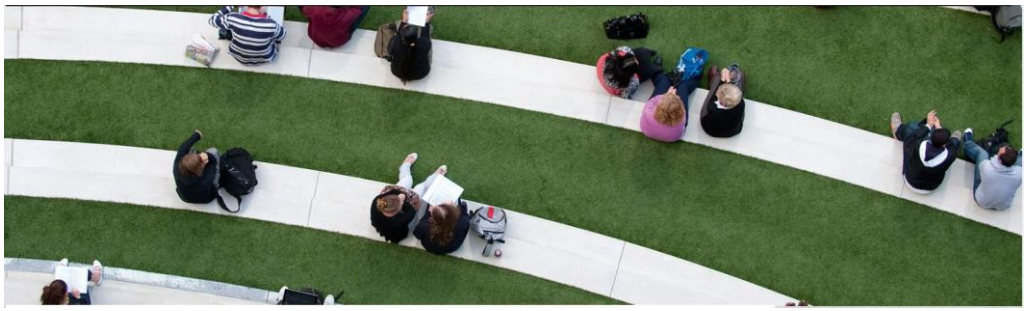

SCHOOL OF HEALTH SCIENCES

Undergraduate Research Internship Projects

2019 - 2020

Thank you for your interest in the School of Health Sciences Research Internship Program.

This booklet provides a description of all the projects available in 2019-2020. If, after reading the project descriptions, you have further questions about any of the projects please contact the project supervisor directly 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 (the link to the online form is available at 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 Catherine Orr (corr@swin.edu.au) to discuss.

Any other questions about the Internships should also be directed to Dr Catherine Orr (corr@swin.edu.au)

Projects

A retrospective assessment of the neuroprotective value of antidepressant medication in multiple sclerosis

Supervisor(s): Lisa Grech

Industry Partners: Monash Health

Project Description: The potential of antidepressant medication to have a neuroprotective effect for people with multiple sclerosis (MS) has received increased interest in recent years. A number of animal studies have found positive results for a neuroprotective effect of antidepressant use in MS with human studies showing mixed results. The human studies that did not report a relationship all have a significant limitation: they exclude people with moderate-to-severe depressive symptoms; a core symptom of MS, beyond that of reactive depression, as well as people with relapsing-remitting MS; important given relapses and depression shares pro-inflammatory cytokine similarities. There are common mechanisms in depression and MS, including inflammation, serotonin, norepinephrine, glutamate and brain derived neurotropic factor disruption, and hypothalamic pituitary adrenal axis dysregulation, that point to the potential of antidepressant medication to provide neuroprotective value through re-regulation.

This study will analyse previously collected MRI data at two time-points to identify whether there is a difference in MRI determined disease progression for people with MS taking antidepressant medication, compared to people with MS not taking antidepressant medication. The study is in progress and has recently finished recruitment and data collection. The intern will have the opportunity to assist with research tasks including literature searches, MRI processing, data collation, and preliminary data analysis.

Intern roles or tasks: Literature searching, MRI processing, data collation, data cleaning, preliminary data analysis.

Any special skills required? Basic literature search and SPSS data analysis skills advantageous.

What skills will the Intern acquire through working on this project? Experience working on a collaborative research project in a clinical sample. Understanding of MRI processing techniques, data collation, data cleaning and analysis techniques. The opportunity for the student to remain involved in the project following the internship, should they choose.

A short-term potato-enriched diet to support muscle accretion and promote substrate metabolism adaptations in recreationally active individuals

Supervisor(s): Donny Camera, Matthew Cooke, Regina Belski, Doa El-Ansary

Industry Partners: Alliance for Potato Research and Education

Project Description: The World Health Organization recommends performing both strength/power (resistance-based exercise) and endurance activities (running, cycling, etc.) for wellbeing. Appropriate nutritional support is essential to maximize the beneficial effects of any training program. It is well accepted that the ingestion of high quality animal protein as well as specially formulated high-protein bars and drinks have an additive effect in optimizing training-induced increases in muscle growth and strength. However, current trends in consumer preferences driven by environmental factors, health benefits and/ or ethical reasons have brought to the forefront a need to advance knowledge of alternate food and beverage sources beyond conventional products. Vegan dietary practices are characterized by the avoidance of animal-based food ingredients, including dairy products and eggs. Such diets have been associated with a reduced risk of cardiovascular disease and type 2 diabetes. The proportion of individuals choosing to follow a vegan diet has increased in many industrialized nations and trend analysis predicts that their influence on the food sector will continue to grow. To date, the anabolic properties of such plant-based proteins have only been investigated in limited protein sources. One such plant-based protein, which has not been investigated and has the potential to stimulate muscle protein synthesis, is potato. Unlike many animal-based protein foods, potato is a good source dietary source of both protein and carbohydrate and therefore could simultaneously stimulate rates of muscle myofibrillar protein (for strength) and glycogen resynthesis (for endurance adaptations). The primary aim of this project is to determine the effect of a potato-enriched, non-animal protein diet on rates of muscle protein synthesis consumed during a short-term combined resistance and endurance training program in healthy young males. A second aim is to compare this muscle protein synthesis response with an animal-protein enriched diet. We will utilize novel proteomic-based technology that allows for determination of the rates of synthesis, abundance and degradation of individual myofibrillar (‘strength’) and sarcoplasmic (‘endurance’) proteins in response to a two-week training-diet intervention. Such in-depth analysis is important because short-term changes in synthesis rates of individual muscle proteins form the basis for muscle growth responses over the long term.

Intern roles or tasks: Assistance with participant recruitment and screening; Assistance with exercise testing and training sessions; Assistance with dietary preparation; Assistance on experimental trial days involving muscle biopsies where the intern will assist with labelling tubes and samples processing

Any special skills required? Current First and CPR

What skills will the Intern acquire through working on this project? First-hand experience in a clinical trial setting that involves interaction with participants, study doctor and other researchers; Preparation and organisation for experimental trial days; Communication with participants and other researchers; Ability to work both individually and within a team; Knowledge of 'gold standard' testing procedures used in skeletal muscle physiology research

Assessing the Risk of Aggression, Self-Harm, and Substance Use within a Forensic Mental Health Hospital

Supervisor(s): Ben Spivak, Melanie Simmons

Industry Partners: Victorian Institute of Forensic Mental Health

Project Description: The assessment, prediction, and reduction of violent behaviours have important clinical, criminal justice and public health implications (Wong & Gordon, 2006). Additionally, forensic mental health hospitals are also tasked to assessing the likelihood of other unfavourable outcomes such as self-harm and substance use. These activities are a key aspect of forensic mental health by assisting with case prioritisation, identifying needs for treatment, and informing management decisions.

Although there is a significant body of literature dedicating to investigating the accuracy of violence risk assessments, limited research has focused on self-harm or substance use within forensic settings, despite the relevance for clinical practice.

The aim of this project is to investigate how well the risk assessments at Thomas Embling Hospital predict aggression, self-harm and substance use. As most of the risk assessments are not specifically designed to predict self-harm or substance use, this project will also investigate whether other clinical risk factors can assist with the prediction of these unfavourable outcomes in the hospital.

Design: A retrospective file review will be conducted on all patients who resided on an acute unit from January 2017-December 2018. Clinical risk factors from the patient files will be manually extracted and added to a risk assessment database that was established for a previous study.

Data Anaylsis: Summary and descriptive statistics will be used to produce aggregate data of the demographic and clinical characteristics of the patients at TEH. Receiver Operating Characteristics's Area Under the Curve will be used to assess whether the risk assessments used at Thomas Embling and available clinical risk factors have utility for the assessment of aggression, substance use, and self-harm.

Intern roles or tasks: Manual data extraction and statistical analyses (under supervision)

Any special skills required? SPSS skills. Psychology background.

What skills will the Intern acquire through working on this project? Data entry, statistical analyses, and poster development

Brain structural differences associated with low levels of cannabis use in adolescence

Supervisor(s): Catherine Orr

Project Description: Our research has recently demonstrated differences in brain volumes in 14 year olds who reported using cannabis only once or twice relative to cannabis naive controls (Orr et al., 2019). Given the changing legal status of cannabis and relaxing of societal attitudes towards recreational use, this research will be relevant for young people when they are making decisions about their substance use as well as policy makers, teachers, and parents.

The aim of the proposed project is to follow up that manuscript with a replication and extension. We aim to replicate the original findings in a sample with higher rates of cannabis use (up to 5 instances of use) and using different metrics of brain structure. We aim to extend the original manuscript by testing whether the observed brain differences are also observed in those who initiated cannabis use at older ages. We will also test whether individual differences in the extent of brain differences is stratified by genetic variation.

Intern roles or tasks: The intern will be responsible for database management, literature review, behavioural data analysis, and will have the opportunity to receive instruction in neuroimaging data analysis if they wish.

Any special skills required? No special skills are required. Familiarity with Excel, interest in statistics, and strong written communication skills would be an advantage.

What skills will the Intern acquire through working on this project? The intern will receive: mentorship in critically appraising existing literature on adolescent substance use and neuroimaging; instruction in database organisation and management; mentorship in experimental design and statistical tests; introduction to analysing and interpreting neuroimaging data if desired.

Capacity Building for Health Literacy Research

Supervisor(s): Shandell Elmer, Richard Osborne

Project Description: The appropriate use and reporting of research data and subsequent action is dependent upon the integrity and robustness of compliance with research protocols, particularly for data collection and analysis. This project aims to build the capacity of community and health services to use, report and act on the results of health literacy assessment tools and processes. The Centre for Global Health and Equity has developed cutting edge tools and processes to assess and respond to health literacy needs. These tools and processes are currently in use in many countries across the world. Information about the intended use and administration of these tools and processes is captured through the licensing process. This project will focus on the development of resources to support the licensees to follow the correct protocol and procedures for data collection, analysis and reporting. These resources will be co-designed with a selection of current license-holders to ensure their relevance and efficacy. The resources may include fact sheets, video clips and online tutorials. This project will focus on capacity building for research and supporting the translation of research into practice.

Intern roles or tasks: Co-design of resources to build research capacity, which will involve becoming familiar with ways to build research capacity, working with license-holders to understand and respond to their learning needs; making recommendations for required resources.

Any special skills required? Interpersonal skills; Understanding of quantitative data analysis (SPSS); Excellent written skills and presentation skills

What skills will the Intern acquire through working on this project? Learn about a range of tools and processes to assess health literacy; Develop an understanding of the health literacy in the global context; Presentation skills and evidence-based practice.

Conducting a systematic literature review on the mechanisms of formal thought disorder in psychiatric conditions

Supervisor(s): Eric Tan

Project Description: This project will involve conducting a literature review on studies that investigate the mechanisms underlying formal thought disorder (FTD) in psychosis. FTD is a core psychiatric symptom describing aberrant patterns of speech and word use, which are present in a number of psychiatric disorders (e.g. schizophrenia and bipolar disorder). It has been related to poorer functioning and quality of life in patients with schizophrenia, as well as poorer illness prognosis when present during initial diagnosis. FTD has been linked to underlying dysfunction in a number of areas including neurocognition, language and affect. Neurobiological studies involving electroencephalography and MRI have also shed light on some under mechanisms, yet all these disparate investigations have yet to be coalesced into a single coherent model for how FTD develops and manifests.
This project envisions reviewing the literature for papers that report on the underlying mechanisms of FTD and how these might contribute to the sub-features of the symptom. Sample populations will range from healthy controls to clinical psychiatric patients.
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.

Intern roles or tasks: The student will be responsible for conducting database searches and screening for articles relating to the topic area. They will also produce a table of the final included studies.

Any special skills required? No special skills required

What skills will the Intern acquire through working on this project? The student will learn how to navigate library databases to conduct the literature search. They will also learn how to conduct a systematic review and use Endnote referencing software. These will be beneficial skills in preparation for completing an Honours year. The student will also gain knowledge in one of the core symptoms of psychosis.

Cross university and discipline assessment comparison

Supervisor(s): Amanda Connors, Loretta Garvey, Michael Olasoji

Industry Partners: Monash University

Project Description: Assessment influences students' approaches to learning and frames the teaching and learning environment. Research on assessment in higher education has exposed discrepancies between students and academics understanding of the role, purpose and value of assessment[1, 2]. Academics are challenged to create assessments that motivate and constructively shape students' learning, in a learning milieu where students focus on results and contest grading.

We require an intern to assist with the first phase of this longitudinal cross-sectional study. The study explores students' conceptions and experience of assessment in Nursing and Midwifery degree programs at two universities. The aim of this phase of the project is to explore first year students' conceptions of and experiences with assessment in order to inform potential change in assessment regimes and diminish the dichotomy in the assessment landscape. The remaining two phases of this research will form a longitudinal project over the period of participants' degrees.

By the time the internship commences, data will have been collected from two universities, on two paper based surveys using Brown's 2011[3] Conceptions of Assessment (26 - item) and the Assessment Experience Questionnaire[4] (27 - item). Students will be involved in any outstanding data entry (this will already have commenced prior to the internship) and the statistical analysis of the data.

1. Struyven, K., F. Dochy, and S. Janssens, Students' perceptions about evaluation and assessment in higher education: a review. Assessment & Evaluation in Higher Education, 2005. 30(4): p. 325-341.
2. Hodgson, Y. and L. Garvey, Conceptions of assessment in students and staff teaching biomedical sciences: a pilot study. Journal of Further and Higher Education, 2019: p. 1-11.
3. Brown, G., Self-regulation of assessment beliefs and attitudes: A review of the Students' Conceptions of Assessment inventory. Educational Psychology, 2011. 31(6): p. 731-748.
4. TESTA. Transforming the Experience of Students through Assessment. [cited 2018 November 2018]; Available from: https://www.testa.ac.uk/index.php/resources/research-tool-kits.

Intern roles or tasks: Data entry, data cleaning, and statistical analysis in SPSS including descriptive statistics, factor analysis and correlation analysis. Students will also be involved in results write up of the data in preparation dissemination of findings for publication.

Any special skills required? SPSS skills and ability to undertake basic statistical analysis in SPSS.

What skills will the Intern acquire through working on this project? Interns will gain experience working in a research team with experienced researchers. The project will allow for the intern to practice undertaking statistical analysis and results write up for a project that already has data collected. This will allow the intern to focus and develop their analysis skills within a guided framework of the constructed project. Given that the project already has data, the students will gain insight into how aims, data and analysis of research align.

Dietary patterns for office-based working adults

Supervisor(s): Dr Won Sun Chen, Prof Denny Meyer

Project Description: Dietary patterns have been demonstrated to be a strong determinant of a population's health [1]. Previous studies suggested dietary patterns are associated with chronic diseases such as cardiovascular disease, hypertension, diabetes and cancer [2-5]. In addition, a higher risk of obesity, hypertension and cardiovascular disease is found to be strongly associated with an energy-dense diet rich in sodium and fat as well as low in fruit and vegetables [6].

Reliable dietary assessment tools are essential in nutrition epidemiology and for advancing understanding of population dietary intakes, diet quality, dietary determinants as well as diet-disease relationships [7]. It is frequent for large epidemiological studies to utilise food frequency questionnaires (FFQs), which are designed to be quick to administer, to summarise intake over an extended period of time, and have been shown to be able to rank individuals according to their dietary intakes [8]. However, long questionnaires can be burdensome and require a greater amount of commitment and effort from individuals, which may increase the number of non-responders [9]. Therefore, food diaries or records that utilise 24-h dietary recalls are considered more reliable than FFQs [10-11].

A recent study suggests that Australian adults with normal blood pressure (BP) follow a healthier dietary pattern and have better nutrition knowledge and lifestyle compared with their high BP counterparts. It also confirms the association between poor dietary patterns and physical inactivity and the greater likelihood of having high BP.

This study aims to cast further light on this topic in order to better understand the dietary patterns of office-based working adults. The second objective of this study is to examine the relationship between dietary patterns and physical activity levels, as well as the relationship between dietary patterns and demographic factors.

Intern roles or tasks: The student will analyse the nutritional intake data using FoodWorks Professional 9 (Xyris Software, Australia). Using these data a Mediterranean Diet score will be calculated as the primary outcome measure for each participant.

Any special skills required? Knowledge in SPSS

What skills will the Intern acquire through working on this project? Knowledge in SPSS and ability to work independently.

Digital health workforce readiness capabilities: do we know what it takes? Using practice based evidence to guide evidence-based practice.

Supervisor(s): Sophie Brice, Helen Almond

Industry Partners: Blamey Saunders Hears

Project Description The roles and responsibilities in a Digital Health roles are shifting as technologies and person centred practice create fundamental change to the industry (Mesko 2017 a).

Modern health technologies have driven control and decision making from the clinicians hands to the health care consumers hands, forcing the Health Care Practitioner (HCP) to change how the same outcomes are achieved and the skills used to do so (van Houwelingen 2016). Where the consumer is now more similar to a consumer, the risks is no longer ˜computer says no" and now becomes ˜consumer says no". In digital health technology and service delivery, the skills and competencies of the healthcare professional and the health care consumer are vastly different from the traditional understanding of skills and competency needed to deliver quality care; that is now also online.

Sustainable Digital health service models are uniquely placed to provide experience and insight into what skills and competencies are crucial in the modern health care consumer centred practice that underlies Digital Health (Van Houwelingen 2016, Mesko 2017 b). Digital Health innovations have not waited for evidence-based practice and so learning from the practice-based evidence that is available is a valuable opportunity to inform our understanding of what skills and competencies matter in the use and delivery of DH. Blamey Saunders hears has been delivering Digital Health supported practice for almost 10 years, having the rare model of delivering traditional clinic based alongside a completely online delivery that utilizes DH technology for clinician and consumer. What can we learn from these 2 groups and those who have used both?

This project will use up to date research and frameworks to design an assessment of skills and competencies in Digital Health, traditional health and a blend of the two, to shed light on the modern workforce capabilities we should be considering in our education and training.

Intern roles or tasks: Literature searching Collate and evaluate current competency frameworks Design a survey Collect and analyse the survey results using appropriate statistical analysis.

Any special skills required? Basic Statistical analysis skills

What skills will the Intern acquire through working on this project? Critical evaluation of literature Research design, implementation, analysis and interpretation Objective understanding of needs and capabilities for Human resources and business design Modern understanding of workforce trends, needs and opportunities Objective evaluation of Health Industry evolutions

Ecological Momentary Assessment of young children's media use

Supervisor(s): Jordy Kaufman, Jennifer Beaudry, Jessica Guy

Project Description: Elucidating the nature of children's digital technology use is important in advancing our understanding of media use patterns and furthering policies and guidelines in this area. The current research aims to quantify young children's (0-5) use of digital technology, including content, time, and context. To do this, we will develop and implement a media use survey using a time-contingent Ecological Momentary Assessment (EMA) method delivered via a smartphone app.
- Research examining children's media use has returned varying results. Some research shows children adhere to guidelines overall, and other research reports children are exceeding screen time recommendations
- Guidelines around the world vary in their recommendations around children's screen use.

Those that prescribe time limits tend to suggest children under 2 years of age not use screens, and children between 2 and 5 years old should use screens for a maximum of 1 hour per day.
- Previous research into children's media use has relied mostly on retrospective and cross sectional self-report methods such as total daily estimates and time use diaries. These methods are prone to error such as memory deficits and social desirability bias.

This study aims to gather and report accurate media use for children aged 0-5. EMA's proximity to experience is thought to result in significant decrease in biases inherent in other forms of self-report data. Participants will be asked to report on behaviours happening in the moment, several times a day, over a number of days. Additionally, participants will be asked to complete global estimates and time use diaries and these will be compared to EMA data. EMA data will also be compared to screen time guidelines to determine if children are reportedly adhering to or exceeding recommendations.

Intern roles or tasks: Collaborate with the research team on the following tasks: (1) Recruitment of participants into the study; (2) Assistance with managing participant enrolment including deploying surveys at appropriate times throughout study period and being a point of contact for participants; (3) Updating and maintaining records to keep track of participant progress (4) Use of survey platforms Qualtrics and MetricWire, including managing and exporting data, and; (5) Statistical analysis of data using Excel and SPSS

Any special skills required? Previous experience in a research environment is valued, as is familiarity with the research areas relevant to this proposal (developmental psychology, children's media use, and children's media use guidelines)

What skills will the Intern acquire through working on this project? The intern will develop valuable skills in multiple aspects of research from recruitment to analysis in an active developmental research lab. Specifically, the intern will gain skills in participant recruitment, data collection, data storage, and practicing research ethically. They will be trained to use two different commonly used survey platforms - Qualtrics and MetricWire. They will develop skills in exporting and analyses of large datasets, including working with EMA data; an emerging methodology in the media use research space. More generally, the intern will be working within a supportive and active research lab, which will provide valuable experience around all aspects of research.

Effect of women's education on accessing Skilled Birth Attendants in South and South East Asia: A Cross-country assessment on for Sustainable Development Goal 3.1

Supervisor(s): Jahar Bhowmik, Raaj Kishore Biswas

Project Description: Sustainable Development Goals (SDG) are important discussion points in public health. Most of the countries under United Nations agenda have committed to attain these goals by 2030. One particular goal (SDG 3.1) is to reduce the frequency of deaths of mothers during childbirth, which is particularly applicable for developing countries. It has been found that lack of birth control contributes to maternal deaths, particularly for young mothers. Many women in developing nations do not have access to modern contraceptive methods. Some use traditional or ancient methods, which are neither healthy nor effective.

There is a need to understand the prevalence of these methods in South and Southeast Asian nations, such as Afghanistan, Bangladesh, Cambodia, India, Indonesia, Myanmar, Nepal, Pakistan, Philippines, and Timor-Leste. Understanding the prevalence of contraceptive methods over the years would help policy makers to set priorities in health scenario.

Furthermore, there is a need to detect the most vulnerable households. For example, data on financial stability of a household and access to modern contraceptives of the household would allow us to evaluate the association between economic status and use of contraceptive methods. This would answer the research question, whether modern contraceptives are only available to the wealthier section of the society. Similarly, education and residence living status (urban/rural) might narrow down the target population who require more attention and support in regard to contraceptives.

A student partaking this project would have the opportunity to choose any one of the countries (or more) from the list above in accordance with their interest and analyse relevant datasets to contribute to current literature gaps. It also gives a student to contribute to the SDG, particularly for health policies of a developing country where the problem is more pressing.

Intern roles or tasks: 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.

Any special skills required? Basic programming skills with at least one statistical software (SPSS, R etc.), completion of at least foundation level stats unit(s) and basic knowledge on health statistics.

What skills will the Intern acquire through working on this project? Interns will acquire work experience with real life project and will learn extra skills on project management including creating research objectives, statistical analysis, team work skills, communication skills, presentation skills, how to write a research article etc.

Effects of Respect Based Parenting on Children's Behaviours

Supervisor(s): Diane Sivasubramaniam, Olivia Campbell, Jordy Kaufman

Project Description: Procedural justice refers to people's judgements about the fairness of a decision-making procedure. When people judge a procedure to be fair, they are more satisfied with the procedure and its outcomes - even if the outcomes are unfavourable. Applications of procedural justice theory began in the forensic context but have since been extended to a number of other contexts (e.g., the workplace). One area that has received limited attention as yet is the family.

Research on parenting is important as the quality of parenting a child receives affects their socio-emotional wellbeing, both in the short- and long-term. Particular styles of parenting (i.e., authoritative) and parenting behaviours (e.g., consistency) are associated with optimal development. However, the many research findings within the parenting domain are complex and lack a unifying theoretical base.

This project aims to reframe parenting from a procedural justice theory perspective. Specifically, it asks: can effective parenting be boiled down to one simple message - respect? Is this concept of "respect based parenting" more useful than traditional conceptualisations of parenting?

Participants in this study include children of two age groups (3-5 year olds and 6-8 year olds) and a parent or guardian. Children and the experimenter will play games designed to build rapport before the child engages in a task designed to test their ability to delay gratification. Meanwhile, the parent/guardian will complete an online survey asking questions about their parenting (and their partner's parenting, if applicable), and their child's behaviours. A research assistant is required to set up cameras to observe the child and support the parent to complete the survey.

Intern roles or tasks: The work of the 2019-2020 research intern would be to facilitate preparing the study to run in the Babylab. This may include preparation of materials and participant recruitment. The intern would also be trained on how to run the study and would facilitate testing of participants. The intern may also engage in pilot data analysis should enough participants be recruited during the course of the internship.

Any special skills required? Interpersonal communication skills are required, as the intern will be interacting with adult and child participants. The intern will also need a current Working with Children's Check.

What skills will the Intern acquire through working on this project? Preparing a study to run; running participants in a lab project; pilot data testing

Embedding digital health in health curriculum

Supervisor(s): Helen Almond, Sarah Barradell, Robyn Delbridge, Carrie Wong

Project Description: The demand for a digital enabled, empowered and adaptable health care workforce is placing increasing pressure on universities to deliver digital health and informatics (DH&I) education. Currently DH&I education efforts are put into modules of DH&I rather than considering an embedded curriculum-wide approach. AIM: By employing a co-design approach, this study aims to identify real perceptions/requirements for DH&I skills and knowledge and how these insights could be used to guide future health curriculum design based on current evidence, and student perceptions of DH&I capabilities expected of tertiary health graduates. METHODOLOGY: Community Based Participatory Approach (CBPR). METHOD: The Delphi method will provide a process framework. This will be based on the results of several rounds of questions circulated to a panel of experts. The experts comprise of students, educators and researchers. Rounds of questionnaires will be circulated to the group of experts, and the anonymous responses will be aggregated and shared with the group after each round. Based on how they interpret the "group response", the experts can adjust their answers in subsequent rounds. The Delphi method seeks to reach the correct response through consensus. CONCLUSIONS: It is envisaged the results of this co-design research approach will inform a cross-school curriculum that aligns with contemporary workforce expectations. There is a need for educational curriculum to acknowledge existing DH&I capabilities, adapt existing capabilities to make them transferable to novel DH&I contexts, and introduce embedded learning opportunities. As such, the research may assist in the application of DH&I by emerging and existing health care professionals. It is also expected that the students recruited via the internship will be exposed to real time challenges and opportunities for research, curriculum development/understanding and the requirements for the delivery of contemporary DH&I learning opportunities for an emerging workforce.

Intern roles or tasks: Literature review, data collection

Any special skills required? None required

What skills will the Intern acquire through working on this project? Literature review, data collection

Evidence based consumer preferences among Telehealth and traditional health service channels: what can we learn from the consumers' choice?

Supervisor(s): Sophie Brice, Helen Almond

Industry Partners: Blamey Saunders Hears

Project Description: Telehealth has improved the choices available to the healthcare consumer from service to product options, which has equally caused a shift in the market towards a consumer driven rather than clinic driven modern health market.
As more technologies and innovations grow in the health industry, many more start ups and shake ups are occurring alongside companies who have already been operating and evolving in this new space (Mesko 2017).
In the hearing care industry, recent market analysis has shown that options and preferences among consumers are changing and that motivations to choose online health services over traditional services are still mixed and seem unclear. A better understanding of the consumer choices will enable better service design and delivery to meet the consumer need.
There are many loosely held assumptions about consumer choice in online hearing care, and yet the evidence is available to inform policy, operational, service design and care design.
After almost a decade of offering a Telehealth service option alongside a traditional clinic-based service option, Blamey Saunders hears has a rare opportunity to try to unpack consumer choices and consumer behaviour using telehealth over at least the 5 years of operation. They have already shown that proximity to traditional service in urban areas has no impact on consumer choice of service options (Brice, 2017). Confidence in choosing online service options is also known to be higher among consumers than clinicians assume (Singh 2014) with a mostly favourable position found, with consumers with no prior experience with hearing devices were more willing to choose online services (Powers & Rogin, 2019). The myths of consumer use of digital technology, especially in the older populations has been debunked showing age is nothing but a number where as familiarity and motivation are greater factors (Gietzelt 2013, Almond 2019).
By analysing retrospective data on service choice, access, consumer activity, engagement; what else can we learn that could help telehealth businesses and those considering expanding into Telehealth on offering and delivering Telehealth to meet the modern digital health care consumer needs?.

Intern roles or tasks: Data analysis Statistical analysis Objective interpretation in relation to consumer health behaviour

Any special skills required? Statistical analysis

What skills will the Intern acquire through working on this project? Critical evaluation of literature Research design, implementation, analysis and interpretation Objective understanding of needs and capabilities for Human resources and business design Objective evaluation of Health Industry evolutions in consumer behaviour Consumer centred data

Expenditure patterns and trends analyses of the Australian Medicare Benefits Schedule (MBS) and Pharmaceutical Benefits Scheme (PBS): A Case Study of Pregnancy Support Counselling and Midwife services.

Supervisor(s): Pragalathan Apputhurai, Jahar Bhowmik

Project 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 [1], 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 [1]. Services under Medicare include:

- fully or substantially subsidised out-of-hospital services;
- subsidised private patient hospital services;
- fully subsidised hospital treatment for public patients in public hospitals; and
- fully or substantially subsidised medicines through the Pharmaceutical Benefits Scheme (PBS).

The Medicare Benefits Schedule (MBS), in general includes consultation and procedural/therapeutic services and diagnostic services [1]. In the MBS, every out-of-hospital or in-hospital service has a unique item number with a description of the relevant service. 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 pregnancy support counselling and midwife services under the MBS and PBS. It was identified in a review report that the cost related birth related expenses are on the rise under the MBS and PBS schemes.

Project Aim

This project aims to analyse the trend of spending on MBS and PBS 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 M8 (pregnancy support counselling) & M13 (and midwife services) in MBS and PBS.

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 and PBS.

Reference

1. Medicare Benefits Schedule Review Task Force. (2015). Public Submissions: Consultation Paper. The Department of Health, Australian Government.

Intern roles or tasks: Data gathering from resources and pre-processing for analyses

Any special skills required? None required

What skills will the Intern acquire through working on this project? How to perform trend and pattern analysis and do literature review

Framework for the modern Digital Healthcare Professional: between the technology and the patient: A scoping review of Digital Capability Frameworks for graduates of disciplines aligned with the health industry to support the modern workforce in Digital Health.

Supervisor(s): Helen Almond, Sophie Brice

Project Description: Modern health technologies have driven control and decision making from the clinicians hands to the health care consumers hands, forcing the Health Care Practitioner (HCP) to change how the same outcomes are achieved and the skills used to do so (van Houwelingen 2016).

Now that the health care consumer has more input and control, the risks in Digital health is no longer focusing on “computer (or clinician) says no” and now becomes a risk of “consumer says no”. In digital health technology and service delivery, the skills and competencies of the healthcare professional and the health care consumer are consequently becoming vastly different from the traditional understanding of skills and competency needed to deliver quality care; that is now also online (Mesko 2017).

The growing frameworks for roles and responsibilities in Telehealth have so far focused on digital competency in its own right rather than being embedded in good care practice frameworks (NHS 2018, JISC). However, it is recognised that new frameworks are needed to address the gap between Health IT skills and Digital Health in practice (Mesko 2017b). The modern Digital Health professional will benefit from unifying the old and the new requirements of their role in a unified capabilities framework that takes a holistic view; can this be found or is it a gap to fill?

This project will review current frameworks and professional competencies required for health care professionals against new frameworks on Digital health skills and competencies. Reviewing where these frameworks compliment or leave a gap will help inform health care professionals and their professional training needs on what may require more alignment in their training needs for their future as a Digital Health care worker

Intern roles or tasks: Literature searching Collate and evaluate current competency frameworks Alignment of professional, quality of care and translatable training needs and gap analysis

Any special skills required? None required

What skills will the Intern acquire through working on this project? Critical evaluation of literature Modern understanding of workforce trends, needs and opportunities Objective evaluation of Health Industry evolutions

Goodness of fit for logistic models with several covariates

Supervisor(s): Steve Quinn

Project Description: Goodness of fit statistics for logistic regression models have been studied extensively (Hosmer & Lemeshow, 1980; Hosmer, Taber, & Lemeshow, 1991; Quinn, Hosmer, & Blizzard, 2014), but in models with only a small number or predictors. This project would extend the currently known results by considering more complex models with several continuous and dichotomous predictors, using pre-written code in various scenarios.

References

Hosmer, D. W., & Lemeshow, S. (1980). A goodness-of-fit test for the multiple logistic regression model. [Quinn]. Communications in statistics, A10, 1043-1069.
Hosmer, D. W., Taber, S., & Lemeshow, S. (1991). The importance of assessing the fit of logistic regression models: a case study. [Clear, gives example, standardized Pearson residual, leverage, influence, residual Quinn]. Am J Public Health, 81(12), 1630-1635.
Quinn, S. J., Hosmer, D. W., & Blizzard, L. (2014). Goodness-of-fit statistics for log-link regression models. [cll Quinn]. J Stat Comp Sim, 85(12), 2533-2545.

Intern roles or tasks: The student will take pre-written code using a software package called Stata, run simulations on their computer and compile results in tables.

Any special skills required? Programming knowledge is an advantage, but a pre-requisite. After a few simulation scenarios are run, the student will have enough knowledge to vary the code and create their own simulations to run.

What skills will the Intern acquire through working on this project? Programming knowledge is an advantage, but not a pre-requisite. After a few simulation scenarios are run, the student will have enough knowledge to vary the code and create their own simulations to run.

Haidinger's brush: human detection of polarised light

Supervisor(s): Mark Schier

Project Description: Haidinger's brush is a visual effect that allows the detection and/or perception of plane polarised light by humans. The brush is usually described as yellow bow-tie, sometimes a blue figure-of-eight or a combination of both. It is possible that the extent of Haidinger's brush and its visibility also relates to eye colour. Eye colour is largely caused by the presence and location of melanin in the choroid layer of the eye. Dark coloured eyes (brown, black) have more melanin than light coloured eyes (blue, grey).
The project will investigate the detection of Haidinger's brush in a human experimental study. This study will entail recruiting participants and testing them in controlled conditions in the laboratory.

Intern roles or tasks: Recruitment of participants, experimental testing

Any special skills required? Some understanding of the physiology of the eye and vision would be an advantage.

What skills will the Intern acquire through working on this project? Participant recruitment, experimental planning, analysis of results

Horizontal visual field size and the effects of fatigue and age.

Supervisor(s): Mark Schier

Project Description: The horizontal extent of the visual field is usually around 90 degrees each side (referred to straight ahead). It is largely affected by geometry of head, eye, nose shape and this has been dealt with from a biometric perspective.
Less known are the effects on the field extent due to fatigue, activity, other physical and cognitive parameters.
Additionally, a comparison of the effects any gradually changing age related effects (for loss of peripheral and/or central vision).
This study will investigate the effects of some of these parameters on horizontal visual field.

Intern roles or tasks: Recruitment of participants, experimental testing

Any special skills required? Knowledge of the eye and visual system would be an advantage

What skills will the Intern acquire through working on this project? Participant recruitment, experimental testing, analysis of results

Investigating the Cause and maintenance of Anorexia Nervosa (the I-CAN study)

Supervisor(s): Andrea Phillipou

Project Description: This a large-scale research project aiming to identify the neurobiopsychosocial mechanisms involved in the cause and maintenance of anorexia nervosa. This study will involve the collection of biological (i.e. blood, saliva, faecal), neuroimaging (MRI), psychological and cognitive data. The intern assigned to this project will gain hands-on experience in the initial stages of setting up a large-scale project - e.g. collating measures, setting up data collection tools etc.

Intern roles or tasks: Collating measures, setting up tasks and assessments

Any special skills required? None required

What skills will the Intern acquire through working on this project? Experience in using Qualtrics; experience with cognitive measures and other psychological tools; an understanding of what is involved in clinical research, particularly anorexia nervosa research

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

Supervisor(s): Jessica Mackelprang, Catherine Orr

Project 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.

Intern roles or tasks: 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

Any special skills required? 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

What skills will the Intern acquire through working on this project? The intern will gain knowledge about gender equity in academia and the process of extracting detail from academic papers, which will have some generalizability to other research methods (e.g., systematic literature reviews). They will also gain skills in basic statistical analyses and academic writing.

Is there a relationship between speech patterns and suicidality in a psychiatric population?

Supervisor(s): Eric Tan

Project Description: Levels of suicidal ideation and behaviour are markedly increased in psychiatric samples compared to the general population. The assessment of suicide risk is thus of key concern and an area of investigation, with the eventual aim of identifying or developing an assessment tool to measure and/predict changes in suicidality. Speech assessment has emerged as a proxy measure of good utility for psychiatric symptomatology. This study particularly seeks to investigate if levels of suicidality are also associated with aberrant speech patterns in a sample of chronic patients with schizophrenia spectrum disorders. If such a link is established, it could potentially lead to the future development of a speech-based assessment tool for suicidality and suicidal ideation that will be beneficial in clinical settings.

This project will require entry of pre-collected clinical data on suicidality to an existing dataset containing speech data as well as transcription of speech samples.

Intern roles or tasks: The student will be responsible for collating demographic and clinical information relating to the research question, as well as transcribing clinical speech samples to obtain speech data variables. They will also be involved in analysing the data.

Any special skills required? None required

What skills will the Intern acquire through working on this project? The student will become familiar with processes surrounding the handling of clinical research data, as well as gain valuable experience in data entry (including use of SPSS) and preparation of a research poster. These are important skills in preparation for completing an Honours year in the future.

NAVIGATE Trial: Medical Records Notes Audit

Supervisor(s): Penny Schofield, Natalie Richards

Industry Partners: Peter MacCallum Cancer Centre, Cancer Experiences Research Department

Project Description: This project is suitable for students wanting to gain experience in undertaking a retrospective audit of patient data and verifying clinical information from the medical history. The Medical Records Notes Audit project is integral to the data analysis phase of the NAVIGATE trial. NAVIGATE is a randomised controlled trial evaluating the impact of an online resource for men with low-risk prostate cancer (LPC) when making a treatment decision. The tool's aim is to help men understand and choose between the different options available to manage their cancer. The study is NHMRC funded and sponsored by Swinburne University. www.navigateprostate.com.au The primary aims of this study are to evaluate: - The uptake of Active Surveillance (i.e. monitoring) as first-line management option for LPC - Men's preparedness for decision-making - Men's decisional conflict, regret and satisfaction - Quality of men's communication with their partners' about their illness - Men's prostate cancer-specific quality of life. The secondary aims of this study are to assess the healthcare cost impact and cost-effectiveness of Navigate (economic sub-study) and determine the specific patterns of use of Navigate (web analytic sub-study). Audit in healthcare is a process to assess and evaluate the care of patients in a systematic way. The purpose of the notes audit for this project is to verify patient clinical information. The notes audit will review the treating clinician report to assess if the primary outcome is uptake of Active Surveillance (vs. surgery, radiotherapy or brachytherapy) as the first-line management option for localised prostate cancer. This is assessed as a dichotomous outcome at one month follow-up. Other information will include prostate cancer clinical information, hospital procedures and resource use data, including surgical and radiology procedures, tests and total bed days of care. Working under the direction of the NAVIGATE Project Manager, the student will undertake the medical record notes audit on-site at participating hospitals and medical clinics. There will be a 4-6 week working schedule and travel will be required around Metro Melbourne. Data collection will occur in a systematic and methodical way and entered into an online database. The student will be trained in the relevant clinical information and cancer data definitions and will work closely with the NAVIGATE Project Manager.

Intern roles or tasks: Undertaking medical record notes audit on-site at participating hospitals and medical clinics; Sourcing medical information from the patient history; Online database management; Liaising with hospital and medical clinic staff; Maintain project documentation

Any special skills required? Familiarity with Microsoft Office suite and data entry platforms. Previous experience in healthcare setting desirable (but not essential), Ability to work independently. Must have a drivers licence and access to a car (reimbursed expenses) as travel is required to sites around Metro Melbourne

What skills will the Intern acquire through working on this project? Gain essential research skills in undertaking a clinical notes audit and insight to the importance of quality data impacting on patient medical care and translation for research.

Pregnancy, Birth, Infant Feeding and Child Health Outcomes

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

Industry Partners: Deakin University

Project 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 (less than 37 weeks gestation); and low birthweight (less than 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 one or two 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 will provide specific projects to examine the relationship between some specific input variables (e.g. birth location, feeding type, infant birthweight, and gestation, birth interventions) and childhood health outcomes (e.g. ASD diagnosis, maternal PND, jaundice, immunity issues). 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).

Intern roles or tasks: 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.

Any special skills required? Basic programming skills with at least one statistical software, completion of at least foundation level stats unit(s) and basic knowledge on health statistics.

What skills will the Intern acquire through working on this project? Interns will acquire work experience with real life project and will learn extra skills on project management including creating research objectives, statistical analysis, team work skills, communication skills, presentation skills, how to write a research article etc.

Redefining the Telehealth team structure: how have roles and responsibilities changed in companies that deliver Telehealth?

Supervisor(s): Helen Almond, Sophie Brice

Project Description: Digital Health in practice requires a new dimension of professional roles and responsibilities for a new way of operating (Mesko 2017). Traditional roles are being challenged and there is difficulty in defining the skills and competencies needed for ever evolving new roles in the evolution on online health care delivery.
What are the jobs of the tomorrow's health care and what can we learn from those of today? This project will review the team structure across small to medium companies delivering a Telehealth product/service in Australia, looking at the traditional, new and cross-functional roles found (Ernts and Young, 2018).
Pro-actively interviewing company representatives and collating org-charts/team structure charts will provide an overview to inform new graduates and education centres of the workforce needs that are to be met for successful graduate recruitment market.

Intern roles or tasks: Researching appropriate companies and identifying their team structures Designing inclusion criteria Interviewing employees to gather information of team design Collating and Mapping the findings

Any special skills required? None required.

What skills will the Intern acquire through working on this project? A business and HR appreciation of the evolving workforce in Telehealth Create a review that has real-world and direct impact potential for new and upcoming graduates considering a role in Telehealth

Resilient relationships: factors that contribute to relational resilience in families with adolescents

Supervisor(s): Monica Thielking, Imogen Frazer, Catherine Orr

Project Description: This project explores the components of a 'resilient relationship' between parents and their adolescent children. There is particular focus on how these parent-adolescent pairs experience conflict (causes, consequences, how they engage in and resolve conflict). We are interested in a diverse range of relationships, both positive and negative in order to identify "what works" in their relationships and what does not. Much of the existing literature focuses on either the parents, or their adolescents. This study will include both their perspectives (collected as a biological/legal parent-adolescent pair) in order to obtain a new and more in-depth understanding of parent-adolescent conflict and the components required to make their relationship resilient. My study aims to identify the most common causes and consequences of parent-adolescent conflict and the biggest risk factors and protective factors present, which either damage or strengthen the resilience of their relationship. The aim is to propose a model of "resilient relationships" for parents and adolescents and publish a survey that measures the resilience of their relationship. The study includes both quantitative and qualitative components (a series of open-ended questions/interview about the parent/adolescent relationships).

Intern roles or tasks: The intern will assist with data collection and analysis.

Any special skills required? Proficiency in SPSS is essential. The most suitable intern will be a student who is reliable, organised, works well independently, is efficient and interested in child psychology/resilience/parenting/adolescence

What skills will the Intern acquire through working on this project? The intern will receive mentorship in database management, data analysis and interpretation, and in scientific writing and academic presentation.

Scoping review: Justice and emerging technology

Supervisor(s): Diane Sivasubramaniam, Jennifer Beaudry

Project Description: This scoping review will inform future systematic review(s) into various topics at the intersection of forensic psychology and technological advancements. The student who conducts the scoping review (including an annotated bibliography) will summarise the current literature in a variety of relevant domains, including body-worn cameras, facial recognition technology, and internet justice.

Body-worn cameras (BWCs) have been argued to improve police transparency, legitimacy, and accountability, and in turn, police-community relations following events that have been detrimental to that relationship (e.g., the police-involved deaths of Michael Brown in Ferguson, Missouri); however, there is little evidence directly testing this claim.

Facial recognition technology presents several unique ethical challenges, in part because we already have CCTV cameras on every corner, and a substantial portion of the population already willingly upload their personal photos to corporate sites (e.g., Facebook, Instagram, Google photos) with little understanding of how those images will be used. Some governments have banned the use of facial recognition technology in their cities (e.g., San Francisco and most recently, London) in response to concerns about the misuse of this software and evidence.

Shaming as a means to punish offenders for their wrongdoing has been employed for centuries, but shaming has taken on a new dimension: in the last decade, we have seen a sharp rise in instances of shaming inflicted online. Although online shaming can have some positive effects (e.g., drawing attention to corruption and malpractice), it has also several negative ones (e.g., humiliation, verbal abuse and threats, and the unjust destruction of a person's wellbeing, career, or reputation). Despite its increasing prevalence, very little research has explored the psychological drivers of online shaming.

Most of the literature on these topics (BWCs, facial recognition technology, and internet shaming), addresses the technological or societal issues, but there is a clear lack of psychological research in these fields. There is a significant need for an evidence base to establish the psychological drivers and implications of these technologies. A scoping review would help us to identify the limited psychologically-relevant evidence base, inform our systematic review, and provide a solid foundation for future study development.

Intern roles or tasks: The work of the 2019-2020 research scholar(s) would be to collaborate with the research team on the following tasks: (1) identify appropriate search terms and databases for each of the topics of interest; (2) review resulting papers with a view to identifying search terms and scope for a Systematic Literature Review (SLR) for each topic; (3) identify and collate relevant grey literature for each topic; (4) develop an annotated bibliography for each topic; and (5) assist with development of the literature review for a published manuscript and/or develop and design materials for the next phase of the research program.

Any special skills required? Strong written communication skills are required. Previous experience with literature reviews and experimental research methods is preferred, as is familiarity with the research areas relevant to this proposal (procedural and distributive justice, eyewitness psychology).

What skills will the Intern acquire through working on this project? The intern(s) will develop literature review/analysis skills related to SLR, which is an increasingly important research methodology involving a specific and sought-after skill set. The intern(s) will also become familiar with research at the intersection of forensic psychology and emerging technologies, equipping them for involvement in future research projects with high impact and industry/community relevance. The intern(s) may also be called on to collaborate with the research team on the design of future research programs; this will lead to the intern(s) developing skills in experimental research design.

Screening for depression using voice and facial expression

Supervisor(s): Denny Meyer, Bee Theng Lau

Project Description: Suicide remains the leading cause of death for Australians aged between 15 and 44. The overall suicide rate in 2015 was 12.6 per 100,000 in Australia. This is the highest rate in 10-plus years. Suicide prevention is therefore an important research area in Australia and elsewhere.
Previous studies have tried to use speech patterns to identify depression and suicidal ideation. Improvements in deep learning algorithms suggest that this may soon be possible, opening up opportunities for the use of these algorithms to improve therapist alliance and clinical interventions for telephone counselling.
In a face-to-face context GPs have difficulty in assessing levels of depression and suicidal risk making appropriate treatment impossible in some cases. For this reason, studies using facial expression to identify depression and suicidal ideation have also been initiated with some success.
The aim of this project is to test various deep learning algorithms with publicly available voice recordings and facial expression images, in order to establish the best methods for identifying depression.
This research will inform two PhD projects currently being developed by the Centre for Mental Health. These projects involve the development of a screening tool for suicidal ideation for use by medical centres and Help Lines. The above screening tool will allow a more nuanced response to different levels of risk.

Intern roles or tasks: Downloading and learning to work with sound recordings, images and deep learning algorithms in order to learn how to recognise depression in voice patterns and facial expression

Any special skills required? Programming skills

What skills will the Intern acquire through working on this project? Statistical methods for comparing the efficacy of the various deep learning algorithms they consider.

Please note that this project will be offered to students at the Swinburne University, Sarawak campus.

Self-reported medication adherence in multiple sclerosis: A literature review

Supervisor(s): Lisa Grech

Project Description: Over the last decade, the multiple sclerosis (MS) medication landscape has changed dramatically. In Australia, there are now four approved oral disease modifying therapies (DMT), with reductions in annualised relapse rate (ARR) of between 31.0% and 57.6% and reduced disability progression of between 22.0% and 33.0%. Medication adherence is crucial for the benefits of DMTs to be realised, yet research shows that ~50% of people requiring long-term medication administration for chronic illness do not take their medication as prescribed. A US study that assessed DMT use in 12,431 people with MS reported participants in the adherent group had 42% less relapses, 52% less hospital admissions and 38% fewer emergency visits, with an estimated average saving of US$5,816 per person with MS. Despite this, the introduction of oral DMTs has not resolved the problem. Research into adherence and persistence to three oral DMTs over one year found between 24.6-46.9% of patients had adherence levels <80% and the discontinuation rate was between 25.6-50.3%.

Assessment of medication adherence may be undertaken objectively using prescription refill data or electronic medication monitoring devices, or subjectively, via patient self-report. Identification of suboptimal medication adherence is critical to enable strategies to remedy the problem, yet objective assessments are largely unavailable in clinical practice, requiring reliance on patient self-report. This systematic review will synthesise the data on self-reported medication adherence of oral and injectable self-administered DMTs in people with MS. The results will be discussed with relation to published research that has objectively assessed medication adherence in MS.

Intern roles or tasks: Literature search, data collation and extraction, preliminary manuscript drafting.

Any special skills required? Basic literature search skills and understanding of academic writing.

What skills will the Intern acquire through working on this project? The intern will have the ability to learn the systematic review process, refine their search and academic writing skills, gain an understanding about the issue of medication adherence and knowledge about MS. Should the intern continue to be involved with the project through to publication they will have the opportunity to be listed as an author on the published manuscript.

The Brain in Hoarding Disorder

Supervisor(s): Maja Nedeljkovic, Matthew Hughes

Project Description: This study uses functional MRI to examine the brain areas that may be involved in Hoarding Disorder. Individuals who are experiencing hoarding disorder, obsessive-compulsive disorder and healthy controls are being recruited and complete a range of questionnaire and cognitive tasks as well as undergo a functional MRI scan. Brain activity during cognitive task performance will be examined across the 3 groups. Compulsive Hoarding is a serious psychological condition associated with the acquisition of, and inability to discard, possessions of limited value, to a degree that precludes the appropriate use of living spaces and creates significant distress or impairment in functioning (Frost & Gross, 1993; Frost & Hartl, 1996). Recent investigations suggest that compulsive hoarding is a serious psychiatric problem that significantly disrupts the life of the hoarder and their family and friends (Frost, Steketee, Youngren, & Mallya, 1999). The accumulation of clutter may create risk of fire, falling, and sanitation problems, particularly among the elderly (Frost, Steketee, & Williams, 2000). Previous research has reported that hoarding patients tend to exhibit, attenuated ability to sustain attention, difficulty with distinguishing relevant items from irrelevant items, and problems with impulsivity, compared to clinical and healthy controls (Grisham et al., 2007; Tolin et al., 2011). Hoarding patients have also been reported to demonstrate excessive emotional attachment to their possessions (Steketee & Frost, 2003). Therefore, brain networks that underpin these cognitive impairments related to inattention and excessive emotional expression may have clinical utility as biomarkers to predicting vulnerability or treatment response. The current study aims to identify functional differences in brain areas involved in attention and executive functioning among people with hoarding disorder and individuals without the disorder.

Intern roles or tasks: recruitment and testing of participants

Any special skills required? Training will be provided.

What skills will the Intern acquire through working on this project? Participate in conducting fMRI, data management and analysis, literature review and write up

The Effects of Digital Media on Parent-Child Interactions

Supervisor(s): Jordy Kaufman, Jessica Balanzetegui, Jessica Guy

Project Description: Play serves a crucial role in children's development; contributing to their cognitive, physical, and emotional and social wellbeing. Given this well-established role of play in children's lives, it is unsurprising that changes to the nature of the play landscape, especially those brought about by digital technologies, have produced a moral panic.

- The limited evidence available suggests there are meaningful differences in how children interact when engaging in electronic toy play, including word quantity and quality, and attentional and initiation-response behaviours, compared to play with traditional toys.
- Research shows social interactions are affected by the use of digital media. Termed "technoference", several studies have shown that adult use of digital technology is associated with sub-optimal interactions in their intimate relationships
- There is a paucity of research examining how children's digital play, especially with touchscreens, affects social interactions and language.

The current study aims to examine the effect of touchscreens on joint attention behaviours and word quantity and quality during play with children between 2 and 4-years-old and a parent. This will be done by observing children play with traditional games and their closest digital counterparts, on a touchscreen, while a parent is present. Matching activities across the different modalities will allow us to examine the effects of digital media on different features of children's play

Intern roles or tasks: The work of the 2019-2020 vacation scholar would be to collaborate with the research team on the following tasks: (1) Recruitment of participants into the study including inviting, scheduling, confirming, and other communications as necessary; (2) Assistance with running research sessions in the Swinburne Babylab (3) Saving data and updating and maintaining database records (4) Coding behavioural (video) data (5) Statistical analysis of data using Excel and SPSS

Any special skills required? Previous experience with experimental research methods is valued, as is familiarity with the research areas relevant to this proposal (developmental psychology, children's media use, social interactions, children's play).

What skills will the Intern acquire through working on this project? The intern will develop valuable skills in multiple aspects of research from recruitment to analysis in an active developmental research lab. Specifically, the intern will gain skills in participant recruitment, data collection, data storage, and practicing research ethically. They will develop skills in coding and analysing behavioural data. More generally, the intern will be working within a supportive and active research lab, which will provide valuable general research experience.

The impact of aged care residents' life-stories on aged care staff attitudes: A randomised controlled trial

Supervisor(s): Sunil Bhar

Project Description: The project examines the impact of digital life-stories about aged care residents on the attitudes of care staff. Digital life stories are 3-5 minute movies about an aspect of the resident's life, featuring photographs, music and an audio narrative. Aged care staff are randomly allocated to one of two conditions. In one condition ('life story' condition), staff will be shown the digital life story of a resident. In the other condition, staff will be asked to read the resident's file notes containing information about the resident collected at or following intake ('control' condition). Staff in both conditions will be asked to compete pre and post measures of their understanding of the resident's background. The project explores if staff in the life-story condition demonstrate a significantly better understanding of the resident, than staff in the control condition.

Intern roles or tasks: Data collection, entering, analysis and interpretation.

Any special skills required? Familiarity with SPSS

What skills will the Intern acquire through working on this project? To obtain data from the aged care sector.

The Role of Social Inferences in Face Recognition

Supervisor(s): Jennifer Beaudry, Julian Oldmeadow, Taylor Gogan

Project Description: They say you shouldn't judge a book by its cover, but we all make judgments about people from their face, often automatically and without conscious awareness (Willis & Todorov, 2006). Research shows we make three kinds of judgments about a person based on their facial appearance - are they trustworthy, are they dominant, and are they attractive (Sutherland et al., 2013)?

We also use faces to identify people, and are remarkably good at identifying people we know. It is often said that we are 'face experts', but the truth is we are really only experts at recognising familiar faces (Young & Burton, 2018). When we are not familiar with a face, we often mistake the same face as being someone else, or mistakenly think we have seen a person before when in fact we have not (Jenkins, White, Van Montfort, & Burton, 2011). A contemporary issue in face perception research is understanding how we recognize faces across different viewings, and how we develop familiarity with a face (Young, 2018).

Face recognition and first impressions (or social judgments) are related processes. Cues to identity and cues to social traits may overlap, and overlap to different degrees depending on the trait being judged. Current research in our lab is exploring how cues to identity and cues to social traits overlap, and how trait judgments influence face recognition.

This internship offers an opportunity for a high-achieving student to be involved in the day-to-day research activities of a social psychology lab focusing on face perception research. You will learn how to create and manipulate face images for use in face perception studies, and may be involved in running an experiment, including recruiting and testing participants.

Intern roles or tasks: Developing and manipulating face stimuli for use in experiments; running an experiment on face recognition; data analysis and manuscript preparation

Any special skills required? None required

What skills will the Intern acquire through working on this project? Skills using face manipulation software; testing participants; statistical analysis; report writing

Three month project in support of the ACEBR Alzheimer's Disease study.

Supervisor(s): Andrew Wood, Robert McIntosh, Steve Iskra, Alireza Lajevardipour

Industry Partners: Telstra Corporation

Project Description: Assess the accuracy of temperature measurements taken with small implantable wireless electronic sensors. The study involves exposing mice that are genetically predisposed to developing Alzheimer's Disease to EME to assess what effect, if any, the exposure has on the progression of the disease. A means of individually tracking mice is to impregnate then with a very small electronic wireless device that can uniquely identify the animal and measure its body temperature. The information contained in the device can be accessed wirelessly via a dedicated scanner.

The aim of this part of the project is to assess the accuracy of temperature measurements and whether the device will be immune to the field strength levels in the reverberation chamber.

Installation and testing of video cameras in reverberation chambers. Video cameras will be used to monitor mice during exposure testing in the purpose built reverberation chambers. A camera will be located within a chamber and must continue to function while being exposed to high field strength levels (up to ~150 V/m at 1950 MHz).

The aim of this part of the project is to test the operation of the cameras and implement modifications (e.g. shielding) to ensure they work as required in the reverberation chambers when exposed to high field strengths.

Intern roles or tasks: Refer project description

Any special skills required? Good experimental skills, with particular attention to accuracy and record-keeping

What skills will the Intern acquire through working on this project? Research skills and contribution to essential research question (safety of mobile phones)

Understanding depression and barriers to treatment-seeking in Sri Lankan Australians

Supervisor(s): Greg Murray, Kathryn Fletcher, Josefine Antoniades

Project Description: Depression is a major public health concern in Australia, as it is in other countries in the Western world. However, unique to the Australian context is its cultural diversity, with over a quarter of the population born overseas, and a further 20% with at least one overseas-born parent (Australian Bureau of Statistics, 2012). This in turn requires mental health services to be responsive to the mental health needs of people from a multiplicity of cultural backgrounds.

Research indicates that culture impacts how illness is understood, help seeking patterns and treatment adherence (Hwang et al., 2008). Only 35% of Australians seek mental health care, and migrant communities access mental health services at half the rate of the main-stream Australian community (ABS, 2016).

Sri Lankan Australians are one of the largest and fastest growing cultural groups in Australia (DFAT, 2016), however, prevalence rates, factors that shape help-seeking and experiences of mental illness are largely unknown. This project aims to be the first project to explore illness beliefs, barriers and facilitators of mental health service engagement of the Sri Lankan migrant community in the Australian context. Ultimately, this project will result in an evidenced-based, culturally congruent online intervention that improves Sri Lankan Australians' understanding of depression in order to facilitate help-seeking within an Australian healthcare system.

Intern roles or tasks: Developing recruitment materials/videos; liaising with community organizations; managing the media campaign; setting up the online cross-sectional survey

Any special skills required? An intern studying psychology, who has proficiency in social media engagement is highly desirable.

What skills will the Intern acquire through working on this project? The intern will develop invaluable skills in how to recruit and engage hard to reach populations using a novel social media campaign. They will also learn how to set up a research project, including skills in survey development and Qualtrics.

Using immersive virtual reality technology to inform public swimming pool lifeguard visual scanning for drowning prevention

Supervisor(s): Jordy Kaufman, Paola Araiza-Alba

Industry Partners: Life Saving Victoria

Project Description: Public swimming pools play an important role in Australian society, with millions of people visiting aquatic facilities each year. Lifeguards play a crucial role in ensuring the safety of patrons at public swimming pools. A critical function of the lifeguard is scanning and surveillance of the water to detect victims in distress and ultimately prevent drowning. However, drowning incidents still occur in public pools and often it is a member of the public that first identifies a potential drowning victim.
Lifeguards can be responsible for the safety of up to 100 patrons in a public pool at any one time, and the impact of this and other factors on lifeguard scanning techniques is yet to be measured.

This research aims to provide evidence-based recommendations to the National Aquatic Industry Safety Committee as to the most appropriate ratio of pool lifeguards to patrons in public swimming pools to maximise safety. Specific objectives are to:

1. Undertake a pilot study to determine the feasibility of:
a. Identifying if lifeguards can recognise drowning signs during the critical times in the drowning process (i.e. 10 seconds, 30 seconds and 3 minutes) with low through to high numbers of people in the pool.
b. Identifying visual search patterns of pool lifeguards when scanning a public swimming pool across different time periods and compare the perceived versus the actual number of persons scanned.
2. Provide a final report and presentation, summarising the overall outcomes of the pilot work.
3. Utilise results from the pilot study to refine the methodology for a more extensive study into lifeguard scanning techniques in public swimming pools.

Intern roles or tasks: Recruitment of participants. Carry out experiments and research according to protocols laid out by primary researchers. Collect and log experimental data. Conduct statistical analyses of data sets.

Any special skills required? Knowledge or experience with Virtual reality or eye-tracking systems is desirable but not mandatory.

What skills will the Intern acquire through working on this project? The primary purpose of the internship is for the education of the Intern by enabling them to apply their expertise to a real world problem, experience the company environment, develop workplace skills and improve their work-readiness.

Using latent class analysis to identify facial categories

Supervisor(s): Julian Oldmeadow, Christine Critchley

Project Description: Latent class analysis (LCA) is a contemporary statistical technique used to classify data. It assists researchers to identify classes or groups of cases that are similar to one another in terms of a set of measured variables. For example, it can be used to identify groups of people who share similar attitudes towards the sharing of biological samples for genetic research. In this project, we will use LCA to attempt to identify classes of faces.

We encounter thousands of human faces throughout our lives, and often hundreds in a single day. Each face is unique (barring identical twins, perhaps), which presents a challenge to our perceptual and cognitive systems. To help us cope with this complexity we categorise faces into types, but what types of faces are there? Some basic social categories, such as gender, race and age, are readily inferred from faces, and research suggests we use some of these categories automatically. But beyond these social categories, faces also vary systematically along a number of dimensions that correspond to particular social judgments, including approachability, dominance and attractiveness. While these dimensions vary in a continuous manner, our cognitive system may prefer to classify faces into types based on combinations of these dimensions. This project will use LCA to examine whether there are distinct classes or types of faces based on perceived social characteristics.

We have a large database consisting of 500 male and 500 female faces. Each face has been rated by groups of raters on 19 separate traits (e.g. intelligence, distinctiveness, trustworthiness). These traits, in turn, are organised into three dimensions (approachability, dominance, attractiveness). Using LCA, we will explore whether faces form distinct groupings based on these traits and dimensions. If so, we will employ image averaging techniques to visualise the different face types and identify their key features.

This internship would suit someone with strong statistical skills and a willingness to learn new statistical techniques.

Intern roles or tasks: Using latent class analysis to analyse data; Using image averaging software to visualise face types.

Any special skills required? Strong statistical skills and a willingness to learn new statistical techniques.

What skills will the Intern acquire through working on this project? Ability to use latent class analysis; ability to use Psychomorph to manipulate face images; general data management and analysis.

Where are They Now? Assessing the Impact of the School of Health Sciences Research Internship Program on Interns' Career Trajectory.

Supervisor(s): Amirul Islam, Julian Oldmeadow, Oren Tirosh, Leah Dowling

Project Description: The School of Health Sciences Research Internship Program has been considered to be one of the successful programs initiated and administered by the School of Health Sciences. Students mostly at second year and without having any prior research experience conduct their research under a supervisor for six weeks during the summer. The program culminates in a poster presentation at the end of six weeks' research tenure. In terms of students feedback from previous summer internship programs, almost 90% of students agreed or strongly agreed that they were now more likely to enrol in a postgrad or honours degree at Swinburne. This is a significant impactful outcome for a research intensive university if this is the real outcome. However, there has been no formal evaluation of the impact of the program on interns' further study or career choices. Now in its sixth year, the program has been running long enough to start to assess the career pathways of former interns. The project aims to assess if the summer internship students really enrol in honours or post-graduate program and the associated factors with the future enrolment.

Intern roles or tasks: Data collection (secondary). Project would involve data entry, data-analyses, and write-up into a publication

Any special skills required? SPSS

What skills will the Intern acquire through working on this project? Data analysis and writing