School of Psychology

Summer Vacation Research Scholarships 2017

Potential Supervisors and Projects

Here is a list of potential supervisors and projects available within the School of Psychology for a Summer Vacation Research Scholarship project.

Tom Denson

Thirty-four percent of road-related deaths in Australia involve speeding as a major factor (Australia New Zealand Policing Advisory Agency, 2010). This project will use recently developed driving simulation software to manipulate perceptions of speeding. Specifically, the project will test whether misperceiving the passage of time (i.e., feeling that time is passing faster or slower than it actually is) affects driving performance and errors such as speeding.

Vincent Laurent

Project 1: Influence of predictive stimuli on choice between actions

Successful decision-making requires the ability to extract predictive information from the environment to guide future actions. This ability is commonly modelled in the laboratory through specific Pavlovian-Instrumental transfer. This phenomenon shows that a stimulus predicting a particular food outcome biases choice towards actions earning that same outcome. This bias is present in many species including humans, monkeys, horses, rats and mice but its psychological processes remain largely unknown. This project will explore the conditions under which Pavlovian-Instrumental transfer is expressed and will evaluate how it can be removed.

Project 2: Neuronal ensembles and memory formation

A major goal in neuroscience is to understand how memories are formed and stored in the brain. Popular theory holds that these memories are established and retrieved in defined populations of neurons, or neuronal ensembles. Evidence for the existence of these ensembles is sparse, as neuroscientists have been lacking the appropriate tools. However, recent advances in genetics now enables us to directly test the hypothesis that neuronal ensembles encode, store and retrieve memories. The present project will therefore use modern genetic tools to explore how predictive relationships between important events are instantiated in the mammalian brain.

Gavan McNally

Cell-type specific brain imaging during relapse to drug seeking

Relapse to drug-taking is the fundamental problem facing any treatment of drug addiction. 70-80% of drug-users seeking treatment will relapse to drug taking within 12 months of treatment. The brain mechanisms of this relapse are poorly understood but this knowledge is needed to generate new treatment platforms. To this end, in this project, students will gain hands on experience with state of the art techniques to image the activity of genetically defined neurons during relapse to drug seeking in awake freely moving animals.

Kristy Martire

The judgements of forensic scientists (e.g., fingerprint examiners or ballistics analysts) relies on conditional probability estimates: what is the probability of observing 10 particles of gunshot residue on a swab if a person has fired a weapon as compared to not? We are seeking a student intern to work on a project taking an innovative approach to characterising how such judgments are made. The project focusses on how people's prior knowledge about stimulus evidence meshes with the cognitive tools they bring to bear when generating inferences. The project will deliver a theoretically significant novel framework which identifies the optimal environments for estimating the conditional probabilities on which forensic judgments rely. The intern will be involved with stimuli development, computer programming, online distribution and monitoring of experiments, and data cleaning and documentation.

Joel Pearson

The scientific study of intuition

What is human intuition? How can it be measured and can it be improved? We have devised the first scientific technique to measure intuition. Using this method, we found evidence that people can use intuition to make faster, more accurate and more confident decisions. This groundbreaking discovery is the first to show scientific evidence that intuition actually exists and a new method to objectively measure it. We have ongoing projects using novel empirical paradigms, physiological measures and computational decision models to show that unconscious emotional information can boost accuracy in concurrent emotion-free decision tasks. New projects are available using these techniques to study intuition, its genetic and brain basis and its application e.g. can we train the military, sports stars or entrepreneurs to be more intuitive or more productive with their intuition?

Marcus Taft

Impact of language background on spelling performance

From tests carried out on bilinguals who grew up in Australia, we have preliminary data to suggest that those whose first language (L1) was Chinese (as opposed to other L1's) have better memory for orthography (i.e., spelling) than monolingual English speakers, despite performing less well on certain other language measures. It might be argued that the logographic Chinese writing system lends itself to holistic and precise orthographic processing which transfers to the processing of alphabetic English. However, it appears that the advantage for the Chinese-English bilinguals even holds for those who do not know how to read or write Chinese. This seems to imply that the relevant factors for better spelling lie either in the home environment or in the genes.

The proposed project aims to examine this more thoroughly by looking at both orthographic and non-orthographic memory of bilinguals with different L1's, and at individuals from these cultural backgrounds who are not themselves bilingual (e.g., third generation migrants).

Relevant reading (that investigates bilingual language ability, but not spelling): Nguyen-Hoan M., Taft M. (2010). The impact of a subordinate L1 on L2 auditory processing in adult bilinguals. Bilingualism, 13(2), 217-230. http://www2.psy.unsw.edu.au/Users/mtaft/Nguyen-Hoan%20&%20Taft%202010.pdf

David White

Many forensic and security procedures use face photographs to verify the identity of unknown people. However, face matching is a surprisingly difficult and error-prone task – on average, people make an error 1 in every 4 or 5 decisions. Recently, researchers have discovered that a small portion of the population have extraordinary face recognition ability. These 'super-recognisers' demonstrate almost perfect accuracy, even

in very challenging conditions. We recently recruited a large group of super-recognisers to participate in our research. We plan to investigate why they can identify faces so much better than other people, and whether they are also skilled at other tasks, such as recognising members of the same family.

Lisa A. Williams

Blood donors literally give a part of themselves to others – engaging in arguably one of the most prosocial acts one can do. The process of donating blood can involve physical discomfort and often instils a sense of fear, especially amongst those who have never donated. Recent research on the psychology of blood donors led by Dr Williams and her colleagues has suggested that, despite these apparent negative aspects of donation, many donors in fact derive positive emotions from donating. In this project, students will contribute directly to ongoing studies in this research area – spanning the entire research process, from question and hypothesis development to research design, and data collection to data analysis.