



Project Title: Validating a digital automated cognition test for pre-clinical dementia decline monitoring and diagnosis		Code: SOMS2
Host School / Institute: School of Medical Sciences		Address: Level 4, M02K, 100 Mallett St Camperdown NSW
Certificates & Clearances required: No		
Primary Supervisor: Prof Micheal Valenzuela		
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Co-Supervisor/team: Post-doctoral research Dr Polly Barr will also be involved in supervision and the project.		
Project Type: Clinical; Data Analysis		
Project Category: Ageing; Epidemiology		
Skills / Attributes of a successful student: The student should have a range of academic research skills however training and supervision will be provided. The student should be a keen and diligent researcher with a keen interest in dementia prevention. Of up most importance is the ability to collect data in the most rigorous and scientific manner whilst maintaining a good personal and empathetic interaction with older participants who potentially may find the tasks frustrating and upsetting. The student will also have excellent organisation and computer skills as inputting data is required, the ability to clearly document all stages of the project (including any data cleaning) is required and to learn statistical analysis and data preparation is essential. Previous experience of data handling is ideal. The Student is expected to attend and contribute to lab meetings as well. It is expected that the student has the skills (i.e. motivation and initiative) and dedication to work independently.		
Project Keywords: Diagnosis; Digital technology; Cognitive Decline; Dementia; Language		
Project Description: Aim: To statistically validate a new automated machine learning dementia diagnosis/monitoring tool against the standardised cognitive assessment. The prevalence of dementia doubles every 20 years and as there is no cure for dementia the best treatment is prevention. However, prevention is only effective if initiated early- which is impossible given the fact it currently takes 3 years from initial clinical symptoms to diagnosis; we are in dire need for a pre-clinical early detection test. Professor Valenzuela has developed an exciting automated screening tool (LOGOS) that can potentially be used to monitor and diagnose cognitive decline instead of the archaic, timely and expensive standardised tests currently in use. However, in order to do this LOGOS needs to be validated against 'gold standard' current diagnostic tests (i.e. RAVLT). LOGOS is an automated equivalent of the RAVLT conducted via a participant's telephone, whenever and wherever is convenient for the participant. Recording and scoring is all conducted automatically using machine learning. If it is found that LOGOS is validated against the RAVLT it will completely change dementia diagnosis to enable monitoring of healthy participants so that any slight decline is noticed in a timely manner and a prevention intervention can be applied. Putting diagnosis in the hands of the consumer will give them more power, ease of mind and quality of life. This will also elevate some burden on the already overloaded health system. This project will entail recruiting, consenting and testing elderly participants on both the RAVLT and LOGOS tests. The researcher will also conduct all tasks related to analysing statistically whether or not these two tasks measure the same aspect of cognition (including but not limited to inputting and cleaning data, analysing and reporting statistics). The successful applicant will be taught clinical research collection skills, supervision and training will be provided for data entry and analysis in excel, SPSS and R. It is expected that the student will write this research up in a scientific presented to other scientists therefore scientific writing and presentation training will be provided in this area as well. At later stages this research will be published at conference proceedings or in journal articles and the student will have the opportunity to be continually involved with this and other work the lab conducts if the project initially goes well. This will ensure the student gains all the necessary skills to become as an high quality clinical quantitative researcher.		