ACUR | Australasian Council for Undergraduate Research

CONFERENCE PROGRAM

27 - 28 OCTOBER 2016

HOSTED BY CQUniversity AUSTRALIA

Australasian Conference of Undergraduate Research

CQUniversity Australia, 27-28 October 2016

Program and Abstracts

Contents

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We wish to thank the following reviewers:

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The organising committee would also like to thank and acknowledge the following CQUniversity student volunteers for their efforts with the conferences:

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Conference Dinner

Willby's Training Restaurant, 6.30pm, Thursday 27th October

Join fellow presenters and attending academics for the conference dinner at the dining hall of St Catherine's College! This is a great opportunity to interact and network with individuals across all disciplines so please come along. The Social dinner will commence immediately following the final presentation session.

Welcome

Dear Conference Participants

On behalf of the organising committee of the Australasian Conference of Undergraduate Research (ACUR) I warmly welcome you to two days of outstanding undergraduate research presentations.

For the first time ever, CQUniversity Australia will be hosting this major conference under the theme of undergraduate research. The conference will be a mix of presentation sessions, keynotes and our conference dinner. Over the next two days we will have the opportunity to support and celebrate the work that our undergraduate students are doing locally, nationally and internationally.

The first **Australasian Conference of Undergraduate Research** was held at Macquarie University in 2012. ACUR provides the opportunity to meet students from other universities and to share research work. As a multi-disciplinary conference, students will have the opportunity to network with other undergraduate researchers from their own discipline, and also to learn about how other disciplines approach research problems. This year we have 71 student presentations representing 21 different universities, which illustrates how undergraduate research is valued in the higher education sector.

Welcome to CQUniversity Australia and I hope you all enjoy hearing about the great work of our undergraduates in a collegial, supportive and celebratory way.

Professor Denise Wood
Conference Convenor

Acknowledgement of Country

In the spirit of reconciliation, CQUniversity recognises that its Rockhampton campuses are situated on Country for which the Darumbal (pron: Darr-um-bull) people have been custodians for many centuries and we pay our respect to the Elders, past, present and future for they hold the memories, the traditions, the culture and hopes of Indigenous Australia.

List of Presentations

Thursday 27 October 2016

Time	Room 1	Room 2	Room 3	Room 4
8am – 8.30am	Conference registrations opens – Building 34 / Room G.10			
8.30am – 8.40am	Official welcome to ACUR 2016 – Professor Denise Wood, CQUniversity Australia - Building 32 / Room 1.28			
8.40am – 9.00am	Official welcome To Country – Wade Mann, Darumbal Elder - Building 32 / Room 1.28			
9.00am – 9.20am	Official Welcome from CQUniversity Australia – Professor Scott Bowman, Vice Chancellor & President - Building 32 / Room 1.28			
	Innovation Theme Building 34 / Room 1.12	**Innovation Theme** Building 34 / Room 1.17	**Social Justice Theme** Building 34 / Room 1.20	**Student Voice Theme** Building 33 / Room G.22
9.30am – 11.00am	**Matthew Hodge** Reconstructing Prehistoric Music	**James Bierton** Imagery Use and Factors Predicting Intrusive Visual Imagery during Training and Competition in Elite Cricketers	**Caitlin Parker** The Oppression of Marginalised Groups in Harry Potter	**Sarah Glencross** Predictors of Flourishing in University Students
	Linus Mueller Hair analysis: understanding temporal trends in substance use	**Peter Hooker** Not Just a Big Gun Battle: The Emergence of Asymmetrical Warfare and the Battle of Jutland, 1914-1918	**Darren Pinks** Experiences of partners of prostate cancer: A qualitative Study	**Emily Clow** Interactive Effects of Temperature and UV Radiation on Thermophilic and Temperate Strains of the Green Alga Chlorella SPP
	Rachel Begg The Comparative Effects of Cognitive Reappraisal and Mindfulness Interventions on Pain Appraisals, Mediated by Gastrointestinal Symptom Burden	**Laurence Liu Jian Liang** Does intestinal bitter taste sensing modulate gastrointestinal motility and hormone secretion to reduce glycaemia and energy intake in humans?	**Vicki Lowik** The Sydney Anglican Diocese's promotion of the male 'headship' doctrine and its influence on women's vulnerability to domestic violence	**Araliya Abeysekara** What is the proximity to the trauma and the impact on psychological wellbeing among westernised and non-westernized university students?

	Jordan Fox Monitoring of Internal and External Workloads during basketball training and game play	**Karen McCulloch** The Effect of a Realistic Media Campaign Depicting Women Exercising on Young Women's Body Satisfaction and Exercise Intent	**Georgina Rychner** 'Wandering and Brooding': Women, Madness and Asylum committal in 1890s Victoria	**Aprill Miles** Experiencing the Macquarie Undergraduate Research Internship, a comparative review of student's self reported reflections from 2012-2015.
11.00am – 11:45am	MORNING TEA Library Lawns			
	Innovation Theme Building 34 / Room 1.12	**Innovation Theme** Building 34 / Room 1.17	**Social Justice Theme** Building 34 / Room 1.20	**Sustainability Theme** Building 33 / Room G.22
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	Alex Catalan-Flores Click, Print, Fire: 3D Printing and the Arms Trade Treaty	**Perri Reynolds** Tracking the Digital Footprint: Anonymity within the Bitcoin System	**Sarah Bell** Problematic Viewing: Representations of Australian Army Nursing Services POWs in Australian News Media, Film and Theatre	**William Rooks** Redefining Distinctions between Old and Modern Genocides
	Maia Zucco Measuring brain responses in special populations using a gaming EEG system	**Jessica Blower** To Grieve or not to Grieve (online)? How Facebook Users Interact with Deceased Friends.	**Aimee Wrightson-Hester** Nightlife attendee's beliefs about what constitutes acceptable sexual behaviour	**Yianna Yi Zhang** Effect of CO2 enrichment and heat stress on native resistant starch of the red lentil (Lens culinaris)
	Gabrielle Georgiou Genetic Testing for Childhood Cancer Survivors' Risk Of Developing Late Effects: Consumer Understanding, Acceptance and Willingness-to-pay	**Liam Howard-Fabretto** Investigating the Electron Ejections in Metastable Impact Electron Spectroscopy using a Graphite Surface	**Nilani Mills** Safe Opioid Use and Prescription: Are Emergency Doctors Able To Do This?	**Roger Lee** The values embedded in Australia's environmental legislation

1.15pm – 2:00pm	**Matthew Ouston** Compressive Strength of Fibre Reinforced and Chemically Stabilised Clay Soils	**Ankita Singh** Reservoir Simulators: Are we getting better at assessing hundreds of million dollars development risk?		**Amanda Sinclair** Effects of elevated carbon dioxide (CO_2) and seasonal water supply on soil nitrogen dynamics
	Sam Gerami Is too much iron bad for your brain?	**James Keal** 3D modelling of radiation dose in inhomogeneous media using artificial neural networks		**Eden Little** Bioacoustic Monitoring of River Biota
2:00 pm – 2.45pm	LUNCH Library Lawns			
	Innovation Theme Building 34 / Room 1.17	Building 33 / Room G.22	**Social Justice Theme** Building 34 / Room 1.20	
2.45pm – 4:15pm	**Reuel Baptista** Sorting Fact from Fairy Tale: the Role of Patent Trolls in the Patent System	**Supervisor Session** Led by Angela Brew and Denise Wood	**Qi Qi Phua** Feminism in Korean Pop Music	
	Romy Ehrlich Intralipid for IVF Failure: Assessing its role in the conceivable future		**Sam McWaters** The imagined contact hypothesis: Prejudice towards asylum seekers in Australia: Is the lack of differences a good news story?	
	Angus Olding Thousand-fold Electrokinetic Concentration in a Microchip Device		**Sheena Mackie** The global response to climate change requires a new paradigm	
	Julia-Rose Satre A quantitative approach investigating the role of COUP-TFII in steroid hormone synthesis of bovine ovarian follicles		**Kathryn Allan** Examining Identity Management in Disaster Response Environments: A Child Exploitation Risk Mitigation Perspective	

4:15pm – 5.00pm	**Mary-Ellen Brierley** The body and the beautiful: Body composition preferences for attractiveness and health		**Nicola Irwin Faulks** Social Judgement: Criminal lawyers' decision making during jury empanelments versus that of the general public	
	Aya Shinooka-Phelan The Effect of Observing and Producing Gesture in Foreign Word Learning		**Jessica Doak** Investigating Fear of Terrorism in the Community	
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6:30pm	CONFERENCE DINNER – Willby's Training Restaurant, CQUniversity Rockhampton City Campus			

Friday 28 October 2016

Time	Room 1	Room 2	Room 3	Room 4
9:00am – 9:30am	**Keynote Speaker – Professor Angela Brew -** Building 32 / Room 1.28 **"Undergraduate Research: Gateways to the Future"**			
	Innovation Theme Building 34 / Room 1.12	**Innovation Theme** Building 34 / Room 1.17	**Social Justice Theme** Building 34 / Room 1.20	**Student Voice Theme** Building 33 / Room G.22
9:30 am – 10.20am	**Julianne Pascoe** Cerebral Lateralisation as a neurological biomarker of listening effort	**Victoria Hinkley** IK_{ca}-IP_3R myoendothelial microdomains in the uterine radial arteriole are present in normal, and absent in gestational and pre-eclamptic hypertensive pregnancies: Targets for therapy?	**Victoria Tasker** Skeletal evidence of torture: how can the past help the present?	**Clive You** Looking East - Vincent van Gogh and Japan
	Kathlyn Gonzales Reform proposals for the effective implementation of UN Security Council resolutions	**Ian Wilkins** Transparent conductive thin films from ZnO doped with Al and Ga for high efficiency multilayer solar cells	**Jamie Penny** Exploring the link between urban Aboriginal male identity and health	**Innovation Theme** Building 33 / Room G.22 **Annika Lamb** Evolution of Australian avifauna through climate-driven mitochondrial selection
10.20am– 11:20am	BRUNCH – Library Lawns			

	Innovation Theme Building 34 / Room 1.12	**Innovation Theme** Building 34 / Room 1.17	**Social Justice Theme** Building 34 / Room 1.20	**Innovation Theme** Building 33 / Room G.22
11:20pm – 1:00pm	**Warwick Chidley** 68 Ga-PSMA ligand in pre-treatment assessment and diagnosis of Prostate Cancer: A Systematic Review	**Hendrik Niehaus** The Erdős-Sós-Conjecture	**Susan Teather** From the micro into the macro: inclusiveness in Australian education	**Raven Laverack and Amida Dean** Electrodermal monitoring: Out of the lab and into the field
	Chin Khai Goh Reducing the Cytotoxicity of Antimicrobial Applications with Plasma Polymerized Antimicrobial Coatings	**Ellen Cliff** The other CO2 Problem - ocean acidification in the Southern Ocean	**Henry Materne-Smith, Hamish Phillips, Timothy Porter, Claudia Boccaccio** The Effectiveness of the Parliamentary Joint Committee on Human Rights in Protecting Human Rights in Australia	
	Bryan Ladowsky Optimisation using genetic algorithms with integrated artificial neural networks	**Rachael Thurecht** Australian Dietitians' Perceptions of the Healthiness of Packaged Foods	**Chris Lawless** Governmentality, Labelling Theory and the conflict of identity and meaning in mental illness: an autoethnographic account of becoming and unbecoming bipolar	
	Christianna Digenis An Australian Pilot Randomised Control Trial of Women's Psycho-social Outcomes Comparing STan and CTG Electronic Fetal Monitoring	**Anne Tin** Clinical decision-making by undergraduate nursing students	**Jonathan Brohier** 'Give Legs to Mabo'	
1.00pm – 1.30pm	**"My Research Journey" - Professor Grant Stanley, DVC Research, CQUniversity Australia** - Building 32 / Room 1.28			
1.30pm – 2.00pm	**Presentation of Best Abstract and Paper Prize - Professor Scott Bowman, Vice Chancellor & President** - Building 32 / Room 1.28			
2.00pm – 2.15pm	**Conference Close – Professor Denise Wood** - Building 32 / Room 1.28			

Keynote Speakers

This year's conference welcomes two exciting keynote speakers: Professor Angela Brew and Professor Grant Stanley.

Professor Angela Brew:

Angela Brew is Emeritus Professor at Macquarie University. She is an elected Fellow of the UK's Society for Research into Higher Education (SRHE), and a Life Member of the Higher Education Research and Development Society of Australasia (HERDSA). She was President of HERDSA from 1999-2003 and co-editor of the International Journal for Academic Development from 2000-2008. In 2009 she was awarded a prestigious National Teaching Fellowship from the Australian Learning and Teaching Council (ALTC) to enhance undergraduate engagement by involving them in research and inquiry. She has published seven books including The Nature of Research: Inquiry in Academic Contexts (RoutledgeFalmer 2001); Research and Teaching: beyond the divide (PalgraveMacmillan 2006); and Academic Research and Researchers (McGraw Hill 2009, with Lucas). Her research is focused on the nature of research and its relation to teaching, learning and scholarship, models of research-led teaching and undergraduate research. She holds degrees in philosophy, sociology and organisational development.

Keynote Speech - **Undergraduate Research: Gateways to the Future**

As a student, undergraduate research opens new pathways to the future. As a university, encouraging undergraduate research and integrating research-based learning into the curriculum open up new forms of higher education. In this keynote I will draw upon international research into the benefits of undergraduate research to argue that it is key to meeting the complex challenges of the world today.

Professor Grant Stanley ([BE(Chem) PhD]):
Deputy Vice Chancellor (Research) CQUniversity

Professor Stanley first arrived at CQUniversity in 2010 as Dean of Medical and Applied Sciences and is currently the Deputy Vice-Chancellor (Research). Grant holds undergraduate and postgraduate degrees from the University of Melbourne and has a background in Applied Microbiology/Biochemical Engineering, with on-going research interests in biofuels, especially the production of second generation bioethanol. He has experience in researching and teaching microbial metabolism, fermentation systems, bioreactor design and bioremediation. He has published more than 110 refereed and non-refereed papers, one international patent, has received a number of Category 1 funding grants and supervised 14 PhD students to completion. Professor Stanley has been on the organising committee of a number of national and international conferences and is currently an Associate Editor of the journal 'Biotechnology for Biofuels'.

Keynote Speech - **"My Research Journey"**

Abstracts

Reconstructing Prehistoric Music

Matthew Hodge
University of Newcastle

This paper examines new understandings of Paleolithic musical culture that arise from embodied and musically-informed engagement with artefacts and their environmental contexts. Drawing on extant writing, videos and recordings on the possible uses of the bone flute, the author has sought a deeper understanding through the recreation of this particular instrument. Through this process some of the challenges and pitfalls of creating Paleolithic instruments, as well as their music-making potential, have been discovered.
The findings and contestations of the new interdisciplinary archeomusicology will be presented, with a focus on three different types of flute (Divje Babe Flute, Hohle Fels, Geißenklöste). The process of re-creating a flute is discussed and some tentative conclusions are drawn of what kind of music might have been created with them, illustrated by sound examples.

The presentation is part of a more in-depth study that seeks to understand the development of prehistoric music cultures through the innovative step of bringing a musicological viewpoint to archaeological findings. Until recently, the dominant investigative approach to prehistoric culture has been one of ethnographic analogy as exemplified by Sollas in his 1911 study: *Ancient Hunter-Gatherers and their Modern Representatives*. With advancing technology and the development of more specific fields of research, understanding of prehistoric cultures and their behaviours has never been so rigorously examined as in recent years. However, despite the work new archeologists have done in challenging the dominant method of ethnographic analogy (such as Alison Wylie) there has been a resistance to change. This is in spite of advances in technology and new interpretations of artefacts that have the potential to bring new understanding of prehistoric cultures.

Imagery Use and Factors Predicting Intrusive Visual Imagery during Training and Competition in Elite Cricketers.

James Bierton
University of the Sunshine Coast

Imagery is a technique utilised by athletes to improve performance, which involves reconstructing a memory, while re-experiencing the senses, perception, and emotions. Paivio's model suggests that imagery is used by athletes to serve cognitive (e.g., understanding skills and strategies) and motivational purposes (e.g., for increasing motivation and regulating emotions). Little is known about how elite athletes use imagery before competing, and if this differs to training. Additionally, there is limited research on factors that predict intrusive visual imagery (IVI); imagery that enters consciousness involuntarily and hinders

performance. Consequently, this research had two aims: firstly, to investigate differences in athletes' imagery use before training and competition. Secondly, identify how vividness of visual imagery (how clear an image is formed in consciousness), negative affect (negative emotions), metacognitions (beliefs people have about how they think), and stress predict IVI. To address these aims, elite cricketers were asked to complete a survey consisting of the sport imagery questionnaire, the intrusive visual imagery questionnaire, the vividness of visual imagery questionnaire, the positive and negative affect schedule, the perceived stress questionnaire, and the metacognitions questionnaire 30 minutes before training and again before competing. Findings showed that athletes utilised imagery significantly more frequently before competition compared to training, and overall, used imagery to rehearse skills and remain focussed. Lack of cognitive confidence and positive beliefs about worry (metacognitions) significantly predicted IVI. Additionally, it was found that there were no differences in vividness of imagery, stress, negative affect and imagery between the training and competition settings. Furthermore, when athletes perceive limited control over their thoughts, images are perceived as intrusive, and when athletes believe worry is beneficial, negative images are perceived as intrusive.

The Oppression of Marginalised Groups in *Harry Potter*.

Caitlin Parker
Monash University

J.K. Rowling's *Harry Potter* series has a strong social justice theme which runs through the core of the books. In particular, the series looks at the role that prejudice plays in leading to the legally sanctioned oppression of marginalised groups, and provides a template on how to overcome it.

The oppression of magical creatures within the series arises due to the combined effect of ingrained prejudices within the wizarding community and the abuse of power which occurs throughout the Ministry of Magic. Prejudiced individuals are able to rise to positions of authority, and then implement legislation which is shaped by their preconceived notions of magical creatures.

Rowling suggests through the series that in order to rectify the laws contributing to the oppression of the marginalised population, it is necessary to first engage with the group on a personal level, not a political level. Not only is personal engagement necessary to overcome prejudiced attitudes, but it is also a necessary element of gaining an accurate understanding of the needs and interests of that community.

Predictors of Flourishing in University Students

Sarah Glencross
University of the Sunshine Coast

Well-being in university students has received increasing attention in recent years. Whilst definitions vary, there is a general consensus that well-being is a complex, multi-faceted construct incorporating optimal experience and functioning. Distinctions have been made between different aspects of well-being which it is possible to influence through the university experience. These include hedonic well-being, which is characterised by subjective happiness; and eudaimonic well-being, which is indicated by objective measures of capabilities and opportunities for optimal functioning.

Previous research has combined measures of psychological and subjective well-being and introduced the concept of flourishing to describe the highest levels of mental health. More recent work has also integrated hedonist and eudaemonist approaches to define a new flourishing theory of well-being. As a result, it has been proposed that the term flourishing describes a desirable state in which both hedonist and eudaemonist components of well-being are simultaneously present within an individual.

The positive outcomes of flourishing are apparent in educational environments, they go beyond self-reported well-being and manifest in positive performance related outcomes. Research has shown that flourishing students experience more positive emotions, greater engagement, and anticipate more future personal resources. They have higher levels of self-control and academic performance, procrastinate less, and adopt a mastery approach towards goals. Furthermore, flourishing can act as a buffer against performance-inhibiting factors.

The present research uses multiple regression to identify predictors of flourishing in students at a regional Australian university. It examines whether participants' locus of control, the balance between their positive and negative experience, their degree of optimism and their perception of their material and time affluence predict flourishing. Demographic variables are also measured to identify whether they predict flourishing including: age, gender, socio-economic status, and whether the participant is the first in their family to attend university. The direction of effects will be discussed.

Hair Analysis: Understanding Temporal Trends in Substance use.

Linus Mueller
University of Queensland

Traditionally, the biological matrices used to assess substance use are blood, urine and oral fluid. These matrices have their respective niches of application but only offer insight into a short window of substance use, typically days to weeks. In comparison, hair can provide a much broader window of detection, often months to years. We have aimed to develop and validate a methodology which is able to accurately quantify as broad a range of chemicals as possible: including licit and illicit drugs of abuse. Preliminary results demonstrate our ability to accurately quantify almost all the relevant substances. We have also begun correlating specific sections of hair to particular time periods of substance use by assuming that hair grows at a known and consistent rate. This allows hair analysis to be used for the determination of the long-term substance use patterns of an individual. Hair analysis is already being applied in practice but has been almost exclusively limited to the purpose of incrimination. We argue that the true potential of hair analysis lies beyond this; through its application to monitor long-term substance use, it could allow us to gain an understanding into gestational substance use, addiction and recovery from addiction, prisoner rehabilitation and the progression of substance use leading up to suicide.

Not Just a Big Gun Battle: The Emergence of Asymmetrical Warfare and the Battle of Jutland, 1914-1918

Peter Hooker
University of Newcastle

On 31 May 1916 the British Grand Fleet and the German High Seas Fleet clashed off the coast of Denmark in what became known as the Battle of Jutland. The battle was the only major fleet action during the First World War and ended indecisively with a heavy loss of life and ships. Thereafter, both navies turned away from the traditional "big gun battles" that had characterised naval strategy and tactics for centuries and instead looked to submarines and airpower to achieve victory.
This paper examines the transition of naval warfare from one dimensional sea battles between opposing surface fleets to a format that incorporated emerging subsurface and aerial doctrines into a homogenous battlefleet. It argues that despite the absence of a decisive victory at Jutland the integration of these technologies into doctrine highlights the genesis of asymmetrical warfare – the capability to fight on, above and below the surface.
Between 1914-18 the advent of submarines and aircraft radically altered the nature of naval warfare. For Admiral John Jellicoe, Commander-in-Chief of the Grand Fleet, this presented unique challenges and

opportunities. An examination of Jellicoe's official papers, personal correspondence, cross-referenced with his memoirs, explains how he intended to incorporate these machines into the fleet. This also reveals that Jutland was intended to be asymmetrical, but relapsed into a surface fleet engagement. Nonetheless, the experience of the battle prompted Jellicoe to enact significant reforms, ensuring a functional asymmetrical battlefleet by 1918.
Coinciding with the recent centenary of the Battle of Jutland, this paper contributes to renewed scholarly interest concerning the development of naval power. It reveals that far from being the symbolic end of the "big gun" era, the Battle of Jutland actually encouraged a major shift towards an asymmetrical battlefleet that, in years to come, would dominate the utilisation of naval power.

Experiences of Partners of Prostate Cancer: A qualitative Study.

Darren Pinks
University of the Sunshine Coast

Introduction: Prostate cancer (PC) is Australia's most diagnosed cancer. Research finds the impact of treatment side effects reduce the quality of life of both patients and partners. Whilst some research has explored what this means to men, there is very little understanding of the partner's experience. The purpose of this study is to address this gap by giving partners a voice by examining 'How do partners experience prostate cancer survivorship?'

Methods: Three focus groups and two interviews were convened with a purposive sample of 16 partners recruited from local support groups and treatment centres. Participants, aged 48 to 88 (M= 68), had been in their relationship between 5 to 67 years (M= 39), with an average of 7 years in survivorship. A semi-structured facilitated discussion elicited participant's stories and how they felt about sexual dysfunction, changes in intimacy and interpersonal communication since diagnosis. Both focus group discussions and interviews were transcribed verbatim and coded thematically, guided by the principles of grounded theory and an inductive approach to qualitative analysis.

Findings: Data analysis revealed partners are also impacted in survivorship. Emerging themes indicate partners feel isolated and excluded because men are not talking about the issues and the medical profession do not include them in discussions. Another theme was the varying impact that sexual dysfunction had on men as compared to their partners. The lack of communication is leading to a withdrawal of intimacy by both men and their partners. Overall partners expressed a lack of specific information and support services to help them cope.

Implications: It is clear that PC significantly impacts partners, but a lack of research into partner experiences has left them feeling unheard and distressed. Specific recommendations to address these issues include support services for partners of PC patients, couple counselling, and provision of information.

Interactive Effects of Temperature and UV Radiation on Thermophilic and Temperate Strains of the Green Alga Chlorella SPP

Emily Clow
Monash University

Ultraviolet radiation (UVR) can have detrimental effects on the biology of algae. The Kok model describes changes in the photosynthetic rate of algae based on the level of damage (*k*) and repair (*r*). This project aimed to analyse the effects of UVR and temperature on thermophilic and temperate strains of *Chlorella.* Because of the differential effect of temperature on damage and repair processes, it is hypothesised that the thermophilic species will show less overall UV-induced damage due to enhanced repair relative to damage. Triplicate cultures of the temperate and thermophilic strains were exposed to three light treatments: PAR (Photosynthetically Active Radiation), PAR+UVA, and PAR+UVB+UVA. Effective quantum yield of photosystem II (PSII) was measured using Pulse Amplitude Modulated (PAM) chlorophyll fluorescence and changes in this parameter as a function of time of exposure were used to determine *r* and *k* using the Kok equation using the analytical program GraphpadPrism. It was found there was a significant decline in effective quantum yield in the PAR+UVB+UVA treatment group (but not in the PAR and PAR+UVA groups) indicating that UVB alone was damaging to PSII. Furthermore, the thermophilic and temperate species measured at the higher temperature showed a slower decline in effective quantum yield. However, when analysing the *r* and *k* values the species measured at the lower temperatures had a significantly higher *k* value. This is likely due to indirect damage caused by Reactive Oxygen Species (ROS) induced by UVB with the higher temperatures stimulating more antioxidant enzymic reactions and thus reducing *k*.

The Comparative Effects of Cognitive reappraisal and Mindfulness Interventions on Pain Appraisals, Mediated by Gastrointestinal Symptom Burden

Rachel Begg
Macquarie University

Individuals with functional gastrointestinal conditions (FGIDs), such as irritable bowel syndrome (IBS), often experience significant physical and psychological distress as a result of their illness. This effect is bidirectional,

with maladaptive psychological processes such as catastrophising and visceral sensitivity key predictors of gastrointestinal (GI) burden and psychological distress. Previous research has noted the need to target these maladaptive processes when treating FGIDs. Emotional regulation strategies such as mindfulness (M) and cognitive reappraisal (CR) have been found to benefit sufferers, potentially via targeting these psychological processes. The comparative benefit of these interventions for those with and without GI symptom burden is unknown. Thus, this study aimed to compare the differing effects of M and CR experimental interventions on individuals' experience and appraisal of physical discomfort. We additionally examined these effects among individuals with either high or low GI symptom burden.

One hundred female first year psychology students with (n=50) and without (n=50) GI symptoms were recruited for this quasi-experimental design. Participants were asked to self-report their GI symptom burden (GSRS), visceral sensitivity (VSI), pain catastrophising (PCS), habitual use of CR and M (ERQ & FFMQ), and psychological distress (DASS). Participants were then randomly allocated to a control, CR, or M experimental condition before completing a pain-induction (cold-pressor) task, with their pain-tolerance measured throughout. They reported state anxiety and task appraisal (STAI & SAM) both before and after the task. Participants' galvanic skin response was also recorded throughout the experiment as a measure of physiological stress.

Results will be presented and the connotations of the findings discussed once collection and analyses have been completed. We hope the findings will help understand the state-specific maladaptive cognitive processes that are characteristic of FGID sufferers, and additionally illuminate the mechanisms through which clinical interventions work, to alleviate the physical and psychological distress common among sufferers.

Does Intestinal Bitter Taste Sensing Modulate Gastrointestinal Motility and Hormone Secretion to Reduce Glycaemia and Energy Intake in Humans?

Laurence Liu Jian Liang
The University of Adelaide

Objective:
Specialized epithelial cells in the gastrointestinal tract (GIT), also known as enteroendocrine cells (EEC), account for less than 1% of the cells in the GIT but collectively represent the largest endocrine system in the human body. EECs release hormones (glucagon-like peptide 1 and glucose-dependent insulinotropic polypeptide, peptide YY and cholecystokinin) which modulate blood glucose level (BGL), gastric motility and satiety. This study was designed to evaluate whether stimulation of intestinal bitter taste receptors (BTRs) would lead to an increase secretion of the aforementioned

hormones by the EEC and, consequently, improve postprandial glycaemia and suppress energy intake in healthy humans.

Subjects and methods:

Based on power calculation, 16 participants would be needed. However, only 4 healthy subjects have completed the study to date. Subjects underwent studies on 3 separate days to receive intraduodenal (ID) infusion of either 30mg denatonium benzoate (DB) (high dose), 10mg DB (low dose) or placebo (water) for 150min. ID glucose was concurrently infused during the last 90min. Blood samples were collected at frequent intervals for evaluation of plasma glucose and hormones. Antropyloroduodenal motility and energy intake were assessed using manometry and buffet meal respectively. Results of weight of food consumed and energy were evaluated using One-way repeated ANOVA.

Results:

Currently only results of BGL and food consumption are available for analysis. There was no difference in BGL between the 3 days. However, there was a dose dependent decrement in both weight of food consumed ($P = 0.12$) and energy intake ($P = 0.08$). Results for weight of food consumed were (placebo = 1239g ± 70g), (10mg BD = 1019g ± 123g), (30mg BD = 821g ± 213g). Results for energy intake were (placebo = 4793KJ ± 199KJ), (10mg BD = 4228KJ ± 385KJ), (30mg BD = 3581KJ ± 545KJ).

Conclusion:

ID DB infusion reduced weight of food consumed and energy intake in the 4 subjects to date. Recruitment of more subjects will be required to determine whether this effect is statistically significant, and whether BGL and hormone concentrations are affected by DB. These observations warrant further investigations in subjects with obesity and/or type 2 diabetes.

The Sydney Anglican Diocese's Promotion of the Male 'Headship' doctrine and its influence on Women's Vulnerability to Domestic Violence: A Feminist Critical Discourse Analysis of a Seminal Text.

Vicki Lowik
University of the Sunshine Coast

This research study analyses the gender/power relationships emerging from the Christian doctrine of male 'headship' and examines its influence in relation to creating an environment where women may face increased vulnerability to domestic violence due to gender inequality. Patriarchy and the use of absolutist discourse enable doctrine beliefs and practices to produce and sustain the subordination of women within certain church communities and within marriage. The Sydney Anglican Diocese is the faith environment for this study as it has developed a public profile through its endorsement of the male 'headship' doctrine. The method applied to this research study is feminist critical discourse analysis (CDA) as it has a social justice objective to transform women's lives by challenging gender/power relations that produce women's inequality. Feminist CDA is a powerful method for analysing the communication of

beliefs and practices relating to the male 'headship' doctrine and the textual interpretations that may be implicated in a tacit acceptance of domestic violence. The selected text, God's Good Design: What the Bible really says about men and women (Chapters 2 and 5), is representative of the Diocese's commitment to and communication of the male 'headship' doctrine. This small-scale project lays a foundation for further research. Both quantitative and qualitative research from a Christian feminist perspective will contribute to future understanding of the gender inequality/domestic violence link created through the promotion of certain beliefs and practices.

The Flipped Research Question: What is the Proximity to the Trauma and the Impact on Psychological Wellbeing among Westernised and Non-westernised University Students?

Araliya Abeysekara
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Research Question: A substantial body of research has demonstrated exposure to traumatic events linked with emotional well-being. However, a lack of attention can be observed in collations of the proximity to traumatic events and the association of Post-traumatic stress symptoms and other comorbid symptoms among university students between different cultures. The novelty of this study is to particularly emphasis on the proximity to the traumatic events and impact on psychological wellbeing among westernised and non-westernised university students.
Background: Trauma develops from being exposed to direct and indirect events (emotional or psychological), which creates a threat to survival and adaptation. These include natural disasters and catastrophe caused by human activities. Exposure to traumatic events associated with various adverse behavioural and emotional outcomes. Such events can trigger an emotional affliction which impedes the psychological well-being of a person.
Methods: A cross-cultural online survey conducted among Australian university students (*n*=800) and Sri Lankan university students (*n* =800). The survey included basic demographic questions, exposure to traumatic events via Life Events Checklist for DSM-5 and symptom measures of Post-traumatic stress, depression, anxiety, and stress disorder via PTSD Checklist-Civilian Form (PCL-C) and DASS 21 among Sri Lankan and Australian university students. Descriptive, correlation and regression analyses were carried out.
Preliminary Conclusions: It concluded that irrespective of cultural backgrounds, students have been exposed to at least one or more primary and secondary traumatic events. Exposure to traumatic events both direct and indirect along with demographic factors have a substantial effect on psychological wellbeing among westernised and non-westernised university students. These issues need further research and policy action

to improve the psychological well-being of university students and implications to reduce the human-made disasters.

A Comparison of Training and Competition Demands in Semi-professional Male Basketball Players.

Jordan Fox
CQUniversity Australia

Overloading athletes during different seasonal training phases is important in preparing for competition. However, the application of available approaches to determine training and competition loads is not well understood in basketball. This study aimed to quantify and compare the external demands and internal responses experienced during basketball training and competition. Methods: Semi-professional, male basketball players (N = 15) were monitored during conditioning, games-based training (GBT), and competition. Microsensors measured external demands including absolute and relative (·min-1) PlayerLoadTM (PL) and Estimated Equivalent Distance (EED). Internal responses were calculated using absolute and relative session-rating of perceived exertion (sRPE) and Summated-Heart-Rate-Zones (SHRZ). Integrated measures were determined as sRPE and SHRZ relative to PL ratios. Results: Absolute PL (arbitrary units (AU)) and EED (m) were significantly ($P < 0.05$) higher during conditioning (632 ± 139 AU; 5964 ± 1312 m) and GBT (624 ± 113 AU; 5892 ± 1080 m) than competition (449 ± 118 AU; 3722 ± 1474 m). Relative PL and EED were significantly ($P < 0.05$) higher during conditioning (6.50 ± 0.81 AU·min-1; 61.88 ± 7.22 m·min-1) and GBT (6.10 ± 0.77 AU·min-1; 56.76 ± 6.49 m·min-1) than competition (4.35± 1.09 AU·min-1; 41.01 ± 10.29 m·min-1). Absolute and relative SHRZ were significantly ($P < 0.05$) higher during conditioning (314 ± 86; 3.22 ± 0.50 AU) and GBT (334 ± 79 AU; 3.19 ± 0.54 AU·min-1) than competition (225 ± 77 AU; 2.17 ± 0.69 AU·min-1). sRPE:PL ratio was significantly ($P < 0.05$) higher during competition (1.58 ± 0.85) than conditioning (0.98 ± 0.22) and GBT (0.91 ± 0.24). Conclusions: The demands of training exceeded those experienced during competition. PL and SHRZ might be optimal approaches for monitoring external demands and internal responses in basketball, respectively and can be used to inform coaches on how to optimise player preparation across training phases.

The Effect of a Realistic Media Campaign Depicting Women Exercising on Young Women's Body Satisfaction and Exercise Intent.

Karen McCulloch
University of the Sunshine Coast

A large body of literature has documented the media as a contributor towards women's negative body image. Recent research has suggested that a focus on the body's functionality components may ameliorate the negative effects of viewing idealised media images. Therefore, the current study experimentally

examined whether a novel media campaign depicting women of varying abilities, ethnicities, and body shapes exercising would provide women with a protective-based benefit when viewing images of attractive models who were thin or thin-fit. A sample of 351 young women was recruited from the general community and a regional university to complete an online quasi-experiment. Participants were randomly allocated to one of six conditions to view the functionality-based media campaign ('This Girl Can') or a control video before viewing images of attractive models presented with a focus on body functions or appearance dimensions, or images of landscapes. Participants completed pre-video, post-video, and post-image measures of appearance and functionality dissatisfaction as well as strength of exercise intentionality and amount of exercise they intended to undertake. As social comparison is a key mechanism believed to underpin women's body dissatisfaction, amount of social comparison was also collected. The results suggest TGC provided an immediate increase in young women's body image and intended exercise. However, TGC did not serve a further protective benefit to improve body image and exercise intention after women viewed media images or discourage women from comparing themselves with thin or thin-fit models. It is the first known study to investigate the efficacy of a functionality-focused media campaign to improve body image and increase exercise behaviours. These findings are important to inform organisations and Government bodies that are producing and funding similar campaigns, of their efficacy.

"Wandering and Brooding"" Women, Madness and Asylum committal in !890s Victoria.

Georgina Rychner
Monash University

The main aim of this project is to examine lunacy and femininity in 1890s Victoria, and how the two concepts intersected in the labeling of 'mad' women. Approximately 3,000 women were committed to Victorian asylums in the 1890s, and the question this paper seeks to address is: what behaviour deemed white women 'mad' in colonial Victoria, and what relation did this behaviour have to contemporary gender role expectations of women? The 1890s saw a peak in female asylum committals and increased anxiety over women's role in society. This paper seeks to understand whether the two phenomena are related.

The medical certificates of 110 women were randomly selected to form the basis of this study. Few histories of madness and asylums in colonial Victoria have been written, and all of them situate themselves within the institution; this paper expands on the existing literature and focuses on the point where the outside community interacted with the asylum through the process of committal. It is only by looking at committal contexts, in conjunction with the expectations placed on women's behaviour in this period, that we will understand how these women wound up in medical institutions.

In doing so, this paper will bring together theories from gender history and psychology. What is considered 'feminine' is constantly changing over time,

a theory largely advanced by Joan Wallach Scott in the 1980s. Similarly, ideas of madness are constantly in flux, and psychological theorists such as Foucault, Laing and Szasz argue that not only psychiatrists, but everyday people, have the power to label 'madness'. Historical works by Stephen Garton, Judith Allen, Shurlee Swain and Susan Magarey provide this paper with the context needed to understand why certain female behaviour in the 1890s was deemed 'feminine' or 'mad'.

The findings of this paper challenge the assumption that asylum doctors had complete control over who was admitted to the asylum; rather, that power lay with families and friends who committed women. In analyzing the committal process, this study shows how women who displayed 'unfeminine' behaviour were labeled as mad, and in need of rehabilitation. Given that women are still susceptible to the label of 'hysterical' or irrational today, this paper also invites us to consider what social processes underlie this language, and the historical past that has informed it.

Experiencing the Macquarie Undergraduate Research Internship, a comparative review of student's self reported reflections from 2012 – 2015.

Aprill Miles
Macquarie University

The Macquarie University Research Internship (MURI) is an undergraduate research program, where students undertake self-derived research projects or join an academic's research pursuits. Previous studies on the benefits of undergraduate research, and the experiences of undergraduate researchers, demonstrate that undergraduate research confers significant benefit and positive ex-perience upon involved students. To illuminate the student experience of such research, this paper will provide an overview of self-reported experiences in the MURI program, identifying what undergraduate researchers feel is most impactful through a comparison of student experiences between program years. Particular attention is paid to the distinction in reported experience be-tween 2012-13, when the program was led by faculty members, and 2014-15, when the program transitioned into a student led, student driven and student sustained initiative. Qualitative analy-sis was employed to evaluate recurring themes in students' weekly reflections, pre-program, and post-program surveys. These themes were then compared between cohorts to review differences in students' experiences. This comparison found that students within all cohorts found the intern-ship challenging. Throughout the program students expressed comfort and interest in connecting with their peers about both the program itself, and their varied topics of research. The communal aspect of the program was especially appreciated by the 2014 and 2015 cohorts, when the pro-gram was student-led. Additionally, students consistently reported in post-program surveys that they felt much more confident in their own study and work abilities, and capability to develop

careers in research positions. These findings demonstrate that the MURI program is perceived by students as a positive undertaking which increases their skills and confidence, and fosters within them interest in both researching individually, and in a communal environment.

On the Base Radical and Semisimple Classes for Associative Rings.

Lauren Thornton
University of the Sunshine Coast

This research project in pure mathematics uses the universal class of associative rings to revisit the recent work of McConnell, McDougall and Stokes (2013) and determine the way these results hold in this more restricted setting. In addition, the question of whether the investigation of the semigroup of class operators described there can be extended with further examples is considered. The methodology for algebra is bound by the rigorous demands of logic, precision and clarity through the narrative of its propositions, theorems and corollaries. Through constructive proofs, new results are added by determining the operator semigroup generated by the universal class using the integers modulo four as its source, and a new theorem about the conditions under which radical and semisimple classes can be secured is included.

The effect of Temperature on the Density of *Wolbachia* Infections in Natural and Trans-Infected Host *Drosophila* Species

Matthew Coleman
Monash University

An estimated 390 million new cases of dengue infection occur each year. The Dengue virus (DENV) is transmitted to humans via mosquitoes. The Aedes aegypti (A. aegypti) mosquito, a vector for DENV, is a widespread species that inhabits a number of different climatic locations. Wolbachia are maternally transmitted endosymbiotic bacteria that have been found to inhibit the replication and growth of transmissible viruses such as DENV. Although A. aegypti is not a native host of Wolbachia, strains isolated from Drosophila melanogaster have been successfully trans-infected into A. aegypti.
This study aimed to explore the effects of temperature on the density of Wolbachia infections in a host organism and to identify a potential candidate strain of Wolbachia for future trans-infection into A. aegypti. It is extremely time-consuming to create a new trans-infected line of mosquito, therefore it is ideal to screen for better candidates prior to trans-infection. A range of Wolbachia strains are naturally found in Drosophila and several have also been trans-infected between Drosophila species, thus Drosophila provide an ideal model for candidate screening.

For this study, eight populations of D. melanogaster and D. simulans infected with different strains of Wolbachia were isolated and sampled following three-day heat exposure at 25°C, 32°C and 34°C. Comparative analyses of Wolbachia densities were completed using qPCR and relative quantification.
wAu and wRi, originating from New South Wales and California respectively, were identified as the most heat tolerant strains of Wolbachia and provide a suitable starting point for further research into trans-infection and heat tolerance in Wolbachia. This study provides insight into the heat tolerance of various strains of Wolbachia, as well as assisting in the identification of potential heat-tolerant candidate strains for future research focus and trans-infection into A. aegypti, as a preventative measure against DENV transmission..

An Invisible People? Russian Displaced Persons in Australia, 1947-1955

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In the flood of displacement precipitated by the Second World War and amidst extensive repatriation efforts, a 'hard core' of displaced persons (DPs) emerged – the 'unpatriatables', primarily natives of the Soviet Union refusing to return to Soviet-occupied territory. These DPs were subsequently resettled by the International Refugee Organisation (IRO), often to non-European nations, with a total of 170 000 DPs resettled in Australia from 1947 to 1952. They were frequently characterised as passive victims of war and communism who were peacefully assimilated as 'New Australians'. This was both a self-styled identity and one attributed by the public discourses of media and politics, particularly in the case of ethnic-Russian DPs escaping the Soviet 'heartland'. This view of Russian DPs has continued to permeate historical literature until very recently, as historians have begun to reascribe agency to DPs, writing them 'back into history', and it is to this emerging approach that my research project contributes.

Some Soviet-origin DPs certainly did become 'invisible', a trait developed during life under Stalin. However, the popularity of two opposing Russian Clubs on either side of George Street, Sydney (the anti-Soviet Russian House and the pro-Soviet Russian Social Club) shows that many of these DPs were far from invisible, involving themselves on both sides of Cold War politics. This research project examines the formation of a diasporic community of Russian DPs in Sydney through the activities and political mobilisation of these two clubs, as sites of both intra-community, and broader social, conflict. As such, it engages with both government records and sources produced by the Russian community itself, synthesizing these in an effort to depolarize the frequently binary political oppositions which shapes sources of this period. Further, in light of contemporary concerns regarding displaced populations, this project is able to illuminate the significance of seeking and including the voices of

displaced persons, asylum seekers, and refugees in histories of immigration.

Cane Toad (Rhinella Marina) Malformations in Urban Rockhampton Water Bodies.

Bethlea Bell
CQUniversity Australia

Amphibians are known to be sensitive indicators of environmental changes and despite the cane toad (Rhinella marina) being a pest species there is evidence that they can also respond to these changes. Malformations and abnormalities appear in all populations but increased frequency of occurrence has been linked to added stressors in the environment. The aim of this study was to determine the level of external abnormalities in the cane toad in the Rockhampton urban area, as an indicator of environmental health. A variety of sites containing cane toad habitat in low, medium and high urban density areas, were included. One hundred percent of sites were found to have toads with developmental malformation levels higher than the background level (1%) and 75% of these results were statistically significant. At the high urban density site, 22% of metamorphs suffered one or more non-traumatic malformations. On average, 12.2% of specimens were found to be abnormal and 8.3% of these had developmental abnormalities. The most common types of abnormalities were additional digits or limbs (26%), missing digits or limbs (26%) and bifurcation of digits (14%). Overall, nearly three times as many metamorphs experienced such abnormalities compared with adult toads. Around three quarters (74%) of developmental abnormalities were considered minor while 26% were moderate. Water quality measurements were taken at each site and showed that conductivity levels were higher and dissolved oxygen levels generally lower than recommended guideline values in cases where abnormality rates were high. Chemical runoff may be an important contributing factor, which could be addressed through improvements to chemical usage and enhancements of riparian zones. As amphibians are bio-indicators, these results are an early warning to other species. If malformation rates are high in cane toads, then other aquatic organisms may be similarly affected.
Keywords: cane toad, abnormalities, environmental health, Rockhampton.

Click, Print, Fire: 3D Printing and the Arms Trade Treaty.

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Australian National University

On 3 June 2013, countries united to sign the Arms Trade Treaty (ATT) in an effort to combat illegal arms transfers and also regulate legal arms

transfers between countries. The ATT provides an unprecedented regulatory framework which encompasses previously unregulated military materiel such as combat aircraft and battle tanks. However on 3 May 2013, exactly one month earlier, a new threat emerged when shots were fired from the world's first entirely 3D-printed plastic polymer firearm – The Liberator. On 12 May, two Daily Mail journalists printed a copy of The Liberator and smuggled it past airport-style security. Despite this threat, 3D firearms are not mentioned in either the treaty negotiations or the final treaty text. This paper analyses whether the legal architecture provided by the ATT can address the three main challenges posed by 3D printing: firearms, components, and digital design files.

This paper reviews the ATT through the lens of international disarmament law and international institutional law, analysing commentary from superior international courts and eminent legal scholars. Ultimately this paper posits that while the ATT adequately addresses 3D-printed firearms, it creates a legal void in the space of 3D-printed components and digital design files, meaning that weapons can still be transferred by sending them component by component or by sharing the original design file online. A solution is possible within the current parameters of international law, but this will depend on states' willingness to give proactive legal powers to the ATT's primary institutional organ – the Conference of States Parties.

Tracking the Digital Footprint: Anonymity within the Bitcoin System.

Perri Reynolds
Macquarie University

In response to a new technological shift, criminals are increasingly finding new ways to evolve and innovate new ways of evading the law. One significant innovation, the cryptocurrency 'Bitcoin', has transformed the way in which both criminals consumers transact without the use of third parties; and as a consequence, has expanded the capacity for illicit use and terrorist financing to occur within a virtual environment. In recent years there has been much academic discussion regarding the potential for cryptocurrencies to be used for illicit use; however, a significant portion of current research either simply accepts on face value that transactions within systems such as Bitcoin are anonymous, or, argues that transactions within the Bitcoin system may be tracked through increased regulation by governmental bodies. This presentation will focus on a three-step analysis of whether these assumptions are actually correct. The first section of the presentation will focus on a background literature review canvassing the current methods in which law enforcement are currently able to track transactions within the Bitcoin system. The second part of this presentation will focus on a thorough critique of these methodologies, and explores how criminals are innovating new ways every day to evade detection and improve their

anonymity online. This section will be supported by research conducted through the use of experiments assessing whether Bitcoin exchange services within Australia have sufficient identity controls to ensure that their services are not manipulated for illicit use or terrorist financing activities, and introduces a base understanding of whether increased regulation by governmental bodies may mitigate illicit use and prevent criminal exploitation. The third section will conclude that despite law enforcement being able to track a significant portion of transactions made in Bitcoin, the current identification controls regulating cryptocurrencies such as Bitcoin are insufficient to protect against illicit use.

Problematic Viewing: Representations of Australian Army Nursing Services POWs in Australian New Media, Film, and Theatre.

Sarah Bell
The University of Notre Dame Australia

Recently and repeatedly proven during the 2015 centenary of the Gallipoli campaign, and the 70th anniversary of end of the Second World War, the Anzac ethos is an enduring facet of Australian identity and culture. However, the representation of Anzac still remains primarily white, male, and combatant-centric. As a result, the Australian Army Nursing Service (AANS) Prisoners of War (POWs) exist within a liminal framework outside of Anzac, unable to fully embody contextual hegemonic masculine or feminine qualities and occupying a space between combatant and civilian identities.

A consequence of this inability to easily conform to a pre-existing identity like Anzac is that the representations of AANS POW in news media and entertainment are highly gendered and often inauthentic. In addition, evolving postwar Australian-Japanese diplomacy resulted in the AANS POWs falling into relative obscurity, their stories and experiences raising awkward and inconvenient themes of white racism and Japanese brutality which were incompatible with modern sensibilities. Though the private accounts written by, or in conjunction with, the nurses are still accessible, it is the representations and adaptations in news media and entertainment that form the nurses' lasting legacy. The inconsistencies that exist between the two reflect the construction of an AANS POWs identity as being dictated by the Australian media and entertainment industry rather than by the POWs themselves, resulting in a problematic integration of them into Australian popular memory.

The comparison of AANS POW private and public representations, and the inconsistencies between the two, therefore raise questions of social justice and moral obligation— do Australians have a responsibility to correct insufficient or inaccurate representations in their national history and memory? Do the experiences of the AANS POWs highlight a pattern of marginalisation of those who challenge Australia's hegemonic social and

cultural ideals? And finally, is there a moral obligation to address the injustices of a group that is no longer living?

Redefining Distinctions between Old and Modern Genocides.

William Rooks
Australian National University

Despite the rising occurrence of international criminal courts and tribunals, an increasing number of Genocide perpetrators and benefactors remain unpunished. The failure of the international justice system is responsible for loss of faith and the desire for retaliation in victim cultures, which are demonstrated in the ensuing tensions between states of former Yugoslavia.

The current definition of Genocide recognises those who give the orders and those who executed them as legally culpable. This definition fails to account for the educated 'middle5 men' who authorised, legitimised, and mobilised crimes against humanity 5 without which the Genocide would not have been possible. My research project examines the role that Nazi doctors played in legitimising the Holocaust, which provides context for establishing a typology of Genocide that seeks to more accurately appropriate legal and moral responsibility.

How do you consider different Genocides? Most educated respondents would suggest degrees of Genocide or a scale of destructiveness, but in 1990 Christian Scherrer proposed a decisive alternative to these approaches: two different types of Genocide that were defined by scale rather than consequence. Through the structural analyses of colonial and state5based Genocides, we see Scherrer's choice of scale as a key distinguishing factor reflects a broader distinction in the implementation of Genocides; and that Genocides distinguished by scale manifest exclusively in the political or Clausewitzean realms.

In the spirit of the social sciences, my research attempts to 'materialise the immaterial' by outlining a framework within which empirical analysis of the act of Genocide is possible. This serves to clarify not only the legal responsibility of perpetrators, but also the moral responsibility of beneficiaries.

Measuring Brain Responses in Special Populations Using a Gaming EEG System.

Maia Zucco
Macquarie University

Frequency discrimination is an important developmental aspect of the human auditory system and consequently, speech perception. However it remains difficult to assess in special populations such as infants and individuals with developmental disorders. Current measures assessing frequency thresholds rely on individuals following instructions and making behavioural responses such as button-presses, which can produce inconsistent and unreliable thresholds in populations with reduced or immature cognitive development. The current study aimed to validate the use of the brain response, the acoustic change complex (ACC), as an objective, instruction and behaviour free measure. The ACC is measured non-invasively in the absence behavioural decisions. Large positive and negative peak magnitude responses to changes in continuous sounds allows for objective measurement of brain recognition to frequency changes. Furthermore the study aimed to assess the use of a commercial gaming EEG system - Emotiv EPOC® - with benefits of reduced cost, quick set-up time, and portability, as a valid imaging method. This approach to measuring brain responses is an innovative and feasible technique for special populations.
In two conditions brain and button-press responses to stimuli with frequency changes were recorded, ranging from zero to six hertz, in one hertz increments. Participants completed a passive task in which they were instructed to ignore the tones and focus on a silent, captioned movie, while ACC responses were recorded. This was followed by an active task in which participants were required to provide a yes/no button-press response as to whether the presented stimulus included a frequency change.
It is predicted that frequency discrimination thresholds produced by the ACC and behavioural measures will have a strong and significant relationship between ACC magnitude and button-press accuracy, suggesting that the ACC can be accurately measured using the Emotiv system, and function as a practical and objective measure of frequency discrimination

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To Grieve or not to Grieve (online)? How Facebook Users Interact with Deceased Friends.

Jessica Blower
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Previous research has highlighted that innovative online social technologies (such as Facebook) have enabled new methods of expressing grief after the death of a friend or family member. This study was the first

to explore the relationship between Facebook grief expressions (FBGE), general psychological distress, and death anxiety, using Terror Management Theory as a guiding framework. FBGE include creating, liking, joining, or visiting Facebook profiles, pages, or groups pertaining to the deceased, and generating or sharing content (on Facebook) of (or relative to) the deceased. A community sample of 409 bereaved Facebook users aged 18 to 74 years (89% female) voluntarily completed a battery of online questionnaires regarding their Facebook use, deaths experienced in the past five years, non-identifiable details regarding the deceased, participation in FBGE, death anxiety, and general psychological distress. Results indicated that bereaved Facebook users who participated in FBGE were found to have statistically significant higher anxiety and stress scores than bereaved Facebook users who did not engage in FBGE. However, there was no statistically significant difference in death anxiety or depression scores for bereaved Facebook users who participated in FBGE and those who had not. The results of this study suggest engagement in FBGE is not related to one's death anxiety, but rather (as previous research suggested) a means to continue a bond with the deceased. Future research should investigate how and why participating in FBGE is related to anxiety and stress, particularly whether engaging in FBGE represents a coping paradox for bereaved Facebook users. Understanding what grieving behaviours are adaptive or maladaptive for psychological wellbeing is of key importance given that bereavement is an inevitable human experience.

Nightlife Attendee's Beliefs about what Constitutes Acceptable Sexual Behaviour

Aimee Wrightson-Hester
Edith Cowan University

Researchers have found that some people go to nightlife settings, such as bars and nightclubs, to have fun and find sexual partners. Some studies have found that people feel harassed at the sexual behaviours they experience in nightlife settings, suggesting these behaviours deviate from what they consider to be appropriate. Other researchers have shown that men and women can differ on their beliefs about sexual behaviour in public places. The current study concentrated on non-criminal behaviours that the research has indicate can cause distress, such as unwanted touching or kissing. The study aimed to establish the injunctive norm (how people think people ought to behave) and the descriptive norm (how people think people behave). A secondary aim of the study was to see if these norms differed based on the gender of the person performing the behaviour or the gender of the participant. 39 Men and 39 women participated in an anonymous online survey. A 5 point Likert-type scale was used to rate how acceptable participants thought behaviours were and how often they thought they occurred. Both male and female nightlife attendees agreed that all four survey behaviours were unacceptable,

however frequency rating results showed that all behaviours are thought to occur in nightlife settings. It was less acceptable to the participants if men performed the behaviours, men were also thought to engage in these behaviours more frequently than women. Social psychology explains that people can behave in inappropriate ways if they feel everyone else is behaving the same. By understanding these two norms clear guidelines can be developed to inform people of what behaviour is appropriate inside nightlife settings.

Effect of CO2 Enrichment and Heat Stress on Native Resistant Starch of the Red Lentil (Lens Culinaris)

Yianna Yi Zhang
University of Melbourne

Background:
Increased atmospheric CO2 due to anthropogenic activity is associated with a litany of climatic events including heat waves. Elevated CO2 and heat may alter the quantity of native resistant starch through changing starch metabolism enzymes and seed biochemical composition. Native resistant starch is important as it may improve mineral assimilation efficiency and colonic health upon human ingestion. The effect of CO2 enrichment and acute heat stress on the starch composition of red lentils has not yet been established.
Results:
Strong genotypic differences were observed in the lentils in response to e[CO2] through total and resistant starch (RS) content. Heat alone raised RS concentrations. e[CO2] reduced RS in the absence of heat. Significant 3 way interaction was observed between genotype, heat and e[CO2].
Conclusion:
The current investigation indicates potential changes in the starch digestibility of lentils under projected climatic conditions, which may be of significance to human nutrition.

Genetic Testing for Childhood Cancer Survivors' Risk of Developing Late Effects: Consumer Understanding, Acceptance and Willingness-to-pay.

Gabrielle Georgiou
University of NSW

Background: Genetic testing to determine cancer survivors' risk of developing late effects from their cancer and/or cancer treatment will be increasingly utilised in survivorship care in the future. This two-stage study, with 64 childhood cancer survivors and parents of survivors, investigated the preferences, attitudes towards, and acceptability of genetic testing in those who may be at risk of developing late effects.

Method: STAGE 1 identified 24 participants' most commonly perceived benefits and concerns regarding genetic testing for risk of developing late effects. In STAGE 2, through interviews, 20 survivors (55% female; mean age 26.0 (18-39), SD=0.80) and 20 parents (55% male; mean age of child survivor 14.2 (10-19), SD=0.79) rated the seven most common benefits and concerns from STAGE 1. Interviews were transcribed verbatim and analysed using NVivo 10.0 software. Decisional balance ratios were calculated by dividing participants' average concerns scores with average benefits scores.

Results: Genetic testing to determine ones' risk of developing cancer treatment late effects was highly acceptable: 95% of survivors and parents leaned toward testing, and most would pay up to AUD5000 (65.9%) for testing. The majority of participants reported it being acceptable to wait for up to six months to receive results (97.2%), and be offered testing immediately after treatment, or when the survivor reached adulthood (62.9%). Survivors and parents both had a highly positive decisional balance (M=0.5(0.38); M=0.5(0.39) respectively), indicating that perceived benefits across the board outweighed perceived concerns of such testing.

Conclusion: Though clinical efficacy of this particular form of genetic testing is yet to be clearly demonstrated, childhood cancer survivors and parents of survivors similarly described positive interest in genetic testing for risk of developing late effects. Perceived benefits outweighed negatives, and the majority of participants would be willing to pay, and wait, for testing.

Investigating the Electron Ejections in Metastable Impact Electron Spectroscopy using a Graphite Surface.

Liam Howard-Fabretto
Flinders University

Metastable impact electron spectroscopy (MIES) is a spectroscopic technique which provides information about the electronic structure of a surface. In this technique, metastable helium atoms are fired at a surface, and electrons are ejected then measured. Due to this method of operation MIES has advantages over other electronic techniques such as ultraviolet photoelectron spectroscopy (UPS), the most notable being its surface sensitivity. Data gathered using MIES are purely from the very top layer of the surface as the helium atoms do not penetrate into the sample, and are not obscured by contributions from lower layers such as in UPS. This is important for many energy applications such as solar cell research, where the efficiency of a cell is directly influenced by the surface electronic properties of the layers involved. The main disadvantages of MIES are that data analysis is more complex than UPS because there is more than one mechanism for electrons to be ejected, and that it is relatively new and still undergoing refinement.

This project examines the technique, with the ultimate goal of allowing it to gain widespread use. Spectra of graphite and carbon nanotube surfaces were measured using both MIES and UPS. Furthermore, x-ray photoelectron spectroscopy (XPS) was used to determine the purity of the surfaces. The measured spectra were deconvoluted to determine the individual base spectra which correspond to the electron ejection mechanisms. It was found that two separate base spectra contribute to the MIES spectrum of graphite. One ejection method increased in probability with increasing temperature, while the other decreased in probability. The carbon nanotube measurements could not be fully analysed, as their silicon substrate was not completely covered resulting in silicon contributing to the measured spectra.

Safe Opioid Use and Prescription: Are Emergency Doctors Able To Do This?

Nilani Mills
University of NSW

Background:
In recent decades, opioid use has escalated in Australia. It is paralleled by increasing rates of opioid misuse and abuse within Australian society. Hence, it is crucial to educate patients on how to safely use their prescribed opioids. However, minimal research exists on doctor and patient knowledge on safe opioid use for acute painful conditions.

Objectives:
This study aims to evaluate whether a multi-dimensional education intervention is effective in improving knowledge regarding safe opioid use. This involves pre- and post-intervention assessment of doctors' and nurses' knowledge on acute pain management and safe opioid prescribing, along with patients' knowledge on safe oxycodone use and oxycodone-related complications.

Methodology:
This is a controlled experimental, prospective study of a holistic education campaign of doctors and nurses. Patients who were prescribed oxycodone for acute painful conditions were surveyed upon discharge and 1-week post-discharge from the Emergency Department, to assess their knowledge on safe opioid use and adverse effects of oxycodone. Doctors and nurses also completed a knowledge test, before and after education. Binary logistic regression was utilised for statistical analysis.

Results:
There were 110 and 123 patients in the control and intervention arms, with 93 and 104 patients followed up at 1-week respectively (Table 1). Comparison of the control and intervention arms reveals that 70% versus 83% of patients knew their recommended dose ($p<0.05$), while 71% versus 83% were aware of side effects ($p<0.05$). 60% of patient received pain management factsheets following education ($p<0.001$).

Doctors (n=42) averaged 64% and 71% in their pre- and post-education test scores ($p<0.05$). Moreover, 29/41 doctors (71%) and 27/34 nurses (79%) demonstrated improved knowledge following education.

Conclusion:

Our holistic education intervention has improved doctor and nurse knowledge on acute pain management, thus enhancing the level of education doctors provide to patients on safe opioid use.

Table 1: Patient knowledge on oxycodone use and adverse effects, in the control and intervention arms

Activity	**Control Arm**			
	Discharge Survey (n=110)		**Follow-Up Survey (n=93[a])**	
Dosage	Knew dose Knew rate	77 (70%) 74 (67%)	-	
Storage	Bench Cupboard Locked	25 (23%) 73 (66%) 9 (8%)	Bench Cupboard Locked	24 (37%) 37 (57%) 1 (2%)
Adverse effects	No knowledge Knew about constipation Knew about drowsiness	32 (29%) 40 (36%) 59 (54%)	Nil experienced Constipation Drowsiness	17 (26%) 21 (32%) 35 (54%)
Activity	**Intervention Arm**			
	Discharge Survey (n=123)		**Follow-Up Survey (n=104[b])**	
Dosage	Knew dose Knew rate	102 (83%) 119 (97%)	-	
Storage	Bench Cupboard Locked	29 (23%) 81 (66%) 6 (5%)	Bench Cupboard Locked	24 (32%) 43 (57%) 4 (5%)
Adverse effects	No knowledge Knew about constipation Knew about drowsiness	21 (17%) 67 (54%) 93 (76%)	Nil experienced Constipation Drowsiness	26 (34%) 25 (33%) 40 (53%)

[a] *Follow-up survey of 93 patients. 28 did not use Endone, so 65 patients included*

[b] *Follow-up survey of 104 patients. 28 did not use Endone, so 76 patients included*

The Values Embedded in Australia's Environmental Legislation

Roger Lee
Macquarie University

Australia's environmental legislation expresses multiple reasons for caring about the environment — including aesthetic and scientific reasons, as well as protecting human welfare. It is important to examine the values embedded in such legislation as this not only reveals why we deem nature worthy of protection, but also has implications on how the environment is conceived. This paper thus explores the way in which these values manifest in environmental statutes and classifies them into two broad categories: Instrumental (nature as a means to our ends) and Intrinsic (nature having value in its own right). Various pieces of legislation are used to illustrate how some statutes provide for the exploitation of natural resources, whilst others temper such utilitarian endeavours through notions of ecologically sustainable development and intergenerational equity. This paper also highlights the growing "ecological wisdom" within statutes — namely, that of a precautionary and holistic approach — which challenges us to re-evaluate the perceived separation between humans and the wider environment. This, in turn, highlights a shift away from the conception of the environment as purely a source of raw materials and puts the focus on its life-supporting capacity instead. Accordingly, examination of the values embedded in our environment legislation can broaden our ability to see and define the problem by helping us to focus on what we care about.

Compressive Strength of Fibre Reinforced and Chemically Stabilised Clay Soils

Matthew Ouston
CQUniversity Australia

In this study, the influence of virgin polypropylene fibres and two chemical additives, (i.e., Poly Vinyl Alcohol, PVA and 1,2,3,4 Butane Tetra Carboxylic Acid, BTCA) on the engineering properties of an expansive clay soil was investigated. The effect of additives on the unconfined compressive strength of soil samples was determined using samples prepared at maximum dry unit weight (i.e. 16.2 kN/m3) and samples prepared at a lower dry unit weight (i.e. 10.8 kN/m3) For this study fibre contents were limited to 0.25% and 0.50% by dry weight of the soil. PVA and BTCA dosages of 0.1% to 1.5% and 0.1% to 0.5% were used in this study respectively. The results of unconfined compression tests on over 100 clay soil samples with varied fibre contents and chemical dosages showed that, with respect to this study, fibres and chemicals significantly increased the unconfined compressive strength of the studied soil. However, the efficiency of the additives was heavily linked to the unit weight of the soil. Furthermore, the durability of stabilised samples was also investigated using soaking tests and results revealed that BTCA

increases the durability of reinforced/stabilised soil samples under such conditions.

Reservoir Simulators: Are we getting better at assessing hundreds of million dollars development risk?

Ankita Singh
University of NSW

The petroleum industry invests considerable funds, especially offshore (~$600 Million for a typical 3-year project), to develop an oil field. It is, therefore, important to completely assess the potential revenue from the targeted reservoir. For this purpose, reservoir simulation is used. It involves building and operating a model whose behaviour represents that of an actual reservoir. This model is then used to forecast field performance and optimise reservoir development plan. Thus, it is crucial to choose an appropriate reservoir simulator (software) that provides a realistic representation of the actual reservoir. This study focusses on two relatively new reservoir simulators (Eclipse and tNavigator) and examines their performance in modelling reservoirs. The quantitative analysis involves comparing the simulators based on their prediction of hydrocarbon flow rates and change in field pressures and saturations over time.
Additional aspects include run time, accuracy and the number of non-linear iterations required to reach a solution. To this end, the Society of Petroleum Engineer developed a series of Comparative Solution Projects (CSP) which are test datasets used to address different reservoir scenarios. I used the simplest CSP, which involves gas injection into a three layered reservoir model. A comparison of the simulators' outcome and the results from established CSPs indicate that the two new simulators deliver reliably similar field performance results. However, there is an interesting difference in the run time and the number of non-linear iterations. Particularly, the observation that using more processor cores can cause larger truncation errors is concerning. These errors are expected to have a profound effect for complex reservoirs which may lead to unrealistic results. Given the high cost of field development, the potential of significant overestimates or underestimates of the field life is a major issue. This important outcome will be investigated further by running simulations for more complex scenarios.

Effects of Elevated Carbon Dioxide (CO_2) and Seasonal Water Supply on Soil Nitrogen Dynamics.

Amanda Sinclair
University of Tasmania

Nitrogen is vital for all plants on Earth as it is a fundamental building block of amino acids, nucleic acids and proteins, which are essential components of life. Consequently, nitrogen availability plays a critical role in controlling ecosystem productivity. Importantly, soil nitrogen cycling may be modified by increasing atmospheric CO_2 concentrations due to changes in soil moisture driven by plants. It is widely established that elevated CO_2 (eCO_2) reduces plant water use, which can increase soil moisture retention time following rainfall as plant water-uptake is reduced. Soil nitrogen is sensitive to changes in soil moisture, and high soil moisture can stimulate the loss of nitrogen from soil through leaching and gaseous emissions. Therefore, under eCO_2 less rainfall may be required to reach soil moisture concentrations that stimulate processes that deplete soil nitrogen. To assess this hypothesis, I investigated how eCO_2 and differing seasonal water supply affect availability of plant-available soil nitrogen, specifically ammonium and nitrate.

This research was done at the TasFACE2 experiment in southern Tasmania. Twelve ryegrass (*Lolium perenne*) plots were exposed to ambient, 475ppm, or 550ppm CO_2 concentration using Free Air CO_2 Enrichment technology, and five sectors within each plot were treated with differing seasonal water supply. Soil nutrient availability was estimated using ion- exchange resins placed in the soil within each plot and changed every two weeks. Results were analysed using repeated-measures analysis of variance. While water supply had no effect, nitrate and total mineral nitrogen (the sum of ammonium and nitrate) availability were consistently reduced under eCO_2 treatments. Although the most obvious explanation for the reduction in nitrogen availability is that plants take up more nitrogen with increasing CO_2, there was no evidence that eCO_2 increased plant nitrogen content. Therefore, the likely fate of nitrogen under eCO_2 is loss from soil through leaching or gaseous emissions.

Is Too Much Iron Bad for Your Brain?

Sam Gerami
University of Newcastle

High levels of iron in the brain have been proposed as causes of various brain diseases including Alzheimer's disease and Parkinson's disease. It is suggested that high levels of brain iron can cause toxic accumulation of iron inside nerve cells, damaging or even killing the cell.
However, studies by our group and others suggest that most nerve cells may actually be well protected against excessive iron build up. It is

important to find out more about this to determine whether iron levels should be monitored and treated to protect people against developing Alzheimer's disease or other brain conditions.
I have been investigating this research question in mice with iron overload. These mice have mutations in two iron regulatory genes that together cause an increase in brain iron levels.
I first examined whether iron is accumulating in brain nerve cells in these mice by using a chemical iron labelling method called 3,3-diaminobenzidine (DAB)-enhanced Perls' stain in combination with fluorescent labelling of nerve cells. These techniques revealed that iron was located around the outside of nerve cells but not inside them.
Next I used a sensitive method called microarray analysis to look at whether high iron levels were affecting the behaviour of genetic systems in nerve cells. While I did detect some changes, these were not consistent with damage or death of nerve cells.
In conclusion, iron does not seem to accumulate to high levels within nerve cells or cause harmful changes in nerve genetic systems. My results provide new evidence that nerve cells may be at least partly protected against the effects of high iron levels. This suggests that direct nerve cell damage by iron is unlikely to be a common cause of brain diseases such as Alzheimer's disease or Parkinson's disease.

3D modelling of radiation dose in inhomogeneous media using artificial neural networks

James Keal
University of Adelaide

Purpose/Rationale

The purpose of this research is to improve the efficiency and accuracy of conventional treatment planning systems for radiation therapy.
Treatment planning systems use the principles of physics and particle interactions to predict the radiation dose to be delivered to cancer patients. Existing methods for calculating doses have limitations. Monte Carlo methods are highly accurate but simulations take too long to be used for each patient. Collapsed Cone Convolution uses analytical techniques that are quicker but can be inaccurate under certain conditions, particularly near inhomogeneities or air interfaces.
Neural networks are machine learning models that have the potential to be as accurate as Monte Carlo but quicker than commercial treatment planning systems. This improvement would increase the number of patients who can be treated as well as the accuracy of their therapeutic dose.

Research Question/Focus

Can artificial intelligence be used to better treat cancer?

Research Methodology/Approach
The data required to train the neural network is generated using Monte Carlo simulations. The simulation geometry is configured to match the commercial Varian TrueBeam linear accelerator used for treatment in the new Royal Adelaide Hospital. The Monte Carlo results were verified against experimentally measured data.
A fully-connected neural network is used to predict the delivered dose in water. A deep, convolutional neural network is developed to predict the delivered dose in semi-realistic geometries, with a real patient CT image used for radiotherapy treatment planning.

Significance and Originality of Findings
We have demonstrated that neural networks have the capacity to predict radiotherapy doses in simple geometries. A tentative conclusion can be drawn that ANN's can also predict doses in more realistic inhomogeneous media. The significance of this result is the possibility of improving the efficiency and accuracy of oncological treatment planning systems.

Bioacoustic Monitoring of River Biota

Eden Little
Griffith University

Modern bioacoustics have made it possible to explore fish communication and to define calls by audibly monitoring an animal's environment. Historic studies on soniferous fish, species that have the ability to produce sound, show that traditional surveying encouraged bias, was expensive and invasive to the environment or animal. Thus river biota monitoring has progressed so that a modern alternative, known as passive acoustics, may be used instead. Some fish species rely on audible communication in order to signal warning, reproduction, competition and feeding behaviours. Fish have adapted several mechanisms to produce sound as they lack vocal chords. As a result, fish have unique acoustic signatures that can indicate an individual's species, body size, gender, reproductive stage and behaviour.

A review of scientific literature showed that studies that defined fish calls were limited and were infamously conducted on birds. Thus fish calls were manually annotated using an audio-editing software which provided a visual and audio representation of the sounds. Annotations were then catalogued in a fashion that was inspired by bird song analysis. In order to ensure that the calls were accurate, they were categorised in a holistic way by a number of techniques. A spectrogram, frequency (kHz) over time, illustrated the composition, repetition, pattern and nature of a call. Whereas a waveform, amplitude (dB) over time, highlighted the domineering and differing producers of sound. Evident trends observed between fish calls and behaviour were then drafted into a sound library.

These findings aim to enhance the current repertoire of fish calls for future template matching.

Sorting Fact from Fairy Tale: The Role of Patent Trolls in the Patent System.

Reuel Baptista
University of Auckland

Patents play a vital role in the modern knowledge economy. They help to protect innovators' ideas, disseminate research in society and encourage investment in research and development. The value and importance of patents have also made them a lucrative target for patent trolls; companies that hoard patents and charge high fees for their use. Patent trolls are generally seen as a blight on the patent system, draining innovators of their limited financial resources and filling the system with threats of patent infringement claims. Their prevalence in the United States has led Congress to legislate against the 'lock and charge' business model that is commonly used by patent trolls.

Despite this unpleasant reputation, some authors state that patent trolls actually support the purpose of patents and the patent system. This paper investigates this dissonance by conducting a two-part analysis using an international body of literature and case law. The first part identifies the activities of patent trolls that support the purposes of the patent system. The second part analyses how the legislative response to patent trolls, as exemplified in the United States, should be modified in light of these findings. Essentially, the focus of patent troll legislation should shift from targeting their business model to mitigating their negative effects on the patent system. This approach allows patent trolls to continue operating, but in a manner that is more beneficial for the patent system.

While the analysis is framed within the United States' patent system, the paper concludes by discussing the implications of this analysis for the patent system in Australia and New Zealand.

Feminism in Korean Pop Music

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University of Sydney

The rise in global popularity of Korean pop music, more commonly known as K-pop, is a phenomenon that emerged in the late 1990s. Over the last twenty years, academic study in this area has steadily increased, but the study of gender themes in K-pop has remained fairly limited; and of the limited literature available, it is apparent that K-pop is often seen as an obstacle to the furthering of feminist agenda in South Korea. Many scholars are of the view that female K-pop idols in particular, often submit

and conform to patriarchal power structures, thus hindering the progress of feminism.
This paper argues, however, that what appears to be subservience or conformation is often a more complex relationship than what is seen on the surface. Through a survey of the Women's Movement in South Korea over the past century, it is shown that interactions between feminists and various patriarchal power structures have, on numerous occasions, yielded positive outcomes for the welfare of women in general. This paper thus contextualizes the work of female K-pop idols within such a historical trajectory.
This paper begins with a brief literature review of gender issues in K-pop and examines some of the arguments made by scholars in regards to the relationship between K-pop and the position of women in South Korean society. The second section analyzes the Women's Movement in South Korea over the past century and examines how it has interacted with patriarchal power structures to yield positive outcomes for the welfare of women. Finally, the last section of this paper examines the K-pop industry briefly, and with the use of two case studies, asserts that by leveraging upon power structures in a similar manner, female K-pop idols are actually able to help advance feminist agenda in South Korea.

Intralipid for IVF Failure: Assessing its Role in the Conceivable Future

Romy Ehrlich
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Field of Investigation
This is the first assessment of the efficacy and risks of Intralipid in Australia.

Background
Intralipid, an intravenous fat emulsion, is a highly innovative immunotherapy used for reproductive failure. Although hypothesised to be effective and safe, few studies exist worldwide. Intralipid was introduced on an empirical basis at IVFAustralia in 2014.

Methods
From the IVFAustralia database, 64 women were identified as having received Intralipid therapy. Their clinical histories, pregnancy outcomes and adverse effects following Intralipid were retrospectively analysed using data from clinical notes.

Results
The median age at the time of infusion was 39 years, with a median duration of infertility of 4.4 years and a median of two miscarriages, five egg collections and seven embryos transferred before Intralipid therapy. The most common fertility factor was elevated uterine or peripheral

blood natural killer cells (n=54). Of the 64 women who received Intralipid, 60 underwent an embryo transfer (94%). A pregnancy rate, defined by a positive pregnancy test, of 50% was recorded (n=30), compared with a pregnancy rate of 37% in a control group of all in vitro fertilisation patients at IVFAustralia during the same time period and matched for age. Women with elevated levels of peripheral blood natural killer cells were more likely to have a positive pregnancy test than those with normal levels ($p<0.05$). Six pregnancies led to livebirths, 11 miscarried, while 14 are ongoing. This translates to a livebirth/ongoing pregnancy rate of 33% per woman with embryo transfer. One patient experienced pre-seizure sensations during infusion, and another reported foetal complication with asymmetrical intrauterine growth restriction.

Conclusion
Results exceeded expectations, given the poor prognosis for the treated women. Intralipid appears to be safe and may be beneficial in improving the pregnancy/livebirth rates in women with reproductive failure. Larger, prospective and controlled studies are required.

The Imagined Contact Hypothesis: Prejudice Towards Asylum Seekers in Australia: Is the Lack of Difference a Good News Story?

Sam McWaters
James Cook University

Objective Asylum seekers have been the target of extensive dehumanisation by the Australian government and media which has contributed to a culture of fear and prejudice towards asylum seekers within the Australian public (Anderson, Stuart, & Rossen, 2015; Bleiker, Campbell, Hutchison, & Nicholson, 2013; Suhnan, Pedersen, & Hartley, 2012). The current experiment used the imagined contact hypothesis to attempt to reduce prejudice towards asylum seekers who travel to Australia by boat.
Method A randomised, independent groups design was used (imagined contact and control conditions) with repeated measures for time (post intervention and at two weeks follow up). Dependent variables consisted of multiple measures of prejudice (an attitude 'thermometer', the Attitudes Towards Asylum Seekers scale, measures of infrahumanisation, empathy, and perspective taking, and a measure of resource allocation).
Results University students (N = 54) who imagined an interaction with an asylum seeker showed higher levels of empathy towards asylum seekers than did the control group and the difference remained at two weeks follow up. The majority of participants would allocate asylum seekers the same resources for housing, unemployment, education, health, and mental health as for other social groups. The distance that participants placed themselves from an asylum seeker in an intended meeting (chair distance) provided an implicit measure of attitudes towards asylum seekers. However, as with all other measures of prejudice

used, allocated resources and chair distance did not differ between experimental conditions.
Conclusions The general ineffectiveness of the imagined contact intervention was quite possibly due to the surprising existence of low levels of prejudice towards asylum seekers in the university student sample (floor effect). Moreover, the low level of prejudice found is gratifying and suggests that sample characteristics may protect somewhat from the effects of media and government misrepresentation around refugees.

Thousand-fold Electrokinectic Concentration in a Microchip Device

Angus Olding
University of Tasmania

Microfluidics including microchip electrophoresis (MCE) and lab-on-a-chip devises have found wide use in the biological and chemical fields. MCE utilises the power of an electric field applied across very narrow channels filled with electrolyte solution to deliver, mix and separate target analytes prior to appropriate detection. A main area of interest in MCE is the improvement of detection sensitivity, which is limited due to the small dimensions of the channels. Analytes present in very low concentrations may not be detected, and thus the development of techniques to concentrate analytes in MCE is important. In this work, the electrokinetic concentration technique of micelle to solvent stacking (MSS) is implemented in MCE. In MSS, cationic cetyltrimethlamonium bromide (CTAB) micelles (an aggregate of a surfactant) associate with the anionic analyte molecules in the sample reservoir and carry the molecules into the channel. Our method involves filling the inlet reservoir of a single channel microchip with sample/surfactant solution and the outlet reservoir and channel with electrolyte. A voltage is then applied. At the boundary between the sample and the electrolyte solution (which contains methanol), the micelles break down and release the analyte. This results in an area at the boundary with a much higher concentration of analyte, which can then be detected. The stacking was visualised using an inverted fluorescence microscope with fluorescein as the target analyte probe, CTAB as the surfactant micelle carrier and methanol as the solvent, on a single channel (5.8 cm long, 50 μm x 100 μm) poly(methylmethacrylate) chip. A significant concentration factor of >1500 (fluorescein intensity at the boundary/intensity of fluorescein flushed through the channel) was achieved. The electro-osmotic flow profiles during stacking as well as the separation of fluorescein derivatised amino acids within the same MCE device are currently under investigation.

The Global Response to Climate Change Requires a New Paradigm

Sheena Mackie
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National and global responses to climate change can be improved due to necessity, in a bid for survival, or alternatively, by presenting significant challenges to long-held beliefs, coupled with viable alternatives. A thesis was proposed, that a new paradigm arising from a unified sociological front, would lead to significant progress in securing a better future for all humanity. The human situation in relation to the effects of climate change was examined, through empirical research and sociological analysis, wherein historical, structural, cultural and critical aspects were considered. Problems faced by lower-middle to low income earners in Western Society were identified. In a case study of Superstorm Sandy, it was revealed that the elderly and poor suffered the greatest impact. Regardless of a prompt response following the disaster, there was a lack of reliable data regarding the distribution and frequency of aid. It was found that although relief efforts occur following climatic disasters, they may not be adequately or fairly distributed, leading to further suffering. Capitalism and the class system were identified as another issue in the global approach to climate change, with the necessity for globalization to better combine with preservation, in order to serve a higher purpose towards survival. Additionally, disparity between sociological perspectives, highlighted a need for a coherent stance, particularly in view of the influence of sociology in political decision-making. The research supported the thesis and it was concluded that progress for all humanity could stem from a new sociological paradigm addressing the globalized climate change problem.

A Quantitative Approach Investigating the Role of COUP-TFII in Steroid Hormone Synthesis of Bovine Ovarian Follicles.

Julia-Rose Satre
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This study has undertaken a quantification approach, investigating the role of cell precursors to steroid hormone production; in bovine ovaries. The development of ovarian follicles are complex and coordinated processes that are regulated by hormones and growth factors which involve multiple cell types. COUP-TFII is a nuclear transcription factor previously localized to steroidogenic cells in the adult human ovary and the stroma of the developing bovine ovary. This innovative study is the first of its kind to quantify precursors to androgen production at different stages of development in ovarian follicles. Poly cystic ovarian syndrome is a disease that is a result of an increase in androgen production. This study explored the role of COUP-TFII relative changes in steroidogenic cells during follicular development. COUP‐TFII was found to be expressed by

almost all CYP17 - positive cells, confirming previous finding and supporting its suggested role in steroidogenesis. However, COUP‐TFII was also found to be expressed in the majority of other cells within the theca interna, therefore we cannot use COUP‐TFII as a marker of steroidogenic cells. In addition, the level of expression did not differ between small and large follicles, and the proportion of CYP17 cells was not different between small and large follicles, nor was there any difference in the cell density between follicle types. This suggests that differences in androgen production between small and large follicles is not due to a change in cellular composition, which remains relatively constant across an important development window. COUP‐TFII may play more of a developmental role in the ovaries than a hormone synthesis role as it is expressed by almost all the cells within the theca, but not the granulosa layer. This innovative research is important in diseases such as poly cystic ovarian syndrome and helping to identify the etiology of the disease.

Examining Identity Management in Disaster Response Environments: A Child Exploitation Risk Mitigation Persepective.

Kathryn Allan
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The immediate disaster response environment exposes civilians to a multitude of risks, including identity risks. It is integral that those working in a disaster response environment input an identity management system to protect the victims of a disaster. Among the most vulnerable persons in a disaster are children and therefore their exposure to risks associated within the disaster response environment are high. This paper addresses the following research questions:

- What is the nature of identity management systems within disaster response environments?
- How do identity management systems within disaster response environments address risks of child trafficking and exploitation?
- What are the experiences of non-State actors in adopting identity management systems within disaster response environments, where such practices have traditionally been the role of the State?

To answer the questions this paper uses the most contemporary case study of Cyclone Winston in Fiji to analyse the identity management systems in the disaster response. The EAST (Event Analysis of Systemic Teamwork) method was used to analyse the networks found in the performance indicators of the identity management system. This analysis was based off of a series of interviews with disaster response experts from IGOs, NGOs and within the community. In disaster response environments, particularly in developing nations such as Fiji, the State is often inadequate at providing an identity management process; IGOs and NGOs such as UNICEF and Save the Children often have the responsibility

of implementing identity and registration procedures. The role of identity management in the Cyclone Winston case study was intrinsically left to the community, with the support of primarily NGO actors. The preliminary conclusions suggest opportunities to improve upon current systems, including the creation of child friendly spaces and identity verification to protect unaccompanied children from social injustices.

The Body and the Beautiful: Body Composition Preferences for Attractiveness and Health

Mary-Ellen Brierley
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The dominant psychological explanation of physical attractiveness channels evolutionary theory, suggesting that attractiveness reflects physiological health. Attraction, therefore, is a mechanism for identifying a healthy mate. While research has focused on understanding the relationship between facial attractiveness and physiological health, research has only recently touched on bodily attractiveness. This research is limited by a focus on Body Mass Index, a measure of body size conflating muscle and fat mass. Literature examining bodily attractiveness has revealed the need to utilise body composition – that is, fat and muscle mass – in order to better understand links with physiological health. We predicted that the body fat and muscle composition that appears most attractive to observers would also appear the most healthy, and correspond to a physiologically healthy body composition. 30 females and 33 males were instructed to manipulate the apparent fat and muscle mass (based on empirical measurements) of 15 female and 15 male body images in order to, separately, optimise perceived health and attractiveness. For male body image trials, fat and muscle preferences were equivalent across attractiveness and health trials, in line with predictions, and in line with health guidelines, though male observers preferred a lower overall male body mass than did female observers. For female bodies, preferred muscle mass was equivalent across health and attractiveness trials. However, preferred fat mass for female bodies was significantly lower for attractiveness than health trials, and below the healthy range. Results suggest that female body attractiveness may be affected by cultural norms or by the association between low fat and youthfulness. Results support the validity of using the innovative measure of body composition for body perception studies. Findings pertaining to male body preferences are particularly unexpected and indicate the need for increased understanding of males' body dissatisfaction and muscle dysmorphic issues, even within a non-clinical population.

Social Judgement: Criminal Lawyers' Decision Making During Jury Empanelments Versus that of the General Public

Nicola Irwin Faulks
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In New South Wales (NSW), a criminal trial allows both the prosecution and the defence to use at least three 'peremptory challenges' to reject prospective jurors from becoming part of a jury panel. The only information available to criminal lawyers in NSW regarding prospective jurors is an identifying number and their appearance (e.g. gender, age, ethnicity, clothing, demeanour, and behavioural cues). This paper explores the decision-making processes of criminal lawyers in their use of the peremptory challenge to reject jurors during empanelment.
Part One of the study involved conducting structured interviews with practising NSW criminal lawyers with the aim of eliciting what criteria they use in making challenges as well as observing actual jury empanelments. As a result, hypotheses were generated about what criteria might be used to challenge prospective jurors. Part Two tested the hypotheses generated by this process in an experimental study of two hypothetical jury empanelments. To investigate whether criminal lawyers' decision-making differed to the lay public, the criminal lawyers' responses were compared to those made by both law and psychology students. Preliminary conclusions show that experience as a criminal lawyer leads to different choices as to the potential juror challenged compared to non-lawyers (students). Reasons for this difference as well as an analysis of reasons for challenging will be discussed**.**

The Effect of Observing and Producing Gesture in Foreign Word Learning

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Observing and producing gestures promotes learning. Observing gestures can facilitate speech comprehension by providing additional information that is not expressed in the speech, or by disambiguating the information in speech. Producing gestures, on the other hand, promotes speech production by reducing the cognitive resources required for speech production. In a participant's native language, production of semantically meaningful gestures by learners has been found to facilitate retrieval of words even more than observation of the same gestures. However, research examining the effect of gestures produced by leaners in foreign word learning is limited. Despite learners' effort, foreign words that they learned often decay in a short time. Strategies to enhance the durability of word learning are therefore needed. This study examined the effects of observation and production of gestures at encoding on participants' performance in foreign word learning. Sixty native English-speaking university students learned 10 Japanese words. Participants watched

videos in which an instructor stated a variety of Japanese words and their associated English translation. The instructor either produced representative (meaningful) gestures or kept their hands still, depending on the experimental condition (speech only; observing instructor's gestures; observing and mimicking instructor's gestures). Participants' performance on recall and their co-speech gesture production at retrieval were examined immediately after the learning session and one week later. Consistent with previous findings the results showed that both observing and producing gestures at encoding facilitated retrieval of foreign words beyond when words were learned by speech alone. There was no difference however in the number of words recalled between the observing and mimicking conditions. Finally, a significant positive association was found between participants' gesture production at retrieval and the number of words recalled. The findings suggest that gesture is an effective tool in foreign word learning.

Investigating Fear of Terrorism in the Community

Jessica Doak
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Research has shown that direct and indirect witnesses of terrorism acts are experiencing negative psychological effects. Research has shown the underlying psychology of terrorism is fear, commonly associated with ongoing terrorism threat. Persistent fear of perceived terrorism threat manifests as terrorism catastrophisation (TC), evident in rumination, magnification, and helplessness. Investigation of literature revealed an integrated web of unexplored relationships which may be predicting, and moderating (increasing or decreasing), TC. Terror Management Theory (TMT) explains a relationship between TC and death anxiety, and Social Identify Theory (SIT) explains a relationship between TC and prejudice. The aim of the current study was to investigate if death anxiety, or prejudice, significantly predict TC. Further, based on TMT and SIT, three additional psychosocial factors (perceived control; religiosity; meaning in life) were included to test if certain factors could moderate the effects that death anxiety and prejudice have on TC. A sample of 382 participants (aged 18-75, M = 38.74; 67% female, 33% male; 93% Australian citizens, 7% non-Australian citizens) was used to assess whether death anxiety or prejudice significantly predicted TC. Using multiple hierarchical regression analysis (to control for gender), results supported the study's hypotheses in that both death anxiety and prejudice significantly predicted TC. Using PROCESS moderation analysis, no significant moderators were found to alter the effects of death anxiety on TC. When assessing moderation for prejudice's effect on TC, perceived control was not a significant moderator. However, both religiosity and meaning in life significantly moderated prejudice's effect on TC, by increasing overall TC. Therefore, higher religiosity and higher meaning life strengthened the effect that prejudice has on predicting TC. Findings

from the current study could inform techniques to reduce TC in the community by reducing death anxiety and prejudice.

Cerebral Lateralisation as a Neurological Biomarker of Listening Effort

Julianne Pascoe
Macquarie University

Listening to speech in noisy environments requires effort, particularly for individuals with hearing loss. Increased demands are placed on cognitive mechanisms in an attempt to compensate for the degraded speech signal being received. A reliable objective index of listening effort could help inform clinical decisions but has proven elusive to date.
This is the first study to use functional Transcranial Doppler Ultrasound (TDU) as a potential neurological biomarker of listening effort. Cerebral blood flow velocities (CBFV) in the left and right middle cerebral arteries were examined to assess language lateralisation, the cerebral hemisphere predominantly processing speech reception. Listening effort was manipulated by increasing the amplitude of background noise (multi-speaker babble) while participants (21 healthy, normal hearing young adults) listened to and repeated a series of simple sentences. An adaptive staircase method was used so that individual speech reception thresholds, indicative of listening effort, were established in easy and hard listening conditions (80% and 50% of sentences reported without errors respectively).
Whilst overall CBFV did not differ between conditions, lateralisation changed from right lateralised in the easy listening condition to left lateralised in the hard listening condition, indicating that. TDU imaging can discriminate between levels of listening effort. This is the first study to highlight the sensitivity of lateralization to listening effort and holds great potential for future work in this area.

IK_{ca}-IP_3R Myoendotheliam Microdomains in the Uterine Radial Arteriole are Present in Normal, and Absent in Gestational and Pre-Eclamptic Hypertensive Pregnancies: Targets for Therapy?

Victoria Hinkley
The University of the Sunshine Coast

In resistance vessels such as myometrial radial arterioles (MRA) in the uterus, small, intermediate and large conductance calcium activated potassium (S/I/BK_{ca}), and transient receptor potential (TRP) channels, inositol-1,4,5-trisphosphate (IP_3R) receptors, and caveolae and caveolins, can collectively form microdomain signaling complexes that modulate vascular tone, blood flow and tissue perfusion. Diseases such as hypertension and diabetes, may change the expression, distribution and function of microdomain constituents, thereby altering blood flow.

Confocal immunohistochemistry measured relative fluorescence intensity of selected signalling proteins in endothelium (EC) and smooth muscle (SM) of MRA (50-70 μm in diameter; n=4-10, each from different subjects) of normotensive (control), and gestational hypertensive and pre-eclamptic late stage human pregnancies. Caveolae density was determined by serial section electron microscopy and vessel function was examined by pressure myography with pharmacological intervention. IK1 (IKCa), SK3 (SKCa), IP3R type 1 (R1), and TRPV4 were selectively present in EC and SM. Compared with control MRA, IKCa was absent in EC from hypertensives, SK3 was increased in EC from hypertensives, IP3R1 was reduced in EC from hypertensives, and caveolae density was reduced in EC and SM from hypertensives. TRPV4 was present in EC and SM of ~30% of vessels from controls and hypertensives; and TRPC3 was absent in vessels from controls and hypertensives. Endothelium-dependent vasodilation to bradykinin was sensitive to IKCa block with TRAM-34, and NO and sGC block with L-NAME and ODQ, respectively, in controls, but not hypertensives. Responses were sensitive to apamin in controls and hypertensives. In the MRA of gestational hypertensive and pre-eclamptic patients, reduced IK1-IP3R expression and caveolae density correspond to impaired IKCa and NO-mediated function. Thus, targeting alterations in the expression of microdomain signaling components, such as IK1-IP3R offers a rational means to correct altered uterine perfusion in hypertension in pregnancy, and improve maternal and fetal health.

Skeletal evidence of torture: how can the past help the present?

Victoria Tasker
Australian National University

The physicality of the human experience is embedded in the literal core of the human species, the skeleton. Torture has always existed in the depths of humanity and its effect on the human skeleton allows the forensic anthropologist to identify and explore the act of torture long after it has occurred. This presentation explores how historical cases of torture contribute to the database of skeletal indicators of torture. Methods of torture including amputation, hobbling and beating are presented through skeletal data from several ancient cases. In addition to identifying the limitations of skeletal data, the lack of a universal code of conduct for forensic anthropologists, and lack of a structured methodology for the identification of torture in skeletal remains, is brought to light. The need for such codification and universal documentation is reinforced by the role of the forensic anthropologist as an expert witness, as well as the increasing diversity in the range of torture methods. The examination of skeletal remains is an important paradox that the skeletal data available for the forensic anthropologist in learning to identify torture can only be expanded by the act of torture itself.

Looking East – Vincent van Gogh and Japan

Clive You
Australian National University

During the formative years of his life in Arles, France, Vincent van Gogh became deeply enamoured with the art of Japan. Although he never saw Japan for himself, in his head he imagined it as an oriental utopia. This vision, while short-lived, was crucial for the eventual flowering of his unique painting style. Therefore, it is vital for us to understand the Japanese aesthetics and philosophy hidden in his paintings.

The essay commences with a discussion on the origins of van Gogh's Japonism interests and then proceeds with an analysis of how this manifested itself in three periods of his "Japanese Era". The first period is the learning stage for van Gogh. Visually, his paintings are close to the original pieces, but they are not simply the copies as he normally intensified the colours and created additional borders. The second period mainly features the Portrait of Père Tanguy, indicating the Japanese art in his social and spiritual life. The peak was reached around 1888, Self-portrait as bonze is the one which reflects his Japanese preference most obviously, which is further discussed in the third part. The visual analysis technique is widely utilised in this paper to conduct the research of Vincent's paintings and select the representatives of three periods. A visual analysis addresses an artwork's formal elements—visual attributes such as color, line, texture, and size. It may also include historical context or interpretations of meaning.

Reform Proposals for the Effective Implementation of UN Security Council Resolutions

Kathlyn Gonzales
Macquarie University

The United Nations Security Council possesses the mandate to deliver international peace and security under Article 24 of the United Nations Charter in the adoption of 'Resolutions'. Resolutions codify the will of the Council and prescribes action to address threats to peace and security. However, since the Council's establishment in 1946, Resolution enforcement mechanisms have proven insufficient.

Innovating and re-invigorating the Resolution process under 21st century frameworks of globalisation and volatile political climates is necessary for the pursuit of peace and security and for the continued legitimacy and authority of the Council. Thus, the purpose of this research is to propose remedies to the problem of enforcement whilst remaining intuitive to 21st century realities of implementation.

Challenges to effective implementation discussed in this paper include, The Councils usage of ambiguous language amounting to legal loopholes, the absence of secondary sanctions to compel States to abide by Resolution provisions, lack of State regulated oversight of transnational corporations that act in contravention to Resolution provisions, uncertainty in determining the intentions of a Resolution, Council deficiency in seeking contributions from States that are directly affected by a Resolution, and disunity in interpretive approaches.

Innovate approaches to address these issues requires encompassing global actors including transnational corporations, citizens, as well as other State and non-state actors and utilizing the concurrent relationship these actors have with the Security Council. This relationship is the foundation of suggested reforms ranging from regulatory oversight to sanctioning States who fail to observe Resolution provisions.

This research was conducted on behalf of the United Nations Association of New Zealand under the supervision of Associate Professor Graham Hassall of the Victoria University, New Zealand. An analysis of previous reform proposals, case studies, scholarly papers, and discussions with academics in the field, formed the basis of this research.

Transparent Conductive Thin Films from ZnO Doped with Al and Ga for High Efficiency Multilayer Solar Cells

Ian Wilkins
Murdoch University

Transparent electronics are an essential ingredient in many of the new technologies which are set to emerge in the 21st century - transparent and interactive displays, solar windows, photonics for high speed communications, and high efficiency multilayer solar cells. The development of functionalised transparent conductive [oxide] materials (TCOs), which are abundant, cheap and environmentally friendly is critical for materials science, and underpins the long term future for high efficiency solar energy. Specifically, an important research goal is to find potential substitutes for existing TCO materials such as indium tin oxide (ITO), which are high performing, but require rare, expensive and/or toxic materials such as indium.
TCOs based on zinc oxides doped with aluminium (AZO), are promising candidates for such a substitute but exhibit much lower conductance than ITO. Gallium doped ZnO (GZO) materials perform better than AZO, but suffer from similar concerns as ITO, in terms of the rarity and high cost of gallium. This project focusses on transparent conductive AZO thin films, incorporating seed layers doped with traces of gallium. The research goal is to enhance the conductivity of AZO materials, using minimum quantities of gallium in the process. The project employed the sol-gel

process, a solution based chemical process for synthesis of AZO/GZO nanoparticles, which are then deposited as thin films using a spin coating technique.
Composite multilayer films were produced with around 400nm thickness, exhibiting transmittance above 90% across the visible range, and resistivity on the order of 100 Ω.cm. The electrical and optical properties and crystal structure of the films were characterised using UV- Vis spectroscopy, X-ray diffraction, scanning electron microscopy, and methods for measuring electrical conductivity in thin films. Preliminary results indicate promising performance in AZO films with a thin seed layer of co-doped AZO/GZO.

Exploring the Link between Urban Aboriginal Male Identity and Health

Jamie Penny
Griffith University

Aboriginal men have been dispossessed of land, traditional roles and societal status, which have had devastating effects on their familial, cultural and social identity. International public health research has identified strong links between identity and health. The health status of Aboriginal men has been described as the worst of any social group in Australia, with the health of urban populations a cause of growing concern. Despite this, there is a disturbing lack of research exploring the discourses surrounding 'aboriginality', identity in the urban environment and the health of urban aboriginal men.
The aim of this research project was to explore the links between the discourses surrounding Aboriginal identity and their impacts, if any, on the health of urban Aboriginal males. The project involved conducting a 'yarning circle', or focus group, of 12 Aboriginal men at an Aboriginal men's group in an outer Brisbane suburb. All participants resided in suburban areas of Brisbane, Queensland. Participants were asked about their perceptions and experiences of identity and links to health. Yarning circle responses from all participants were recorded and transcribed in full and thematic analysis employed to analyse the data.
Expression of cultural identity in an urban environment was identified as problematic for many Aboriginal men due to the negative discourses and stereotypes surrounding Aboriginal identity. The men felt that these discourses were prevalent in the mainstream community and contributed to feelings of self-doubt, confusion and anguish which influenced their mental, physical, emotional, cultural and spiritual health.
To address the embarrassingly poor state of Aboriginal men's health, further research must attempt to address the negative and deficit discourses surrounding urban Aboriginal identity and perceptions of Aboriginal men. Future initiatives need to focus on positive, enabling discourses which alter the perception and conversation around what it means to be an urban Aboriginal.

Evolution of Australian Avifauna Through Climate-Driven Mitochondrial Selection

Annika Lamb
Monash University

Natural selection enables species to adapt to an environment by favouring beneficial alleles within populations. Diversifying selection between populations that inhabit different environments can promote lineage divergence within species and ultimately drive speciation. The mitochondrial genome (mitogenome) is essential to cellular functioning as it encodes products that contribute to the ATP-producing and translational machinery. Products of the mitogenome are temperature sensitive and are partly responsible for the generation of endothermic heat. The mitogenome is therefore susceptible to environmental selection pressures. I will investigate the potential link between climate, mitochondrial selection and speciation within Australian avifauna. First, I will investigate whether environmental variation has impacted phylogeographic structure in a number of Australian birds. Using sequences for a single mitochondrial locus (ND2) to screen intraspecific mitogenome variation, I will 1) identify mitochondrial lineages (mitolineages) within a number of bird species and 2) use distance based redundancy analyses to test concordance between genetic differentiation within species and environmental variables that represent temperature and precipitation extremes and variability. Preliminary results indicate that mitolineage divergence in most species correlates with environmental variation. Next, I will identify signals of selection in the mitogenomes of Australian bird species and test for parallel selection in mitolineages of different species found to be influenced by the same environmental variables. This will be achieved by 1) identifying signals of selection in the mitogenomes of different mitolineages and 2) searching for signals of positive selection that are similar at the level of amino acid, genes or gene complexes, across lineages affected by the same environmental variables. The results of this multispecies comparative analysis of mitochondrial selection will show whether mitolineages in Australian avifauna are likely to harbour climatic adaptations. This research will give insight to mitochondrial adaptation and add to our growing understanding of the processes driving evolution of Australian biota.

68 Ga-PSMA Ligand in Pre-treatment Assessment and Diagnosis of Prostate Cancer: A Systematic Review

Warwick Chidley
Monash University

Background: Prostate-specific membrane antigen (PSMA) is a cell surface protein that is over expressed in prostate cancer cells. Recent developments have allowed for radiotracers to be bound to PSMA and applied in positron emission tomography (PET). The radiotracer 68Ga (Gallium) is becoming increasingly used as successful chelators are allowing for the production of a wide range of radiopharmaceuticals. The 68Ga-PSMA ligand enables highly sensitive and specific imaging of local prostate cancer and metastases. The ability to identify additional disease or rule out additional disease with a greater level of confidence allows for more appropriate treatment application. Given that this is a recent development, many existing studies use differing criteria to determine the efficacy of the 68Ga-PSMA ligand. The aim of the study was to investigate the use of 68Ga-PSMA in PET imaging for prostate cancer staging. A systematic review of the literature was undertaken. The key inclusion criteria for this review required articles to describe findings on at least 4 quantitative outcomes and not use the same patient cohort. The primary database used was PubMed. **Results**: Thirteen articles were identified that assessed the use of 68Ga-PSMA in staging local prostate cancer and identifying metastases or lymph node involvement from a primary prostate tumour. Five were excluded for not meeting the selection criteria or being too similar to another study. The findings from the literature reviewed have shown that 68Ga-PSMA is highly specific to prostate tumours. 68Ga-PSMA has a higher sensitivity than other imaging modalities for finding local recurrence and locating metastases or lymph node involvement. **Conclusion**: 68Ga-PSMA is superior to other existing PET imaging protocols for diagnosis and staging of prostate Cancer, including lymph node involvement and metastases. This evidence will allow health professionals to use evidence-based practice in order to achieve the best possible outcomes for the patient.

Keywords: 68 Ga(Gallium), imaging, PET/CT, prostate, prostate cancer, prostate-specific membrane antigen (PSMA)

The Erdős-Sós-Conjecture

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University of Hamburg

Extremal graph theory is a branch of mathematics in which one often looks for an extremal (maximal/minimal) value of a graph invariant to ensure specific properties of a graph.

1963 Paul Erdős and Vera T. Sós conjectured, that for all trees T with k edges, every graph G of the order n, not containing T as a subgraph, has at most n(k−1) edges.
After a short introduction I will give a survey of the known results about this upper bound of the Turán number for trees. Also I will explain the concepts of new proofs for special cases and a conditional, which is part of the research results of my bachelor thesis "The Erdős-Sós-Conjecture". This conditional reduces the problem to a set of "somehow homogenious connected" graphs.
As an outlook I will show at which point some natural approaches fail and what kind of questions the previously presented conditional implies.

From the Micro into the Macro: Inclusiveness in Australian Education

Susan Teather
CQUniversity Australia

The current method of Australian education, via schooling of the 'hidden curriculum', experienced in National Assessment Program-Literacy and Numeracy (NAPLAN), testing; students with disabilities remain 'invisible', without a voice 'excluded' by 'gatekeeping' from the tests and from social justice.
The aim of the research was to challenge the social justice of the 'ignorance' of the macro functionalism of Australian government that sees its social structure, or the organisations of society, of more importance than the micro individual. The research investigated the history of the 'hidden curriculum', NAPLAN; in current functionalist Australian policy of compulsory education, 'as the right for all', having done little to provide the necessary equal access or inclusion to an education for students with disabilities.
Functionalist Australian education (macro) was research using secondary data, collected primarily as a quantitative (statistical) deductive method, using government data to examine social issues from a 'big picture' perspective. As this method's limitations could be seen to suffer from the ethic of objectivity in the Data sources being heavily influenced by outcome objectives of the macro perspective; and therefore, exclusion of students with disabilities as individuals. A further Interpretivist research approach was used in a qualitative inductive method using the mass media of the internet to view the micro social reality of inclusive education in Australia.
The research established that Australia has a 'false consciousness', regarding its educational standards; hidden behind the government's functionalism in NAPLAN tests and policy. For the common good of Australia and its sustainable economic progress, the institutionalised 'invisible' students with disabilities must achieve an inclusive education, by substituting the culture of schooling from the current macro to the micro. The macro practice of 'gatekeeping' throughout schools must be

reformed to that of connectivity, where students with disabilities are valued and given a voice in the education system.

Electrodermal monitoring: Out of the lab and into the field

Raven Laverack and Amida Dean
CQUniversity Australia

This presentation is based on our involvement in CQUniversity's Rising Stars Program which commenced this year. The program provides the opportunity for undergraduate students to learn about research by being mentored by a Professor and other researchers for 12 weeks and being actively involved in a research project. The project we are involved with is entitled the Smartphone ambulatory electrodermal activity application verification study. Electrodermal activity has previously been measured in a laboratory setting using large traditional equipment which measures skin conductance through attaching sensors to participants' hands. This study aims to determine whether new smartphone technology that also measures and records an individual's electrodermal activity, is reliable and valid. To achieve this goal the research team is recruiting 30 undergraduate students. We will measure their electrodermal activity using new smartphone equipment and the related phone app, and compare it to data collected using traditional recording equipment. This research potentially benefits future studies, as the smartphone equipment is cheap and portable, enabling multiple participants to be tested simultaneously, either in the laboratory or in the field. As first year undergraduate students, the experience and insights already gained through the Rising Stars Program are invaluable. For example, we have learned about ethics requirements, participant recruitment, data collection and analysis, and the importance and process of publishing research. Without doubt our future study will benefit immeasurably from the guidance and mentoring we are receiving. This experience has already begun to answer a multitude of questions regarding possible future career paths and how these can be achieved, career paths that most students entering a Psychology degree, have no idea exist.

Reducing the Cytotoxicity of Antimicrobial Applications with Plasma Polymerized Antimicrobial Coatings

Chin Khai Goh
University of Adelaide

Purpose/Rationale

The implementation of antimicrobial agents in various industries is plagued with issues such as antimicrobial resistance, systemic toxicity and host cell cytotoxicity. Despite advancement in healthcare technologies, these issues continue to restrict the full potential of antimicrobial products. Although seemingly different, these problems are fundamentally related and can thus be overcome by sustaining

antimicrobial agent release at optimum antiseptic concentrations for sufficient periods of time.

Research Question/Focus
The focus of this research is to develop plasma polymerized antimicrobial coating systems with versatile methods for controlling release profiles of antimicrobial agents.
Research Methodology/Approach
In this study, the effect of plasma polymerization operating conditions on the physical, structural and chemical characteristics as well as antimicrobial release performance of the polymer coating is investigated. Physical characteristics of the coating are determined via ellipsometry (thickness), contact angle measurements (hydrophilicity) and thermal gravimetric analysis (swelling properties). X-ray photoelectron spectroscopy and infrared spectroscopy will be used to characterize the chemical structures of the coating whereas in-vitro models utilizing S. aureus, E. coli and Candida albicans are used to characterize the antimicrobial performance of the coatings. The data obtained will correlate the characteristics, antimicrobial release profiles and antimicrobial properties of the coating. Based on this knowledge, a novel antimicrobial coating which utilizes iodine as a primary antimicrobial agent can then be developed and tailored to suit various applications.

Significance and Originality of Findings
The antimicrobial coating are versatile in the sense that it can be tailored and optimized based on the protocol developed from the findings to have antimicrobial release profiles which suit specific wound dressing applications, thus maximizing antimicrobial activity whilst minimizing antimicrobial resistance and any side effects or toxicity to host tissues.

The Other CO2 Problem – Ocean Acidification in the Southern Ocean

Ellen Cliff
Australian National University

A third of man-made carbon dioxide emissions have been absorbed by the ocean, leading to a decrease in seawater pH, a phenomenon called ocean acidification. This is most acute in the Southern Ocean surrounding Antarctica, where the cold waters readily absorb carbon dioxide. Micro-organisms that produce calcium carbonate shells for protection form the base of the Southern Ocean food web. These organisms struggle to form their shells in acidified, carbon dioxide-rich ocean water. To measure the amount of calcium carbonate produced by these organisms and track their fate in seawater, I developed a high precision isotope-dilution multi-collector inductively-coupled-plasma mass spectrometry technique to measure calcium content in seawater samples. I applied this technique to samples of seawater from the Southern Ocean collected at points between Tasmania and Antarctica, and at various depths from the surface to 1000

m deep. My results provide the first precise estimates of the amount of calcium carbonate formed by micro-organisms in the Southern Ocean. My results suggest that calcium carbonate from the micro-organisms' shells is mixed into deeper waters, transporting carbon from the surface to store in the deep ocean carbon-sink. My Honours research provides a promising method to track the effects of ocean acidification on the calcifying organisms. With this new tool, ocean scientists can better model the amount of calcium carbonate in the Southern Ocean, which will be essential for humanity to predict what we will face in the coming decades as oceans and climate change.

The Effectiveness of the Parliamentary Joint Committee on Human Rights in Protecting Human Rights in Australia

Henry Materne-Smith, Hamish Phillips, Timothy Porter, Claudia Boccaccio
University of Adelaide

Purpose/Rationale

Australia has a patchy record of protecting human rights. The first Australian body to specifically assess how human rights are affected by legislation is the Parliamentary Joint Committee on Human Rights (PJCHR). An understanding of its strengths and weaknesses is vital to improving Australia's human rights protection framework.

Research Question/Focus

Our research seeks to evaluate the effectiveness of the PJCHR in protecting human rights, with particular scrutiny of its 22nd and 24th reports.

Research Methodology/Approach

This research considers the PJCHR's governing Act (the Human Rights (Parliamentary Scrutiny) Act 2011 (Cth)), similar Acts in other jurisdictions, PJCHR reports, Parliamentary Hansards and academic commentary on both the PJCHR and similar bodies in Australia and overseas.

Significance and Originality of Findings

It was found that the PJCHR's most significant problems are the non-binding nature of its recommendations, combined with its inability to play a meaningful role in adjudicating human rights violations due to the separation of powers in Australia. Other factors arising from the PJCHR's structure and function also limit its effectiveness, including over-reliance on Statements of Compatibility provided by Ministers, time constraints, a lack of substance in reports and potential partisanship. Exacerbating these issues is a generally poor culture of compliance by Ministers, who may see their democratic mandate and the Government's priorities as overriding the need for strict compliance with all of Australia's human

rights obligations. Ultimately the PJCHR achieves its goal of influencing policy debate by improving recognition of human rights, improving dialogue with Ministers and encouraging better justifications of human rights abrogation. However the PJCHR falls far short of realising strong, consistent rights protection.
Restricting the PJCHR's focus to fundamental rights, empowering it to propose legislative amendments and engage with courts, modifying the committee's composition and improving the culture of rights compliance would significantly enhance its ability to protect human rights – an obligation owed to us all.

Optimisation using Genetic Algorithms with Integrated Artificial Neural Networks

Bryan Ladowsky
Monash University

This paper explores the effectiveness of genetic algorithms with embedded artificial networks and their potential applications. Genetic algorithms use high-level concepts of genetic variation and natural selection – random selection, crossover and mutation – to effectively select optimal or near optimal solutions out of a large pool of candidate solutions. The selection process can be enhanced when implemented with artificial neural networks, a series of nodes that connect to each other with pre-programmed functions to arrive at outputs from given inputs. These networks are used to model environments where the requisite output is impossible to calculate, or would take too long by other means. These two methods have been combined to efficiently solve complicated optimisation problems in fields ranging from construction to biofuel production.

Australian Dietitian's Perceptions of the Healthiness of Packaged Foods

Rachael Thurecht
University of the Sunshine Coast

Research background & aim:
The aim of this research is to investigate Australian dietitians' perceptions of the healthiness of packaged foods; specifically their self-reported influences on their rating of healthiness. This research addresses a gap in knowledge surrounding how dietitians evaluate the healthiness of packaged foods. To-date research has focused on the influence of nutrients in this evaluation process with little to no exploration of other influences such as: food name, presence of additives, or fit within a whole diet.

Methodology:
The study design was an observational cross-section survey of Australian dietitians. A single online survey containing four sections of questions was distributed to registered Australian dietitians through the Dietitian's Association of Australia national e-newsletter. The survey collected respondent's; perceived healthiness rating of seven random foods, the information used to make their healthiness evaluation specific to each food; an examination of specific healthiness influences on all packed food and demographic data.

Results:
The survey received 153 responses. Analysis of the results are currently in progress and this research is expected produce two articles; the first of which will be completed by early October 2016.

Research progression:
This research will contribute findings on what aspects of the nutrient composition as well as those factors outside of the nutrient composition are considered by dietitians when evaluating packaged food's healthiness. Expanding knowledge in this area would be valuable since the collective perceptions of dietitian's have been used in the development and validation of nutrient profiling models. These nutrient profiling models in-turn are being used for innovative public health initiatives and for regulation of food advertising and labelling. In the area of public health initiatives nutrient profiling models are increasingly being used to inform interpretative front-of-pack labelling systems which can affect the food choices and health of the general public.

Governmentality, Labelling Theory and the conflict of identity and meaning in mental illness: an autoethnographic account of becoming and unbecoming bipolar

Chris Lawless
University of Adelaide

Purpose/Rationale
For six years I lived with a misdiagnosis of bipolar affective disorder. Interestingly this misdiagnosis and subsequent treatments delivered an actual experience of bipolar disorder. During this time my life was considerably different cognitively, physically, emotionally and psychologically.
The reason for my research is two-fold;
1) To find meaning in my own life as I attempt to make sense of my experience, and,
2) To investigate a possible method of understanding and interpreting mental health, anthropologically by understanding mental health from the patients' point of view.

Research Question/Focus
My research aims to examine my own autoethnographic account of what I have named, 'becoming and unbecoming bipolar'.

Research Methodology/Approach
I examine the theory of governmentality argued by Foucault as well as labelling theory in relation to my own experience. Through this comparison I discover how as a patient I was institutionalised objectively by an apparently consequentialist system which aimed to control my condition while creating an ideal, norm abiding citizen through the use of procedure and labels. Through my actual experience of this system I have been able to identify a conflicting difference between the institutional objective nature of governmentality and the subjective and personal experience of mental health as experienced by the patient.

Significance and Originality of Findings
In particular I find that governmentality and labelling prescribe identity and meaning to a patient's life which conflicts the subjective and unique perspective of the patient. I find through my own experience that this conflict hinders cohesion and understanding between system and patient and may be influential in mental health patient resistance. I suggest that this conflict may exacerbate mental illness.
This research is early and ongoing and has great scope for further investigation.

An Australian Pilot Randomised Control Trial of Women's Psycho-social Outcomes Comparing STan and CTG Electronic Fetal Monitoring

Christianna Digenis
University of Adelaide

Purpose/Rationale
Birth and the postnatal period can be a stressful and complicated time for women. This period is categorised by physical, social and psychological challenges. A common technique to ensure the health of the fetus and mother during labour is fetal monitoring, which can lead to clinical intervention such as caesarean. The standard practice for fetal monitoring in Australia is cardiotocography (CTG), which has a high false positive rate leading to unnecessary intervention such as caesarean delivery. Although the relationship is less clear, there has been research that shows that women who undergo caesarean delivery indicate poorer mental health. The Women's and Children's Hospital is currently trialling a new technology ST-Analysis (STan), which is used in conjunction with CTG. STan provides more information to the clinicians, allowing for more precise decision making, thus leading to fewer unnecessary emergency caesareans.

Research Question/Focus
We are interested in comparing women's psychosocial outcomes after fetal monitoring and their satisfaction with the type of monitoring they received.

Research Methodology/Approach
This is a pilot randomised control trial (RCT) comparing women who received either CTG only or STan and CTG combined during their labour. We are contacting women seven or more weeks after birth seeking questionnaire feedback on physical and mental health, their social functioning, women's willingness to trade off risk and satisfaction with fetal monitoring and care.

Significance and Originality of Findings
This research is the first to compare women's psychosocial outcomes after receiving both types of fetal monitoring. It is the first to include a psychological perspective when comparing CTG with and without STan, the first to compare satisfaction and the first research trial in Australia. We hope to find that women will have better outcomes physically, mentally and socially in the STan group, because of reduced caesarean rates. We are currently in the data collection stage of this pilot project.

Clinical Decision-making by Undergraduate Nursing Students

Anne Tin
University of Queensland

Research Question
What clinical decision-making processes do final year nursing students utilise when assessing patients' post-operative vital signs?

Background
As primary providers of acute care, nurses make many critical decisions guided by decision-making frameworks including situation awareness. First introduced in the aviation industry, situation awareness is the ability to perceive and interpret a situation, before making a decision. It consists of three levels of situation awareness that affect decision-making ability, and depends on a person's experience, and access to resources and information, to prevent potentially adverse consequences. This model has been adopted in healthcare to minimise human error and maximise patient safety and outcomes. However, there is a lack of research regarding the processes employed by nursing students for clinical decision-making. This study aims to explore clinical decision-making regarding post-operative vital signs, which is an important tool used to recognise and manage patient deterioration. This research gives insight into the current framework of decision-making used by nursing students, whilst highlighting areas of potential development in undergraduate nursing education.

Methodology
This qualitative study engaged a naturalistic inquiry paradigm, which is a form of interpretive research. Think aloud research methods and semi-structured interviews were used to collect data from 12 purposively selected final-year nursing students. Data analysis was undertaken with verbatim transcription, coding and thematic analysis.

Preliminary conclusions
Preliminary findings indicate that nursing students display high levels of situations awareness when assessing patients' post-operative vital signs. Many students demonstrated Level 3 situation awareness where they were able to think forward to potential outcomes associated with patients' vital signs. This is an important finding as previous work has suggested that nurses, once registered, may not use high levels of situation awareness in patient assessment. Identifying how students' use of situation awareness can be carried forward into their practice may strengthen nurses' decision making.

Native Title Compensation – 'Give Legs to Mabo'

Jonathan Brohier
University of Adelaide

Purpose/Rationale
Compensation for loss of Native Title is the next frontier for the Indigenous land rights movement. Native Title was first recognized in Mabo's case and gave Indigenous people rights over their traditional land providing they established a continuing connection to the land. How are these interests to be valued? Australian courts have never considered this question until this year. In the landmark case of Allan Griffiths and Lorraine Jones on Behalf of the Ngaliwurra and Nungali Peoples v Northern Territory Aboriginal claimants are seeking compensation for loss of native title. My research investigated how native title interests should be compensated in a manner that fosters tangible reconciliation within Australian society.

Research Question/Focus
How should loss of native title interests be compensated?

Research Methodology/Approach
The paper focused on the way in which other jurisdictions have approached such valuations. Concentrating on United States and Canadian case law it is evident that courts only consider the economic losses. However, unlike western cultures, indigenous people have strong non-economic ties to their land. These ties are arguably of more worth to them than the economic value of the land and thus Australian courts should devise a different approach to accurately quantify the loss suffered. The fundamental principles underlying how Australian courts

have compensated non-economic losses in other areas of law were analysed. These principles were combined with those gleaned from academic literature to propose a formula where non-economic losses are given equal weight as economic losses in valuing the loss of Native Title.

Significance and Originality of Findings

Under the formula proposed, courts will be required to award a sum that has an appropriate and rational relationship to the loss suffered. This formula has the potential to foster reconciliation as such a framework will communicate to the Indigenous people and the whole of the Australian community that Indigenous interests are valued, respected and recognized.

Reflections

ACUR provides a supported yet realistic experience of presenting your research at an academic conference. As presenters, you are given an opportunity to seek critical yet supportive feedback on your own research project. As members of the audience, you join a global community of undergraduate researchers united by common excellence and a passion for critical inquiry, engaging in dialogue over ideas produced by currents on the other side of the world. Throughout your valuable experience here, you may want to reflect on a few suggested topics provided below.

Your Research Experience

1. Reflect on your own research project and experiences.
2. If you were a presenter, how do you feel about your own presentation? What feedback did you receive? Where do you think you could improve?

Presentation and Communication

"To learn through listening, practice it naively and actively. Naively means that you listen openly, ready to learn something, as opposed to listening defensively, ready to rebut. Listening actively means you acknowledge what you heard and act accordingly." – Betsy Sanders, former Senior Vice president and General Manager, Nordstrom

1. Think about what you've heard and seen – which presentations and posters worked well and which didn't? Why or why not?
2. Which poster design grabbed your attention first? Why?
3. What presenters/ideas were most memorable to you?
4. Have you come across any ideas or techniques that you could apply to your own work in the future?
5. Did you hear any great questions or answers during the Q&As? What were they? Why did they interest you?

Learning Without Borders

Most areas of academic learning and research are improved if they are approached from an interdisciplinary perspective. Stepping outside the usual disciplinary silos gives the opportunity to learn about an area holistically, approaching complex ideas from a range of perspectives and exploiting the symbiotic potential of traditionally distinct disciplines. The conference gives you

the opportunity to think again about your research and consider it from an interdisciplinary standpoint, the opportunity to present alongside students researching the same area as you, but from a different discipline. Make the most of this opportunity to broaden your research mind!

1. What have you learnt from areas outside your own discipline?
2. How did other presentations effectively communicate to audiences from various countries/disciplines?

Making Connections

There is no time like the present to practice your networking skills. Getting to know your fellow delegates provides you with the opportunity to exchange and share information, discuss common interests or differing opinions, provide advice and support to each other and even work together on projects in the future. It's also not just about building these relationships now during your undergraduate studies, but maintaining ongoing connections in the future as well.... who knows when and where your paths may cross again.

Francesca Gino, a professor at Harvard Business School explains "Today, probably even more than ever before, networks are a key form of social capital for achieving goals in both your professional and personal lives." And meeting people at conferences "who likely have the same interests as you and are highly relevant to your work" is a good way to nurture and expand your network, says Dorie Clark, author of *Stand Out Networking*. "The fact that technology has made it easier to interact with people across great distances and time zones actually makes face-to-face interaction even more valuable" (*Harvard Business Review*, 2015)

1. Use the space below to collect email addresses, Facebook contacts, LinkedIn profiles, or even create a WhatsApp group to connect.

Publishing Your Research

As a participant at ACUR, you have worked hard to present your research to this international and cross-disciplinary audience. The next natural step is to write a paper for publication!

Publishing will enhance your research and writing skills, and give you the experience of working through the editing and journal publication process. By collaborating with students and staff across your university, you will see your research efforts and hard work actually come to life, and be accessible to others.