

Do people gamble with their lives: The relationship between risky driving behaviour and other risky behaviours.

Fernan, D., Palk, G.,
Centre for Accident Research and Road Safety-Queensland (CARRS-Q)
School of Psychology and Counselling
Institute of Health and Biomedical Innovation
Queensland University of Technology

Contact: David Fernan, Masters Scholar, CARRS-Q
Phone: (+61 7) 3138 4922, Fax: (+61 7) 3138 0111,
Email: d.fern@qut.edu.au

Abstract

General risky behaviour is explored for correlation with risky driving behaviour in light of two theories, self-control and cross-situational consistency. Identification of general risky behaviours associated with risky driving behaviour, and the theory that best predicts the behaviours, will enable better targeting of intervention and education strategies to reduce driving related fatalities and injuries. A correlational study using participants (N=152) drawn from first year university undergraduates and the public surveyed their lifestyle and behaviours. Relationships were found between risky driving behaviours and other risky behaviours such as alcohol consumption, cannabis use and performing unlawful activities. No significant differences were found between genders, with the exception that males were more likely to believe that they were at risk of injury from their employment, $\chi^2(1, N = 152) = 4.49, p = .03$, were more likely to have performed an unlawful offence, $\chi^2(1, N = 152) = 11.77, p = .001$ and were more likely to drink drive, $t(55.41) = -3.87, p < .001$, mean difference = -0.63, CI 95% (-0.9, -0.37).

People engaged in risky driving behaviours were more likely to engage in other risky behaviours. The theories that were explored were unable to accurately predict an association between general risky behaviour and driving without a license or when disqualified. Cross-situational consistency explained 20% ($R^2_{adj} = .16$) of the variance in which people engaged in risky driving with low self-control theory explaining an additional 0.3% variance ($R^2_{change} = .003$), $F(8,143) = 6.92, p < .001$. Driving while under the influence of alcohol could be predicted by risky behaviours in lifestyle, health, smoking, cannabis use and alcohol consumption, $F(8,143) = 6.92, p < .001$. The addition of self-control was not significant.

Key words: Risky Driving, Risky Behaviours

1. Introduction

People constantly make choices regarding the level of risk in their lives, whether it is to exercise, eat healthily, smoke or drink alcohol. Current research indicates that there is a positive correlation between risky driving behaviour and criminal behaviour, in both Australia and overseas (Broughton, 2007; G.R. Palk & Davey, 2005; Rose, 2000). Rose (2000) found that drink drivers in Great Britain were found to be twice as likely to have a criminal record as members of the general public and Broughton (2007) found that the strongest relationship between the number of vehicle offences and non vehicle offences was for those driving while disqualified. Risky behaviour, in the form of alcohol, tobacco and drug use, is estimated to have cost Australian society \$56.1 billion during the 2004 -2005 financial year (Ministerial Council on Drug Strategy, 2011).

In a Dutch study examining risky traffic and criminal behaviour, the authors suggested that their results supported the idea of a common factor underlying risky behaviour both in traffic and criminal behaviour (Junger, West, & Timman, 2001). This underlying trait was thought to represent risk

taking, impulsivity or low self-control. Although a useful observation, care must be taken when trying to apply overseas results to a local context (Brace, Whelan, Clarke, & Oxley, 2009).

Excessive alcohol consumption, illicit drug use and drink driving are issues of concern in Australia and other countries. Australian authorities have responded to these issues with different strategies, including harsher penalties imposed through the legal system, associated policing strategies, greater support of individuals with substance dependence, improved availability of public transport, and increased support from various community groups which deal with such behaviours (Queensland Parliament, 2010). There appears to be strong evidence to link risky driving with criminal activity and deviant behaviour (Junger, et al., 2001). Further, males have been found to be more likely to engage in excessive alcohol consumption (Australian Institute of Health and Welfare, 2007) and they are also over-represented in road fatalities (Henley & Harrison, 2009). What is of interest is whether poor lifestyle behaviours, such as lack of exercise, poor diet, or smoking, all of which can be classified as risky behaviours, are related to risky driving. A closer examination of risky behaviours that relate to risky driving behaviour will reveal the role that governments at all levels, as well as the broader community, can play in implementing cost-effective programs and measures to alter attitudes to risky driving behaviours such as speeding and drink-driving to make roads safer.

1.1 Theories

Cross-situational consistency suggests that individuals experiencing different situations in a psychologically similar way would think and behave in a similar manner in response to these situations across different settings. Personality theorists discuss two phenomena that are useful in the linking together of different crimes - temporal stability and cross-situational consistency (Woodhams, Hollin, & Bull, 2008). Temporal stability is defined as the consistency of behaviour across the 'same' situation, while cross-situational consistency refers to behaviour of an individual being consistent across different situations. Shoda, Mischel and Wright (1993) do not however consider them as separate constructs, rather that they represent two ends of a continuum. They further suggest that cross-situational consistency should increase as the situation similarity increases, until temporal stability is achieved.

Gottfredson and Hirschi argue in their theory of low self control that crime is similar to other risky behaviours (such as alcohol consumption, smoking, drug –taking, and unprotected sex) in that it brings immediate gratification (albeit temporarily) to the individual as a result of low self control. In their theory, crime is viewed as being simple and unplanned, with individuals influenced by external elements such as whether there are easy targets available, obvious deterrents (e.g. guardians); such behaviours can be seen in people who are impulsive and take risks (Gottfredson & Hirschi, 1990).

Cross-situational theory and low self-control theory are examined for their potential to predict risky behaviours with the following proposed four hypotheses.

- H1: People who engage in risky behaviour are more likely to engage in risky driving behaviour.
- H2: People who commit serious traffic offences are more likely to commit other types of offences.
- H3: Men are more likely to engage in risky behaviours than women.
- H4: The theory of low self-control will explain risky behaviour better than the theory of cross-situational consistency.

2. Method

A 60-item questionnaire was developed for use online. The questionnaire used multiple-choice items to gather information on a participant's demographic details, health, driving behaviours and other risky behaviours such as smoking, alcohol and possible drug use. It included items 1, 2, and 3 of the World Health Organisation's AUDIT (Alcohol Use Disorders Identification Test) which is widely used to assess, and has been demonstrated to be a reliable indicator of risky levels of alcohol use (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). These items comprised the 'consumption' subscale of the test and was summed to provide an indication of risk level of the participant's alcohol

consumption; they have been validated as being as effective as the full AUDIT for detecting risky levels of alcohol consumption in both men and women (Gual, Segura, Contel, Heather, & Colom, 2002). A score of six or seven in the AUDIT is considered to indicate risk of alcohol related harm, but a conservative cut off of six was used in the present study.

The questionnaire included an additional five categories to identify risky behaviours in the situational contexts of smoking, alcohol use, health, drug use and lifestyle, measured using a 5-point frequency scale and yes/no questions. The risky driving scale was created by the present researchers and comprises the mean of three questions assessing speeding, frequency of speeding and tailgating. The questionnaire also included a scale of 14 items identifying self-control and measured on a 5-point frequency scale (1= almost always, 5 = almost never). These items were influenced by those used by Stirling, and attempted to identify constructs of impulsivity, sensation seeking and social empathy (Stirling, 2010).

Participants were recruited from first year university students and a snowball sampling approach was used to recruit from the general public with a final sample of 152 participants (living in Australia). Before commencing the questionnaire, the participants were required to first read on-screen information regarding the purpose of the study and reassurances that their responses were anonymous and would be treated in confidence. Consent was implied by participants progressing forward onto the next screen. For the online questionnaire to be accepted, the participant had to complete all questions and then activate the submit tab.

The three scales used were found to be reliable. Three items (questions 26, 27 and 28 of the survey) obtained from the AUDIT consumption subscale were summed to give a *Risky Alcohol Consumption* (RAC) Scale (Cronbach's $\alpha = .68$). The *Risky Driving* (RD) scale (Cronbach's $\alpha = .72$) comprised the mean of questions 34 (degree of speeding), 35 (frequency of speeding) and 37 (tailgating). The *Self-Control* (SC) scale was calculated using the mean of 14 questions (questions 48 to 61) examining low self-control as a construct (Cronbach's $\alpha = .72$).

Independent variables used were gender, smoking, lifestyle (categorical) and health, drug use (continuous). High consumption of take away foods and low consumption of vegetables are risky health behaviours predisposing an individual to obesity and other health complications (Lawrence, 2004; Rosenheck, 2008). Alcohol use was used as both a categorical and continuous variable. The items under lifestyle identify levels of risky behaviour in areas of occupation, sport, violent behaviours and illegal activities. The dependent variables are driving to/from work while disqualified (categorical), driving to/from work without a license (categorical), driving home believing they are affected by alcohol (ordinal), and risky driving scale (ordinal).

3. Results

3.1 Demographics and Characteristics

Median age of the 152 participants (109 females and 43 males) was 22.5 years (range = 17 -74 years). With twice as many female respondents as males, some gender comparisons may suffer from a lack of power. The majority of participants (69.7%) were engaged in some form of study and just over 80% were in some form of employment. The data in Table 1 indicate that people engage in some form of risky driving, consume risky levels of alcohol and frequently consume takeaway foods that are often high in salt and fats. Almost one in four people identified that they used cannabis at least once per year and 25% of participants had engaged in some form of unlawful activity.

It was found that 47% of participants admitted to driving 1 to 5 km/hr above the speed limit if they felt they were running late, and a further 30% would travel from 5 to 10 km/hr over the posted speed limit. One in 10 people admitted they would be likely to travel 10 km/hr or more over the posted speed limit if they felt they were running late. Nearly one in five participants indicated they would speed daily, while a third would speed at least once per week.

Of the 12 participants who reported that they had at some stage driven to or from work without a license, all had reported that they were likely to speed if in a hurry, 50 % had driven home believing they were under the influence of alcohol at least once per year, and 41% used cannabis at least once per year. Similarly, of the nine participants who reported driving to/from work while disqualified, all had reported that they were likely to speed if in a hurry, 77 % had driven home believing they were under the influence of alcohol at least once per year, and 67% used cannabis at least once per year. It is noted that for both of these groups (n=12 and n=9) both are too small to provide meaningful conclusions.

Table 1: Percentage of Participants Engaged in Risky Behaviours

Risky Behaviour	Percentage of participants
Risky alcohol consumption	33.6%
Use cannabis at least once per year	23%
Smoke tobacco	9.2%
Have engaged in unlawful activity	25%
Takeaway food at least once per week	59.2%
Less than one serve of vegetables per week	13.1%
At risk of injury at work	13.8%
Playing contact sports	17.8%
Risky driving behaviour	89.5%
Drink driving (at least once per year)	11.8%
Driving to work without a license	8%
Driving to work while disqualified	6%

Note. N=152

3.2 Hypotheses

Hypothesis One

In Table 2, it can be seen that both risky levels of ‘risky alcohol consumption’ and ‘having performed an unlawful activity’ are correlated with likelihood to engage in risky driving behaviour and drink driving. Risky behaviour for smoking and cannabis use is also correlated with likelihood to drink drive. Surprisingly, high levels of takeaway consumption (once per week or more) is correlated with risky driving behaviour although only a small effect size was noted ($\eta^2 = .04$). It is worth noting that the dependent variable of ‘drink driving’ showed a breach in Levene’s test requiring the use of the t value for non-normal variances. If a t-value is used based on an assumption of equal variance there is a risk of having an inflated result and an increased risk for a Type 1 error. Hence with a significant Levene’s test indicating unequal variance the appropriate t-value is used instead.

Interesting associations were found in Chi-Square analysis of comparison of risky behaviours with driving disqualified and unlicensed. For example, unlawful activity and cannabis use both show some association with risky behaviours such as driving while disqualified and driving without a licence. However, the small sample sizes for the latter two criteria render any meaningful interpretation invalid from a statistical viewpoint.

Table 2: Significant Mean Differences of Various Risky Behaviours with Risky Driving and Driving under the Influence

	<i>M (SD)</i>		t	df	Sig. (2-tailed)	Mean Diff.	95% confidence intervals		η^2
	Not at Risk	At Risk					Lower	Upper	
<i>Risky alcohol consumption categorical scale</i>									
Risky driving scale	1.16 (.67)	1.58 (.76)	-3.49	150	.001	-0.42	-0.658	-0.18	.08
Have you ever driven under the influence of alcohol?	0.36 (.73)	0.65 (.89)	-2.02	84.73	.047	-0.29	-0.58	-0.01	.05
<i>Do you use cannabis?</i>									
Have you ever driven under the influence of alcohol?	0.29 (.60)	1.00 (1.09)	-3.70	40.47	.001	-0.71	-1.10	-0.32	.25
<i>Do you smoke?</i>									
Have you ever driven under the influence of alcohol?	0.35 (.711)	1.5 (.86)	-5.67	150	<.001	-1.15	-1.55	-0.75	.18
<i>Are you at potential risk of injury in your current job?</i>									
Risky driving scale	1.24 (.71)	1.63 (.74)	-2.34	150	.021	-0.39	-0.73	-0.06	.03
<i>Have you ever engaged in unlawful activities?</i>									
Risky driving scale	1.18 (.67)	1.66 (.78)	-3.70	150	<.001	-0.48	-0.74	-0.23	.08
Have you ever driven under the influence of alcohol?	0.36 (.74)	0.74 (.89)	-2.35	55.14	.022	-0.38	-0.70	-0.06	.09
<i>How often do you have takeaway?</i>									
Risky driving scale	1.07 (.07)	1.45 (.08)	-3.49	149.47	.001	-0.38	-0.60	-0.17	.04

Note. η^2 = effect size, α = .05, *M* = Mean, *SD* = Standard Deviation

Hypothesis Two.

Data from Table 2 shows a significant relationship between ‘Have you ever engaged in unlawful activities’ and the dependent variables ‘Risky driving scale’ and ‘Have you ever driven under the influence of alcohol?’ This tends to support hypothesis two, people who commit serious traffic offences are more likely to commit other types of offences. The sample sizes for individuals who have ‘driven to and from work while disqualified’ (n=12) and ‘driven to and from work without a license’ (n=9) were too small to make any comparisons.

Hypothesis Three.

Independent t-tests for gender across a number of risk-taking categories revealed that men ($M = 0.91$, $SD = 1.00$) were more likely than women ($M = 0.28$, $SD = 0.62$) to drive home believing they were under the influence of alcohol, $t(55.41) = -3.87$, $p < .001$, mean difference = -0.63 , CI 95% (-0.9 , -0.37), showing a medium effect size, $\eta^2 = .21$. Chi-Square analyses revealed that men were more likely to believe they were at potential risk of injury in their employment, $\chi^2(1, N = 152) = 4.49$, $p = .03$, showing only a small effect size, $\Phi = .17$ and were more likely to have engaged in unlawful activities $\chi^2(1, N = 152) = 11.77$, $p = .001$, displaying a medium effect size, $\Phi = .28$. It is noted that, as participants were not required in this study to state their actual occupation, an objective assessment of work risk (for example, whether the male respondents were employed in more hazardous jobs than the female respondents) cannot be made, meaning that this criterion may reflect perceived risk in employment as well as actual risk. The sample sizes for individuals who have ‘driven to and from work while disqualified’ (n=12) and ‘driven to and from work without a license’ (n=9) were too small to make any comparisons.

Hypothesis Four.

Logistic regression analysis of whether someone has ‘driven for work while disqualified’ was conducted although it was recognised that information gained would not be statistically significant due to small sample sizes (n=9). Consequently very few variables can be entered. None of the various risk behaviour categories were significant in the first step and the model failed to predict those who ‘drove without a license for work’. The success rate of the model used for predicting the above two variables was less than just using the constant alone (Nagelkerke R square = $.247$). In step two, the addition of the self control scale still did not predict those who drove while disqualified but there was an increase in variance (Nagelkerke R square = $.361$) and was significant, $p = .014$. In both steps, correct prediction of individuals at risk was less than chance.

An analysis of whether someone is likely to ‘drive without a license for work’ was conducted using logistic regression although it was recognised that information gained would not be statistically significant due to small sample sizes (n=12). Of the various risk behaviour categories (ever engaged in unlawful activity and Smoking (“Do you smoke?)) were significant in the first step but the model failed to predict those who drove without a license. The model’s success rate was only an extra 1.3% than using the constant alone (Nagelkerke R square = $.2$). In step two, the addition of the self-control scale still did not predict those who ‘drove without a license for work’ but there was an increase in variance (Nagelkerke R square = $.29$) and was significant, $p = .019$. In both steps, correct prediction of individuals at risk in both categories was less than chance.

Results obtained from a hierarchical regression indicate that risky driving behaviour can be predicted by risky behaviours in lifestyle, health, smoking, cannabis use and alcohol consumption, $F(8,143) = 4.48$, $p < .001$. Together these self-reported behaviours explained 20% ($R^2_{adj} = .16$) of the variance in which people engage in risky driving. The addition of self-control was not significant, only explaining an additional 0.3% variance ($R^2_{change} = .003$) in risky driving. As seen in Table 3, unlawful activity ($sr^2 = .24$), vegetable consumption ($sr^2 = .16$) and alcohol consumption ($sr^2 = .17$) were significant predictors.

Table 3: Hierarchical Regression Coefficients for Predicting ‘Risky Driving Scale’

Variables	Unstandardised Coefficients B	t	Sig.	95% Confidence Interval for B	
				Lower	Upper
Unlawful activity	0.43	3.15	.002	0.16	0.70
Vegetable consumption	0.12	2.12	.036	0.01	0.23
Takeaway consumption	0.13	1.91	.06	0.00	0.27
Smoking	0.06	0.29	.77	-0.36	0.48
Cannabis Use	-0.06	-1.13	.26	-0.18	0.05
Risk of injury in job	0.22	1.39	.17	-0.1	0.54
Playing contact sports	0.16	1.07	.29	-0.13	0.44
Risky alcohol consumption	0.05	2.31	.02	0.01	0.09

Note. $\alpha = .05$

Results obtained from a hierarchical regression indicate that driving while under the influence of alcohol can be predicted by risky behaviours in lifestyle, health, smoking, cannabis use and alcohol consumption, $F(8,143) = 6.92, p < .001$. Together they explained 27.9% ($R^2_{adj} = .24$) of the variance in which people engage in drink driving. The addition of self-control was again not significant, only explaining an additional 0.9% variance ($R^2_{change} = .009$) in drink driving. As seen in Table 4, cannabis use ($sr^2 = .20$), vegetable consumption ($sr^2 = .15$) and smoking ($sr^2 = .24$) were significant predictors.

Table 4: Hierarchical Regression Coefficients for Predicting ‘Drink Driving’

Variables	Unstandardised Coefficients B	t	Sig.	95% Confidence Interval for B	
				Lower	Upper
Unlawful activity	0.11	0.79	.43	-0.17	0.39
Vegetable consumption	0.13	2.14	.034	0.01	0.24
Takeaway consumption	0.02	0.26	.799	-0.12	0.16
Smoking	0.74	3.34	.001	0.31	1.18
Cannabis Use	0.17	2.82	.006	0.05	0.29
Risk of injury in job	0.23	1.36	.176	-0.10	0.56
Playing contact sports	0.00	-0.01	.99	-0.30	0.30
Risky alcohol consumption	0.01	0.26	.798	-0.04	0.05

Note. $\alpha = .05$

4. DISCUSSION

The purpose of this study is to determine if a relationship exists between risky driving behaviours and general risk taking behaviours and whether such a relationship is best described in terms of self-control theory or cross-situational theory. Risky driving behaviours were measured across four areas, risky driving (speeding and tailgating), drink driving, driving for work without a license and driving for work while disqualified.

Four hypotheses were tested. The first hypothesis posits that people who engaged in various risk taking behaviours during the course of their daily lives are more likely to be engaged in risky driving behaviour. Findings from the present study indicate that the majority of participants would engage in risky driving behaviours if they felt they were under pressure due to time constraints. A similar result was observed by Fleiter, Lennon, and Watson (2007) and nearly one in five would tailgate the driver in front of them if

they felt frustrated. Analysis of the data in the present study indicated that participants who had poor dietary habits (significant fast food intake), dangerous occupations or had committed a criminal offence at some point in their lives were more likely to engage in the unsafe driving behaviours of speeding and tailgating. Those who engaged in unhealthy levels of alcohol consumption, smoked tobacco or smoked cannabis were likely to have driven home while under the influence of alcohol, suggesting that these events may be occurring in a salient social context.

Watson (2004) comments that self-reporting of driving without a license varies between 11% and 70% of survey respondents; Watson (2006) also cited a 1991 survey by New South Wales (Australia) police that reported that 2.4% of drivers pulled over as part of random roadside breath test (RBT) operations did not have a current driver's license. Respondents to the present survey were asked if they had *ever* driven for work either disqualified or without a license as opposed to currently driving without a license, possibly explaining the higher values (6% and 8% respectively) found in this study. The number of respondents who drove for work without a license or drove for work while disqualified was however too low to enable a reliable chi-square analysis to be undertaken.

Overall, the present data supports the hypothesis posed here, that individuals who engaged in risky driving were also likely to engage in a number of general risk-taking behaviours.

The second hypothesis proposed that people who engage in serious traffic offences are more likely to commit other type of offences. Results from this survey supports the proposition, as participants who self-identified as having committed a criminal offence also indicated they were more likely to engage in risky driving (as per the Risky Driving scale) or drink driving. While the number of individuals who had either driven without a license or driven while disqualified was low (making Chi-Square analyses impractical), of those who were disqualified six out of nine had committed a criminal offence, and of those who drove without a license, seven out twelve had committed an offence at some point. These patterns of behaviour reflect relationships found by a number of other researchers (Brace, et al., 2009; Broughton, 2007; Rose, 2000) and also supports a continuing need for law enforcement personnel to check for other offences when detaining motorists for speeding offences.

Hypothesis three posited that men were more likely to engage in risky behaviours than women. Analyses revealed that this was not the case for the current sample although some comparisons were not possible because of small sub-sample sizes. Only three areas displayed differences by gender. Firstly, men were more likely to find themselves at risk of injury in their employment; this may be indicative of sensation seeking (seeking dangerous employment) rather than impulsivity, as suggested in a meta-study conducted by Cross, Copping & Campbell (2011). The survey question asked if people felt their occupation was dangerous rather than what their occupation is, and this may reflect a perception that men may feel their occupation is more hazardous than what it really is. Between 1995 and 2005 in Australia, female drinking at a risky or high level increased from 6.25% to 11.7%, while for males the increase was 10.3% to 15.2% as reported by the Australian Bureau of Statistics for 2004-2005 although in the present study there were no significant differences in levels of alcohol consumption between men and women (Australian Bureau of Statistics, 2004/2005). Secondly, men were more likely to engage in drink driving, as also found by the Australian Bureau of Statistics (Australian Bureau of Statistics, 2008), suggesting that men and women view the risks associated with drink driving differently. It may be that male 'culture' finds the risks associated with drink driving more acceptable, however further research is needed to elucidate the answers behind this difference. Thirdly, male participants were more likely to have committed a criminal offence than female participants were. While the categories of drink driving and having committed a criminal act may represent impulsivity, it might also involve males experiencing reduced punishment sensitivity. Literature suggests that men differ in motivational behaviour control –

specifically, men appear to score high on sensation-seeking and women appear to have a greater sensitivity to punishment (Cross, Copping, & Campbell, 2011). Findings indicate that in the present sample, men and women were very similar in the way they take risks with only a few exceptions (such as those noted above).

Finally, the theories of self-control and cross-situational consistency were tested to see which was better at predicting risky driving behaviour. It was expected that the theory of self-control would prove to be the more reliable model however; this was not the case, as the findings suggested that risky driving and drink driving were predicted by other lifestyle risk taking behaviours. Low dietary vegetable intake, smoking and cannabis use were indicative for the capacity to drink drive, rather than excessive alcohol consumption. Why low vegetable intake should be a factor is curious, perhaps reflecting a low concern for personal health, reduced understanding of the long term risk for health or the time consuming nature of meal preparation ("Mick Adams - Radio interview script", 2010). Smoking and cannabis use may reflect associations of their use with alcohol and driving in social situations. While the majority of participants drank alcohol to some degree, only 12% believed they drove under the influence of alcohol at least once per year. It may signify that the educational media campaign by governments ("Anti-drink driving public education 2010/2011", 2011) to lower alcohol related vehicle accidents may have had the desired effect upon the wider community. However, a third of participants still consumed alcohol at dangerous levels as defined by the AUDIT scale, indicating that further efforts at curbing this behaviour are needed.

Risky driving was predicted by low dietary intake of vegetables, alcohol consumption and unlawful behaviour. Vegetable consumption, as mentioned previously, may reflect either a low concern or understanding of the risk with this poor health behaviour. It might also reflect a perceived societal problem for not having enough time to prepare nutritional meals as opposed to accessing meals that are more convenient if not healthy. This attitude may link with time constraints as a reason for speeding (Fleiter, et al., 2007). The associations found between unlawful behaviour and risky driving behaviour, and alcohol consumption and risky driving, supports previous research (Broughton, 2007; G. R. Palk, Davey, & Freeman, 2007a; G. R. Palk, Davey, & Freeman, 2007b; Rose, 2000).

Looking at the analyses for both cases of driving without a license, neither model presented was alone sufficient to predict instances of license violations. A possible reason for this is that very few participants had driven while disqualified or without a license (6% and 8% of participants respectively). While the models failed to predict instances of driving without a license, the addition of the self-control measure did add variance to the model while adding very little in the hierarchical analyses. This discrepancy may be due in part to the scale created for self control, using 14 items as opposed to the 24 items used in the work by Stirling (2010) although Cronbach's α was still an acceptable .72. The four dependent variables that describe elements of risky and/or illegal driving behaviours (i.e. driving to/from work while disqualified, driving to/from work without a license, driving home believing they are affected by alcohol, and the Risky Driving scale) may not be measuring the same construct. While it is evident that there are elements of risk taking, two elements (speeding and drink driving) deal with immediate possibility of harm, while the other two (driving without a license and driving while disqualified for work) deal with rule breaking.

In this present study, there is evidence to support the idea that people who frequently engage in dangerous driving behaviours are also likely to engage in other behaviours that place them at risk of harm. It can be seen that there is a correlation between those who commit serious traffic offences and non-traffic offences. In this present study, it appears that men and women take similar risks, with only a few exceptions such as drink driving, committing a criminal offence and risk of injury while at work. While

cross-situational consistency was able to predict risky driving behaviour and drink driving, the two theories discussed in this work were found to be inadequate to fully explain and predict driving without a license or disqualified for work. A theory that takes into account values and beliefs of the individual, such as the theory of planned behaviour, would be of value in predicting such behaviours.

Limitations

A limitation to this study is its size and convenience sampling. Increasing the size and potential diversity of the study population would have allowed the exploration of 'driving without licenses' and its relationship with other risk taking behaviours. In addition there was an uneven distribution of females and males in the study, with twice as many responses from females as from males. There is potential for not enough power (due to the smaller sample size of male respondents) to adequately examine gender differences in this study. Sampling the risk taking behaviours of individuals across different occupations (emergency services, military and mining) might provide additional information in comparisons of levels of impulsivity, sensation-seeking and rule adherence. It may be worth exploring whether sexual risk-taking is correlated with other risk-taking behaviours.

This study reveals that many individuals consider violation of speed limits to be acceptable when faced with time restrictions. This has clear policy implications for government and community groups, suggesting that educational campaigns with an emphasis on changing social values and norms would be of significant value, particularly those targeting young people's values and attitudes towards self-management (including better time management), adherence to rules, and long-term consequences of risky actions. Such a goal will require long term commitment to effect such large attitudinal changes, but offers long term benefits to communities and governments through reducing the costs (financial, healthcare and personal) associated with risky behaviours.

5. Acknowledgements:

This work was undertaken as part of the Honours project for David Fernan.

References

"Anti-drink driving public education 2010/2011". (2011). Brisbane: Department of Transport and Main Roads Retrieved from http://www.tmr.qld.gov.au/~media/3038dd56-f901-4c33-b6f3-c40a765fba3f/think_before_you_drink_campaign_summary_apr2011.pdf.

"Mick Adams - Radio interview script". (2010), from <http://www.measureup.gov.au/internet/abhi/publishing.nsf/Content/tp-mick-radio-int-script>

Australian Bureau of Statistics. (2004/2005). *Alcohol consumption in Australia: a snapshot, 2004/2005*. Canberra, Australia: Retrieved from www.abs.gov.au.

Australian Bureau of Statistics. (2008). *Australian Social Trends*. Canberra, Australia: Retrieved from www.abs.gov.au.

Australian Institute of Health and Welfare. (2007). *National Drug Strategy Household Survey: First Results*. Canberra, Australia: Australian Institute of Health and Welfare.

- Babor, T. F., Higgins-Biddle, J. C., Saunders, J. B., & Monteiro, M. G. (2001). *AUDIT: The alcohol use disorders identification test*. Geneva, Switzerland.
- Brace, C., Whelan, M., Clarke, B., & Oxley, J. (2009). The relationship between crime and road safety (pp. 76): Monash University Accident Research Centre
- Broughton, J. (2007). The correlation between motoring and other types of offence. *Accident Analysis and Prevention*, 39, 274-283.
- Cross, C. P., Copping, L. T., & Campbell, A. (2011). Sex differences in impulsivity: A meta-analysis. *Psychological Bulletin*, 137(1), 97-130. doi: 10.1037/a0021591
- Fleiter, J., Lennon, A., & Watson, B. (2007). *Choosing not to speed: A qualitative exploration of differences in perceptions about speed limit compliance and related issues*. Paper presented at the Proceedings Australasian Road Safety Research Policing and education Conference, Melbourne, Victoria.
- Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford: Stanford: University Press.
- Gual, A., Segura, L., Contel, M., Heather, N., & Colom, J. (2002). Audit-3 and audit-4: effectiveness of two short forms of the alcohol use disorders identification test. *Alcohol and Alcoholism*, 37(6), 591.
- Henley, G., & Harrison, J. E. (2009). *Injury deaths, Australia 2004-05*. (51 (Cat. no. INJCAT 127)). Adelaide, Australia.: AIHW Retrieved from www.aihw.gov.au.
- Junger, M., West, R., & Timman, R. (2001). Crime and risky behaviour in traffic: an example of cross-situational consistency. *Journal of Research in Crime and Delinquency*, 38, 439-459. doi: 10.1177/00224278103004005
- Lawrence, R. G. (2004). Framing obesity. *The Harvard International Journal of Press/Politics*, 9(3), 56-75.
- Ministerial Council on Drug Strategy. (2011). *National Drug Strategy 2010 -2015: A framework for action on alcohol, tobacco and other drugs*. Canberra, Australia.
- Palk, G. R., & Davey, J. D. (2005). *A comparative analysis of the nature and extent of traffic offences and their relationship to other non traffic-offences*. Paper presented at the Australasian Road Safety Research, Policing and Education Conference, Wellington, New Zealand.
- Palk, G. R., Davey, J. D., & Freeman, J. E. (2007a). The prevalence and characteristics of alcohol-related incidents requiring police attendance. *Policing: An International Journal of Police Strategies and Management.*, 30(1), 82-92.
- Palk, G. R., Davey, J. D., & Freeman, J. E. (2007b). *The relationship between traffic offending and other general criminal activity: The role of alcohol, time and place*. Paper presented at the Proceedings International Conference on Alcohol Drugs and Traffic Safety, Seattle.
- Queensland Parliament. (2010). *Inquiry into Alcohol-Related Violence - Final Report*. Brisbane: Law, Justice and Safety Commission Retrieved from www.parliament.qld.gov.au/lisc.

Rose, G. (2000). *The criminal histories of serious traffic offenders*. (Home Office Research Study 206). Retrieved from <http://rds.homeoffice.gov.uk/rds/pdfs/hors206.pdf>.

Rosenheck, R. (2008). Fast food consumption and increased caloric intake: a systematic review of a trajectory towards weight gain and obesity risk. *Obesity Reviews*, 9(6), 535-547.

Shoda, Y., Mischel, W., & Wright, J. C. (1993). The role of situational demands and cognitive competencies in behaviour. *Journal of Personality and Social Psychology*, 65, 1023-1035.

Stirling, S. J. (2010). *The role of Crime-Pattern Theory and Low Self-Control Theory, in explaining gender differences in alcohol-related violence*. Unpublished Post Graduate Diploma, Queensland University of Technology, Brisbane, Australia.

Watson, B. (2004). *The psychological characteristics and on-road behaviour of unlicensed drivers*. Doctor of Philosophy, Queensland University of Technology.

Watson, B., & Steinhardt, D. (2006). *A comparison of the crash involvement of unlicensed motorcycle riders and unlicensed drivers in Queensland*. Paper presented at the Proceedings 2006 Australasian Road Safety Research, Policing, Education Conference, Gold Coast.

Woodhams, J., Hollin, C., & Bull, R. (2008). Incorporating context in linking crimes: An exploratory study of situational similarity and if-then contingencies. *Journal of Investigative Psychology and Offender Profiling*, 5, 1-23. doi: 10.1002/jip.75