



Australian  
National  
University



*Knowledge moves us.*

# 2023 Student Research Conference

# Acknowledgement of Country

The Australian National University (ANU) acknowledges, celebrates and pays our respects to the Ngunnawal and Ngambri people of the Canberra region and to all First Nations Australians on whose traditional lands we meet and work, and whose cultures are among the oldest continuing cultures in human history. We also pay our respects to all Student Research Conference participants who represent First Nations people from countries across the globe.



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# Foreword



A warm welcome to the ANU Student Research Conference (SRC) 2023!

On behalf of the Deputy Vice-Chancellor (Academic) portfolio and the Student Life team, it is my privilege to welcome you to this year's conference. In 2023, the SRC celebrates its ten year anniversary and continues to provide a platform for student researchers from undergraduate, honours and postgraduate coursework backgrounds to come together to present their research on complex issues and develop skills and experience participating in a professional conference from beginning to end.

Knowledge moves us is the theme this year, and, in this spirit, I hope you find the conference engaging, insightful and valuable to your overall university experience and that it inspires you to create impact in future research and employment.

The opportunity to gain meaningful academic development and hone your research presentation skills through SRC is a highly rewarding one. By ensuring a thriving research community exists at ANU, we can continue to confidently grow and build opportunities for current students and future career researchers.

The events program is co-designed by a small team of paid student leaders and one full-time staff member each year and provides an opportunity for personal and professional development for those involved as presenters, reviewers, judges or volunteers. I would like to take this opportunity to thank the SRC organising team for your brilliant work in developing and running this year's Conference.

Congratulations to the whole team, Lucas Medcraft, Student Development Officer, SRC, Amelie Cahill, Student Research Conference Support Officer, Georgia Conechado, Student Leader, Events and Natasha Tareen, Student Leader, Graphic Design. The student leaders, Amelie, Georgia and Natasha, have made significant contributions to ensuring that the student voice is at the very centre of SRC, including throughout the 2023 abstract submission campaign, pre-conference events and the final program.

A huge thanks to our SRC 2023 volunteers, whose support is so valuable and appreciated by the team. Thank you; Adam Basheer, Amulya Nanda, Ananya Banerjee, Anneysha Sarkar, Emmy Xie, Lidan Cao, Millie Mao, Lucia Montes de Oca Rondon, Navodya Samarasinghe, Punit Deshwal, Rosa Soto Ruidias, Tejashree Chandrashekar Anchan, Xiao Song, Yidan Lin, Yifeng Qiao and Yukun Zhang.

I would also like to thank those who have supported the students to this point. Including Aunty Dr Matilda House, Prof. Simon Haberle, Prof. Kim Cunio, Dr. Brad Tucker, Peter Swanton, Juliet Meyer, Ash Dowling, Kezia Quirke, Arian McVeigh, Ripley Rubens, Hayden Merrell, Rowan Davie, Cat Evans, Joshua Robinson, Benjamin Hofmann, and Gouri Banerji.

This year a new student-led research and development showcase event is being held and we thank the many student groups including ANU Rocketry, ANU Solar Racing, ANU Formula Sport and university teams including ANU MakerSpace, and the School of Cultures, History and Languages for supporting SRC 2023.

A massive thanks also goes to the team at Academic Skills for providing multiple pre-conference training workshops and helping develop the students research presentation skills. Finally, thank you the ANU Vice-Chancellor, Prof Brian Schmidt AC and Deputy Vice-Chancellor, Pro Grady Venville, for your continued support of SRC over the years and for providing students with engaging and inspiring research insights as part of the presentation of prizes.

Congratulations again to all student presenters who will be sharing their research with the ANU community at this year's conference.

I wish you all the best of luck and I look forward to seeing how your work will ultimately shape our collective future and solve enduring, complex issues.

Dr James Brann  
Director, University Experience



# Conference Schedule

**6** Wednesday  
September

9:30-10am

Welcome to Country & Smoking Ceremony (Kambri lawns)

All sessions below are held at  
MRTC Level 6 - Superfloor

10-11am

Registrations & Morning Tea, followed by Official Welcome

11-12pm

Student Presentations  
*Ecological Interactions: Connecting Traits, Behaviors, and Adaptations*

12-1pm

Keynote 1: *Climate Change and Environmental Sustainability*

**Lunch break**

2-3pm

Student Presentations:  
*Oceanic Cultures: An Exploration of Australian and Pacific Languages, Knowledge, and History*

3-4pm

Student Presentations:  
*Paths to Success: Immigrant Entrepreneurship and Project Management*

4-6pm

Networking 101 & Welcome Reception: Feast of Strangers

**7** Thursday  
September

9-10am

Mindfulness workshop (Kambri lawns)

All sessions below are held at  
MRTC Level 6 - Superfloor

10-11am

Morning Tea & Student Presentations:  
*Complex Systems: Analysis of Energy Transmission, Machine Learning, Computational Biology, and Geochemistry*

11-12pm

Student Presentations,  
*Cosmic Mysteries: Insights from Astrophysical Phenomena*

12-1pm

Keynote 2: *Future Impact: Space, Technology and Cultural Advancement*

**Lunch break**

2-3pm

Student Presentations: *From History to the Mind: Understanding Depression and Suicide, Cognitive Empathy and Politics of Memory*

3-4pm

Student Presentations: Public Health and Medical Challenges: Leprosy risk factors, COVID-19 Response, Medical Imaging, and Alzheimer's Disease

4-6pm

R&D Showcase: Innovation in Student-led teams includes Afternoon Tea

**8** Friday  
September

10-11 am

Student Presentations:  
*Democracy in Action: Tax Cuts, Compulsory Voting, and Moral Framing in Political Decision-Making*

Unless otherwise stated, all sessions are at MRTC Level 6 - Superfloor

11-12pm

Student Presentations: *Feminist Expressions: Reshaping Narratives in Culture, Literature and Art*

12-1pm

Research and Community Panel: Careers and Access in Research

**Lunch break**

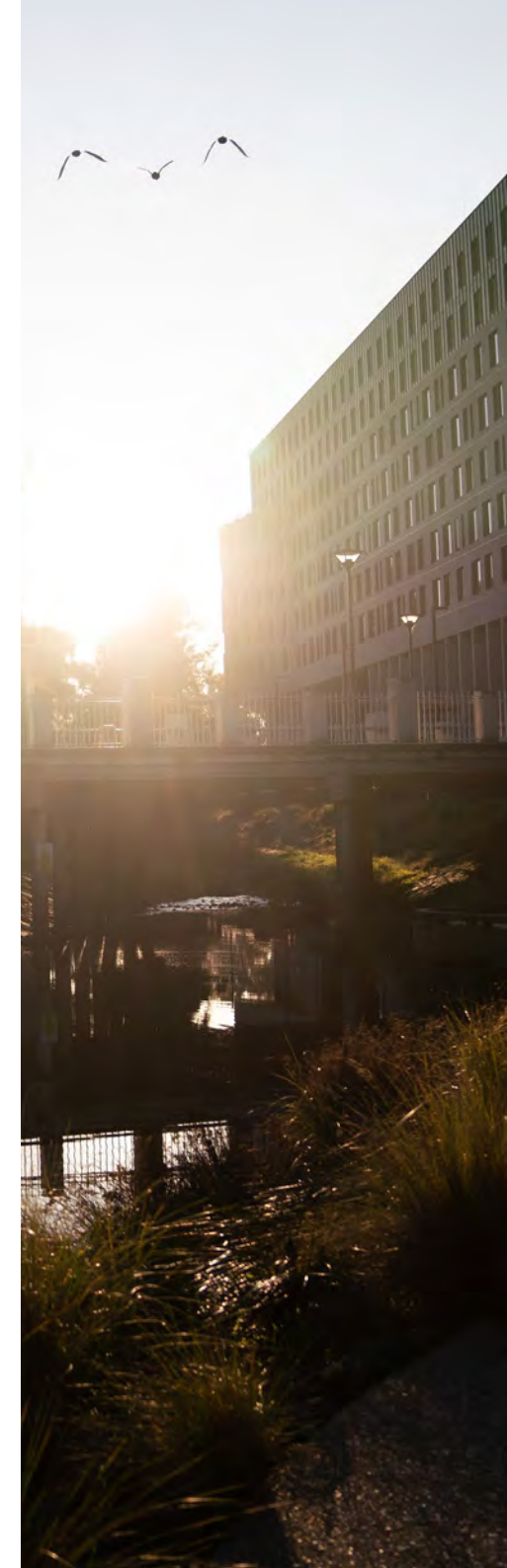
2-3:30pm

Multidisciplinary Research Workshop. *This will be hosted in various rooms on level 5. Follow signage on the day for more information.*

Followed by Afternoon Tea

4-5pm

Closing Address and Presentation of Awards





# Session highlights

## **Feast of Strangers: Academic networking welcome reception**

Wednesday, 6 September, 4-6pm

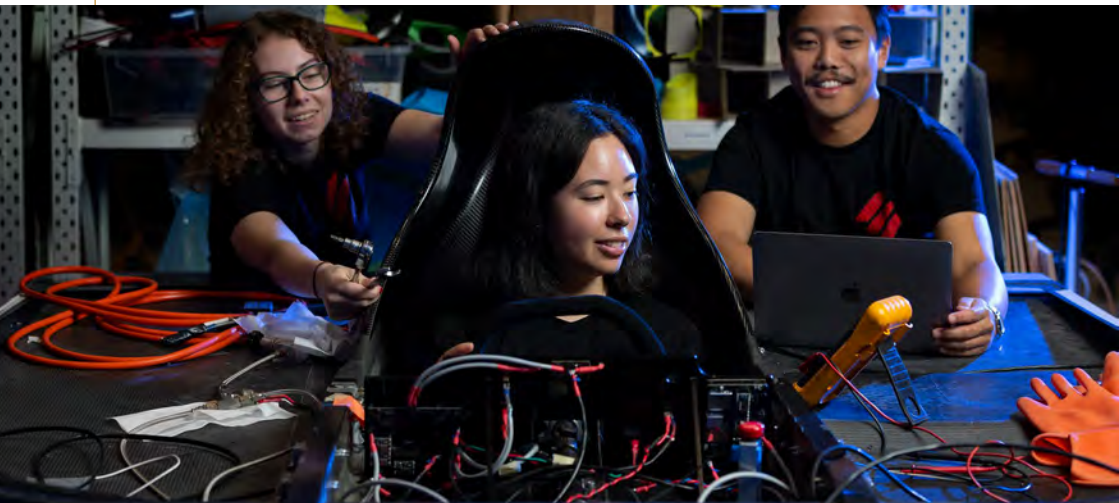
Get a taste for academic networking by connecting with the wider ANU research community at the 2023 welcome. Join this networking opportunity and indulge in canapés and light refreshments. Students are invited to connect with fellow peers and academic staff including PhD students from a range of disciplines to increase your confidence with academic networking, build useful connections and identify practical steps towards achieving their research aspirations. ANU staff open to sharing their experience and advice to aspiring student researchers are highly encouraged to attend.

We are grateful to have Prof Simon Haberle, Director of the School of Culture, History & Language at ANU as our guest speaker. He will provide the keynote address on his research in the field of paleoecology and will also share some of his journey to becoming a researcher.

## **Innovation in Student-Led Teams – R&D Showcase**

Thursday 7 September, 4pm-6pm

This event is a showcase of the research and development achievements made by extracurricular, student-led teams at the ANU with team presentations and an interactive display. Student teams are generally multidisciplinary, almost entirely student-led and produce valuable research and development. There will be 10-15 minute presentations by participating teams followed by display stalls where the audience can mingle, ask questions and network with teams and the wider ANU research community.



## Multidisciplinary research workshop – solving research problems through a multidisciplinary lens

Friday, 8 September, 2-3:30pm

An interactive workshop where students will explore a problem and potential solution in a topic of interest facilitated by a researcher in that field, followed by presenting the results of their discussion to the other groups. Students will form multidisciplinary groups, with the opportunity to look at a problem from a range of perspectives and discuss the applications of different fields to that challenge. Finally, participants will informally present and discuss their topic with the other groups, allowing students to learn from each other as well as the facilitating academic present.

## Awards Ceremony and Closing Address

Friday, 8 September, 4-5pm

Join us for the closing address of the 2023 ANU Student Research Conference (SRC) delivered by Vice-Chancellor Professor Brian P. Schmidt. Following the closing address, the Vice-Chancellor will announce the winners of the 2023 ANU Student Research Conference, acknowledge the achievements of the SRC organising team and volunteers and thank the key supporters of the 2023 Conference. All student presenters, their supervisors, friends, family and supporters are invited to attend. This event is open to the wider ANU community.









# About the Student Research Conference

As one of the world's leading research institutions, ANU is proud to host emerging researchers from across the globe. Unlike any other university in Australia, ANU is uniquely positioned as the only national university. Founded in 1946, in a spirit of post-war optimism, our role was to help realise Australia's potential as the world recovered from a global crisis. It was envisioned at the time that Australia needed to build our national research capacity as we stepped into a more complex world.

Fast forward to today and we have a thriving research community underpinned by research-driven student development and leadership programs including the ANU Student Research Conference (SRC). The SRC is a multi-disciplinary conference that emphasises staff-student partnership and co-design opportunities and offers all ANU undergraduate, Honours and Masters by coursework students a program of conference events which have been designed for students, by students led by the Student Life team .

Research is not just the work of PhD candidates and established academics, it begins with inquiry undertaken at coursework level. Students presenting their coursework research at SRC are doing so for the first time outside of the classroom and have successfully gone through a double-blind abstract review and feedback implementation process. Students presenting at SRC 2023 will be judged by a panel of academic staff who have volunteered in support of these students gaining real life skills presenting their research. The development of undergraduate research is extensively supported at the University, through the Student Life team, our professional and academic partners, the ANU Undergraduate Research Journal and membership of the Australian Council for Undergraduate Research (ACUR).



# Hello from SRC team!

The 2023 SRC Team consists of a small group of full time staff and student casuals from the Student Life team, who work together over a six month period to deliver a professional conference supporting undergraduate research at ANU. The SRC program includes a range of events, student presentations, key note speakers, and interactive sessions that is open to the wider ANU student and staff community to attend.

The team has expertise in various areas including graphic design, event management, stakeholder management and communications, editorial skills, social media management, logistics and photography. Volunteers are an integral part of the delivery of SRC, they provide much needed human resourcing, skills and enthusiasm to support with the management of the three day conference. Our volunteers have their hours recognised through the ANU+ award for their contributions.

This year's conference would not have been possible without all of our team member's hard work and dedication. We hope you enjoy SRC 2023!



# Meet the SRC 2023 Organising Team



## **Natasha Tareen, SRC Graphic Designer**

Hello! My name is Natasha Tareen, and I'm a fourth year Business Administration and Design student.

I was involved in designing graphics for the Conference in 2022, and am so privileged to be contributing again this year. Getting the opportunity to work with a team to produce the most optimal solution for the Conference deeply aligns with the passion I have for continuing to create, alongside others with incredibly valuable insight.

Outside of ANU, I love doing freelance branding and design work, and am currently building up an exhibition with the Everything I Am Not collective. I



## **Amelie Cahill, SRC Program Support Officer**

Hello! My name is Amelie Cahill, and I recently graduated with a Bachelor of Commerce (Management) and Bachelor of Science (Psychology) and am just about to complete my Honours year.

I have been involved in the development and programming of the Student Research Conference since 2022 as the program support officer whilst also working with the Student Central team.

I've been able to learn so much from this experience including skills in marketing, administration and student engagement as part of the co-design team. Being able to see the Conference come to fruition and provide opportunities to other students to engage meaningfully in research is highly rewarding to me.

Outside of ANU, I love to play Netball, watch the AFL, or curl up with a good book.





### **Georgia Conechado, SRC Events Officer**

Hello! My name is Georgia Conechado, and I am completing my Honours year in a Bachelor of Engineering (Research and Development), majoring in Renewable Energy Systems.

I presented my research on modelling and optimising battery scheduling in distribution networks at the 2022 Student Research Conference which was a great experience. The highlight for me was the wide variety of presentations in such diverse topics, and being able to engage with students outside my own field. This led me to join the team this year as a student leader in creating events for the Conference that can help build these connections further, and encourage students to engage with research in non-conventional forms.

Outside of ANU, I work part time for a renewable energy developer. In my free time I love bouldering, painting and food, especially Japanese and Filipino cuisines. I look forward to meeting you at the Conference!



### **Lucas Medcraft, SRC Program Lead**

Hello! My name is Lucas Medcraft and I'm a Master of Public Policy student at the Crawford School of Public Policy and previously studied Honours in German at ANU.

For the past five years I've coordinated research conferences at The University of Queensland and joined the SRC team earlier this year as the Student Development Officer. It has been an absolute pleasure getting to work in a student-led team to create a meaningful experience for student researchers and to help build our research capacity at the undergraduate, Honours and postgraduate coursework level at ANU.

As the SRC program lead, I've had the opportunity to see how student as staff and our volunteer team have brought to life this conference through the co-design process. Thank you to the entire team for your hard work and to the research community for your support!

Outside ANU, I love volunteering in the local community and am actively engaged in cultural organisations and championing social justice issues. I love to hike and explore Canberra and surrounds by foot, alternatively you'll find me at Palace Cinemas watching the latest foreign film!

# Special Thanks to 2023 SRC Judges

The ANU Student Research Conference acknowledges the generous support of academic staff from across the University who volunteer their time to evaluate and provide feedback on student presentations at the conference.

Ana Silvia Casas Ramos  
Anushka Vidanage  
Beth Marsden  
Bryan Levina Viray  
Bryan Teo  
Charbel El-Khaissi  
Christian Wolf  
Chunyuan Gao  
Danlu Guo  
Hang Duong  
Irina Samsonova  
Ivan Vinogradov  
Jalene Nalbant  
Jim DelBene

Jing Zhang  
Jonathan Yik Chang Ting  
Joshua Robinson  
Julie Tournet  
Kathy Wang  
Ksenia Maximova  
Kylie Message-Jones  
Lee White  
M. Hali Aprimadya  
Md Rezanur Rahaman  
Michael Anenburg  
Mila Knezovic  
Mutiarra Indriani  
Nabila Nisha

Patrick McGlynn  
Petra Vaiglova  
Rabin Basnet  
Rosemary Wyber  
Sameer Ali  
Sergey Kruk  
Si Ming Pang  
Subrata Banarjee  
Sven Ullrich  
Tuukka Kaikkonen  
Xinting Wu  
Yik Ki (Jackie) Ma  
Yujiao Shi  
YunHeng Chen







# Speaker Highlights



**Professor Simon Haberle,**  
School of Culture, History & Language

Prof Simon Haberle is currently Director of the School of Culture, History and Language (since 2016). He completed his PhD at ANU on the Late Quaternary Environmental History of the Tari Basin, Papua New Guinea, in 1994. While holding postdoctoral positions at the Smithsonian (STRI, Panama) and at the University of Cambridge he continued to pursue his interest in the role of past climate change

and human activity on tropical and temperate ecosystems through work in the Amazon Basin and southern south America. His research is currently focused on the application of high-resolution palaeoecological analysis to our understanding of the impact of climate variability and human activity on terrestrial ecosystems of the Pacific and Indian Oceans during the Holocene. He is also developing e-Research tools in palaeoecology such as the Australasian Pollen and Spore Atlas and the PalaeoWorks website. He is currently using his knowledge of Australian pollen to explore the impact of atmospheric pollen and spores on respiratory health.

Simon will provide the keynote address at the welcome reception and discuss his research in the field of paleoecology and will also share some of



**Mr Peter Swanton**  
Research School of Astronomy & Astrophysics

Peter Swanton is a Gamilaraay man from Mackay, QLD. Peter graduated from The Australian National University in 2019 with a Bachelor of Science, majoring in Physics, specialising in Astronomy and Astrophysics. Peter's work in astronomy initially began with research around black holes and

cosmology, but he has since shifted his focus to cultural astronomy and dark sky preservation. Peter's work will highlight the scientific importance of Indigenous star knowledges, and what we need to do in order to preserve these knowledges on Country, as well as in the night sky.



**Professor Kim Cunio,**  
Head of the School of Music

Professor Kim Cunio is a composer, performer and researcher interested in old and new musics and the role of music in making sense of our larger world. Kim is a Grammy Long listed composer and recipient of the ABC Golden Manuscript Award. Kim's compositions have been played at the Whitehouse, United Nations and

concerts / festivals in many countries. Kim is working on a series of albums with the Gyuto Monks of Tibet; a project setting the sounds of space with the British Antarctic Survey, and a deepening relationship with ANU colleagues Tucker and Swanton. Kim writes for his peak body, the Deans and Directors of the Creative Arts, the Crawford Centre for Public Policy at the ANU, Australian Studies and has a regular segment on ABC Radio to discuss music and the larger world.



**Dr Brad Tucker**  
Research School of Astronomy & Astrophysics

Brad Tucker is an Astrophysicist/Cosmologist at the Research School of Astronomy and Astrophysics, Mt. Stromlo Observatory and the National Centre for the Public Awareness of Science, at the Australian National University.

Brad received Bachelor's degrees in Physics, Philosophy, and Theology

from the University of Notre Dame and a PhD in Astrophysics and Cosmology from Mt. Stromlo Observatory at the ANU. He's leading programs using the NASA's Kepler Space Telescope and TESS to understand why and how stars blow up. He's also building a network of ultraviolet telescopes in the upper atmosphere, and a search to find Planet 9.

Brad frequently gives talks to school groups and the public about Astronomy and has regular segments on various radio and TV stations. He has also developed a series of Astronomy coins with the Royal Australian Mint, consulted on science fiction movies, and has been featured in TV specials. He is currently in the process of writing his first popular book and has developed an online Astronomy course.



## Leaf traits and snow gum dieback

### Ecological Interactions: Connecting Traits, Behaviors, and Adaptations

Snowgums (*Eucalyptus pauciflora* subsp. *niphophila*) in Kosciuszko National Park (KNP) are currently experiencing rapid and unprecedented dieback, first documented in 2017. It is understood that the native wood-boring beetle *Phorocantha mastersi* is contributing factor to this phenomenon as its' larvae feed circumferentially on living tree tissue. Prior field surveys also show that trees at the lower bounds of this snowgum subspecies' elevation range are more frequently affected by wood-boring beetles however given the recency of this outbreak a lot is still unknown. This study is designed to build on these previous observations, aiding to describe tree condition post infection and better understand the variation in tree growth across elevation that may influence dieback susceptibility.

In particular this study aims to investigate how four suites of leaf traits (morphological, physiological, anatomical and chemical) change across elevation as well as when a tree is damaged by borers. In February-April 2023, 784 leaves were collected across 10 transects (1680m-1890m) near Guthega Dam in KNP. The following leaf traits were measured for each leaf: 1) Morphological traits (leaf size, leaf mass and leaf to stem area ratio), 2) stomatal anatomy (size and density), 3) leaf spectral reflectance as a proxy for pigment (chlorophyll, anthocyanin and carotenoid) concentration and 4) leaf thermal tolerance.

Initial results show significant morphological changes with increasing levels of borer damage. Both leaf size and leaf area per stem area decline with borer damage likely due to the disruption of leaf water supply. In the near future changes in the remaining three suites of leaf traits will also be examined across both elevation and with increasing borer damage. This should allow us to detangle the effects of these two co-factors and aid in future efforts to predict and map the spread of dieback.



**Presenter: Sabina Aitken**

Have questions? Write them down here!

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## Quantifying Maternal Metabolic Hormone Variation in Skink Eggs Across Two Australian Species

### Ecological Interactions: Connecting Traits, Behaviors, and Adaptations

Many factors influence offspring development, including effects from mothers. Maternal effects occur when the mother's environment and phenotype (observable characteristics) affect offspring phenotype. For instance, development is affected by transfer of metabolic hormones, including corticosterone (CORT) and thyroxine (T4), from egg-carrying mothers to offspring via yolk. Elevated CORT concentration during stress impacts developmental and metabolic processes, and may reduce T4 concentration. Maternal hormone transfer is investigated in Australian native skink species, *Lampropholis delicata* and *Lampropholis guichenoti*, as they are oviparous (egg-laying) lizards. Currently, the mechanism of maternal CORT and T4 transfer into egg yolk, and the baseline clutch variation in CORT and T4 is unknown. I aimed to quantify CORT and T4 variation between and within egg clutches, compare hormone concentrations across species, and identify the relationship of CORT and T4. To achieve this, I measured CORT and T4 concentration in yolks from various clutches of *L. delicata* and *L. guichenoti*, then performed statistical analyses. I found support for maternal hormone transfer, discovered no difference in hormone concentrations across species, and no support for a relationship between CORT and T4. Since maternal hormone transfer is considered a maternal effect, this study provides an insight into maternal effects on offspring development inside the mother, while majority of studies focus on the developmental period between laying and hatching. In the future, mechanisms of maternal hormone transfer remain to be investigated, to further understand the physiological processes causing this maternal effect.



**Presenter: Amelia Peardon**

Have questions? Write them down here!

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## The trade-off between antipredator behaviours and immune response of guppies, *Poecilia reticulata*'

### Ecological Interactions: Connecting Traits, Behaviors, and Adaptations

Trade-offs occur between immune responses and antipredator behaviours. Prey animals tend to have several predatorial evading mechanisms that are often energetically costly. However, if an individual is immunocompromised, an immune response would require more energetic allocation to combat the infection. As such, it is postulated that when immunocompromised, a prey animal may forego resource allocation to antipredator behaviours as it mounts an immune response.

To determine this, we subjected guppies to lipopolysaccharide (LPS), a pseudo-toxin. Therefore, we observed if the antipredator behaviours of LPS-inoculated guppies were suppressed compared to a control group (no LPS inoculation). Instead, the control group guppies are subjected to phosphate-buffered saline that does not affect the immune system. Consequently, the antipredator behaviours of the control group act as a comparison.

This study investigated two antipredator behaviours; time spent in the dark and the maximum swimming speed of guppies. A decreased time spent in the dark and/or decreased maximum swimming speed stipulates reduced energy allocation to antipredator behaviours. Both female and male guppies in our study elicited no significant differences between the LPS-inoculated and control group, indicating there may be no trade-offs towards both antipredator behaviours when immunocompromised.

We suggest a third treatment group of no injections to determine if LPS truly has a significant effect on guppies and that other antipredator behaviours should be studied since energy allocation varies for different traits. The study is primitive but serves as a good launching pad for future research on guppies and their immune response trade-offs. It also questions if the effect of LPS is species-specific and if we should at all generalise immune response to be costly for all animals.



**Presenter: Tina Gopalan**

Have questions? Write them down here!

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# What is the Opposite of a Jungle, a Rainforest?

## Oceanic Cultures: An Exploration of Australian and Pacific Languages, Knowledge, and History

As illustrated by the recent research of Helen Bromhead and other semantic linguists, landscape terms can convey deep cultural meaning. This paper aims to describe two such terms, jungle and rainforest, as used in Australian folk vernacular. I will draw upon corpus data from Collins Wordbank and elicitation data, collected according to convenience sampling through face-to-face and digital text channels, to formulate Natural Semantic Metalanguage explications of both concepts. In general, my findings are that rainforest focuses on the natural elements of a forest, while jungle focuses on the human experience within a forest. Interestingly, speakers will prefer to classify some geographical areas as either jungle or rainforest, seemingly according to connotations of colonial exploration. While rainforest is limited to the description of natural environment, jungle has common meaning extensions into human spaces, as in 'concrete jungle' or 'her room is a jungle', suggesting that density and disorder are especially key to jungle. This research helps us to understand how we make categorisations and the role of association in semantic analysis. Additionally, it offers a method for the explication of associative meaning in Natural Semantic Metalanguage.



**Presenter: George Griswold**  
Have questions? Write them down here!

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# An Acoustic Description of Lelepa Vowel System

## Oceanic Cultures: An Exploration of Australian and Pacific Languages, Knowledge, and History

Lelepa is an Oceanic language in central Vanuatu, a linguistically diverse country with over 130 languages (François et al., 2015). In the main descriptive work on the language, Lacrampe (2014) states that Lelepa has five vowel qualities /i e a o u/ and also a length contrast between the open vowels /a/ and /aa/, making six vowels in total. However, there are still some unresolved questions about the sound system, such as the existence of other long vowels and the relationship between vowel quality and specific consonantal environments. This study aims to provide a comprehensive acoustic description and analysis of the Lelepa vowel system, to contribute to cross-linguistic phonetic typology and a deeper understanding of Oceanic language family. Based on a corpus of audio recordings collected by Lacrampe (2017), a total of 4,738 vowel tokens were analysed in this study. This study examines acoustic parameters such as vowel duration (ms) as phonetic correlates of possible vowel length distinction, and formant frequency (F1, F2 and F3) as acoustic correlates of vowel quality, with consideration of the different kinds of consonants that come before and after the vowels. Results show that Lelepa uses a five-vowel system /i e a u o/, but the realisation of these vowels can be significantly affected by the types of consonants that precede and follow them. There is also evidence that, apart from the distinction between /a/ and /aa/, there are also some long vowels for the other vowel qualities. This contributes to the understanding of Lelepa and its relationship to other languages of central Vanuatu in the context of the linguistic diversity of the region and numerous sound changes that have occurred.



**Presenter: Zhe Yang**

Have questions? Write them down here!

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# Colonial Values Constructed: An Examination of the Head Mission Station at Ere, Tongoa island, Vanuatu

## Oceanic Cultures: An Exploration of Australian and Pacific Languages, Knowledge, and History

Can the ruins of one lonely house overlooking the village of Lumbukuti, on the Vanuatuan island of Tongoa, tell the story of an entire movement, one that continues to shape the lives of Tongoans today? The house was built by Reverend Johan “Oscar” Michelsen, one of many Presbyterian missionaries that laid the groundwork for the colonisation of the New Hebrides. Archaeological studies of mission houses in southern Vanuatu have shown how missionary values, and the values of the British Empire, were primary considerations in the design of such buildings. This study aims to ascertain whether the same is true for the house at Ere, and if so, to what extent. To date, no formal study of the house has been undertaken, and as a field, mission archaeology in Vanuatu remains in its infancy. Excavations of the building’s foundations were undertaken by a combined team of ANU students, Vanuatu Cultural Centre staff, and Tongoan workers in September 2022. The team recovered a number of artefacts and produced plan drawings of the site. This material evidence was analysed alongside historical documentation, penned by Michelsen and sources close to him, to place it in context. James Flexner’s, Stuart Bedford’s, Martin Jones’, and Matthew Spriggs’ work was used to situate the project within current academic discourse. It was found the house had several features designed to manage colonial fears, such as separate living spaces to reinforce Christian hierarchy and underfloor tunnels to carry away deadly, fever-inducing miasmas. These findings are consistent with those from southern Vanuatu, however substantial room exists for further detailed study of the site.



**Presenter: Brad Dare**

Have questions? Write them down here!

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# We Are Not Drowning, We are Fighting - Pacific Countries Resilience Against Climate Change

## Oceanic Cultures: An Exploration of Australian and Pacific Languages, Knowledge, and History

Diverse knowledge systems exist in our world, ranging from rigorous science to spiritual systems. This research focused on the unique knowledge systems that have evolved over generations in the Pacific. These knowledge systems enabled the Pacific people to interact harmoniously with the environment, such as predicting droughts using the blossoming patterns of the Tera tree or foreseeing rainy seasons based on mango fruit growth. Despite the effectiveness of these Pacific knowledge systems, Westerners often undervalue them favoring formal scientific approaches. Therefore, this research argued that the Pacific knowledge systems were not inferior to the Western ones and shed light on the effectiveness of the Pacific Knowledge systems.

Although there was literature on the importance of the Pacific knowledge system, my research examined the narratives and oral histories of the Pacific local people, which were overlooked in existing scholarly works. Therefore, this research adopted an interdisciplinary methodology by analyzing existing literature and the perspective of Pacific people. Data collection involved in-depth interviews and participatory observations with members of diverse Pacific communities to gain insights into their knowledge systems. The data analysis followed a qualitative approach with thematic coding and content analysis to identify recurring patterns and key themes. Academic publications from the Pacific region were also critically analyzed to explore historical representations of Pacific knowledge within academia.

The implications of this research extend to academia and policymakers. This research promotes cultural diversity by encouraging a more inclusive approach to knowledge. The findings also challenged the dichotomy between Western and Pacific knowledge systems, demonstrating the effectiveness of Pacific ways of knowing.



**Presenter: Sai Hossain**

Have questions? Write them down here!

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# Skills Required for Project Managers in Transformative Projects and Way Ahead !

## Paths to Success: Immigrant Entrepreneurship and Project Management

Project management is often conceptualised as a change management process in the organisation (Kimmons & Loweree, 1989). However, due to the nature of changes, one can argue that not all the changes are same or can impact the organisation in similar way as changes could be incremental or radical/transformative. Of those changes, transformative-changes are fundamental shift in the way of delivering values to stakeholders by changing strategies, structures, and culture of the organisation (Fiedler, 2010; Tonder, 2004) and reports shows that transformative projects are 70% likely to fail than normal project with leaders' lack of skillsets underpinning (McKinsey & Co, 2023; O'Riordan, 2021). Therefore, we argue that transformative projects are different and it's important to identify the skillsets that contributes to the success of those project managers. Therefore, this paper tries to understand the nature of transformative-project and the skillsets required for managing such projects to provide recommendation on how transformative-project management skills could be developed by the project managers. This paper uses a qualitative method using content analysis on the existing academic literatures on the transformative projects and analyses using thematic analysis. Thematic analysis is uses because it helps in clustering data and offer insights from embedded meaning behind data (Braun & Clarke, 2012).The findings show that the fundamental skillsets required by the transformation-managers are not different from the other project managers however there are certain skillsets which transformative-managers should be better equipped with than the other project managers, namely interpersonal skill, planning and communication. The findings and recommendations could be of particular interest to the project managers in understanding the transformative-projects and help them devise the recruitment and training plan for transformative managers.



**Presenter: Sushant Rijal**  
Have questions? Write them down here!

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# The Evaluation of Contribution of Project Governance Framework on Project Success and Failure Situations

## Paths to Success: Immigrant Entrepreneurship and Project Management

Project governance is a flexible structure that accommodates the outcome of the projects and evolves the framework as per the project nature. Several scientific research on project governance and project performance has been conducted separately till date, however the contribution of project governance framework on project success or failure is still to be explored in a quantitative manner. As Zwikael (2022) argued that project planning is dependent on project scenarios where the planning is highly likely to depend on the intensity of risk and probability of occurrence of failure. This research will consult the project completion reports on major projects in public sector in Australia for source of primary data along with revisiting the previous research conducted on several industries for secondary data. A regression analysis will be adopted to evaluate project performance where the factors determining success or failure would be identified as dependent variables and the governance factors would be taken for the independent variables. While the governance of major public projects is highly evolving around the efficiency, legitimacy and accountability (Brunet & Aubry, 2016), this article in conjunction with the previous studies, aims at addressing the project governance framework as a factor in occurrence of project success or failure apart from the iron triangle. It will also try to identify the intensity and likelihood of project success or failure being driven by the understanding of the roles of each actor in the framework and offer possible solutions to adopt to balance the impacts in terms of cost, time and project scopes.



**Presenter: Fariba Halim Aurin**  
Have questions? Write them down here!

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# Understanding the relationship between entrepreneurial capabilities and motivational influence on socio-cultural adaptation of immigrant entrepreneurship: The case of Canberra

## Paths to Success: Immigrant Entrepreneurship and Project Management

In today's globalized society, immigrant entrepreneurship is crucial. The socio-cultural adaptation of immigrant entrepreneurs, which includes cultural learning strategies, language learning, and bicultural flexibility for adjustment in a new host nation, can have a considerable impact on their entrepreneurial abilities. Furthermore, entrepreneurs' co-ethnic choices influence the development of their skills and motivations based on the importance of shared community, shared religion, and access to ethnic resources. This research focuses on specific research questions like what motivates entrepreneurs to start their businesses in Canberra? Were there any co-ethnic preferences or influences to start their businesses? How they adapted to the new sociocultural context in Canberra?

This research is based on fieldwork through in-depth interviews with three Bangladeshi immigrant entrepreneurs contributing to the SME sector in Canberra. Due to time constraints, phone interviews duration of 40–60 minutes were recorded with their consent to participate for five days over the phone in two weeks time period. All interviews were transcribed from Bengali to English for analysis. To explain the study results, each respondent was given a pseudonym. From transcribed data, first-order codes have been generated and then grouped into second-order codes, and finally aggregate themes have been designed for explaining the primary data collection from the immigrant entrepreneurs.

The study investigates how immigrant entrepreneurs are driven by push and pull elements of motivation, as well as strengthening their talents to adapt to the socio-cultural setting, which gives some additional benefits to immigrants than other regional states of Australia. Based on the findings, it is obvious that the majority of entrepreneurs were motivated by pull factors rather than push factors.



**Presenter: Sharmin Akther**

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# Theoretical error bound of linear discriminant analysis with pseudoinverse in high dimensional double asymptotic setting

**Complex Systems: Analysis of Energy Transmission, Machine Learning, Computational Biology, and Geochemistry**

In classical understanding of machine learning, there is a commonly accepted trade-off that as model complexity increases, the test error first decreases then increases due to underfitting and overfitting of the training data. Therefore, to minimize test error, one must find a model that is not too complex, (has a large number of parameters or features). However, in recent years a phenomenon called double descent is observed: as model complexity increases, test error eventually decreases again, forming a second descent. There has been a spur of research on uncovering double descent phenomenon for models including neural network, random forest. However, no research has linked it to linear discriminant analysis (LDA). LDA is a popular classification method that assumes data comes from different multivariate normal distributions. It allocates new data point to a based on a linear boundary estimated from training data. LDA become overfitted when the number of dimensions exceeds the number of samples. Understanding whether there is a double descent occurs for LDA can help us decide whether techniques like dimension reduction or increasing sample size are necessary to achieve a lower test error.

This research paper serves as a theoretical exploration of the error bound of LDA in the double asymptotic context: What does the theoretical error approach as the number of sample size ( $n$ ) and number of dimension ( $p$ ) approaches infinity, whilst the ratio between the two ( $p/n$ ) remains constant. Since the covariance matrix needed to compute LDA is not invertible in the  $p \geq n$  setting, the Moore-Penrose pseudoinverse is used. The inverse is unique and exists for any matrix. The result is derived using random matrix theory and shows the behaviour of LDA at different ratio of  $p/n$  in the underparameterised ( $p/n < 1$ ) and overparameterized case ( $p/n \geq 1$ ).

**Presenter: Kehan Zhao**

Have questions? Write them down here!

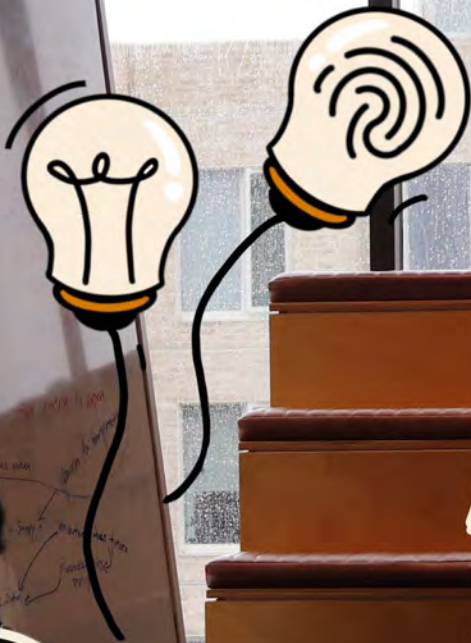
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## Transmission Networking: Why the Shape of Energy Delivery Matters

### Complex Systems: Analysis of Energy Transmission, Machine Learning, Computational Biology, and Geochemistry

The urgent need to combat climate change has motivated the rapid adoption of renewable energy sources. While these technologies play a crucial role in reducing emissions, they are more dependent upon geography than traditional sources of generation. This leads to renewables frequently being distributed away from consumers. Thus, alongside the adoption of renewable energies is the increased demand for the transmission network to transport energy from remote renewable generation to the distribution networks that directly connect to consumers. Therefore, the energy transition places significant stress on the transmission network through greater demand.

Network theory is an abstract analysis of members in a node-edge network and their connections. Applying this approach to modelling energy generation and transmission infrastructure can inform us of key characteristics in the network and where vulnerabilities might lie. In this study, we propose a model of transmission lines in the National Energy Market as a network with substations and generators as nodes, and the transmission lines as edges. This leverages network theory applications to expose insight into the network's nature and composition. The network analysed displayed characteristics of a scale-free network with exponential degree distribution. The implications of the findings with respect to a network's robustness will be discussed relating to the impact of climate change on energy systems. Further work will be conducted into applying these concepts to measures of resilience.



**Presenter: Benjamin Hofmann**

Have questions? Write them down here!

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# Constraining the Masses of Black Holes Using Accretion Disc Models

## Cosmic Mysteries: Insights from Astrophysical Phenomena

Black holes are extremely dense and compact objects commonly found in our universe. One of the typical formation pathways for black holes is through the death of massive stars. At the centre of most galaxies there is a supermassive black hole, which is a black hole with a mass higher than one hundred thousand solar masses. They are involved in regulating the growth and evolution of galaxies as well as powering active objects like quasars through accretion. Decades of research have been carried out to obtain accurate measurements of black hole masses to help us better understand these processes. A long-established method of black hole mass measurement that has been calibrated many times is the single-epoch (SE) virial mass method, which uses emission lines to estimate the masses of black holes. However, sometimes this method will arrive at conflicting results. For example, for object J102325.31+514251.0, the H-beta and MgII emission lines produced results with a factor of ten difference. Thus, we turn to a more recently developed method, accretion disc (AD) fitting to resolve ambiguous cases. A sample of black holes with disagreeing SE masses were selected and the masses of this sample were estimated using AD fitting. On the other hand, AD fitting was also performed on a sample of objects with agreeing SE masses to verify the reliability of the method. It was found that AD fitting does not favour an SE mass from a particular emission line, and that AD fitting may have some biases that need to be further investigated before it can be trusted as a reliable method for black hole mass measurement.



**Presenter: Ashley Hai Tung Tan**

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# Directly Imaging Exoplanets with GMTIFS

## Cosmic Mysteries: Insights from Astrophysical Phenomena

Our understanding of exoplanets and their formation processes is limited, since they are difficult to observe. Exoplanets are usually detected by observing variations in their host star (as it wobbles or dims due to the planet), however one of the key pieces of information which informs us about their formation process – the initial entropy of the planet – can only be measured by observing the planet directly. This is difficult, since most known exoplanets sit so close to their host stars that the glare from the star makes the planet impossible to image with the current generation of 8-10 m telescopes and their dedicated exoplanet-imaging instruments.

The next decade will see the development of the Giant Magellan Telescope (GMT; under construction in Chile) whose 24.5 m mirror should make the size of the glare (up to) three times smaller. This would allow for the detection of planets which sit at smaller angular separations to their host star, as well as allowing for fainter planets to be observed at already-achievable separations. The preliminary simulations presented here are manually-built images that mimic what GMTIFS’ – the GMT’s non-dedicated workhorse instrument – ‘view’ of the glare and planet will look like. They indicate that, at first light, GMTIFS should allow for the direct imaging of planets that are 10–100 times fainter and twice as close as current dedicated planets finders allow. These simulations serve to inform the theoretical work as to what will actually be observable within the next decade (once GMTIFS comes online), and the results (that GMTIFS will give access to a previously unavailable parameter-space) also justify the expenditure on the project for this stage of the development.



**Presenter: Michael Frazer**

Have questions? Write them down here!

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# Unravelling the Chemical History and Evolution of Galaxies with Oxygen Abundances

## Cosmic Mysteries: Insights from Astrophysical Phenomena

Understanding how stars form and their connection to the chemical growth and evolution of galaxies is a fundamental area of astronomy. A critical quantity in this area is the abundance of heavy elements relative to hydrogen in the gas surrounding stars, known as the oxygen abundance. However, the oxygen abundance is challenging to accurately measure since different methods produce different results. This discrepancy limits our understanding of the true chemical composition of galaxies. To understand this discrepancy, we investigated the properties of star-forming regions in nearby dwarf galaxies and the Small Magellanic Cloud (SMC). We explored whether spatial variations in properties such as electron temperature and density contribute to the discrepancy, and derive maps and radial profiles for these quantities. We also derived maps and radial profiles for different methods of measuring oxygen abundance, which inform us of how chemical enrichment varies throughout galaxies. Finally, we investigated the correlation between different methods of measuring oxygen abundance, finding strong correlations between some methods and a weak or lack of correlation for others. These results ultimately provide insight on the complex nature of heavy element abundances which drive the chemical composition and evolution of galaxies.



**Presenter: Hin Yeung Chu**

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## Developing a Novel Measure of Cognitive Empathy

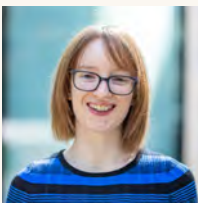
### From History to the Mind: Understanding Depression and Suicide, Cognitive Empathy and Politics of Memory

Cognitive empathy (CE) involves understanding another's perspective, mental state, intentions and/or emotions (Goodhew & Edwards, 2021), and is relevant to research in autism spectrum disorder (Baron-Cohen, 1989) and schizophrenia (Fretland et al., 2015). To date, CE has been measured using tasks including visual perspective-taking and adopting the perspectives of story characters.

Several of these measures, including story-based measures, have been criticised for unsuitability for use in adult or neurotypical populations (Quesque & Rossetti, 2020), leaving a gap in the literature for thorough, well-validated measures.

We conducted a literature review to identify strengths and weaknesses of current measures, and worked to develop a novel story-based measure intended to avoid most of these major criticisms.

Our measure consists of a series of short stories, each followed by questions requiring participants to make judgements about whether characters will take a given course of action. Some trials of our measure require the participant to suppress information they possess to effectively empathise with a story character, which we include as we believe it will assist in operationalising a key criterion for CE measures, known as the non-merging criterion (Quesque & Rossetti, 2020). This criterion is important as, without it, CE could simply involve assumptions about how others would behave based on one's own mental state or personal experience. The next stage of our project will involve testing and validation of our measure. If the results of pilot testing are promising, we hope our measure may be able to provide a new means of testing individual differences in CE in research or clinical settings, that may be more suitable than the historical measures which are still often in use.



**Presenters: Emily Begg,  
Tanya George, Sophia  
Hadjimichael**

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# The Re-Remembrance of History by East Asian States

## From History to the Mind: Understanding Depression and Suicide, Cognitive Empathy and Politics of Memory

The history of war, conflict, and colonialism is a complicated and multidimensional topic that has been the subject of consistent academic inquiry. However, due to a rise in nationalistic tendencies among key states in East Asia, scholars from Western institutions have shifted their focus from a purely Eurocentric conception of memory studies towards an accounting of how and why East Asian states have remembered and re-remembered their history. This essay employs a qualitative research design, endeavouring to test the veracity of different theoretical frameworks resulting from this new debate by applying them to sets of primary historical evidence and secondary sources analysis. This essay argues that East Asian states have constantly re-remembered the past to (1) achieve domestic political objectives via elite-led processes geared towards changing people’s thoughts and feelings toward history and (2) adjust their relations with other countries in response to changes in the external environment with the help of deliberate acts of emotional diplomacy. Case study one will demonstrate that elites in Taiwan and China have intentionally forged very different narratives of their common historical experiences and track the evolution of such ‘official memory’ over time. Case study two illustrates that re-remembering is not merely a top-down process but rather one that could be influenced by bottom-up or international factors, as exemplified by the difficult diplomatic relationship between Japan and South Korea. This essay has implications for memory politics by showcasing how memory is mobilized for political purposes and is grounded in both history and theory. However, it is, at best, a single frame of the increasingly complex and evolving field that is memory studies.



**Presenter: Liang-Yu Chen (Mina)**

Have questions? Write them down here!

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# The ERP technique: Using neuroscience to understand and treat depression

## From History to the Mind: Understanding Depression and Suicide, Cognitive Empathy and Politics of Memory

Major depressive disorder (MDD) is one of the most widespread, chronic, and co-occurring mental illnesses. However, its cause, presentation and course vary drastically between individuals. This is because a DSM-5 diagnosis of MDD requires any five of nine key symptoms (including low mood or inability to feel pleasure). The heterogeneity of MDD raises a key concern about treatment. That is, if the underlying basis and resulting symptoms are inconsistent, how can “one size fits all” interventions effectively reduce the severity and impact of depression? This problem highlights the importance of using objective measures to understand, diagnose and treat MDD. Current self-report approaches are inherently subjective and cannot elucidate the underlying neural mechanisms of the disorder. Therefore, the present research essay explores the utility of the event related potential (ERP) technique, which provides a non-invasive, objective, and sensitive measure of cognitive processes. This neuroimaging method employs scalp electrodes which measure electrical brain activity in response to a given stimulus. Specific patterns of activity are associated with underlying cognitive processes such as attention, memory, or perception. As such, ERP is a promising tool for documenting altered brain activity in MDD and identifying specific neural processes affected. Through an exploration and evaluation of ERP literature, I argue that a more nuanced understanding of depression can be gained, as well as potential neurophysiological biomarkers. While there are still many challenges to overcome in this field, the possibility of identifying ERP biomarkers of depression may lead to the development of personalised, symptom-specific treatments.



**Presenter: Sonali Varma**  
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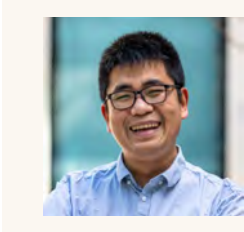
# What Have We Done and Should We Do Next? A Literature Review of Suicide Research in Indonesia

## From History to the Mind: Understanding Depression and Suicide, Cognitive Empathy and Politics of Memory

Suicide represents a major global public health concern, with developing nations like Indonesia shouldering the highest burden. Despite this, most research in this field primarily originates from developed countries. The World Health Organization (WHO) has stressed the significance of increasing suicide research in these regions. Fortunately, there have been increasing efforts to address this issue. A notable example of such endeavors is the nationwide survey by Liem et al. (2022), which investigated the predictors of suicide ideation in Indonesia. As a result, it becomes essential to evaluate the progress made in these countries by analyzing their contributions to the suicide literature.

This paper utilizes a narrative review to provide an overview of international research publications on suicide in Indonesia using the PubMed, PsycINFO, and Google Scholar databases. The focus on publications in highly ranked international journals corresponds to the Indonesian government’s policy to promote the research output in such outlets. Additionally, this review seeks to evaluate the contributions of the indigenous psychology approach to suicide research in Indonesia, reflecting the significant interest by Indonesian researchers in this particular perspective.

One of the main barriers to suicide research in Indonesia is the restricted publication output. This limitation has led to a considerable knowledge gap regarding the suicide phenomenon in the country. Moreover, there is a troubling trend of “parachute science” in Indonesia, where international researchers take advantage of collaborations with local researchers. As a result, Indonesian researchers have become dependent on global partnerships to conduct their studies, negatively impacting their research productivity. This issue undermines the autonomy of Indonesian researchers in producing their research outcomes.



**Presenter: Ferdi Djajadisastra**  
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# Improving Automatic Two-stage Knee Alignment Analysis Pipeline of Human Lower-limb X-ray Images with Implicit Shape Modelling

## Public Health and Medical Challenges: Leprosy risk factors, COVID-19 Response, Medical Imaging, and Alzheimer’s Disease

For improving the current two-stage automatic joint alignment analysis system, we investigate two factors that significantly influence its efficacy: (1) whether the mask restores the shape, especially the contour of the bones. (2) the precision of the post-processing algorithm in measuring crucial landmarks defining the mechanical axes of the lower limbs. To address these issues, we introduce implicit shape modelling of bones and leverage a multitask learning paradigm using learned signed distance functions (SDF). This approach effectively integrates bone contour information into the segmentation model. Secondly, we propose a robust landmark detection algorithm adhering to the medical definition of lower extremity mechanical axes. By precisely locating landmarks on bone masks predicted by the model, we achieve accurate hip-knee-ankle angle (HKAA) measurements. Additionally, we employ an adaptive sampling method to handle high-resolution input images with limited computational resources. Tremendous experiments demonstrate the superiority of our approach in terms of the quality of the mask contour and HKAA measurement accuracy across multiple datasets. These findings contribute to enhancing the performance and clinical applicability of image-based joint alignment systems.



**Presenter: Yunxiang Liu**  
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# Party or Pandemic? Assessing Governors' Impact on the COVID-19 Outbreak in the United States

## Public Health and Medical Challenges: Leprosy risk factors, COVID-19 Response, Medical Imaging, and Alzheimer's Disease

By enforcing public health measures through executive action, state governors played a major role in the fight against the COVID-19 pandemic in the United States (US). Importantly, scholars observe a partisan divide in these governors' responses; the governors affiliated to the Democratic Party are more likely and quicker to implement public health measures than those from the Republican Party. The empirical literature focuses predominantly on the effect of the governors' party affiliation on their likelihood of enacting public health policies. Extending this line of inquiry, this study examines whether the partisan divide in state-level public health policymaking can explain the pandemic's varying severity across the 50 US states. Specifically, it explores the relationship between the governors' party affiliation and their states' cumulative COVID-19 cases per 100,000 as of 31/08/2020 taken from the Centers for Disease Control and Prevention's COVID Data Tracker, while accounting for the states' population. Through a multivariate regression statistical model, this study finds that the governors' party affiliation does not have a significant impact on the severity of the COVID-19 pandemic in their states. The study then proposes two explanations for this finding, namely (1) the national party leadership's finite ability to discipline their state-level colleagues for deviating from the party's policy positions and (2) the undercounting of COVID-19 cases in Republican-leaning areas. Building on these results, this study emphasises the need for future research on subnational policymaking processes to consider the balance of power between national, state, and local party leaders.



**Presenter: Hin Yeung Chu**

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## Risk Factors of Leprosy in Children: A Systematic Literature Review

### Public Health and Medical Challenges: Leprosy risk factors, COVID-19 Response, Medical Imaging, and Alzheimer's Disease

In the worldwide neglected disease issues, leprosy stands out as public health concern with incidence rate 26 per million people annually. India, Brazil, and Indonesia are regions with the highest prevalence, including cases in children. Physical deformity and social stigma are reported as side effects in such cases. Purposes: The primary aim of this review is to assess the risk factors of leprosy in children, appraise the literature sources, and establish appropriate case-prevention recommendations. Methods: The preferred reporting items for systematic reviews and meta-analyses (PRISMA) were used to report this systematic review. Articles from 2010–2023 published in PubMed, Google Scholar, and the Web of Science were searched using the key terms “leprosy in children”, and “risk-associated leprosy in children”. The literature search was restricted to three regions with the highest number of cases (India, Brazil, and Indonesia). Inclusion criteria were epidemiological studies, risk factors for leprosy in children and leprosy-prevention strategies provided. Results: Of the total 323 papers screened, only nine studies were included in the qualitative synthesis. These studies reported several risk factors associated with leprosy in children, such as household contact, contact duration, endemic regions, socioeconomic status, parental attitude, and uncontrolled factors (gender, age). More than half (56%) of articles reported household contact as a significant risk factor for transmitting leprosy to children (Odds Ratio ranged 1.48–35.71). Prevent strategic recommendations provided, including scaling up active case detection or surveillance, combating social stigma through campaigns, and investing in ongoing research. However, the studies included in the synthesis have limitations, including a low sample size, subject selection bias, and confounder variables. Conclusions: This systematic review identifies risk factors leprosy in children, of which household contact is highly correlated. Routine contact tracing, epidemiologic surveillance, and continued research should be priority for prevention strategies.



**Presenter: Arif Sujagat**

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# The many pathogenesis hypotheses of Alzheimer’s Disease: Can we obtain a comprehensive understanding?

## Public Health and Medical Challenges: Leprosy risk factors, COVID-19 Response, Medical Imaging, and Alzheimer’s Disease

Dementia is a group of diseases characterised by symptoms that affect one’s cognitive, behavioural, neuropsychological and, occasionally, motor abilities. The most common form of dementia is Alzheimer’s disease (AD). The full pathogenesis of AD is still debatable and not comprehensively understood. This means that we do not currently understand why and how AD develops in the body. If we understand how AD develops, we can progress preventative measures and medical treatments. Several hypotheses have been developed to try and explain the pathogenesis of AD. These current pathogenesis hypotheses have been researched to varying degrees in human and non-human animals. These hypotheses are also at varying stages of therapeutic development. OBJECTIVES/METHOD: I aimed to investigate the current hypotheses, by undertaking a critical review of the literature. I then worked to provide clarity on the hypotheses that do exist; outlining what evidence exists to support or debunk each one, and what the future of this research could look like. RESULTS/CONCLUSION: Through my investigation of the literature, I show that not all hypotheses can equally explain the initiation of AD. Rather, the results suggest that combining aspects from six different hypotheses could provide a more accurate description of AD pathogenesis. My research has shown that AD is more complicated than any one hypothesis or therapeutic option hoped it would be; though that is science and that is the human body – fantastically complex. This insight could help inform more suitable therapeutic options that target a range of pathogenesis pathways and inform new ways of thinking about AD prevention. Finally, research suggests that early onset Alzheimer’s disease (EOAD) may have pathogenesis factors that differ from the late onset Alzheimer’s disease (LOAD) pathogenesis narrative. As most research in the literature has focused on LOAD, future research would benefit from further investigations into EOAD pathogenesis.



**Presenter: Sophie Hope**  
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# How Does Moral Reframing Affect Voting Behaviour?

## Democracy in Action: Tax Cuts, Compulsory Voting, and Moral Framing in Political Decision-Making

Many disagreements in politics are characterised by differences in understanding of moral right and wrong. Moral reframing is a persuasive technique that takes these differences into account. It involves taking a political position that members of a group would not normally support and framing it in terms of moral values they find important. Research finds that moral reframing consistently makes left-wing individuals more supportive of right-wing political positions (such as increasing military spending) and right-wing individuals more supportive of left-wing political positions (such as pro-environmental policies, same-sex marriage, and immigration). However, little research investigates if these changes in self-reported political attitudes translate into real-world political behaviour. Therefore, this paper investigates the question, “how does moral reframing affect voting behaviour?” The importance being that political parties may use moral reframing during election campaigns to secure more votes. This paper uses the Moral Foundations Dictionary to quantitatively analyse the federal election campaign launch speeches of the two major political parties in Australia: the Australian Labor Party and the Liberal Party of Australia. Using linear regression analysis, we find that when left-wing political parties increase their use of moral words typically associated with right-wing moral concerns, they receive a higher vote share. However, we find no statistically significant relationship between moral reframing and vote share for right-wing parties. This implies that, at least for left-wing political parties, moral reframing may be an effective campaign strategy.



**Presenter: Angus Padley**

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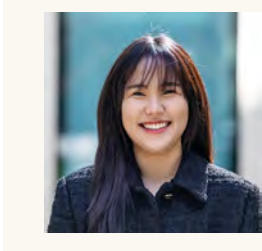
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# Is Compulsory Voting Required for a Just Voting System

## Democracy in Action: Tax Cuts, Compulsory Voting, and Moral Framing in Political Decision-Making

The right to vote is often cited in discussing liberty and equality. John Rawls highlighted the equal right to vote, presuming justice as fairness in his book, “A Theory of Justice.” Since the first universal suffrage was granted in 1755, the voting form has diversified. Compulsory voting is one of them, which happens in 21 countries as of January 2023. By referring to Lisa Hill’s arguments about the reasonableness of compulsory voting, I explore whether compulsory voting is required for a just voting system based on Rawls’s theory. The issue is examined by answering three questions via Rawls and Hill’s arguments: Does compulsory voting protect democratic, liberal, and moral values? Does it remove the barriers to voting by abstainers? Finally, does it make voting a more ‘rational’ activity?

I conclude that Rawls’s “A Theory of Justice” is limited in assessing whether compulsory voting is a just voting system. It is suggested that compulsory voting ensures the majority will, which provides inclusive political participation and socially disadvantaged’s rights under the state’s provision. Yet, his theory has three critical limitations. First, collecting electorates’ information via compulsory voting opposes the veil of ignorance, his strongly advocated device for decision-making without knowing personal circumstances. Fundamentally, voting is challenging to pursue a veil of ignorance as voting behaviour reflects individual situations. Thus, removing personal conditions from consideration is impractical for the government to correct social injustice. Second, the ignorance of innate ability depreciates the benefit of compulsory voting, which exposes the bulk of the population’s interests and preferences. Last, the result from compulsory voting may not reflect the most socially disadvantaged’s interest, contradicting his expectation.



**Presenter: Hannah Heewon Seo**  
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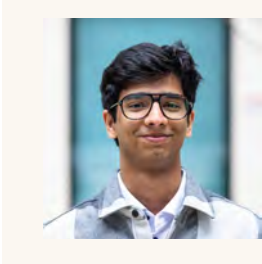
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# On Beach-houses and Savings: Exploring The Distributional Impacts of Stage 3 Tax Cuts

## Democracy in Action: Tax Cuts, Compulsory Voting, and Moral Framing in Political Decision-Making

The third stage in the Morrison Government’s legislated tax plan takes effect in July 2024. The floor of the highest tax bracket will be raised from \$180,001 to \$200,001 and the bracket between \$120,001 and \$180,000 will be removed. A new tax bracket between \$45,001 and \$200,000, taxed at a lower rate, will be introduced. Since tax policy plays a significant role in the financial plans of individuals and businesses alike, consideration of who the financial winners and losers are, and what the gains and costs are, are crucial. The purpose of this study is to explore the spatial distribution of the impacts of the scheduled Stage 3 tax cuts in Australia and explore its implications at a high level. A microsimulation of the tax-paying Australian population was developed. Aggregate statistics of ABS (Australian Bureau of Statistics) Statistical Area units (SA4) showed stark differences in how various regions were impacted. The Stage 3 tax cuts were found to disproportionately benefit high income earners. Ergo, higher gains (savings) were seen in higher income and consequently higher wealth regions – inner city locations, high income regional locations and mining centers. An inquiry into the skewed nature of these impacts can motivate a better understanding of the likely financial impacts on households in Australia and how policy may be altered to improve equity in the future.



**Presenter: Sreehari Pulickamadhom Sreedhar**  
Have questions? Write them down here!

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# Can Multiculturalism and Feminism Co-exist?: Re-examining Okin’s (1999) Western Feminism

## Feminist Expressions: Reshaping Narratives in Culture, Literature and Art

Multiculturalism aims to provide cultural minorities with equal rights and opportunities within a state. A central theoretical question is whether states should extend special rights to minorities in order to preserve their cultures. Prominent feminist scholar, Okin (1999), argues that preserving cultures may mean protecting cultural practices and traditions that oppress women. Okin (1999) highlights that there are inherent tensions between the goals of feminism and multiculturalism. In this paper, I analyse the evidence and logic Okin (1999) uses for her claims. I draw on the perspectives of Third-World Feminists (Mohanty 1988; Herr 2004), who aim to critique the ways Western Feminists conceptualize women in the “Third-World.” I argue that Okin’s (1999) claim relies on a static view of culture and a victimised portrayal of minority women. The view that multiculturalism and feminism inevitably conflict is theoretically limiting as this view undermines the autonomy of both minorities and women. Instead, I propose a normative argument for how to consider the tensions between multiculturalism and feminism. I argue that the focus should be on how feminism and multiculturalism can mutually enrich each other. This theoretical approach is important because it can allow for diverse expressions of feminism and culture that would otherwise be limited to Western perspectives. By extending special rights to preserve cultures, minority women can create their own versions of feminism. While there may be potential conflicts in waiting for both values to benefit each other, I suggest that the trade-offs would be worth the goals of feminism and multiculturalism.



**Presenter: Arami Chrystal**

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# The Abduction of Persephone in Modern Feminist Literature

## Feminist Expressions: Reshaping Narratives in Culture, Literature and Art

Myths serve not only as a source of entertainment but also as a reflection of societal values and moral lessons. The modern retelling of the Greek mythology of Persephone is an example of how myths have been influenced to align with societal values. While the original myth portrays Persephone as a victim of abduction, contemporary feminist authors often portray her as a powerful, independent woman responsible for her own decisions. However, the lack of comparative analysis of modern feminist retellings of the myth makes it difficult to establish common themes, the interest of feminist writers in their reinterpretation and the impact of such works on modern readers. This presentation aims to consider the potential reasoning behind how and why feminist authors choose to reinterpret Persephone by analysing and comparing Rachel Zucker’s *Eating in the Underworld* (2003) and Rachel Smythe’s *Lore Olympus* (2018). The findings suggest that, although different in mediums, these reinterpretations contribute to broader conversation within feminist literature, subverting societal norms and advocating for gender equality. Focusing on the themes of agency, identity, and transformation, modern reinterpretations provide Persephone with control over her narrative, offering a new perspective and challenging traditional gender roles and power dynamics. Whereas the original purpose of the lore was used to suppress women, the modern interpretation of Persephone signifies her as an autonomous, multidimensional individual, thus aspires modern women and feminists to be resilient and flexible in the way in which they approach life. Overall, the presentation attempts to reconsider how the reinterpretation of myths may impact readers’ understanding of the original narratives and whether it perpetuates certain stereotypes or power dynamics in modern society.



**Presenter: Minh-Chau Ho**  
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# The Use of Hysterical Body in Louise Bourgeois' Works

## Feminist Expressions: Reshaping Narratives in Culture, Literature and Art

This essay examines the use of hysterical body in the works of Louise Bourgeois, one of the most original and influential artists of the 20th century. Hysteria was historically viewed as a neurosis only affecting women. Symptoms of hysteria ranged from physiological, such as convulsion, to psychological distress. The 'hysterical body' was first popularised in the nineteenth-century Europe, when the French neurologist Jean Martin Charcot published photographs of his hysterical female patients. The photographs captured how the hysterical patients culminated in the highly unnatural arched posture on the hospital beds during convulsion. By surveying literature and examining the artworks, I conclude that there are four reasons why Bourgeois implemented the hysterical body in her art. First, the hysterical body represented her own depression, strong feelings, and emotions. Second, cutting the hysterical body had a symbolic meaning that Bourgeois overcame her depression, since cutting sculptures required concentration and remaining in control of herself. Third, as a firm believer of the Freudian idea of recalling one's trauma to eliminate mental distresses, Bourgeois obsessively expressed her traumatic experience and her depression through her art. Fourth, the arc-in-circle posture of the hysterical body symbolised the intensity and tension in Bourgeois' emotions and her relationship with her parents. I argue that understanding the meanings of the hysterical body in Bourgeois' works is crucial in comprehending Bourgeois' art and artistic practice. Not only that the hysterical body was a recurring motif in Bourgeois works, but also because coping with mental distress was the primary motivation for Bourgeois to create art.



**Presenter: Jasmine Li**

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# See You Next Year! Until Then...

## **Immersia 2023**

Tuesday 5 September – Saturday 30 September

SRC are proud to be supporting Immersia 2023, a month-long festival to celebrate, through immersive events and activities, the diversity and rich cultures of Asia and the Pacific. In conjunction with the Immersia host, the School of Culture, History & Language at ANU, our program includes live cultural performances, a mindfulness workshop and a keynote. Find out more: [immersia.anu.edu.au](https://immersia.anu.edu.au)





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