19 participants with TBI to the study, with 17 completed! We are still recruiting and are looking forward to see what the results reveal! If you are interested in participating, please contact Emily at e.trimmer@unsw.edu.au.

A pilot project for a standardised assessment tool (Systematic Assessment for Brain Injury Rehabilitation - SABIR) for patients after a traumatic brain injury and its correlation with functional outcome measures

By Travis Wearne, Tram Bui, Stuart Browne, Clayton King and Skye McDonald

What the study is about:

A challenge facing clinicians working with individuals following mild to moderate brain trauma is how to identify those at risk of problems and to implement appropriate assessment that can inform patient management. Although detailed assessment techniques exist, the resources, time constraints and restricted availability of staff and patients make them unsuitable for guiding clinical decision-making. Nevertheless, there are many existing cognitive screening tests that have been designed for patients with mild cognitive impairment in dementia, and even though brief cognitive screening tests are likely to have greater application because of their accessibility, their usefulness has not been examined in TBI. The aim of this study is to determine whether early brief cognitive screening tests can predict long-term outcomes for individuals following TBI and whether they show the same benefit as formal neuropsychological testing (the “gold standard” of cognitive assessment).

What we are doing:

Individuals aged 18 to 65 and within 6 months of sustaining a traumatic brain injury (TBI) of sufficient severity are invited to participate in the study. A range of cognitive screening tests and outcome measures are administered at baseline and at 3 and 6 months. A comprehensive neuropsychological assessment is also administered within 12 months. We plan to recruit a total of 40 participants in the study.

What we expect to find:

Primary Aim is to:

To determine whether early brief cognitive tests correlate with functional outcomes after a traumatic brain injury.

Secondary Aim is to:

Assess validity of cognitive screening tests by comparison with formal neuropsychological testing (i.e. Gold Standard).

For more information about this study:

So far we have recruited over 24 participants with TBI to the study. If you would like more information, please contact Travis, at t.wearne@unsw.edu.au



NEW RESEARCH

STARTING IN 2017

Can non-invasive brain stimulation improve memory following traumatic brain injury?

By Frances De Blasio, Jaqueline Rushby, Travis Wearne and Skye McDonald

What the study is about:

Treatments to improve memory in the traumatic brain injury population usually target working memory, or the ability to hold and manipulate information in your mind. Although such treatments have been shown to be effective in improving working memory, they typically require many sessions and are both time-consuming and expensive. In this study we will assess the effectiveness of a newer and more economical treatment option. The treatment being assessed is a relatively safe and painless form of brain stimulation known as transcranial direct current stimulation or tDCS for short.

This type of stimulation involves the application of a weak direct electrical current to the scalp as shown in the picture. This stimulation can be used to increase or decrease the natural electrical signals in select regions of the brain. Our aim is to increase the electrical activity in brain areas involved in working memory processes. We expect that this stimulation will result in improved performance in a working memory task.



What we are doing:

We will be recruiting participants who have experienced a traumatic brain injury to attend 4 two-hour testing sessions, each approximately 1-2 weeks apart. In the first session electroencephalography (or EEG) will be used to record brain activity during rest and during a simple computer task. This will allow us to identify which region or regions of the participant's brain have been affected by their injury. This information will be used to identify where the brain stimulation will be applied for the remaining testing sessions. For each of the remaining 3 sessions participants will receive 20 minutes of brain stimulation while completing a working memory task on a computer. The strength of the brain stimulation will differ between the sessions: one session will be a fake brain stimulation, one will be delivered at 1 milliamp, and the other will be at 2 milliamps. The order of these stimulation strengths will differ for each participant, and we will not tell them the order of the stimulation strength they received until the end of the last session. This will allow us to identify the effects of each stimulation strength with more accuracy. During each of these stimulation sessions we will also record brain and sweat gland activity during resting conditions before and after the brain stimulation. We will also ask participants to complete short questionnaires about how they are currently feeling and about their mood. This will allow us to assess the effects of the brain stimulation on each of these other measures.

What are our next steps:

This study is ready to begin, and we will start participant recruitment shortly.

For more information about this study:

If you are interested in participating, or would like to find out more information, please contact Frances by email at f.deblasio@unsw.edu.au or by phone (Mondays and Wednesdays only) at (02) 9385 3590.

COLLABORATIVE

@ UNSW & ABROAD

Do different emotional expressions influence recognition of faces?

By Eli Vakil, Bar-Ilan University, Israel; Skye McDonald and Samantha Allen, UNSW

What the study is about:

We know that the brain processes information about what a person looks like separately to how it processes what emotional expression the person is showing. What we don't know is how much one influences the other. In this study we examined this by testing how much changes to facial expressions affected recognition of facial identity.

What we did:

Three groups of normal healthy adults participated in this study. One group was shown a set of 42 neutral faces, one group was shown a set of 42 happy faces and one group was shown a set of 42 angry faces.

Afterwards, they were shown a larger set of 84 faces (half new, half old) and had to choose which ones they had seen before. One-third of the old and new faces displayed the same facial expression shown during the study, and the remaining two-thirds had one of the other two expressions.

What we found:

Participants were more likely to recognize a face with the same expression both initially and at test. Recognition of angry faces was the highest, followed by happy then neutral. People were more likely to mistake a new face as an old one, if it had an angry expression.

What our findings mean:

This study shows that people process both the identity and emotion of the face they see and the emotion is part of the information used to recognize the face. Angry expressions are more likely to grab attention and influence memory possibly reflecting "bottom up" influences on attention from the amygdala.

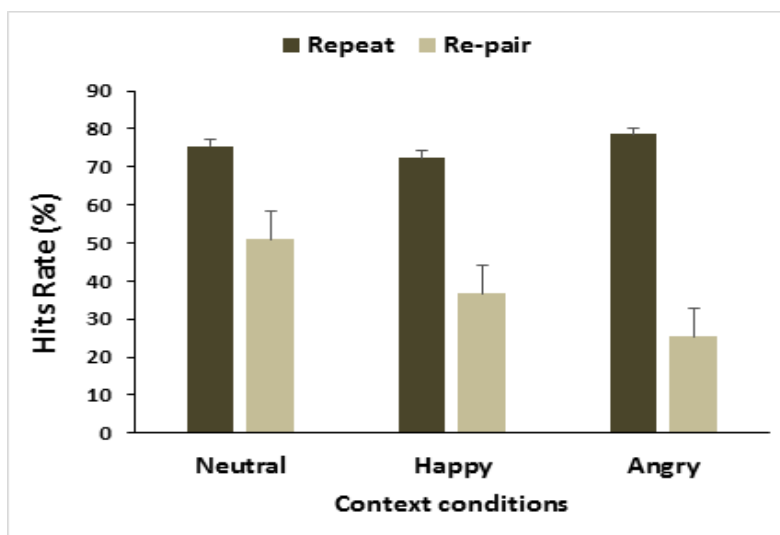


Figure 1: Percent of hits (accurate recognition) of faces when the same expression is repeated ("Repeat") versus paired with a different expression ("Re-pair") for Neutral, Happy and Angry expressions.

For more information about this study:

Vakil, E., McDonald, S., Vardi-Shapiro, N. and Allen, S.K. Facial expressions yielding context memory effect: The additive contribution of eye movements (Submitted).



Dr Eli Vakil has over 30 years experience in Clinical Neuropsychology. He is a professor in the Department of Psychology and the Head of the Memory and Amnesia Lab at the Gonda (Goldschmied) Multidisciplinary Brain Research Center at Bar-Ilan University in Israel.

RESEARCH

@ UNSW & ABROAD

Assessing social skills in people with a diagnosis of dementia

By Michelle Kelly and Skye McDonald

What the study is about:

Many people with dementia have difficulty with social skills, that is, they have trouble reading facial expressions, and understanding the intentions behind other people's behaviour. They also fail to pick up innuendos, such as hints and sarcastic comments. This leads to misunderstandings, confusion and aggression, and can make it difficult for relationships with caregivers.

What we did:

We developed the Brief Assessment of Social Skills (BASS) based on our understanding of different ways to assess social cognition. This test takes less than 30 minutes to administer and gives us an overview the person's social skills. We gave this test to 30 people with a diagnosis of dementia and 70 healthy controls of approximately the same age to see if it was sensitive to the problems people with dementia experience.

What we found:

We have found that control adults perform significantly better than those with dementia. We have also found that scores on certain parts of the BASS (emotion perception, empathy, social disinhibition and social reasoning) are associated with scores on established tests of social cognition suggesting that the BASS is measuring the same kinds of abilities. We have also shown that results are stable over time.

What our findings mean:

The results are encouraging thus far and suggest that a short test of social cognition may be useful to pick up everyday difficulties for dementia patients. We are currently preparing this paper for publication.

For more information about this study:

If you're interested in getting involved or keeping in the loop about our progress, please contact: Michelle at michelle.kelly@newcastle.edu.au.



Dr Michelle Kelly is a Clinical Psychologist and a Senior Lecturer in Clinical Psychology at the University of Newcastle. Her research focus is psychosocial functioning in people with traumatic brain injury and people with a diagnosis of dementia.

Cognitive-communication and psychosocial functioning in adults 12 months after severe traumatic brain injury

By Sarah Tran, Belinda Kenny, Emma Power, Robyn Tate, Skye McDonald, Rob Heard, Leanne Togher

What the study is about:

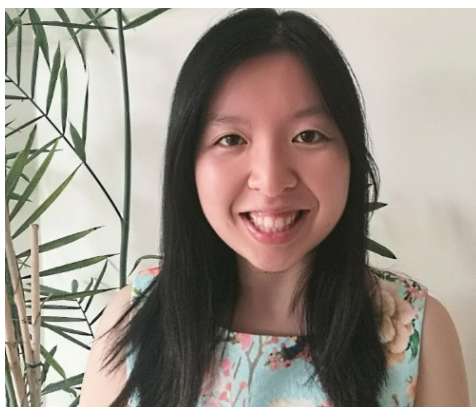
Cognitive-communication disorders encompass difficulty with any aspect of communication as a result of a cognitive deficit. It is thought that cognitive-communication difficulties as a consequence of severe traumatic brain injury may contribute to chronically poor psychosocial functioning and problems reintegrating into the community. This study investigated the link between cognitive-communication skills and psychosocial functioning in persons one-year post-injury.

What we did:

Thirty six adults with severe traumatic brain injury were evaluated at 12 months post-injury. Cognitive-communication skills were evaluated with the Functional Assessment of Verbal Reasoning and Executive Strategies (FAVRES). Participants' psychosocial functioning were assessed using the Sydney Psychosocial Reintegration Scale-2 (SPRS-2) Form A – completed by a close relative (e.g. parent, spouse).

What we found:

Cognitive-communication performance (measured by the FAVRES Total Accuracy and Total Reasoning scores), were significant predictors of overall psychosocial functioning outcome (SPRS-2 Other score). That is, individuals who achieved higher scores on the FAVRES were more likely to have less change in their post-injury psychosocial outcome when compared to their pre-injury psychosocial functioning. Similarly, higher FAVRES scores were predictive of better psychosocial functioning in the specific Work/Leisure and Interpersonal Relationships domains of the SPRS-2.



Sarah Tran is a Speech Pathologist from The University of Sydney. Her research focus is cognitive-communication in people with traumatic brain injury.

What our findings mean:

At 12 months post TBI, individuals were no longer considered to be in the acute stages of recovery. However, findings demonstrated these individuals were still experiencing significant difficulties such as resuming employment, and substantial challenges in maintaining interpersonal relationships. These same individuals performed below normal limits on the cognitive-communication measure.

Therefore, findings suggest continued speech pathology involvement in the latter post-acute stages of recovery may potentially improve social, vocational and overall psychosocial functioning. This provides argument for the role of speech pathologists in community rehabilitation teams and return to work programs for individuals following traumatic brain injury. Finally, the study demonstrates that the FAVRES was able to realistically capture the communication demands in everyday social and vocational situations. Therefore, speech pathologists should consider use of the FAVRES in clinical practice as a benchmark assessment measure, and to assist in the development of rehabilitation goals.

For more information about this study:

If you're interested in finding out more information about this study, please contact: Sarah at stra4282@uni.sydney.edu.au

How do people with brain injury experience ostracism?

By Michelle Kelly, Skye McDonald and Jacqueline Rushby

What the study is about:

It is well known that many people find themselves socially isolated after experiencing a brain injury. This can be due to changes in living and work circumstances, or changes in their ability to interact in social settings. We wanted to know what effect a very short experience of social exclusion (ostracism) has on people who have had a brain injury.

What we did:

We asked 21 adults with TBI and 17 matched adults without brain injury (control group) to play an online game of 'catch-and-throw'. Participants played this game on a computer where they saw four players, one of which is themselves. Participants did not know that we had programmed the other 'players' to either include them in the ball game, or to exclude them. During the game we measured what happens to their level of stress, via measuring what is called skin conductance (sweat on their fingers). We also asked them how they felt about the game.

What we found:

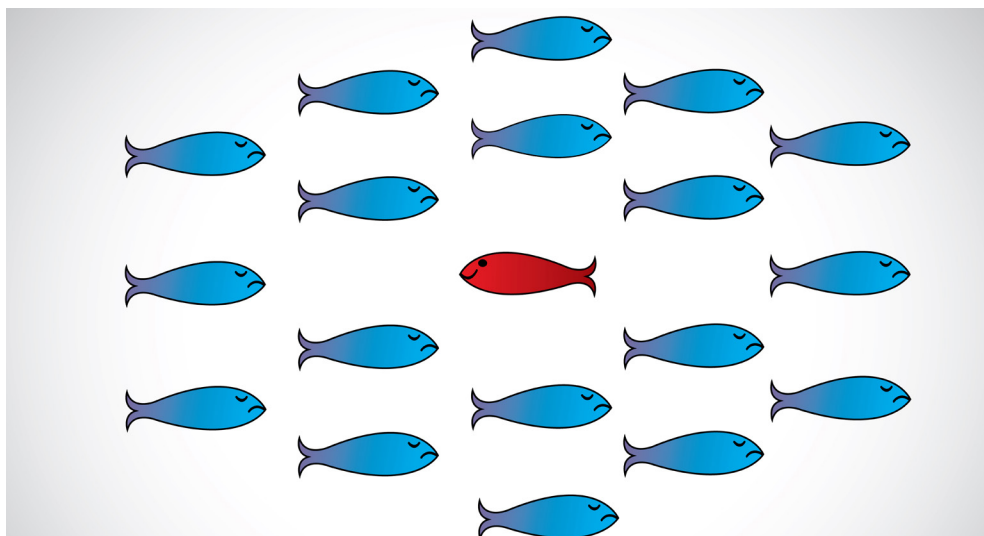
We found that people with TBI knew when they were being excluded by the other players just as the control group did, but that they reported feeling less emotionally affected by being excluded. However, their level of stress measured by skin conductance was not different to controls.

What our findings mean:

We think that the different response experienced by people with brain injury could be explained by many possible factors. Some people with brain injury reported to us that they were 'used to' being excluded. This may be one reason why they were not as emotionally affected. In the future we hope to investigate this outcome further as we think it might predict whether people with brain injury will engage in an activity that will help them remake social connections in the future.

For more information about this study:

If you're interested in getting involved or keeping in the loop about our progress, please contact: Michelle at michelle.kelly@newcastle.edu.au.



IN OUR RESEARCH

Our research would not be possible without the generosity of all the people with traumatic brain injuries and their families, as well as our control participants who so kindly offer their time and energy to participate in our studies.

The Clinical Neuropsychology Research Team at UNSW in conjunction with Liverpool, Ryde and Westmead Hospitals are conducting research on emotion processing and social cognition following brain injury. We are looking for individuals who have suffered a brain injury, as well as healthy controls, to participate in our research projects.

If you are interested in getting involved in any of the following studies, please contact Emily Wilson or Poss Logan, our Lab Research Assistants, on (02) 9385 3590 or emily.j.wilson@unsw.edu.au and or poss.logan@unsw.edu.au and provide the following information: your name, date of birth, level of education, and nature of your brain injury (if applicable). We look forward to hearing from you!

Emotion and Social Communication Studies

These projects examine the ability of those who have sustained a brain injury to make judgements about the thoughts, feelings, and intentions of others. Testing sessions involve a variety of simple tasks, such as viewing pictures or videos on the computer, as well as pen-and-paper tasks. Whilst these tasks are completed, measures such as heart rate, brain activity, facial muscle activity and arousal may be taken. We are looking for individuals who have a brain injury, as well as healthy controls, to participate in these studies.

Sessions are conducted at the University of New South Wales, and require one visit lasting approximately three hours.

Appointment times are flexible, to suit your schedule.



INVOLVED

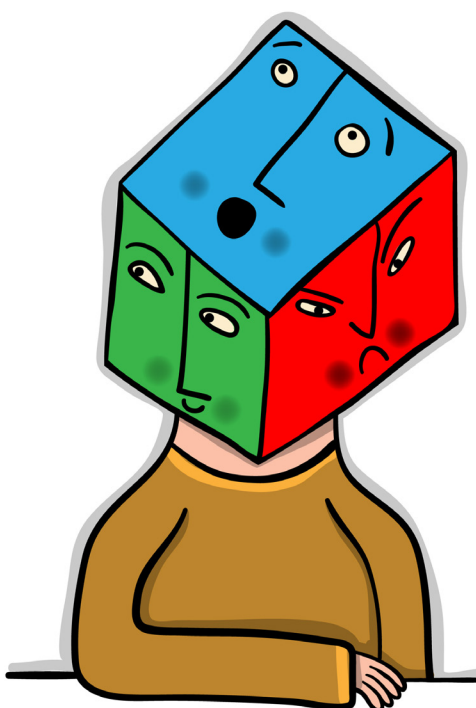
IN OUR RESEARCH

Social Thinking Therapy Study

This study is looking at a new treatment called SIFT IT: The Social Thinking Therapy. We want to see if it is possible to improve the thinking skills we know are important for people to have successful social interactions. To get by in social situations, we need to have an understanding of what the other person is thinking or feeling and also understand how that can be similar or different to our own point of view. This treatment is being examined as a small group face-to-face therapy and as an individual therapy using telehealth.

At the moment, we are looking for people who've had a brain injury to take part in the group therapy. Taking part involves firstly having an assessment of your social thinking skills. We will do this before the treatment, immediately after, and three months after finishing the treatment and it will take about two hours to complete each time. We may also need to complete an assessment of your other thinking skills before the treatment starts if you haven't had these assessed recently (which will take a little over an hour). The treatment will run in small groups for about 14 weeks. Each session will be 90 minutes long and we will be doing lots of activities to help you look for the clues to other peoples' thoughts and feelings, think about how these relate to your thoughts and feelings, and decide how you can go about trying out your response.

If you are interested, or you know someone who may be interested, in taking part in this study please contact Anneli Cassel for more information at anneli.cassel@unsw.edu.au. She will be able to reply or give you a call to discuss the study with you in more detail.



PUBLICATIONS

FROM OUR LAB

BOOKS AND CHAPTERS

IN PRESS

- McDonald, S. & Cassel, A. (In Press). Rehabilitation of social cognition. In Wilson, B.A., Van Heugten, C., Winegardner, J. & Ownsworth, T. (Eds), *International Handbook of Neuropsychological Rehabilitation*. Psychology Press.

Professional Reports, Technical Manuals, Tests and Databases

2016

- Tate, R., Rosenkoetter, L., Wakim, D., Sigmundsdottir, L., Doubleday, J., Togher, L., McDonald, S. & Perdices, M., (2016) *The Risk of Bias in N-of-1 Trials (RoBiNT) Scale: An Expanded Manual for the Critical Appraisal of Single-Case Reports*: Sydney; Uni of Sydney.

PUBLICATIONS IN REFEREED NATIONAL AND INTERNATIONAL JOURNALS

In Press

- Trimmer, E., McDonald, S., Rushby, J. & Kelly, M. (In Press) The psychophysiological and psychological effects of ostracism in adults with ASD. *Journal of Autism and Developmental Disorders* (Accepted 10/1/17)
- Kelly, M., McDonald, S., Rushby, J. (In press) Ostracism and physiological arousal following Traumatic Brain Injury. *Brain Injury* (accepted 9/12/16)
- Rosenberg, H., McDonald, S., Westbrook, R.F., & Rosenberg, J. (In Press) Measuring emotion perception following traumatic brain injury: The Complex Audio Visual Emotion Assessment Task (CAVEAT) *Neuropsychological Rehabilitation* (Accepted 8/12/16) <http://dx.doi.org/10.1080/09602011.2016.1273118>.
- Cassel, A., McDonald, S., Kelly, M., & Togher, L. (In Press) Learning from the minds of others: A review of social cognition treatments and their relevance to traumatic brain injury *Neuropsychological Rehabilitation* (accepted 31 Oct 2016)
- Osborne-Crowley, K. and McDonald, S. (In press) A review of social disinhibition after traumatic brain injury, *Journal of Neuropsychology* (Accepted 12 Sep 16)
- Kelly, M., McDonald, S. and Frith, M. (In press) A survey of clinicians working in brain injury rehabilitation: Are social cognition impairments on the radar? *Journal of Head Trauma Rehabilitation* (Accepted 11 April, 2016)

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- Kelly, M., McDonald, S., Frith, M.J.H. (2017) Assessment and rehabilitation of social cognition impairment after brain injury: Surveying practices of clinicians. *Brain Impairment*, 18 (1), 11-13.
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- Tate, R.L., Perdices, M., Rosenkoetter, U., McDonald, S., Togher, L., Shadish, W., Horner, R., Kratochwill, T., Barlow, D.H., Kazdin, A., Sampson, M., Shamseer, L., Vohra, S., for the SCRIBE Group (2016) The Single-Case Reporting guideline In BEhavioural Interventions (SCRIBE 2015): Explanation and Elaboration. *Archives of Scientific Psychology*, 4, 10-31. DOI: <http://dx.doi.org/10.1037/arc0000027>
- Osborne-Crowley, K., McDonald, S. (2016) Hyposmia, not emotion perception, predicts social disinhibition after severe traumatic brain injury, *Neuropsychology* 30(7) 820-829.
- Trimmer, E., McDonald, S. & Rushby, J. (2016) Not knowing what I feel: Emotional Empathy in Autism Spectrum Disorder *Autism* 1-8; DOI: 10.1177/1362361316648520
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- Brassel, S., Kenny, B., Power, E., Elbourn, E., McDonald, S., Tate, R., MacWhinney, B., Tursktra, L., Holland, A., Togher, L. (2016) Conversational topics discussed by individuals with severe traumatic brain injury and their communication partners during sub-acute recovery. *Brain Injury* DOI: 10.1080/02699052.2016.1187288
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- Tate, R.L., Perdices, M., Rosenkoetter, U., Shadish, W., Vohra, S., Barlow, D.H., Horner, D., Kazdin, A., Kratochwill, T., McDonald, S., Sampson, M., Shamseer, L., Togher, L., Albin, R., Backman, C., Douglas, J., Evans, J.J., Gast, D., Manolov, R., Mitchell, G., Nickels, L., Nikles, J., Ownsworth, T., Rose, M., Schmid, C., Wilson, B., (2016) The Single-Case Reporting guideline In BEhavioural interventions (SCRIBE) 2015 Statement *Aphasiology*, 30 (7), 862-876).
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- Honan, C. A., McDonald, S., Sufani, C., Hine, D. W., & Kumfor, F. (2016). The awareness of social inference test: development of a shortened version for use in adults with acquired brain injury. *Clinical Neuropsychologist*, 1-22. doi:10.1080/13854046.2015.1136691

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REFEREED CONFERENCE PROCEEDINGS AND ABSTRACTS

2017

- McDonald, Skye, Samantha Allen, Cynthia Honan, Christine Padgett, Fiona Kumfor, Olivier Piguet, Jessica Hazelton TASIT-S: The brief version of TASIT with new norms for USA and Australian adults Abstract presented at the 40th Annual ASSBI conference, Melbourne, June 2017
- McDonald, S., Dalton, K., Rushby, J. & Landin- Romero, R. Social cognition after TBI Its all about connections. Abstract presented at the Annual meeting of the International Neuropsychological Society, New Orleans, February 2017

2016

- McDonald, S., Rushby, J., Dalton, K., & Parkes, N. Communication: Its all about connections. The role of the corpus callosum in TBI. Abstract presented at the 2016 Conference of the Australasian Society for the Study of Brain Impairment; Macau, September 2016
- De Blasio, F., Rushby, J., Kornfeld, E., Schollar-Root, O. & McDonald, S. ERP indices of happy and angry facial processing in a dishabituation paradigm Abstract presented at the 3rd annual conference of the Australasian society for affective and social neuroscience (AS4SAN) Sydney, June 2016
- Kornfeld, E., Allen, S.K., Rushby, J., & McDonald, S. The influence of stimulus duration and mask type in an emotional backward-masking paradigm. Abstract presented at the 3rd annual conference of the Australasian society for affective and social neuroscience (AS4SAN) Sydney, June 2016



- Allen, S.K., Kornfeld, E., De Blasio, F., & McDonald, S., & Rushby, J.. The effects of duration and stimulus similarity on psychophysiological responses to backwardly masked faces, Abstract presented at the 3rd annual conference of the Australasian society for affective and social neuroscience (AS4SAN) Sydney, June 2016
- Kershaw, K., Rushby, J., McDonald, S., De Blasio, F., Sufani, C., Fisher, A. and Iredale, J. ERP correlates of emotional prosodic processing following severe traumatic brain injury: New insights from principal component analysis Abstract presented at the 3rd annual conference of the Australasian society for affective and social neuroscience (AS4SAN) Sydney, June 2016
- Cassel, A. & McDonald, S. Social cognition remediation? A review of treatment approaches and future directions. Abstract presented at the 3rd annual conference of the Australasian society for affective and social neuroscience (AS4SAN) Sydney, June 2016
- Osborne-Crowley, K., McDonald, S. & Rushby, J. Electrophysiological value representation of predicted rewards after severe traumatic brain injury Abstract presented at the 3rd annual conference of the Australasian society for affective and social neuroscience (AS4SAN) Sydney, June 2016
- Honan, C., McDonald, S., Sufani, C., Hine, D.W., & Kumfor, E. Assessing social cognition: A validation study of the The Awareness of Social Inference Test – Short Version (TASIT-S) Abstract presented at the 3rd annual conference of the Australasian society for affective and social neuroscience (AS4SAN) Sydney, June 2016
- Dalton, K., Rushby, J., McDonald, S., Parks, N. & Allen, S. Social cognition deficits following traumatic brain injury correspond with decreased white matter diffusivity in the corpus callosum Abstract presented at the 3rd annual conference of the Australasian society for affective and social neuroscience (AS4SAN) Sydney, June 2016
- Rushby, J., McDonald, S., Kornfeld, E. and De Blasio, F.M. Mu suppression impairment to angry faces in people with severe traumatic brain injury
- Rosenberg, H., McDonald, S., Rosenberg, J., Westbrook, F.R. Impaired perception of negative emotions after brain injury: Evidence for a specialized neural network? Abstract presented at the 3rd annual conference of the Australasian society for affective and social neuroscience (AS4SAN) Sydney, June 2016
- Rosenberg, H., McDonald, S., Rosenberg, J., Westbrook, F.R. Amused, flirting or simply baffled? Is recognition of all emotions affected by Traumatic Brain Injury (TBI)? Abstract presented at the 3rd annual conference of the Australasian society for affective and social neuroscience (AS4SAN) Sydney, June 2016
- Rosenberg, H., McDonald, S., Rosenberg, J., Westbrook, F.R. Emotion perception deficits following TBI: General or specific? Abstract presented at the London INS meeting, July 2016
- Rosenberg, H., McDonald, S., Dethier, M., Kessels, R.P.C., Westbrook, R.F. Impaired perception of negative emotions after TBI: Real or artefact? Abstract presented at the 13th-NR-SIG-WFNR Conference, Glasgow, July 2016.



THANK YOU

FROM ALL OF US

Many people and organisations have been involved in coordinating and assisting in our research studies. We would especially like to acknowledge the outstanding brain injury rehabilitation teams at Liverpool Hospital, Ryde Royal Rehabilitation Centre and Westmead Hospital. Several of our projects also represent collaborations with researchers at UNSW and other institutions, in particular:

- Robyn Tate at the Rehabilitation Studies Unit, University of Sydney;
- Leanne Togher at the Faculty of Health Sciences, University of Sydney;
- Michelle Kelly, University of Newcastle; and
- Eli Vakil, Bar-Ilan University, Israel

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We are always keen to welcome any future volunteers who would like to participate in our research. Please do not hesitate to contact us for further information.

Until next year,

Professor Skye McDonald's Research Team



CLINICAL NEUROPSYCHOLOGY

