

*RESEARCH  
INTERNSHIP  
PROGRAM  
PROJECTS FOR  
2018/19*

*School of Health Sciences*

Thank you for your interest in the School of Health Sciences Research Internship Program. This booklet provides a description of all the projects being offered in the Program for 2018-2019. If you have further questions about any of the projects you might consider emailing the project supervisor to discuss the project.

If you wish to apply to be an intern on one of the projects listed here please complete the online application form available from the Internship website.

Please note that students need to have completed between 12 and 20 units of study to be eligible for the internship program. In addition, some projects list specific skills as prerequisites or desirable for interns. If you are unsure if you are eligible please contact Dr Julian Oldmeadow ([joldmeadow@swin.edu.au](mailto:joldmeadow@swin.edu.au)) to discuss.

If you have general questions about the internships please contact Dr Julian Oldmeadow ([joldmeadow@swin.edu.au](mailto:joldmeadow@swin.edu.au))

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## Improving the skills and capabilities of mental health nurses to manage the physical health care needs for patients in a mental health setting

**Supervisor(s):** Loretta Garvey Michael Olasoji Georgina Willetts

### **Description:**

Evidence suggests that for patients with severe mental health illness the predominant cause of morbidity and mortality is due to physical health problems related to modifiable risk factors (Parks, Svendsen, Singer, Foti, & Mauer, 2006, Vreeland, 2007). A severe mental illness is inclusive of 'schizophrenia, bipolar disorder, schizoaffective disorder and major depressive disorder (De Hert et al, 2011, p52). Whilst this problem is well documented there is currently a paucity of literature to identify what if any actions are being supported to reduce the high incidence and inequality of morbidity and mortality with the general population. In a nation-wide study of mental health nurses in the public health sector in Australia, it was identified that nurses in mental health services had a high level of interest for training in physical health however, a much lower proportion actually independently undertook any training (Happell, Platania-Phung, & Scott, 2013). Thus, identifying a need for training to specifically target the gap in skills of mental health nurses in providing care to meet the physical health care needs for patients in both public and private mental health settings.

This project has two aims: (1) to identify the gaps in the capabilities of mental health nurses in managing physical health needs in public and private mental health settings. This will be achieved in Phase 1 through a scoping review, interview with nursing staff, development, pilot and implement of survey tool. The interview questions will be developed around the expected physical health management required for mental health patients, inclusive of acute presentations and health promotion. The interviews aim to gather data in relation to the perceived gaps in the mental health nurses' skills in relation to management of physical health presentation in the mental health setting. The subsequent survey will ascertain participants demographics as well as key knowledge, skills (capabilities) and attitude. Aim (2) is to implement an educational package to improve the capabilities of mental health nurses in managing physical health needs in public and private mental health settings - Phase 2 & 3.

The summer internship will be involved in the first part of Phase 1 of this project which will include a scoping review of the literature and development of interview protocol.

### **What the project involves:**

Scoping review of the current literature and the development of interview protocol

**Specific skills required to do the internship?** No

## A multi-site study of cognitive mechanisms associated with proneness to hallucinations

**Supervisor(s):** Susan Rossell Wei Lin Toh

**Description:**

Hallucinations refer to sensory experiences, typically manifesting as auditory or visual imagery, that occur in the absence of corresponding external stimuli. In other words, a person may hear noises or speech, or see images or scenes that others do not, and are actually not present in reality. These unusual sensory experiences are typically encountered in a range of psychiatric disorders, for instance, commonly in schizophrenia. A number of explanatory theories exist, implicating a wide range of psychological processes. In the current study, we are interested in mechanisms involving lapses in reality monitoring (i.e. the inability to remember and assign the source of external events) and cognitive control (i.e. indexed by the ability to filter out unwanted sensory information). In addition, hallucinations have been theorised to exist on a continuum, ranging from mild, unusual sensory experiences in the general population to full-blown hallucinations seen in psychosis. By comparing healthy controls with high versus low hallucination proneness, we aim to investigate whether deficits in reality monitoring and cognitive control identified in clinical samples may be replicated in the former group, but perhaps to a lesser extent. This will allow a better understanding of how such deficits may develop and exacerbate over time. Participants for this study will comprise individuals from the general population, aged from 18 to 65 years, and a native English speaker, with corrected hearing or vision (if necessary). The lower age limit was set to ensure valid capacity to provide informed consent, and the upper age limit corresponds to typical significant cognitive decline observed due to aging. Participants will be sourced via a variety of recruitment avenues. Following a brief telephone screen to verify eligibility, an appointment will be made for a single, face-to-face interview session at Swinburne University.

The student working on this project will learn the assessment material and help with the collection of data. The assessment is via an on-line platform that has been set up by my international collaborators in the UK. This project forms one of ten international sites, all interested in improving our understanding of hallucinations.

**What the project involves:**

Learn assessment package to address study research questions

**Specific skills required to do the internship?** NA

## Hippocampal-dependent spatial learning in elderly individuals with subjective memory

**Supervisor(s):** Brian Cornwell Andrew Scholey David White

### **Description:**

This project aims to determine whether hippocampal-dependent spatial learning is impaired in elderly individuals that report having subjective memory problems. Whole-head magnetoencephalography (MEG) recordings were recorded in elderly individuals as they performed a virtual reality navigation task. In the task, which is modeled after a popular rodent task for measuring hippocampal function, participants acquire knowledge of the spatial layout of the virtual environment that can be subsequently assessed by their performance in finding a hidden goal location after training.

In addition to analyzing differences in spatial navigation performance between those reporting memory problems (vs. those not reporting memory problems), MEG data will be analyzed to address potential group differences in hippocampal engagement in the task. The work involved in the project is principally execution of MEG source analyses using adaptive beamformer methods to reconstruct hippocampal theta oscillations during periods of active spatial navigation. These methods will be implemented in Fieldtrip, a Matlab-based toolbox for bioelectromagnetic data analyses. Accordingly, the successful intern should have some experience with Matlab scripting/programming and a basic knowledge of MEG source imaging techniques.

Stefanie Evas recently completed the Neuroimaging Unit (NEU20007), which covers the relevant background material, and showed outstanding potential in gaining practical knowledge of neuroimaging analyses. She has also conveyed keen interest in being involved in this particular project, and would therefore be the ideal candidate for this internship.

### **What the project involves:**

Time-frequency analyses of MEG time series data; MRI-based volume conduction modeling; Adaptive beamformer source analyses; Generating figures/plots summarizing results

**Specific skills required to do the internship?** basic Matlab scripting/programming, general background knowledge of MEG forward and inverse modeling

## Ethical dilemmas and information sharing among Australian secondary school wellbeing staff

**Supervisor(s):** Monica Thielking Jason Skues

**Description:**

The project is being led by Dr Monica Thielking from Swinburne University who recently published the Handbook of Australian School Psychology: Integrating International Research, Practice and Policy and last year delivered two webinars for the Australian Psychological Society on ethical decision making for school psychologists. Notably, Dr Thielking published a paper recently with Dr Jason Skues (co-supervisor) and Monica's summer internship student titled: Collaborative Practices Among Australian School Psychologists, Guidance Officers and School Counsellors: Important Lessons for School Psychological Practice in the Journal of Educational and Developmental Psychology. It is this research topic, i.e., collaboration, supervision and professional dilemmas for student wellbeing staff and how to work more effectively with other professionals and teams, that this project will again address.

Recently in June 2018, Monica delivered a keynote address to the CSSS Conference, and gained ethics approval to survey student wellbeing staff from Catholic secondary schools on their experiences and perceptions of collaboration, supervision and professional/ethical dilemmas. Data is now collected, and the internship will involve:

- 1) data analysis
- 2) literature review
- 3) contribution to a manuscript

Above the research training received, the intern student will be a third author on the publication resulting from this work.

**What the project involves:**

data analysis, literature review, contribution to a manuscript

**Specific skills required to do the internship?** Statistical analysis skills (supervision provided):

frequency  
correlation  
T-tests  
Manova

Thematic analysis of open-ended questions

## An improved smartphone based blood pressure monitoring

**Supervisor(s):** A/Professor Bee Theng Dr Amirul Islam Professor Denny Meyer

### **Description:**

Chandrasekhar et al. (2018) developed a smartphone based blood pressure monitoring prototype. A designated casing consists of sensors is designed to be placed on the back of the Android smartphone to measure blood pressure directly from the finger, eliminating the need for any specialized equipment. Conveniently, a user may place his/her finger on the pressure sensor, a chart is displayed on the phone to guide the user to gradually increase the applied force. Meanwhile, another sensor measures blood volume by illuminating the finger and detecting changes in how light is absorbed, then this information is used to determine blood pressure. The researchers tested the prototype with 30 participants, and found it has good usability. Presently, the device was not as precise as an arm monitor, the accuracy could be improved by taking multiple measurements over time.

With the availability of latest low-end to mid-end smartphones compacted with good processor and sensors needed to transform them into portable blood pressure monitors and provides these benefits:

1. Thus, blood pressure measurement using an inflatable cuff that presses down on an artery in the arm while a device records the blood flow may be discarded. It saves costs and times, and reduces the complexity.
2. This prototype may help to monitor and alert the users on the high blood pressure can lead to heart disease and stroke which often goes undetected and untreated via the smartphone.
3. This new technology puts a simple blood pressure monitor in everyone's pocket, measurement and calculation may be done ubiquitously.
4. Useful in remote areas where access to cuff-based devices is limited, but where smartphones are common

Thus, this summer internship project aims to build an improved prototype of smartphone based blood pressure monitoring which provides better accuracy in measuring the blood pressure. An evaluation may be done with volunteers who are more than 18 years if time permits. In return, a prototype, poster and report will be delivered to SUT FHAD project collaborator.

### **What the project involves:**

The student will build an improved prototype of smartphone based blood pressure monitoring which provides better accuracy in measuring the blood pressure.

**Specific skills required to do the internship?** programming skills and graphic design would be beneficial

## A systematic review of self-administered medication adherence behaviours in people with multiple sclerosis

**Supervisor(s):** Dr Lisa Grech Prof Penelope Schofield

### **Description:**

Annually, in Australia, an estimated 230,000 medication-related hospital admissions cost Australian taxpayers \$1.2 billion. Medical claims research shows that ~30-50% of people with MS who commence self-injectable disease modifying therapy (DMT) discontinue within 2-years and very few switch to an alternative DMT. A review of 24 studies found self-injected DMT adherence rates between 41-88%. Suboptimal medication adherence (<80%) has been associated with subsequent discontinuation and there is a consistent relationship between suboptimal adherence or discontinuation and longer treatment duration. The introduction of oral DMTs has not resolved the problem. A study of adherence and persistence to three DMTs over one year found between 24.6-46.9% of patients had adherence levels <80% and discontinuation rate was between 25.6-50.3%.

There is a requirement for an updated systematic review about medication adherence to ) in MS. The two reviews assessing medication adherence for DMTs in MS included studies published until October 2008 and May 2011, 3 and did not include studies related to oral DMTs, the first of which was introduced in 2010. These reviews are now obsolete given the changed landscape of DMT administration options in MS.

This project is to undertake a systematic review of medication adherence and persistence of DMTs in people with MS that will be registered with PROSPERO. The review will include assessment of studies reporting adherence and persistent levels of all self-administered DMTs in MS, with a focus on validity of medication adherence measure used (self-report or objective) and study duration. The review will include assessment of medication adherence and persistence research for quality and bias in accordance with STROBE and Cochrane guidelines. The systematic review will be reported using PRISMA reporting guidelines.

Data may include self-reported or objectively obtained data. All searches will be conducted with expert consultation from an experienced catalogue librarian who will also assist with removal of duplicates, non-English abstracts and abstracts grossly out of scope of the search. Data will be extracted and synthesised for development of a systematic review that will be submitted for peer review publication. The intern will have their name listed as an author on the publication.

### **What the project involves:**

Drafting protocol for registration, data search, data extraction, data synthesis, assistance with literature review drafting

**Specific skills required to do the internship?** Intern requires an understanding of how to search for and read evidence-based scientific literature. Knowledge of how to use endnote would be advantageous.

## A review of non-pharmacological, health and lifestyle behaviour guidelines for people with multiple sclerosis.

**Supervisor(s):** Dr Lisa Grech Dr Claudia Marck

**Description:**

People with multiple sclerosis may seek information about evidence-based non-pharmacological interventions, health and lifestyle changes to self-manage their disease, e.g. in a survey of 600 people with MS, more than 90% expressed interest in diet modification to manage their MS (Brenton & Goldman, 2016).

Armed with self-sought information gained from the internet, patients may consult members of their treating medical team (e.g., neurologist; MS nurse) for advice and guidance about the benefits and harms associated with less-conventional therapies and lifestyle strategies they hope may provide them with the best possible long-term disease outcomes. Therefore, it is important that MS healthcare professionals have access to available evidence-based guidelines about how to respond ensuring they are providing evidence-based assistance or advising patients about the absence of evidence for a non-pharmacological interventions, health and lifestyle changes such as cannabis, nutrition, smoking or exercise.

This intern project will undertake a literature search to identify published guidelines and gaps about advice and treatment of non-pharmacological, health and lifestyle modifications. The outcome of this will be to develop a report identifying guidelines and gaps requiring further research to ensure healthcare professionals are equip with information required to educate and support people with MS self-manage their disease in line with current evidence.

**What the project involves:**

literature searching and retrieval, collating information, development of a report

**Specific skills required to do the internship?** No, although endnote would be advantageous.

## Elders at Ease - a program for reducing depression, anxiety and suicide ideation in older adults living in residential aged care settings

**Supervisor(s):** Sunil Bhar

**Description:**

Nearly 250 000 older adults living permanently in residential aged care settings. Approximately 40 - 60% of these suffer for significant levels of depression, anxiety or suicide ideation. However, mental health care is poor in such settings, as there is a shortage of adequately trained staff to recognise symptoms of poor mental health, and to attend to such care needs. ELATE is a novel program designed to improve depression, anxiety and suicide ideation in such settings. The program has been running for nearly 8 years and data have been collected over that time on outcomes of clients who have received ELATE. Data also are available on the satisfaction of residents receiving this program. The aim of the this project is to examine the outcomes of ELATE over the last 8 years, using a data set.

**What the project involves:**

Data entering, data analysis, literature review and writing up results,

**Specific skills required to do the internship?** Knowledge in SPSS, ability to independently search the literature, a high standard of writing skills

## Systematic Review of Effective Training Frameworks for Clinicians.

**Supervisor(s):** Dr Sharnel Perera Dr Lisa Grech

### **Description:**

This project is suitable for students wanting to gain experience in conducting and writing systematic reviews for publication in peer-reviewed journals.

This project is nested within a larger intervention trial (SAMSON) aimed at pilot-testing the clinical feasibility and acceptability of a nurse-supported mobile health (m-health) intervention to increase oral medication adherence and reduce errors in people with chronic illness. The trial involves the development of a nurse training program, with the content and delivery of this program reflecting evidence-based recommendations from prior research. While there have been systematic reviews on specialised training modules targeting specific learning objectives, a general systematic review detailing global recommendations for effective delivery and optimal learning has not been conducted since 2011. Additionally, a brief review of the research shows inconsistent recommendations on what the most effective aspects of a training program are (e.g. duration, method of delivery, assessment, etc.), that are relevant to clinicians who work with patients (e.g. training on how to deliver difficult information, effective interactions with patients, etc.). While there are studies that have highlighted a number of effective training strategies (e.g. some face-to-face delivery, measurement of prior learning, etc.), a synthesis and summary of this research is needed in order to collate information and summarise the global evidence-based recommendations.

This systematic review will guide the development of the nurse training framework which will be utilised in the SAMSON m-health intervention. This project will systematically review, assess research bias, and synthesise previously published literature (including grey literature) focusing on different training frameworks, with a goal to identify optimal training strategies. This systematic review will be registered with PROSPERO and follow Preferred Reporting Items for Systematic Reviews (PRISMA) guidelines.

The intern will have the opportunity and recognition as a co-author on the manuscript for publication.

### **What the project involves:**

- Conduct a systematic review/literature search (including grey literature) using online databases, including tasks relating to determining eligibility of past studies to be included in the systematic review. This involves an initial scoping of literature, development of key words, selection of studies, and the construction of PRISMA flow diagram of results. Contribute towards manuscript write-up.
- Consult with supervisors and other project staff.
- Consult with University librarians as necessary.
- Training in using Endnote.
- Draft development of poster and publication.

**Specific skills required to do the internship?** Writing skills.

## ‘Going digital’: Online pilot studies of belief formation and cognitive flexibility

**Supervisor(s):** Drs Wei Lin Toh/Andrea Phillipou Dr Erica Neill Dr Eric Tan Prof Susan Rossell

### **Description:**

The Cognitive Neuropsychiatry Lab headed by Prof Susan Rossell is aimed at understanding the cognitive and neurobiological processes involved in psychosis and body image disorders. This project will involve setting up two online pilot studies examining i) the formation of aberrant beliefs and ii) differences in cognitive flexibility, across a range of psychiatric disorders. This will be carried out on the Qualtrics platform supported by Swinburne University, where we already have a wide range of typical clinical measures (e.g. anxiety, mood, psychotic symptoms) established in digital format. We are seeking two motivated and ‘tech savvy’ Psychology undergraduates to migrate/ amalgamate a comprehensive assessment battery, including self-report questionnaires and/or tasks, specifically targeting discrete research questions, in line with the above. Depending on the specific project, you could also develop one or two secondary research questions you wish to further investigate. In the pilot test phase, you will recruit at least ten participants each to take part in your study. Following this, you will be guided through a preliminary analysis of the collected data using a statistical software package, such as SPSS. This will form the basis of a poster you will prepare detailing your internship experiences as well as any notable study findings. As we are a busy and active multidisciplinary lab, you will be jointly supervised by the four ECRs (listed above), and overseen by our lab head. You will be given the chance to experience what it would be like to pursue Honours or HDR research in a similar lab setting. Depending on availability and level of interest, related activities could include attendance at regular lab meetings and/or journal clubs, or even the opportunity to sit in on a ‘real-life’ assessment session.

### **What the project involves:**

Familiarisation with clinical measures; participant recruitment and assessment; analyses of collected data

**Specific skills required to do the internship?** Interest/knowledge in psychosis and body image disorders, basic familiarity with software packages, such as Qualtrics and SPSS

## Scene interpretation for people with low vision

**Supervisor(s):** Denny Meyer Bee Theng Lau

### **Description:**

People with low vision can only see with little light perception or with blurred vision, depending on their diagnosis and the severity of their vision loss. It is therefore useful for them to have a scene interpreter to describe what is around them when they are walking. However, the only scene interpreter available utilizes smart glasses which have to be worn all the time, and may be uncomfortable due to the heat and a nuisance (Owano 2017). The descriptions are supplied by trained agents who see the world through the smart glass worn by the person with low vision and these agents respond to requests for information from the users. These agents, work at an especially-designed dashboard that efficiently connects to information supplied via the video camera, GPS, and other sources of data.

With the capability of a smartphone, real time scene interpretation is made possible through image processing and image recognition. Recently, Moses & John Olafenwa built ImageAI which supports a list of state-of-the-art Machine Learning algorithms for image processing, custom image prediction, object detection, video detection, video object tracking and training for image identification. It supports 4 different Machine Learning algorithms trained on the ImageNet-1000 dataset, and object detection, video detection and object tracking using RetinaNet, YOLOv3 and TinyYOLOv3 trained on COCO dataset. For example buses, bicycles, people and cars can all be identified using this method.

This summer internship project aims to develop a mobile app to interpret street scenes using the ImageAI library. With this, the users may utilize their smartphone with its built-in camera(s) to work as a handheld scene recognizer when they travel alone. There are factors that need to be considered such as real time walking speed and lighting, that may affect the quality of the images or video frames, which may affect the quality of scene interpretation. The benefits of this prototype for people with low vision include:

- Low cost - No additional investment on extra hardware
- Comfort - No additional wearable, use whenever needed
- Low maintenance - No extra maintenance for additional hardware
- Ease of use - Embedded in the phone, low complexity

### **What the project involves:**

develop a mobile app to interpret the street scene using the ImageAI library. With this, the users may utilize the smartphone with its built-in camera(s) to work as a handheld scene recognizer when they travel alone

**Specific skills required to do the internship?** programming skills

## Who uses personal safety apps? Understanding the predictors and perceptions of personal safety app use.

**Supervisor(s):** Dr Jason Skues Lucy Maxwell

### **Description:**

Given the increasing rates of Public Stranger Violence (PSV) in the community and the known negative physical, psychological and social outcomes for those impacted by violence, there is a need for more research into how we can reduce vulnerability to such victimisation. One relatively recent and increasingly popular approach to reduce vulnerability has been to develop mobile phone apps that provide users with information and strategies about maintaining their personal safety. Yet there has very little, if any, research on what predicts the use of personal safety apps as well as how users perceive the usefulness of such apps. In one of the few studies to address the topic of personal safety apps, Maxwell, Sanders, Skues and Wise (submitted for review) indicated that many of the features of such apps may not be useful in preventing instances of PSV. Indeed, whilst personal safety apps may be useful in reducing fear of crime among users, some of the features of these safety apps provide information that may actually increase users' vulnerability to PSV. Therefore, given the increasing uptake of personal safety apps by individuals to increase their personal safety, there is a clear need for research to determine what predicts the use of personal safety apps as well as how users perceive the usefulness of such apps.

### **What the project involves:**

The student will assist in developing an SPSS data file, cleaning data and conducting preliminary analyses. The student will also draft sections of a manuscript for a peer-reviewed journal.

**Specific skills required to do the internship?** They will need to be competent in using SPSS to help clean the data file and to run some preliminary analyses. The student will need to be able to manage their time effectively to remain on target with the proposed research plan, and communicate clearly and concisely in writing. The student needs to be able to write up the relevant sections of a research paper.

## Forged by Fire: Development of a trauma-informed community screening package

**Supervisor(s):** Carolynne White Danielle Williamson Jessica Mackelprang

### **Description:**

Forged by Fire is a documentary film directed by Andrew Garton that focuses on the creation of a memorial by artists, blacksmiths and community members following the Black Saturday bushfires in Victoria in 2009. This project will develop an evidence-based package of resources for community health services to assist in hosting screenings of the film in early 2019. The package will support community screenings that are trauma-informed and sensitive to the possible exposure of audience members to the Black Saturday bushfires.

The aim of this research project is to:

- Investigate best practices in supporting community members to process trauma in larger-scale, public events.
- Identify principles of trauma-sensitive practice that apply to this type of event and potentially support posttraumatic growth.
- Develop informational resources (e.g., "How to" guide) for community health services involved in hosting film screenings.
- Develop resources that are easily understood and practical, to provide to people attending the screenings.

### **What the project involves:**

- Work in collaboration with the film-maker, Andrew Garton, and other community services. Review of relevant background literature.
- Write the resources for community health services and community members.
- Design a plan for the screenings that is informed by research.
- Identify possible opportunities for promoting posttraumatic growth.
- Identify relevant support services that could assist in the screenings.
- Preparation of the poster.
- Experience developing a proposal for future research for future

**Specific skills required to do the internship?** The intern needs skill in psychology and health communication. Strong research and communication skills. An interest in the study of trauma.

## Investigation of Gender in Authorship of Papers Published in High-Impact Psychology Journals

**Supervisor(s):** Jessica Mackelprang Catherine Orr

**Description:**

The proportion of female psychologists has risen steadily in recent decades and there are now more women in the psychology workforce than men. For example, in the United States and Australia, women comprise 68.3% and 79.8% of the active psychology workforce (American Psychological Association, 2015; Psychology Board of Australia, 2018). However, women in academia are underrepresented at the associate professor and full professor level and only 18% of editors of journals published by the American Psychological Association are female (American Psychological Association - Committee on Women in Psychology, 2017). Securing research funding and publishing in high-impact journals are key metrics that are considered in academic promotion. Gender disparities in publication in leading journals has been observed in medicine (e.g., pediatrics; Silver et al., 2018), but to our knowledge, this has not been investigated in psychology. This cross-sectional study will investigate the prevalence of female first and senior authorship (i.e., last author) in selected high-impact journals in psychology. The gender breakdown of editorial boards in selected journals will also be examined, as will the congruence between the gender of first and last author.

**What the project involves:**

Review of relevant background literature; setting up a database in excel; extracting and coding data from articles that meet study inclusion criteria; assisting with data analysis and writing up findings; preparation of a poster

**Specific skills required to do the internship?** No specific skills are necessary for this project, though adeptness with Excel and strong orientation to detail will be valuable for success in this role.

## Emotional and motivational factors influencing risk taking behaviour

**Supervisor(s):** Catherine Orr

**Description:**

The aim of this study is to assess the effect of peers on risk taking and risk perception in a laboratory setting and to relate these measures to substance misuse behaviour in late adolescence and early adulthood.

An increase in risk taking during adolescence has been reliably demonstrated and is associated with increased sensitivity to potential rewards and the increased importance of peer relationships at this time. Adolescents and young adults are more likely to engage in substance misuse, to be involved in serious or fatal accidents, to engage in criminal or antisocial activity, and risky sexual behaviour. Adolescent and young adult risk taking has been associated with significantly higher rates of avoidable morbidity and mortality relative to childhood and adulthood. Although adolescents are, on average, more likely to take risks than children or adults there is individual variation and laboratory measures of risky decision making have been linked to problematic patterns of substance use.

We will explore links between peer influence, risk perception, risk taking behaviour, and substance use. To do this, we will use questionnaires and gambling game that assesses risky decision making.

**What the project involves:**

Participant scheduling and data collection. The intern will also have the option of receiving training in literature review and data analysis if they choose.

**Specific skills required to do the internship?** No specific skills or training are required.

## Sources of income, daily livings and dependency in older adults in a rural district in Bangladesh: Data from a prospective cohort study

**Supervisor(s):** Dr Amirul Islam Md Nazim Uddin

### **Description:**

Life expectancy is increasing worldwide ranging from 60.0 years in the African Region to 76.8 years in the WHO European Region (Life Expectancy report, World Health Organisation (WHO), 2016). The gap in life expectancy between the sexes was 4.5 years in 1990 and had remained almost the same by 2015 (4.6), higher in females than that of males. According to World Bank statistics, the average life expectancy of Bangladeshis was 47 in 1971 rising to 71 in 2016. Of 16 million people in Bangladesh, 7% people are with age of 60 years or older and the percentage is expected to increase as aging population are increasing. The older people, for their daily living, generally depend on income of their children or family or sometime try to engage in some income generation activities. The older adults, especially those who are fully dependent on income of their family members, sometimes they are considered to be burden for a family. This especially happens among the low or lower medium income families which is because people with low income category usually depend on their daily income. However, this is unknown what proportion of older people are engaged in some income generation activities or depending on their children or relatives and how these impact on their daily livings or quality of life. In recent years, the Bangladesh government has introduced some social support for people with disability or elderly who are unable to work but its impact on improving quality of life is unknown.

**Aims:** The current study aims to investigate the self-reported quality of life, quality of life measured by World Health Organisation Quality of Life (WHOQoL) questionnaire and factors associated with quality of life in a large sample from a prospective cohort in a rural district in Bangladesh.

**Materials:** Using a multi-level cluster random sampling technique, a total sample of 2425 participants, of ages 18 to 90 years were recruited. Among them, 1147 participants (50% females) were 60 years of age or older. Socio-demographic factors including level of education and occupation were collected alongside data related to quality life measured by WHOQoL questionnaire.

### **What the project involves:**

Analyse data, writing the manuscript

**Specific skills required to do the internship?** Very good in statistics

## Neuroimaging of procedural justice reasoning: Mapping function and structure associated with emotion in justice judgments

**Supervisor(s):** Diane Sivasubramaniam Matthew Hughes Susan Rossell

### **Description:**

Research has demonstrated that particular factors (e.g., deservingness information, voice, and whether one is a decision maker) affect justice reasoning through various motivation pathways. In this project, we look to neuroimaging techniques to investigate the effects of emotional engagement on justice reasoning. Specifically, we test whether antecedents to justice judgments are moderated by the presence of more or less emotionally arousing stimuli. Lerner (2003) suggested that, when participants are presented with situations that have a low emotional impact, the participants' primary motivation will be to advance self-interests instead of attempting to restore their sense of justice. Alternatively, Lerner (2003) suggested that when participants reason about emotionally impactful situations, their need to restore their sense that the world is just will take precedence. The presence of world-class neuroimaging equipment at Swinburne University allows a unique opportunity to test this theoretical question about implicit emotional reasoning using brain imaging techniques.

We have already conducted a pilot study (Study 1a; developed as a result of a Summer Scholarship awarded in 2016-2017) for this project. The work of the 2018-2019 vacation scholar would be to develop materials for a larger lab study (Study 1b), building on the earlier pilot study. The lab study (Study 1b) involves the final, expanded testing of stimulus materials before we run the larger, Neuroimaging study (Study 2).

The scholar will work with Dr. Sivasubramaniam and the neuroimaging staff to develop a list of 500 stimulus sentences required for Study 1b, and match them to criteria for phonetics, word frequency, difficulty, etc., required for experimental neuroimaging work. The student will also assist with development of the literature review and Method section for a published manuscript, with the expectation that the student will be included as an author on any resulting publication. In all of these tasks, the student will also be the key facilitator in the day-to-day mechanics of the collaboration between Dr. Sivasubramaniam and the neuroimaging staff, giving the student a unique opportunity to work with Swinburne's world-class neuroimaging facility. (Note that data collection for Study 1b and Study 2 is not anticipated during the Vacation Scholar's tenure. Therefore, Ethics approval is not required in order for the student to carry out the proposed tasks.)

### **What the project involves:**

Developing and refining stimulus sentences; Meetings with project supervisor and neuroimaging staff to adapt materials and protocol for use with neuroimaging equipment; Draft literature review; Draft Method section (based on protocol already developed).

**Specific skills required to do the internship?** Prior experience designing or running experimental laboratory studies

## The impact of micro-aggressions on the distress levels of Indigenous university students

**Supervisor(s):** Diane Sivasubramaniam Stephane Shepherd Benjamin Spivak

### **Description:**

The concept of micro-aggressions has received extensive academic attention over the past decade. Micro-aggressions, unlike traditional forms of overt racism, encompass subtle or inadvertent discriminatory comments, gestures or actions. Examples include being ignored by service staff at a shop counter; being mistaken for a low-skilled worker; assuming criminality; attending an institution that valorises colonial figures; assuming educational attainment occurred through affirmative action schemes etc. The cumulative impact of these ostensibly racially-tinged equivocal statements is reported to cause immense distress to individuals of colour.

However the concept has also received academic criticism for its sole reliance on self-report measures, its unclear association with mental health, its broad operationalisation and presumed connection to implicit prejudicial motives. In this project, we seek to methodologically advance the Micro-aggression research program in an Australian context. We have conducted two online experimental studies, which: (1) ascertain the perceived level of offence taken by Indigenous and non-Indigenous university students to a series of micro-aggressive vignettes; and (2) determine the short term psychological impacts of micro-aggressions. By December, 2018, data collection for these two studies will be complete.

The work of the 2018-2019 vacation scholar would be to collaborate with the research team on the following tasks: (1) analyse data from the two experimental studies; (2) participate in discussions with the research team about the next phase of the research program; (3) develop and design materials for the next phase of the research program; (4) assist with development of the literature review for a published manuscript (describing the two completed studies).

As data collection for the two studies will be complete by Summer, 2018/9, and the next phase of the research program will not yet have begun, Ethics approval is not required in order for the student to carry out the proposed tasks.

### **What the project involves:**

Data analysis for two completed studies; Meetings with project supervisor and research team to discuss phase two of research program; Design materials for phase 2 of research program; Draft literature review

**Specific skills required to do the internship?** Prior experience designing or running experimental laboratory studies

## Analysing expenditure patterns and trends of the Australian Medicare Benefits Schedule (MBS): A Case Study of Psychological Services (2006-2018).

**Supervisor(s):** Madawa W Jayawardana Jahar Bhowmik Pragalathan Apputhurai

### **Description:**

Healthcare spending in Australia has increased rapidly in the past two decades. Part of this has come from the prevalence of lifestyle related illness and demographics, as physical inactivity and ageing have become common. Although Australia enjoys relatively superior health outcomes by means of international standards, the relative cost of providing the services through Medicare has increased noticeably over the years. Medicare is the Commonwealth-funded health insurance scheme that provides free or subsidised health care services to the Australian population.

The Medicare Benefits Schedule (MBS), which is one of the key components of Medicare system is a pivotal part of the Australian health system. In general, MBS include consultation and procedural/therapeutic services and diagnostic services. In the MBS, every out-of-hospital or in-hospital service has a unique item number with a description of the relevant service. There is a list of services that are currently supported by the MBS. The Pharmaceutical Benefits Scheme (PBS) is also part of Medicare system, which provides subsidised medicine for most medical conditions. In this study, we primarily focus on the psychological services related activities under the MBS. It was identified in a review report that the cost related to non-chronic disease expenses are on the rise as compared to the expenses for chronic diseases under the MBS and PBS schemes. This study will perform a trend analysis on the expenses of some of the items listed under the psychological services, which categorised under miscellaneous services category in MBS.

This project aims to analyse the trend of spending on MBS using publicly available data to ascertain the potential future of health funding requirements as a result of continuing changes in Australian lifestyle characteristics and demographics. Primarily, we will be looking at the expenses patterns and the trend analysis of some of the items listed under the category of miscellaneous services and group M6 (Psychological Therapy Services) & M7 (Focussed Psychological Strategies (Allied Mental Health)) in MBS and PBS from year 2016-2018. The analysis will identify any time varying relationships and will be able to better predict the future levels of expenditures for the selected cost items under the MBS.

### **Data Availability**

All data (freely available) are sourced from the government web sites related to MBS.

### **What the project involves:**

Literature review, data analysis and reporting

**Specific skills required to do the internship?** Programming skills

## Citizen Science for the Identification of Health Hazards

**Supervisor(s):** Pragalathan Apputhurai Denny Meyer

### **Description:**

Science is our most reliable system of gaining new knowledge and citizen science is the public involvement in inquiry and discovery of new scientific knowledge. A citizen science project can involve one person or millions of people collaborating towards a common goal. Typically, public involvement is in data collection, analysis, or reporting.

The common features of citizen science practice include

- a. anyone can participate,
- b. participants use the same protocol so data can be combined and be high quality,
- c. data can help real scientists come to real conclusions, and
- d. a wide community of scientists and volunteers work together and share data to which the public, as well as scientists, have access.

The fields that citizen science advances are diverse: ecology, astronomy, medicine, computer science, statistics, psychology, genetics, engineering and many more. The massive collaborations that can occur through citizen science allow investigations at continental and global scales and across decades—leading to discovery that a single scientist could never achieve on their own.

### **Project Aim**

The purpose of the project would be to evaluate the effectiveness of citizen science for the identification of health hazards. This would involve:-

1. Explaining what citizen science is, its advantages and disadvantages.
2. Setting up an email address or web site where people can post pictures of health hazards, adding text in order to explain what the hazard is and where it is located. Ideally each picture should have GPS co-ordinates embedded.
3. Advertising the project to as many people as possible and providing them with the email address or web site.
4. Creating a data file containing all the relevant information collected, including the file address for the picture.
5. Analyzing the data and categorising the health hazards on the basis of the text and/or the pictures. Visualising the results as clearly as possible, using a map to illustrate the location of all the hazards.
6. Creating a poster in which citizen science is evaluated in the context of this example. Suggestions for other applications of citizen science in the context of public health.

### **What the project involves:**

Create a website and set up email to receive health hazards and where it is located

**Specific skills required to do the internship?** Web creation and data mining

## A review of the developmental trajectory of semantic memory impairment in schizophrenia

**Supervisor(s):** Dr Eric Tan

**Description:**

This project will involve conducting a literature review on studies using the category fluency task to examine semantic memory (SM) in schizophrenia. This is a commonly used SM task that has been employed in many different groups along the schizophrenia spectrum. SM impairment is an established feature of schizophrenia. Presently, there are a number of theories that suggest that SM impairment changes with increasing duration of illness, however evidence for this has yet to be coalesced. This project envisions reviewing the literature to track the nature of category fluency performance in groups ranging from healthy controls to high schizotypes, ultra-high risk individuals, first episode psychosis and chronic schizophrenia.

The student will be expected to search for relevant articles in online academic databases with guidance and collate the information in preparation for writing up a review article for publication. The student will gain keen expertise in the development and write-up of a literature review (a key component of a 4th year program) as well as gain exposure to a branch of cognitive neuroscience in a psychiatric population with a focus on memory.

**What the project involves:**

Literature search, collation of data, structuring a review manuscript, write up

**Specific skills required to do the internship?** Experience with online databases and searching would be beneficial but not mandatory

## Facelabs system implementation

**Supervisor(s):** Mark Schier Luke Downey

**Description:**

Facelabs is an eye and face tracking system known that uses a series of cameras and is set-up for each individual to be able to monitor their eye and gaze movements.

It has applications in the driving, performance area providing the individual does not make large movements. <http://www.seeingmachines.com>

This project involves setting up the system for use with complex seated tasks or a driving simulator and will require some knowledge of recording and basic computer skills to be able to implement the system so that it can be used in future studies.

Currently the system is ready to be configured, assembled and made operable.

This project would suit a student with some basic knowledge of vision, some rudimentary computer skills, and ability to cope with hardware and software and also an ability to think laterally to achieve the final outcome, assembly, troubleshooting and testing of the system.

**What the project involves:**

Setting up system, troubleshooting and getting system fully functional.

**Specific skills required to do the internship?** Basic computer systems and hardware skills would be an advantage. A knowledge of the visual system will be an advantage.

## Understanding psychological growth: Examining associations between life stories, relationship styles and psychological well-being.

**Supervisor(s):** Dr Sharon Grant Ms Justine Collins (PhD Candidate) Dr Ros Galligan

### **Description:**

It is widely acknowledged that attachment styles are related to coping behaviours, adjustment and mental health (Jason, Jude, & Phillip, 2014; Mikulincer & Shaver, 2012; Shaver & Mikulincer, 2005). However, little is understood about how reflection and narrative processing influences the relationship between attachment styles and psychological functioning. Therefore, the aim of this study is to understand how individuals with different attachment styles reflect on stressful life experiences through narratives (life stories) and how narrative themes in turn influence psychological functioning. Specifically, this study will examine how different attachment style groups (i.e., secure, anxious, avoidant and fearful-avoidant attachment styles) respond to life events, by analysing data obtained from life story interviews (McAdams, 1995) for themes such as coherence, integrative meaning, motivational themes and affective themes (Adler et al., 2012). Associations between narrative themes and psychological well-being will then be examined. Knowledge of how narrative themes relate to psychological well-being can inform the development of prevention (e.g., self-compassion and reflection) practices, and treatment after encountering stressful life events (i.e., narrative therapy). One of the key applications of this narrative research is that it will contribute important data related to the efficacy of narratives in facilitating psychological well-being, which might inform future health government decisions (i.e., the inclusion of Narrative therapy in Medicare focused therapy solutions). The project has commenced and the (community sample) life story interview data (40 interviews of 60 minutes duration) will be available at the commencement of the internship. The interviews will be digitally recorded. All data will be de-identified through the replacement of recognisable identifiers with artificially generated identifiers (i.e., pseudonyms) during transcription. Narratives will then be coded for different narrative themes.

### **What the project involves:**

Learning a best-practice narrative themes coding framework, coding transcribed interview data for different narrative themes, some transcribing

**Specific skills required to do the internship?** Psychology discipline background

## Pregnancy, Birth, Infant Feeding and Child Health Outcomes

**Supervisor(s):** Jahar Bhowmik and Minh Huynh Kerrie Shandley Christine Brown David Austin

### **Description:**

More than 300,000 babies are born in Australia each year and their health at birth is an important determinant of their ongoing development and long-term health and wellbeing. The influence of health on children's wellbeing begins soon after conception and pre- and post-natal risk factors vary widely and include: parental age, mental health, and socioeconomic status; alcohol consumption, tobacco smoking and medication use during pregnancy; birthing interventions (e.g., caesarean, epidural, gas); pre-term birth (<37 weeks gestation); and low birthweight (<2500 grams). Additional variables implicated in suboptimal health outcomes relate to infant feeding practices, particularly breastfeeding duration and exclusivity with some researchers proposing a breastfeeding dose-effect. However, breastfeeding has often been difficult to study due to the propensity of mothers to feed their babies a mixture of formula and breastmilk and the failure of research to take this factor into account. Birthing location (home, hospital, birthing centre) is a further variable of interest. Most homebirth studies focus on neonatal mortality; however birthing environments also offer insight into contrasting approaches to pre- and post-natal care and the subsequent impact on the child's health.

Data pertaining to 4,306 children aged 3-13 years of age was provided by biological mothers via an anonymous online survey in a previous study. We are seeking to engage three students to work on individual projects utilising this unique dataset. While there is considerable scope for each student to design their own project (under guidance), we have three specific projects in mind: (1) to examine the relationship between infant feeding type (formula, breastmilk, mixed) and childhood health outcomes, and whether the relationship is moderated by first hour breastfeeding and/or breastfeeding duration; (2) to examine the impact of birthing environment on childhood health outcomes and whether specific risk factors have a greater association with one birthing environment over another; and (3) to examine pre- and post-natal predictors of Autism Spectrum Disorder. In addition to offering the student the opportunity to develop their analytic skills through working with a large, challenging dataset, the student will develop their writing skills through assisting in the preparation of a manuscript for publication (which will include the student as an author).

### **What the project involves:**

The activities include familiarisation with dataset and variables, finalising research topic, reading up on research relevant to topic, determining statistical analysis and models, learning how to conduct analysis if necessary, conducting analysis, preparing poster for required internship presentation, commencement of manuscript drafting (this will continue beyond the scholarship period), scheduled supervision sessions etc.

**Specific skills required to do the internship?** Basic programming skills with at least one statistical software, completion of at least foundation level stats unit(s) and basic knowledge on health statistics.

## A review of psychotic and mood symptomatology in Lewy body dementias

**Supervisor(s):** Dr Eric Tan

**Description:**

The Lewy body dementias are comprised of Dementia with Lewy bodies (DLB) and Parkinson's disease dementia. The Lewy body dementias are characterized by the development of abnormal collections of alpha-synuclein protein within neurons, known as Lewy bodies, and Lewy neurites in diseased neurons. When these protein clumps form in neurons, those neurons function less optimally and die, resulting in severe cognitive and functional consequences. Relatedly, a number of psychiatric symptoms emerge in DLB patients, such as delusions, visual hallucinations and depression.

This project involves conducting a literature review to uncover the prevalence and proposed mechanisms of psychiatric symptoms (e.g. delusions, hallucinations, depression, anxiety) in the Lewy body dementias. This will contribute to improved understanding of how these symptoms come about in neurological conditions as well as having significant implications for illness management in these chronic and debilitating disorders.

The student will be expected to search for relevant articles in online academic databases with guidance and collate the information in preparation for review.

**What the project involves:**

Database searching, data collation, manuscript preparation and write up

**Specific skills required to do the internship?** Familiarity with library databases and searching techniques will be beneficial but not mandatory

## Systematic Review to Assess The Effectiveness Of Interventions Designed To Increase healthy eating Levels Among Young Women

**Supervisor(s):** Laura Tirlea Irene Hudson Ainura Tursunalieva

### **Description:**

The prevalence of overweight and obesity in childhood and adolescence have rapidly increased world-wide (De Bourdeaudhuij et al., 2011). Primary prevention interventions could have large impact on obesity by promoting healthy diets and body image in young women. Historically, most interventions have tried to prevent obesity through health education focussing on individual-level behavioural determinants, such as increasing knowledge, awareness, attitudes and motivation (eg Brug et al., 2005). These interventions often focused on either nutrition or body image separately, and showed low to modest effects on behaviour and hardly any effects on BMI (Hardeman et al., 2000). In recent years, calls have been made for interventions that take into account the wider environment and as a consequence, interventions have been developed that try to systematically change the environment related to body image and physical activity and/or nutrition to increase the likelihood of healthy behaviour.

### Primary Aims

-To assess the effectiveness of interventions designed to increase healthy eating and to improve body image levels among teenage girls, compared no intervention.

### Secondary Aims

-To describe intervention programs that aim to increase the healthy eating levels of school-aged girls.

-To describe how healthy eating influenced body image, body satisfaction

-to describe intervention programs that aim to increase young women self confidence.

### **What the project involves:**

Learn about the process involved in systematic literature reviews, perform library searches, extract references to endnote, examine each article to determine if it meets the study inclusion criteria, include/exclude studies, prepare draft report/abstract, prepare poster

**Specific skills required to do the internship?** no