

NATALIE GASTIN

INTEGRATED PHD PROGRAM (NEUROSCIENCE)
SWINBURNE UNIVERSITY OF TECHNOLOGY
MELBOURNE, AUSTRALIA



**SWIN
BUR
NE**

SWINBURNE
UNIVERSITY OF
TECHNOLOGY

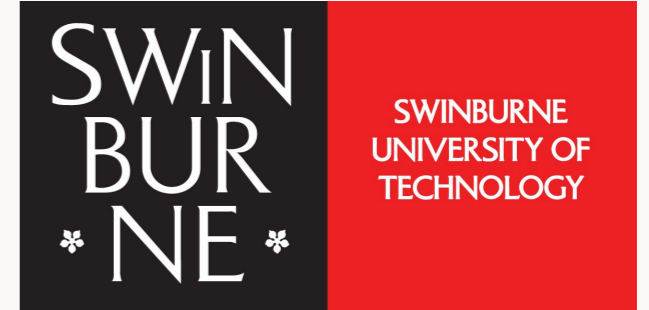
**Study Protocol:
Assisting clinical assessment of fitness-to-drive following
drug or alcohol misuse,
using the Schuhfried Vienna Test System's
Fitness-to-Drive (Standard) battery.**

Phase 1 - Proof of concept study

ngastin@swin.edu.au



NATALIE GASTIN
ngastin@swin.edu.au



Current Australian Legislation

- Any driver applying for relicensing after any type of suspension, be that driving under the influence of alcohol or drugs (DUI), injury, or medical fitness, must be clinically assessed for "fitness to drive" (FTD) (Austroads, 2016)
- Assessment of FTD for injury or medical conditions is relatively straightforward
- Assessment of FTD following alcohol or drug misuse is complex with no single test or guideline to follow, none-the-less clinicians are required to provide assurance that:
 - A. The substance misuse has not resulted in brain or any other end organ damage relevant to driving, and;
 - B. The applicant is truly in remission and has completed a minimum of 1 month abstinence



NATALIE GASTIN
ngastin@swin.edu.au

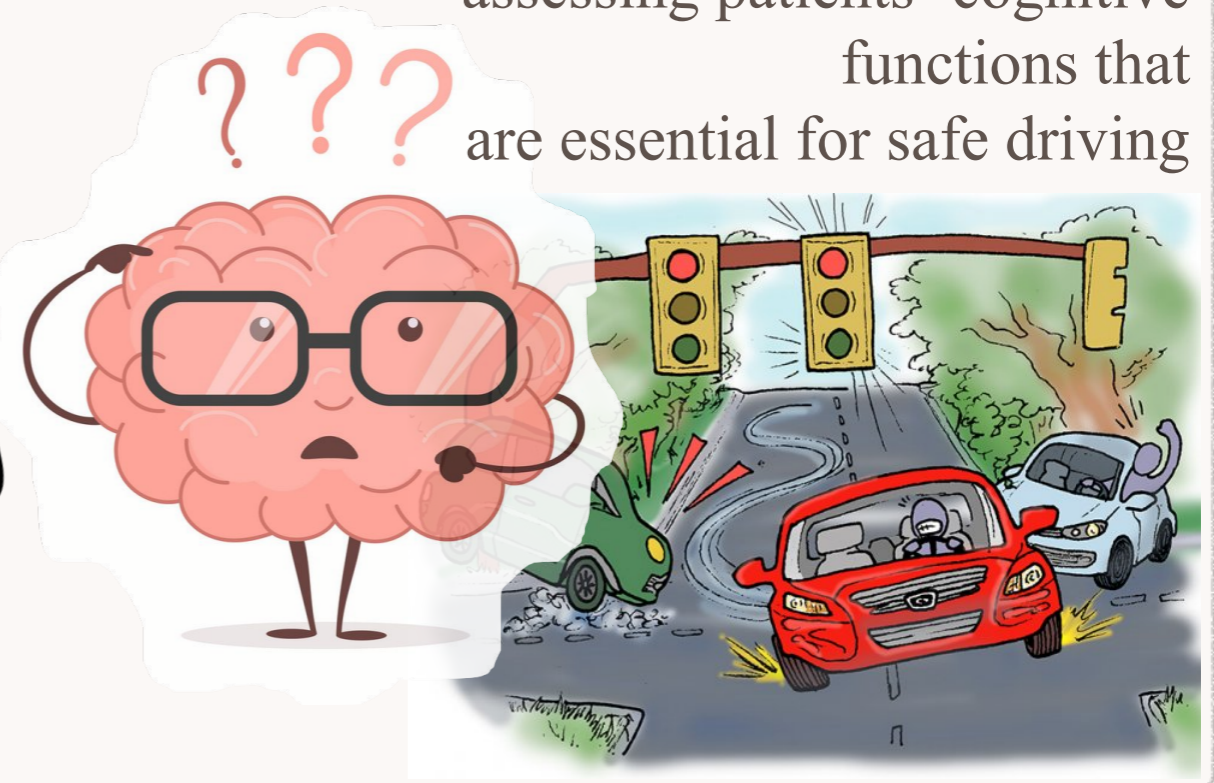
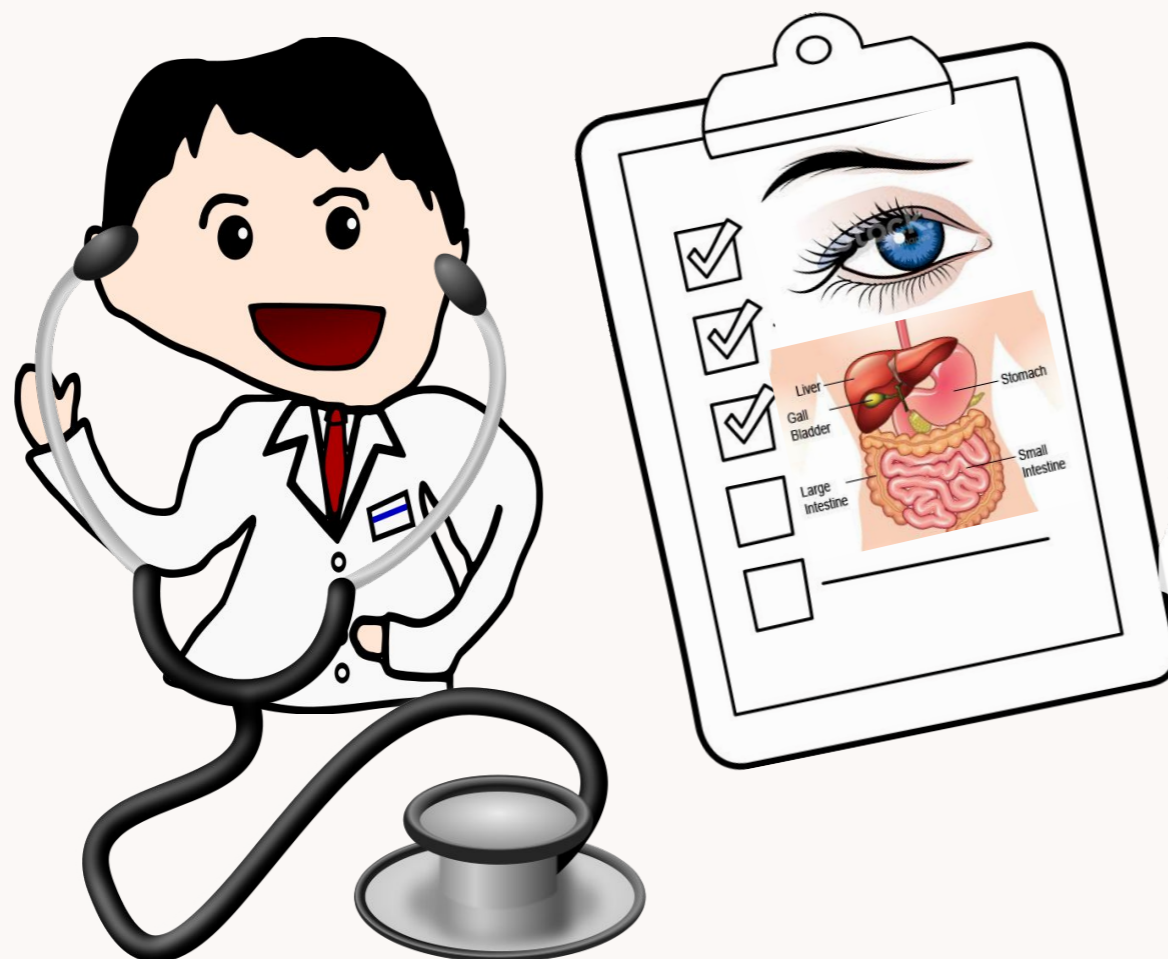
**SWIN
BUR
NE**

SWINBURNE
UNIVERSITY OF
TECHNOLOGY

Background

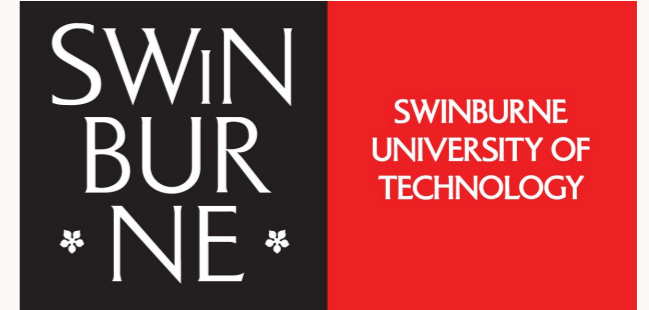
Clinical assessments are most often performed by specialist drug and alcohol medical doctors, who do not perform driving tests.

Australian practitioners are seeking a reliable tool to assist them in assessing patients' cognitive functions that are essential for safe driving





NATALIE GASTIN
ngastin@swin.edu.au



Case study - Liver damage

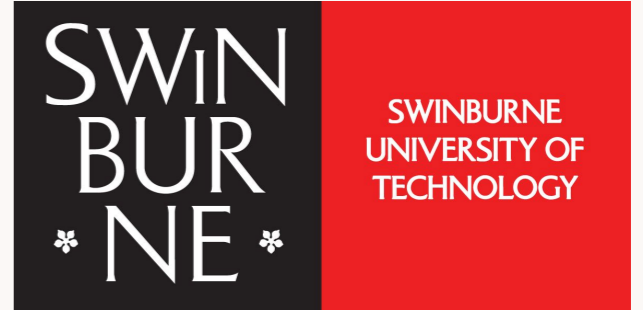
- early signs of sclerosis of the liver (liver disease, LD)
- reformed alcoholic, who is now abstinent
- known: liver disease never abates
- known: LD continues to worsen even in abstinence
- known: LD is exacerbated by stress, overall health, and diet
- known: LD eventually causes widespread brain damage
- known: LD causes cognitive decline (early brain damage) from initial onset

In such a case, how can the professional medical specialist be certain the brain or end organ damage isn't affecting their patient's driving capacity?

When viewed through this lens it is clear that Australia must establish a protocol of rigorous psychological, cognitive and psychomotor assessment for licence reinstatement following a DUI suspension.



NATALIE GASTIN
ngastin@swin.edu.au



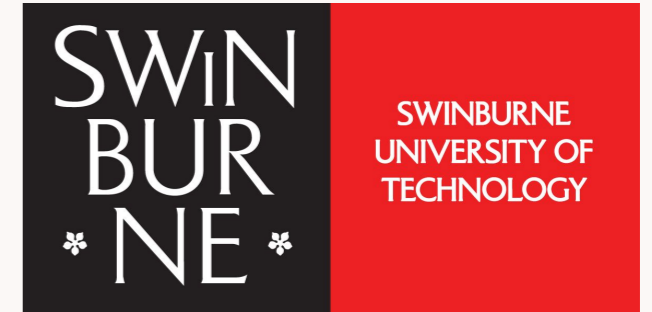
Study Objective

To determine if the Schuhfried Vienna Test System, Fitness-to-Drive (Standard) battery can assist clinical assessments of an individual's cognitive functions known to be essential for safe driving.





NATALIE GASTIN
ngastin@swin.edu.au



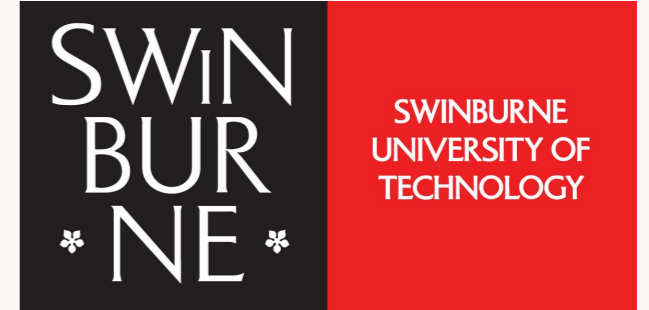
The Schuhfried Vienna Test System

- Computerised battery of psychological, cognitive and psychomotor ability tests designed for use in traffic psychology research and practice arenas
- Developed in the 1950's, continuously updated
- Mandatory requirement in Austria, Germany and various other European countries for licence reinstatement
- Requires a dedicated game style control panel with large boldly coloured buttons, pedals, headphones,
- No computer skills or experience required.





NATALIE GASTIN
ngastin@swin.edu.au



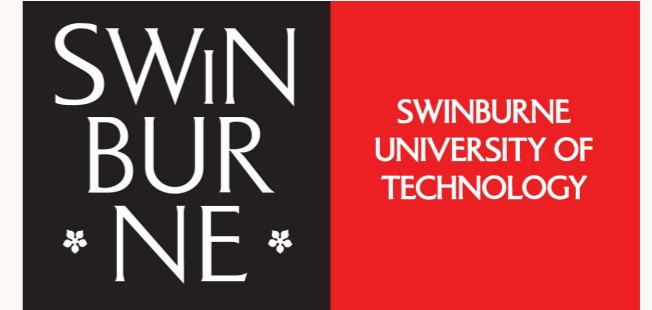
Schuhfried Vienna Test System

Consisting of five brief driving-related ability tests, based on Groeger's (2000) action theory model of driver behaviour, three dimensions are assessed:

- “action planning” which requires logical reasoning skills to analyse a situation and plan appropriate action or reaction
- “implementation” requires concentration and focused attention to execute the planned action
- “dealing with goal interruptions and conflicts” requires observational and reaction abilities including
 - obtaining an overview in a rapidly changing situation, and;
 - the ability to initiate an appropriate and timely response to unforeseen encounters which relies upon initiation of reaction speed, simple motor speed, and reactive stress tolerance



NATALIE GASTIN
ngastin@swin.edu.au

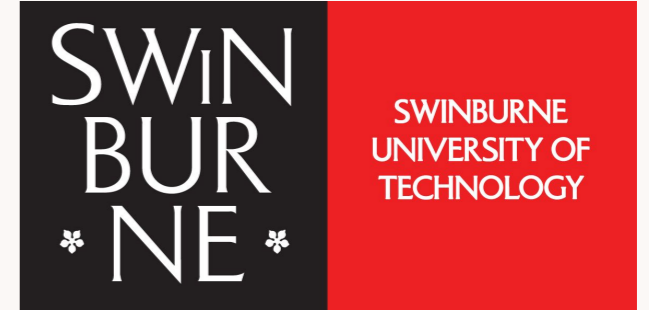


Phase 1 - Proof of concept study

- Non-random, self selected, consecutive sample
- 20 licensed, or previously licensed individuals seeking treatment for drug or alcohol misuse will be recruited at two Australian drug and alcohol services, one a residential detoxification unit, the other an outpatients clinic
- Selection Criteria includes:
 - willingness to participate;
 - diagnosed with moderate to severe Alcohol or Drug Use Disorder per DSM-5 classification;
 - has completed acute withdrawal phase;
 - holds a current driver's license, or intends to reinstate a suspended or expired licence



NATALIE GASTIN
ngastin@swin.edu.au

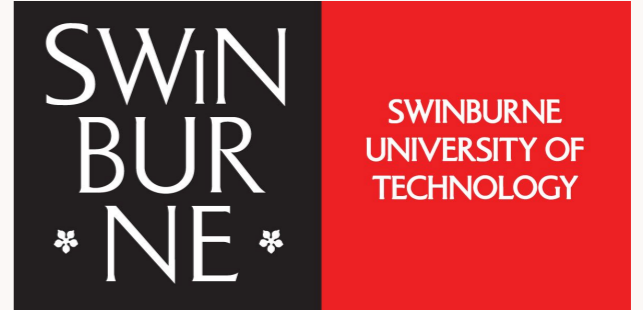


Methodology

- Empirical, post-positivist strategy
- Quantitative, quasi experimental, observational research using computerised test battery
- All participants will undergo a clinical assessment of fitness-to-drive, breath test analysis and complete the 60 minute Schuhfried battery
- Schuhfried tests and clinical evaluation will be administered blind to each other, not more than 7 days apart
- Primary outcomes will correlate Schuhfried results with clinical assessment of fitness-to-drive
- Secondary outcomes that suggest cognitive impairments relevant to driving competency will be communicated to both the participant and the subject's treating doctor.



NATALIE GASTIN
ngastin@swin.edu.au

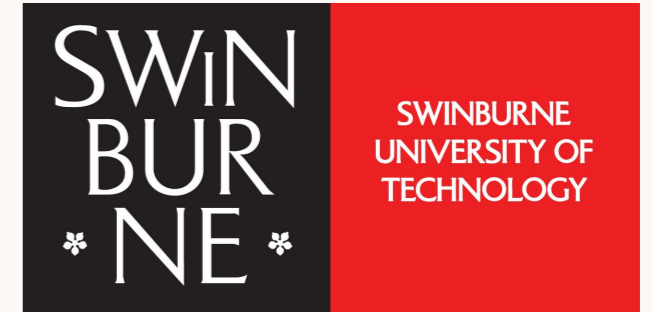


Early indications, difficulties and limitations

- Residential detoxification patients do not have the minimum 1 month remission, clinical assessments will therefore ignore part B of Australian regulation
- Early findings suggest a strong correlation between clinical assessment and Schuhfried results, however this may be due to the timing of the tests, and may be an indicator that patients undergoing detoxification are not at all in a fit state to resume driving, regardless of their legal licensing status
- Patients undergoing detoxification are a particularly vulnerable cohort and may find the test battery less “fun” than it initially appears. Negative results may be devastating to a patient who has entered detox voluntarily with a valid driving licence. Feedback given in such circumstance must be mindful and sensitive to the impact negative results may have on the patient’s mood and mental health
- Stress tolerance tests and the ability to concentrate seem to predominantly be impaired in this cohort, frequently leading to a grading of driver incompetency. This may be a time sensitive problem, Retesting after 1 month remission may shed better light on the extent of such impairments.



NATALIE GASTIN
ngastin@swin.edu.au



References

Austroads. (2016). *Assessing fitness to drive for commercial and private vehicle driver: 2016 Medical standards for licensing and clinical management guidelines, as amended up to August 2017*. Sydney: Austroads Ltd. Retrieved from <https://austroads.com.au/drivers-and-vehicles/assessing-fitness-to-drive>

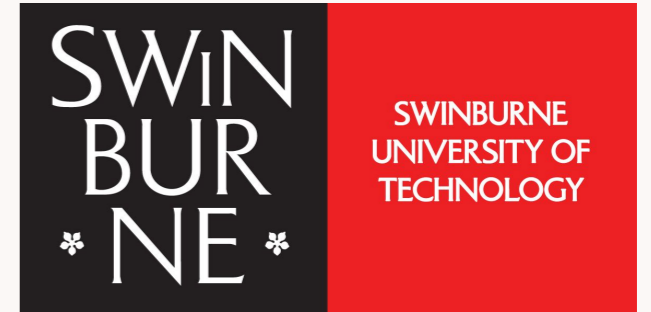
Groeger (2000). *Understanding driving: Applying cognitive psychology to a complex everyday task*. East Sussex: Psychology Press.

Schuhfried. (2013). *Vienna Test System Manual: Fitness to Drive Standard & Fitness to Drive Plus*. Mödling, Austria: Schuhfried GmbH

Images downloaded from www.istockphotos.com/au



NATALIE GASTIN
ngastin@swin.edu.au



Thank you for your attention today

ngastin@swin.edu.au