

**INFLUENCING RECIDIVIST DRINK DRIVERS' ENTRENCHED
BEHAVIOURS: THE SELF-REPORTED OUTCOMES OF THREE
COUNTERMEASURES**

James Freeman

Bachelor of Social Science (Honours Psychology)

A thesis submitted for the Degree of Doctor of Philosophy
Queensland University of Technology
Centre for Accident Research and Road Safety – Queensland
Brisbane, Australia.

2004

Key Words

Drink driving, recidivist, repeat offender, deterrence, behavioural change, legal sanctions, rehabilitation programs, alcohol ignition interlocks.

Abstract

Concern remains regarding the efficacy of drink driving countermeasures to produce lasting change for repeat offenders, as a wide array of countermeasures have been developed that demonstrate varying levels of success in reducing re-offence rates. This thesis proposes that the collection and examination of repeat offenders' self-reported perceptions, experiences and behavioural changes that result from completing court-ordered interventions can provide valuable contributions to the development of effective sentencing strategies. As a result, the program of research implemented a mixed-method design to investigate the self-reported impact of legal sanctions, a drink driving rehabilitation program, and alcohol ignition interlocks on key outcome measures for a group of recidivist drink drivers.

Study One incorporated a cross-sectional design to examine the deterrent effect of traditional legal sanctions (e.g., fines and licence disqualification periods), non-legal sanctions, alcohol consumption, recent offending behaviour(s), and the actual severity of sanctions on perceptual deterrence and intentions to re-offend. The study involved face-to-face and telephone interviews with 166 repeat offenders. The analysis indicated that participants perceived legal sanctions to be severe, but not entirely certain nor swift.

In Study One, self-reported recent drink driving behaviours and alcohol consumption levels were identified as predictors of future intentions to drink and drive. The results suggest that habitual behaviours are difficult to change, and heavy alcohol consumption levels increase the probability of re-offending. At a bivariate level, three non-legal sanctions were negatively associated with intentions to re-offend but were not predictors of future intentions to drink and drive in the model. In addition, a relationship was not evident between: (a) the size of the penalties and perceptions of sanction severity or future intentions to drink and drive, and (b) the number of previous convictions and self-reported deterrence. The findings of the study confirm the popular assumption that some repeat offenders are impervious to the threat and application of legal sanctions.

Study Two examined the stages of change and self-efficacy levels of 132 repeat offenders – who were all involved in Study One - while they completed an 11-week drink driving rehabilitation program. A repeated measures design was implemented to focus on the impact of the intervention on a number of salient

program outcomes such as participants' motivations and self-efficacy levels to control and change their drinking and drink driving behaviour(s). Prior to program commencement, the majority of participants were motivated to change their drinking driving, but not their drinking. The sample also reported high self-efficacy levels to control the two behaviours, but did not have high expectations of the effectiveness of the program.

Upon completion of the program, significant increases were evident in motivations to change drinking and drink driving behaviours, and a large percentage of participants reported a positive appraisal of the effectiveness of the intervention. Program completion also resulted in a reduction in self-reported alcohol consumption levels, yet the majority of the sample continued to consume harmful levels of alcohol. Self-efficacy levels remained high, although a notable finding was that participants reported higher levels of control over their drinking rather than drink driving behaviours. In general, Study Two provided a positive perspective of the capacity of a drink driving rehabilitation program to produce change for a group of repeat offenders.

Study Two extended a small body of research and examined the effects that mandated program enrolment has on motivations to change, as well as expectations and appraisals of program effectiveness. Contrary to predictions, mandated participants did not report lower levels of motivation to change drinking and drink driving compared to voluntary attendees, but did indicate lower expectations of the effectiveness of the program, as well as being willing to *engage* in the program. Furthermore upon program completion, mandated participants also reported lower appraisals of the effectiveness of the program, but this factor was not associated with intentions to re-offend or non-program completion. Rather, not successfully completing the program appeared linked with being unwilling to change drinking behaviours.

Study Three involved a longitudinal case-study design that utilised both quantitative and qualitative data to conduct one of the first examinations of the impact of alcohol ignition interlocks on a group of recidivist drink drivers from a users' perspective. The study investigated 12 participants' self-reported perceptions and experiences of using an interlock and the effect that the device had on key program outcomes such as drinking levels, operational performance, circumvention

attempts and general beliefs regarding the effectiveness of the device in comparison to traditional legal sanctions.

Participants reported positive appraisals regarding the effectiveness of the device as qualitative themes emerged concerning the educational and practical benefits of interlocks. However, closer examination of individual interlock performances revealed each participant had attempted to start their vehicle after consuming alcohol, and a smaller sample of three drivers were regularly attempting to start their vehicle after drinking. The combination and analysis of self-reported and downloaded interlock data revealed four main themes: (a) initial operational difficulties, (b) a general unwillingness to reduce alcohol consumption levels, (c) an unwillingness to acknowledge/recognise that interlock breath violations resulted from drinking, and (d) an overall decline in the frequency of interlock breath violations over the interlock installation period. Similar to Study Two, a notable finding was that half the sample was still consuming harmful levels of alcohol upon program completion.

Taken together, the results of the program of research highlight that repeat offenders' entrenched behaviours, such as drinking and drink driving, are resistant to change and that multi-modal interventions are required if the drinking and driving sequence is to be broken for this population. The findings have direct implications for the sentencing and management of repeat offenders and the development of countermeasures that attempt to produce long-term behavioural change.

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Glossary

Administrative Interlock Approach: an interlock program that is regulated and maintained by a driver licensing authority

Judicial Interlock Approach: an interlock program that is regulated by the courts and administered as a condition of probation

Unlicensed Driving: driving a motor vehicle without holding a current drivers licence

Court-ordered Intervention: an intervention that is accessed through the courts as offenders are directed by a magistrate to participate

Mandated Enrolment: compulsory enrolment in a court-ordered intervention e.g., no option

Incorrect Breath Sample: a breath sample provided by a participant to an interlock that did not register with the device due to inadequate breath sample e.g., sample not of sufficient strength or length

Rolling Retest: an interlock anti-circumvention technique that requires a random breath specimen to be provided to the interlock 5 to 15 minutes after the initial “start-up” of the vehicle

Statement of Original Authorship

The work contained in this thesis has not been previously submitted for a degree or diploma at any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Name: James Freeman

Signed:

Date:

Acknowledgements

Firstly, I would like to thank my supervision team of Dr Poppy Liossis and Professor Mary Sheehan who provided a tremendous amount of guidance, assistance, and insight during the exhausting yet exhilarating journey that encapsulated this PhD. I am grateful to Poppy who always made time for a consultation, read mountains of drafts, and offered support and advice when I needed it most. Similarly, I would like to thank Professor Mary Sheehan for providing me with the opportunity to complete my PhD within the Centre for Accident Research and Road Safety - Queensland (CARRS-Q), and the corresponding logistical and financial support that was provided by the Australian Research Council, Motor Accident Insurance Committee and Draeger Pty Ltd, which assisted immensely in the completion of the research. Additionally, I would like to thank all the probation officers within the Department of Community Corrections who gave up their time to assist in scheduling interviews.

I express my appreciation to the staff at CARRS-Q and the School of Psychology and Counselling at the Queensland University of Technology for their continual help throughout the duration of the research program. A special note of thanks is extended to Cynthia Schonfeld, who was always available to provide assistance and direction when the difficulties of data collection appeared impossible to overcome. Additionally, I am indebted to Maxine Nott and Diane Jensen who assisted in formatting the thesis during the later stages when I was struggling to find the strength to even consider such a task.

I am extremely grateful to those who read drafts of the thesis and provided advice that ranged from structural to statistical: Lisa Bell, Stephen Cox, Jonathan Dwyer, Vic Siskind, Jason Tysoe and Evelyn Vingilis. And to those who are going through the same process as myself, the postgraduate students, thank-you for everything and I hope I can return some of your favours.

Finally I would like to thank my family, without whose encouragement and understanding would have made the completion of the thesis, and my general tertiary studies, so much more difficult.

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1.1 The Present Context

Drink driving continues to be a serious and persistent problem in motorised countries, as alcohol-related crashes result in substantial injuries, fatalities, and property damage. The gravity of the problem is reflected in the enormous amount of literature that has focused on the personal and economic cost of drink driving, and the effectiveness of different countermeasures to reduce the prevalence of the offending behaviour (Beirness, Mayhew & Simpson, 1997). Sustained policing efforts in combination with the implementation of a range of sanctions and countermeasures have resulted in considerable reductions in the prevalence of drink driving in the past 15 years (Karki, 2002; Mayhew, Simpson & Beirness, 2002; Rauch, Berlin, Ahlin & Berlin, 2002; Shults et al., 2001; Voas & Tippetts, 2002), but such sanctions appear to have been less effective in reducing alcohol-impaired driving among “hard-core” repeat offenders (Ahlin et al., 2002; Beirness et al., 1997; Biecheler-Fretel & Peytavin, 2002; Hedlund & McCartt, 2002; Marques, Voas & Hodgins, 1998; Nadeau, 2002; Yu, 2000). These offenders are known as recidivist drink drivers and may best be defined as motorists who drive repeatedly after drinking alcohol, have more than one proven drink driving offence, are often apprehended with high blood alcohol content (BAC) readings, and appear resistant to emotional appeal or the threat of criminal sanctions (Beirness et al., 1997).

1.2 Characteristics of Repeat Offenders

This sub-group of repeat offenders is surprisingly large, as research consistently demonstrates that between 20 to 30% of convicted drink drivers have a prior drink driving offence (Brewer et al., 1994; Brown et al., 2002; Bryant, 2002; Langford, 1998; Hedlund & McCartt, 2002; Peck, 1991; Sheehan, 1993; Wiliszowski, Murphy, Jones & Lacey, 1996). However, some North American studies have reported previous conviction rates as high as 50-60% (Beirness et al., 1997; Beirness, Simpson, Mayhew & Brown, 1995). The high frequency of repeat offending has also been reported in Australia (Bryant, 2002; Buchanan, 1995; Little, 2002; Marshall, 1997; Sheehan, 1993), and a number of states are currently implementing new legislation and countermeasures to combat the prevalence of repeat offending e.g., alcohol ignition interlocks.

Repeat offenders are a major social and road safety concern as they are at the greatest risk of being involved in an alcohol related crash (Brewer et al., 1994; Mann et al., 1994) and are therefore disproportionately represented in crash statistics (Beirness et al., 1997; Brewer, 1994; Brown et al., 2002; Hedlund & McCartt, 2002; Little, 2002; Nadeau, 2002; Popkin, 1994; Popkin, Stewart, Martell & Birckmayer, 1992; Queensland Transport, 1999; Simpson & Mayhew, 1991). For example, a North American study estimated this group of drivers to be 36 times more likely to be involved in a fatal accident than drivers who do not have convictions (Brewer et al., 1994), and up to 60% of fatally injured drivers under the influence (or 30-35% of all drivers) are persistent drinking drivers (Beirness et al., 1997).

Discernible differences have been noted between first-time and multiple drink driving offenders. As a group, first-time offenders are predominantly social drinkers who may make a judgement error in their decision to drive after drinking (Ferguson, Sheehan, Davey & Watson, 1998; Howard & McCaughrin, 1996). These drivers are usually deterred from committing further offences by their experience of both formal and informal sanctions such as fines and licence loss, as well as peer disapproval from friends and family (Ferguson et al., 1999).

Conversely, a considerable body of research has demonstrated that repeat offenders are not a homogenous group, but instead display a wide variety of socio-demographic and psychological characteristics (Beirness et al., 1997; Fetherston & Lenton, 2002; Nadeau, 2002; Norchajski & Wiczorek, 2000). The only consistent trait among this group is that most repeat offenders are male and are usually apprehended with a high BAC reading e.g. $> 0.15\text{mg}\%$ (Beirness, Simpson & Mayhew, 1998; Stewart, Boase & Reid, 2002; Voas & Tippetts, 2002). High BAC readings have been proposed to indicate alcohol misuse and/or alcohol dependency problems, as well as low levels of knowledge regarding safe drinking levels (MacDonald & Dooley, 1993; Wiczorek, Miller & Nochajski, 1992; Wilson, 1992).

Apart from these broadly identifying traits, repeat offenders vary in age (ranging from 18-50), may have a history of general traffic offences as well as non-traffic offences (Bailey & Bailey, 2000; Davies & Broughton, 2002; Ferguson et al., 1999; Henderson, 1999; Homel, 1988; McMillen et al., 1992; Nickel, 1991; Stewart et al., 2002), may regularly use illicit drugs (Bailey & Bailey, 2000; Nadeau, 2002), be single or experiencing marital problems (Ferguson et al., 1999; Nickel, 1991; Norchajski & Wiczorek, 2000), display a number of antisocial or deviant

behaviours including hostility and aggression, (Beirness et al., 1998; Fetherston & Lenton, 2002; Nadeau, 2002; Norchajski & Wieczorek, 2000), experience problems with stress, frustration, anger or depression (Ferguson et al., 1999), be sensation seeking (Nadeau, 2002; Norchajski & Wieczorek, 2000), experience difficulties with impulse control (Baker, Ward, Cryer & Hudson, 1997; Nadeau, 2002; Snortum, 1988) and may also exhibit cognitive deficits (Glass, Chan & Rentz, 2000; Nadeau, 2002). In summary, repeat offenders exhibit a range of characteristics and behaviours, making specific definition of this group difficult (Beirness et al., 1997; Peck, 1991).

1.3 Drink Driving Countermeasures

This wide demographic variation among recidivist drink drivers has contributed to the development and implementation of a variety of countermeasures designed to reduce the prevalence of repeat offending. These countermeasures consist of four main forms, (a) specific deterrence-based sanctions (e.g., fines, licence loss and incarceration), (b) rehabilitation and treatment programs, (c) vehicle control mechanisms and other technological advances (e.g., alcohol ignition interlocks), and (d) offender monitoring and probation (e.g., electronic monitoring) (Ferguson et al., 1999). These countermeasures are reviewed fully in Chapter Two, and differ in their ability to produce both short and long-term reductions in recidivism rates.

Briefly, legal sanctions and alcohol ignition interlocks appear only to reduce repeat offending in the short term (Beirness et al., 1997; Cobin & Larkin, 1999) while rehabilitation programs and probation periods have more recently been associated with longer reductions in recidivism rates (DeYoung, 1997; Ferguson, Schonfeld, Sheehan & Siskind, 2000; Mann et al., 1994; Nickel 1991; Siskind et al., 2000; Taxman and Piquero, 1998). However, current choice regarding the most appropriate methods to reduce repeat offending remains controversial (Wells-Parker & Popkin, 1994). Previous evaluations of most countermeasures have been plagued by methodological limitations such as small sample sizes, self-selection of participants and judicial bias, non-random assignment of groups, unmatched intervention and control groups, inaccurate measurement of treatment success (e.g., sole focus on recidivism rates), short follow-up evaluation periods, and the lack of post program participant assessment (Ferguson et al., 2000; Mann et al., 1983; Sanson-Fisher, Redmond & Osmond, 1986; Wells-Parker, Bangert-Downs,

McMillen & Williams et al., 1995). As a result, the efficacy of the major countermeasures to reduce repeat offending is far from conclusive.

Furthermore, little is known about the impact that these approaches have on repeat offenders' attitudes, motivations and self-efficacy levels to change or control their offending behaviour(s), nor changes in drinking and drink driving behaviours that result from coming in contact with interventions (Wells-Parker, Kenne, Spratke, & Williams, 2000; Wells-Parker, Williams, Dill & Kenne, 1998). It also remains unclear why a considerable proportion of offenders do not successfully complete interventions or continue to drink and drive after successful completion. As mentioned above, these issues are discussed in Chapter Two.

1.4 Outcome Measures

The majority of previous research has focused primarily on summative outcome measures such as recidivism, crash and fatality rates (Fitzpatrick, 1992; Popkin, 1994). Archival data such as recidivism rates, are perhaps the simplest and most accessible outcome measure (Buchanan, 1995) and have continually been used as the major indicator of program effectiveness (Ferguson et al., 2000; Sanson-Fisher et al., 1986). However, a number of researchers have highlighted difficulties associated with using recidivism rates as an outcome measure and have primarily questioned the accuracy and validity of the approach to provide an accurate reflection of the prevalence of drink driving on public roads (Beirness et al., 1997; Cavaiola & Wuth, 2002; Fitzpatrick, 1992; Hedlund & McCartt, 2002; Popkin, 1994; Rauch et al., 2002; Ross, 1992; Sanson-Fisher et al., 1986; TIRF, 2001; Weinrath & Gartell, 2001; Wells-Parker et al., 1995; Wells-Parker & Williams, 2002).

For example, in America it has been estimated that the chances of a driver with a BAC of .10% or greater being arrested is 1 in 200 (Beitel, Sharp & Glauz, 1975). Furthermore, Voas (1982) reported that the drinking driver is arrested once out of every 5000 miles driven under the influence of alcohol. A similar estimation for the Australian context offered by Homel, Carseldine and Kearnes (1988) suggested that only 0.5% to 1.5% of intoxicated drivers are detected by the police at any one time. This is undoubtedly relevant for recidivist drink drivers who regularly drink and drive, often whilst avoiding apprehension (Smith, 2003; Ross, 1992). As a result, current knowledge regarding the effectiveness of drink driving countermeasures may not only be dependent upon participants' willingness to

change their offending behaviours, but may also be affected by factors such as the level and effectiveness of law enforcement activities in a particular jurisdiction, and the ability to avoid police detection (e.g., method of driving, type of vehicle and routes driven).

Resulting from the heavy reliance on recidivism rates, accurate indications of the impact of drink driving countermeasures may not have yet been attained. The summative-based research described above provides little insight into: (a) reasons for the differing short and long-term effects of modern countermeasures, (b) selection of countermeasures to be combined to increase long term behavioural change, or (c) repeat offenders' specific needs and requirements to ensure that behavioural change is lasting e.g., screening and matching procedures.

1.5 Multiple Outcome Measures

For the above reasons, there is a need for research that measures change from multiple perspectives, as the possibility of drawing misleading conclusions increases when using one simple index to measure change (Lambert & Hill, 1994; Posavac & Carey, 1997). The majority of drink driving research has excluded the experience of rehabilitative interventions for participants, or the effect that this experience has on attitudes, intentions and motivations towards changing drinking and drink driving behaviour(s). A possible initiative to improve the accuracy of existing knowledge regarding the impact of current countermeasures is to examine several measures of program effectiveness such as self-reported experiences and changes in lifestyles, attitudes, motivations, self-efficacy and drinking and drink driving behaviours.

Responses and reactions of program participants can provide insight into how a program or countermeasure functions as well as the effect of the program on key outcome measures (TIRF, 2001; Tittle, 1980). Such measures have successfully been incorporated in health, business, and education sectors to explain how change occurs (Robertson & Colborn, 1998). In the present context, self-reported data would not only provide a more accurate reflection of the effectiveness of drink driving countermeasures but also provide information regarding program strengths and deficiencies, benefiting subsequent policy and program development. Fitzpatrick (1992) noted that the lack of multiple measures of program effectiveness has contributed to the uncertainty regarding the effectiveness of interventions. A broadening of measurement outcomes would result in improved detection of both

behavioural and psychological changes resulting from completing either drink driving programs or interlock trials.

At present, only a small amount of research has examined offenders' self-reported experiences and changes (e.g., knowledge, attitudes and behaviours) following program completion (Ferguson et al., 2000; Levy, 1997; Wells-Parker & Williams, 2002). Research initiatives that have focused specifically on recidivist drink drivers' offending behaviours, drinking levels and experiences of the sentencing process are also extremely rare (Freeman & Liossis, 2002a; Nadeau, 2002). Despite this, initial studies have provided rich contextual information regarding the impact that interventions have on a range of psychological and behavioural factors for drink driving offenders (Ferguson, 1997; Levy, 1997; Wells-Parker et al., 1998; Wells-Parker et al., 2000), which is reviewed in Chapter Four.

1.6 Aims and Significance of Research

Stemming from the lack of clear evidence regarding the effects of drink driving countermeasures on repeat offenders, the primary goal of the program of research is to examine the *impact* of countermeasures on key *outcome* measures, while a group of repeat offenders incurs legal sanctions, completes a drink driving rehabilitation program, and (for a select sub-sample), participates in the first court-ordered trial of alcohol ignition interlocks in Queensland, Australia. An analytic epidemiological approach is utilised, which incorporates a pre-experimental mixed method design to examine the self-reported outcomes from each individual countermeasure. This approach is more fully explained in Chapter Five.

The first aim of the study is to investigate repeat offenders' experiences and perceptions of traditional legal sanctions (e.g., fines and licensing sanctions) and to examine the deterrent impact these sanctions have on future intentions to drink and drive (Study One). The Classic Deterrence Doctrine (Gibbs, 1975) is to be used, focusing on the perceived severity, certainty and swiftness of legal sanctions. In addition, considering recent assertions that informal sanctions can influence offending behaviours (Baum, 1999; Berger & Snortum, 1985; Green, 1989; Piquero & Paternoster, 1998; Vingilis, 1990), an initial exploration into the influence of non-legal sanctions on repeat offenders' behaviour will be conducted using Homel's

(1988) model of deterrence that incorporates social sanctions (e.g., peer disapproval), internal norms (e.g., feeling guilty) and physical sanctions (e.g., fearing personal injury).

The second aim of the study is to examine the processes of change for repeat offenders while they complete a drink driving rehabilitation program, following the legal sanctions in Study One. A repeated measures design will use the Transtheoretical model of Change (Prochaska & DiClemente, 1984) to focus on a number of salient program outcomes such as participants' motivations and self-efficacy levels to control and change their drinking and drink driving, as well as subsequent self-reported behaviours. Study Two extends a small body of research that has explored the motivation and self-efficacy levels of first time offenders who complete drink driving interventions (Wells-Parker et al., 1998; Wells-Parker et al., 2000). Given the common practice of mandating repeat offenders to complete intervention programs (Maxwell, 2000; Polcin, 1999; Shuggi et al., 2002; Wild, 1999), the present study also focuses on the differing circumstances by which recidivist drink drivers enrol in court-ordered programs (voluntary vs mandatory), and what affect program enrolment has on attaining successful rehabilitative outcomes e.g., motivations to change behaviour(s). The study is one of the first to examine the factors that are directly related to not completing the program as well as factors associated with not achieving successful outcomes such as intending to drink and drive in the future.

The third aim of the research is to conduct one of the first examinations of the impact of alcohol ignition interlocks on a group of recidivist drink drivers from a users' perspective (Study Three). Participants' self-reported perceptions and experiences of operating interlocks and the affect that the device has on key program outcomes such as drinking levels, driving performance, operational assessment, and circumvention attempts will be investigated. In addition, participants' overall perceptions and evaluations of interlocks as a sentencing option will be compared to their impressions of traditional legal sanctions.

1.7 Thesis Outline

Chapter Two will review the current literature regarding the effectiveness of legal sanctions, rehabilitation programs and alcohol ignition interlocks to reduce recidivism rates among repeat offenders. The chapter highlights prominent unanswered questions, providing a foundation for exploring the self-reported impact of these countermeasures on habitual offenders' behaviours. The literature review and the proposal to investigate participants' self-reported experiences have previously been peer reviewed and published (Freeman & Liossis, 2002a).

Chapter Three will review perceptual deterrence research on drink driving, highlighting the structure and relevance of the two deterrence models implemented to examine the impact of the sanctions. Major characteristics of deterrence will be reviewed to provide a theoretical basis for the examination of the impact of the sanctions experienced in Study One. The key research questions of Study One are presented at the end of the Chapter.

Chapter Four will review the Transtheoretical model of Change (Prochaska & DiClemente, 1984) and other research that has utilised the conceptual framework to examine the influence of drink driving rehabilitation programs on the key outcomes mentioned above. The chapter will also extend previous research and consider the important relationship mandatory vs voluntary enrolment has with the Transtheoretical model (e.g., the effect on stages of change), providing a foundation for the examination of the drink driving rehabilitation program reported in Study Two. The key research questions of the study are presented at the end of the Chapter.

Chapter Five will outline the overall methodological approach of the research program, providing a summary of the characteristics of the larger Queensland interlock trial - of which the current work is an extension - highlighting the research design of each of the three studies in the thesis.

Chapter Six presents Study One, which examines the impact of legal sanctions and three non-legal sanctions on a group of repeat offenders, focusing on participants' perceptions and experiences of such sanctions. Chapter Seven presents Study Two, that investigates the impact of a drink driving rehabilitation program on key outcomes such as drinking levels and motivations to change, after participants have incurred the legal sanctions examined in Study One. Chapter Eight will provide a review of the small amount of research that has examined the behavioural

influence of interlocks (e.g., downloaded interlock recordings and self-report data) before presenting the third study which explores the impact of interlocks after participants have incurred legal sanctions and also completed the drink driving program (Study One and Two).

Chapter Nine reviews the findings of the three studies presented in Chapters Six to Eight and discusses the empirical, theoretical and practical implications for the management of repeat offenders. The strengths and limitations of the research program will be discussed and directions suggested for future research.

1.8 Summary

This Chapter has briefly reviewed the seriousness of repeat offending amongst convicted drink drivers, the need for *outcome* evaluations and provided an outline of the research program. The thesis is designed to describe and achieve an understanding of the self-reported changes and experiences for recidivist drink drivers who come in contact with the major sentencing options currently implemented in Australia. This research has practical significance as it highlights:- (a) the impact of commonly used countermeasures on repeat offenders (e.g., intentions, motivations, behaviours), (b) the effect of combining interventions (e.g., rehabilitation program with interlocks), and (c) the mediating factors that influence change (alcohol use, mandatory vs voluntary program enrolment). Accurate understanding of the effect of current countermeasures on repeat offenders is vital to improve best practice and knowledge regarding the most effective methods of ensuring repeat offenders do not continue to drink and drive, thus reducing the considerable threat this group maintains on road safety.

Chapter Two commences the research program by reviewing the literature regarding the effectiveness of legal sanctions, drink driving rehabilitation programs and alcohol ignition interlocks to reduce re-offending among convicted drink drivers. The focus will centre on recidivism rates and the subsequent gaps in knowledge regarding the effectiveness of such countermeasures to produce long-term behavioural change. The chapter highlights the need for research initiatives that measure change from multiple perspectives and the subsequent benefits to the management of repeat offenders.

Chapter Two: Legal Sanctions, Rehabilitation Programs and Alcohol

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2.1 Introduction

The effectiveness of drink driving countermeasures to reduce repeat offending is vital when considering the enormous toll this behaviour imposes on road safety. A wide variety of countermeasures are currently being employed throughout the motorised world to reduce the prevalence of drink driving. These include; fines, licence disqualification periods, vehicle impoundment, offender confinement, special licence tags, publishing of offenders' names, electronic monitoring, rehabilitation programs and installation of alcohol ignition interlocks to offenders' vehicles (Beirness et al., 1997; Harding, Apsler & Walsh, 1989). Within Australia the major sentencing options remain sanctioning offenders with licence disqualification periods coupled with fines, as well as rehabilitative alternatives incorporating some intervention programs. More recently alcohol ignition interlocks are being implemented to determine their viability and efficacy to reduce re-offending. This chapter provides a review of current knowledge regarding the effectiveness of these three sentencing options in both North America and Australia.

2.2 A Methodological Note

Evaluating the effectiveness of countermeasures to reduce repeat offending has proven difficult due to a number of research obstacles and methodological limitations. Firstly, a variety of different measurement outcomes have been used to determine the effectiveness of countermeasures, including; the number of general accidents (e.g., overall traffic safety), alcohol-related accidents, serious or fatal crash involvement, further drink driving convictions, general driving convictions and other various self-report data (Sanson-Fisher et al., 1986). Consequently the "success" of any specific intervention is highly dependent on the form of outcome measurement that is utilised (Morse & Elliot, 1992) as well as other factors that may influence the accuracy and validity of the measure such as the local level and patterns of law enforcement.

Secondly, there is considerable variation within each of the different intervention types, limiting the generalisation of results. For example, licence disqualification periods can be absolute or restrictive and applied at the judicial or administrative level, which may directly and indirectly influence the effectiveness of sanctions (Watson, 1998). In addition, rehabilitation programs vary tremendously in both content and aims (Ferguson et al., 1999; Mann et al., 1988), while interlock

programs also vary in length of installation, type and level of accompanying support interventions, and periods of licence loss before installation.

Thirdly, it is often difficult to disentangle the effects of specific countermeasures (e.g., licence loss vs rehabilitation programs) as they are often combined in an attempt to produce the greatest deterrent effect (Ferguson et al., 1999; Watson, 1998). Finally, offenders are rarely randomly assigned to control and experimental groups with the results influenced by judicial and self-selection biases (Ferguson et al., 2000; Wells-Parker et al., 1995), follow-up periods have usually been short (Mann et al., 1983), and there has been a lack of post program participant assessment. In summary, the variation in structure combined with the utilisation of different measurements of program effectiveness and methodological weakness have resulted in conflicting findings regarding the efficacy of programs to reduce recidivism (Wells-Parker & Williams, 2002). These limitations should be borne in mind when interpreting the following review.

2.3 Legal Sanctions

2.3.1 Aim of Legal Sanctions

Legal sanctions consisting of both a period of licence suspension and monetary fine are the major sentencing option for convicted drink drivers in Australia. Fines and licence loss aim to fulfil a number of objectives such as retribution, incapacitation and deterrence (Beirness et al., 1997; Homel, 1988; Ross, 1992; Watson, 1998). Firstly, retribution forms the foundation for criminal punishment and is a motivating factor for the application of fines and licence suspension to convicted drink drivers (Ross, 1992; Watson, 1998). That is, applying sanctions involves “balancing the damage caused by the act with the pain imposed on the offender” (Ross, 1992, p.61). In addition, legal sanctions can act to reform convicted offenders to be less likely to drink and drive again in the future (Peck et al., 1985; Ross, 1992; Watson, 1998).

For legal sanctions, reform operates primarily through the process of specific deterrence (Watson, 1998). Specific deterrence refers to the process whereby an individual who has been apprehended and punished for a criminal act refrains from additional offending behaviour due to fear of incurring further punishment (Homel, 1988). Fines and licence disqualification periods can therefore produce a specific deterrent effect as convicted offenders fear being sanctioned again, and are expected to avoid further drink driving behaviours. Finally, legal sanctions (especially licence

disqualification periods) act to incapacitate offenders by preventing them from committing the offence again, even if they wish to do so (Beirness et al., 1997; Peck et al., 1985; Ross, 1992).

2.3.2 Effectiveness of Sanctions to Reduce Repeat Offending

For the general population, a large volume of North American literature has demonstrated licence disqualification periods to be one of the most effective methods for reducing further drink driving offences (Jones & Lacey, 1991; McArthur & Kraus, 1999; Nichols & Ross, 1990; Sadler & Perrine, 1984; Vingilis, Mann, Gavin, Adlaf & Anglin, 1990; Williams, Hagen & McConnell, 1984). In fact, compared to other sanctions, disqualification periods have proven to be the most effective short-term countermeasure that can be applied to drink drivers (Nichols & Ross, 1990; Ross, 1991; Sadler & Perrine, 1984). The effectiveness of licence sanctions can also extend beyond drink driving offences, as research has demonstrated sanctions such as these can improve overall road safety by reducing the general level of traffic violations and crashes (DeYoung, 1997; Mann et al., 1991; McKnight & Voas, 1991; Nichols & Ross, 1990; Peck, 1991; Vingilis et al., 1990). For example, Peck (1991) reported that licence disqualification periods reduce crashes as well as drink driving convictions by 30-50% during the suspension period, and that the risk of alcohol-related fatalities is reduced by half during licence disqualification periods (Peck et al., 1985).

The majority of research that has examined the effects of legal sanctions on drink driving recidivism has been conducted in North America, although these positive findings have also been confirmed in Australia (Homel, 1981; Siskind, 1996). For example, a Queensland study by Siskind (1996) examined 25,000 disqualified drink drivers' traffic records and reported that crash and offence rates were reduced by approximately two thirds during the disqualification period compared to those drivers who had their licence reinstated at an earlier time. Furthermore, Homel (1981) examined the driving records of one thousand offenders in New South Wales and reported that licensing sanctions produced a specific deterrent effect against further offending.

Monetary sanctions such as fines are often applied in conjunction with licence loss to increase the retributive and deterrent effects of sanctions. However, research into the effects of fines on convicted drink drivers has not received the same level of focus that licence disqualification periods have attracted (Brooker, 2001; Yu

& Wilford, 1995). This is partly due to the difficult task of separating the effects of fines from licence loss. Despite this, a small body of research is beginning to indicate that fines also produce a deterrent effect that reduces the likelihood of convicted offenders continuing to drink and drive again in the future (Homel, 1981; Yu, 1994). In summary, it appears that the combination of licence disqualification periods and monetary fines both deter and incapacitate convicted drink drivers, therefore reducing the likelihood of re-offending.

2.3.3 Recidivist Offenders

Compared to the large volume of comprehensive reviews on the effects of licensing sanctions in deterring recidivism in general (Nichols & Ross, 1990; Watson, 1998; Vingilis et al., 1990), very few studies have specifically examined the direct effects of legal penalties on repeat offenders' drink driving behaviour (Yu, 2000). Despite the lack of research, there is a general consensus that the application of legal sanctions alone does not produce long-term behaviour change, and consequently, are not extremely effective in reducing drink driving amongst recidivist offenders (Ahlin et al., 2002; Beirness et al., 1997; Brewer et al., 1994; Frank et al., 2002; Homel, 1988; Longest, 1999; Marques et al., 1998; Morse & Elliot, 1992; Popkin et al., 1992; Ross, 1982; Yu, 2000).

One of the only definitive results of sanction research for repeat offenders is that incarceration does not appear to decrease the likelihood of further offences in the long term (Beirness et al., 1997; Homel, 1981; Kadell Weinrath & Gartell, 2001; Vingilis et al., 1990; Voas, 1986; Wiliszowski et al., 1996). Jail terms are most often applied to hard-core repeat offenders who continue to drink and drive and appear to be immune to traditional sanctions such as fines and licence loss. Comprehensive reviews of the effects of imprisonment for drink driving offences in a number of countries have concluded that such procedures have little long-term effect outside the physical incapacitation resulting from imprisonment (Beirness et al., 1997; Nichols & Ross, 1990; Voas, 1986). Furthermore, researchers have demonstrated that where legislation has been passed to provide mandatory incarceration for drink driving offenders, this option is rarely taken due to the high cost and increased administrative burden of jail sentences (Morse & Elliott, 1992). Considering the high cost of incarcerating offenders, researchers have recognised that future efforts to prevent repeat offences may be better directed towards less costly countermeasures.

In the case of implementing a combination of licence loss & fines, a small number of early reviews reported reduced re-offending outcomes for repeat offenders (Jones & Lacey, 1991; Peck, 1987). However, the overwhelming evidence of high levels of repeat offending in a number of countries (Brewer et al., 1994; Brown et al., 2002; Bryant, 2002; Henderson, 1999; Hedlund & McCartt, 2002; Langford, 1998; Sheehan, 1993; Wiliszowski et al., 1996), demonstrates that licensing sanctions generally fail to deter habitual offenders from continuing to drink and drive (Yu, 2000).

A major limitation of licence disqualification periods for this group is that many simply drive unlicensed (Bailey & Bailey, 2000; Coxon, 2002). A considerable body of North American research has repeatedly demonstrated that a large percentage of disqualified drivers continue to drive without apprehension (Bailey & Bailey, 2000; Coxon, 2002; Hedlund & McCartt, 2002; McCartt, Geary & Berning, 2002; Wiliszowski et al., 1996; Yu & Wilford, 1994), with some studies reporting unlicensed driving levels of up to 75-90% (Fell, 1990; Peck et al., 1985; Voas, Tippetts & Lange, 1997). In addition, large proportions of drink driving offenders (approximately half) fail to reapply for their licence when they are eligible (Sadler & Perrine, 1984; Voas & McKnight, 1989). The few studies that have included self-reported data for repeat offenders confirm that this group regularly drive unlicensed while avoiding apprehension (Smith, 2003; Wiliszowski et al., 1996).

A second limitation of licence suspension and/or disqualification periods is that despite the general positive effects of licence removal on both drink driving behaviour and general road safety, researchers have raised concerns regarding the efficacy of the sanction to produce long term behavioural change (McArthur & Kraus, 1999; Watson & Siskind, 1997). Apart from incapacitating or deterring offenders from committing similar offences, licence disqualification periods do little to provide long-term treatment or solutions for problem offenders. Such offenders may need to address harmful and/or irresponsible drinking behaviours, before the drinking and driving sequence can be successfully broken. As a result, legal sanctions are more recently being combined with other countermeasures (e.g., rehabilitation programs) to increase the prospect of establishing behavioural change.

In summary, legal sanctions have proven to be an effective deterrent for a considerable proportion of first-time offenders, but are yet to produce long-term

behavioural change among habitual offenders. Deterrent threats such as legal sanctions have been hypothesized to be most effective for the social drinker, rather than the persistent offender whose drinking behaviour may be chronic, compulsive and unaffected by foreseeable consequences (Beirness et al., 1997; Vingilis, 1990). Apart from general assumptions regarding the limited long-term effect of sanctions, little is known about the immediate deterrent effect that legal penalties have on repeat offenders' drink driving behaviour (Beirness et al., 1997). Specifically, research has yet to determine whether repeat offenders consider penalties to be "certain, swift and severe", whether licence loss and fines have a deterrent impact on self-reported drink driving behaviours, or why a considerable proportion continues to drink and drive despite incurring such sanctions. Examination of recidivist drink drivers' perceptions of legal sanctions will provide valuable insight into the deterrent effects of this predominant sentencing option.

2.4 Rehabilitation Programs

Following the recognition of the inability of legal sanctions to produce long term behavioural change and the subsequent need to address repeat offenders' problem behaviours (e.g., excessive drinking), rehabilitation programs were developed in an attempt to reduce the prevalence of repeat offending (Beirness et al., 1997).

2.4.1 Aim of Rehabilitation Programs

Drink driving rehabilitation programs constitute a secondary form of prevention, attempting to directly change offenders' drink driving behaviour through education and treatment. The primary aim of these programs has generally been accepted to be the process of separating drinking from driving by providing participants with the knowledge, skills and strategies to avoid further offending behaviour (Popkin, 1994; Wells-Parker, 1994). A secondary aim has often been to reduce drinking levels by increasing participants' awareness of the seriousness of excessive alcohol consumption (Wells-Parker, 1994).

Rehabilitation programs are not new, as drink driving interventions have been implemented in North America since the 1960s (Cavaiola & Wuth, 2002; Mann et al., 1988). The majority of research and work into drink driving has been conducted in the US, with the first Australian program not being developed until

1973 at St Vincent's Hospital, Melbourne (Homel et al., 1988). Early programs were proven to be relatively ineffective but a resurgence in the development of programs in the 1990's reflected the acknowledgement of the serious problems experienced by repeat offenders. Rehabilitation programs have since expanded and evolved to incorporate a range of interventions and techniques designed to accommodate the changing characteristics and circumstances of the drinking population.

The type and format of programs vary considerably, ranging from simple provisions of reading materials to long-term treatment of alcohol problems (Ferguson et al., 1999; Mann et al., 1988; Taxman & Piquero, 1998). Specifically, interventions can consist of either educative or health programs, skills-based programs, short-term and long-term treatment programs, social skills and assertion training, other forms of counselling or a combination of different treatments. More recently, technological advances in alcohol assessment have led to the inclusion in some programs of biological measurements to examine the alcohol consumption levels of participants, with successful program completion being contingent upon low biological readings e.g., GGT & CDT (Glitsch et al., 2000; Popkin, 1994).

Despite the diversity of programs, the overarching aims and goals of the interventions have usually been accepted to be: (a) education involving strategies that highlight the risks and consequences of drink driving, and/or (b) psychotherapy or treatment that aims to target and treat drinking problems, and/or (c) skills-based interventions that teach behaviours that might prevent further offences (Ferguson et al., 1999; Sanson-Fisher et al., 1986). In Australia, the majority of rehabilitation programs have focused on health and education (Homel et al., 1988; Sanson-Fisher et al., 1990; Social Development Committee, 1988), with the aim being to produce attitudinal and behavioural change through education and increasing awareness of the serious consequences of the offence. Such programs are usually offered in conjunction with punitive sanctions such as licence disqualification periods and fines (Ferguson et al., 1999) and are relatively inexpensive and easily standardised (Sanson-Fisher et al., 1986).

2.4.2 Effectiveness of Rehabilitation Programs

Historically, there has been a tremendous amount of conflicting research regarding the effectiveness of drink driving rehabilitation programs to reduce further

offending. A number of early evaluations both in North America and Australia reported that such programs did not reduce the prevalence of repeat offending (Foon, 1988; Holden, 1983; Jones & Lacey, 1991; Peck, 1994; Sanson-Fisher et al., 1986; Wells-Parker & Bangert-Downs, 1991) and that licensing sanctions were a more effective countermeasure in combating drink driving (Popkin, 1994). For example, Foon (1988) reviewed 28 drink driving rehabilitation programs and reported that there was little evidence that such interventions reduce further drink driving offences.

In the Australian context, Sanson-Fisher, et al. (1986) examined the goals and effectiveness of 27 drink driving rehabilitation programs in both Australia and New Zealand and reported that aside from the difficulties in assessing interventions, it is unlikely that such programs would reduce the prevalence of repeat offending, as most programs do not incorporate the ingredients that produce long-lasting behavioural change such as screening and matching practices and the inclusion of maintenance procedures.

Despite these early negative results, more recent studies have demonstrated that drink driving rehabilitation programs can indeed reduce recidivism and alcohol-related crashes (Davies, Broughton, Harland & Tunbridge, 2000; DeYoung, 1997; McKnight & Voas, 1991; Nochajski & Stasiewicz, 2002; Pratt, Holsinger & Latessa, 2000; Sadler, Perrine & Peck, 1991; Siegal, 1990; Smith & Davis, 2002). The most promising results have been reported by large scale meta-analytic studies that have examined first time and multiple offenders, effect size, intervention characteristics and the quality of research design for each study (Wells-Parker et al., 1995). For example an early review of rehabilitation programs in the 1970's and early 80's by Mann, et al. (1983) demonstrated that certain forms of drink driving rehabilitation programs may reduce recidivism among convicted drink drivers. Mann et al. reported that drink driving programs have beneficial effects on drinking and drink driving behaviour, traffic safety measures as well as more general knowledge and attitudes.

More recently, Wells-Parker et al., (1995) conducted a meta analysis of 215 drink driving rehabilitation programs, concluding that treatment has a small but consistent effect of a 7–9% reduction in drink driving, compared to no treatment or licence sanctions. The largest improvements in traffic safety have been reported for rehabilitation programs that incorporate a combination of three intervention aspects such as psychotherapy or counselling, education, and probation (Wells-Parker et al., 1995) rather than single-mode or two-mode interventions (DeYoung, 1997). Wells-Parker et al. also confirmed that despite the large number of methodological difficulties which limited earlier evaluations, programs have the potential to provide positive effects on both recidivism rates and general traffic safety (e.g. alcohol-related crashes). It has been suggested that the relatively small positive effect resulting from rehabilitation programs is dramatically increased when evaluated against subsequent reductions in drink driving related crashes and injuries (Beirness et al., 1998).

2.4.3 Recidivist Offenders

The most promising indications of the effectiveness of rehabilitation programs involve interventions that have focused primarily on recidivist drink drivers (Connor, Maisto & Ersner-Hershfield, 1986; DeYoung, 1997; Ferguson et al., 2000; Nickel, 1991; Siskind et al., 2000; Siskind, Sheehan & Schonfeld, 2001; Mann et al., 1994; Taxman & Piquero, 1998). Such programs are most effective for serious repeat offenders who are apprehended with blood alcohol content levels of 0.15 g/100 ml or greater (Siskind et al., 2001). These rehabilitation programs often provide recidivist drink drivers with a wide range of skills and strategies to avoid the drink driving sequence, including information regarding the effects of alcohol, drink driving laws, safe driving practices and possible indicators of drinking problems. In addition, studies have demonstrated that rehabilitation programs are most effective in reducing further offences when they are combined with licence disqualification periods (Fell, 1990; Mann et al., 1994; McKnight & Voas, 1991; Nichols & Ross, 1990; Popkin et al., 1992; Sanson-Fisher et al., 1990; Siskind et al., 2001). That is, interventions that have combined rehabilitative programs with deterrence based-sanctions such as licence disqualification periods have consistently produced the greatest effect size.

Despite the reductions in drink driving behaviours resulting from the combination of legal sanctions and rehabilitation, some persistent offenders continue to drink and drive after completing such programs whilst others fail to successfully complete the programs and remain a considerable risk to re-offend. It follows then that no interventions have been proven effective for all repeat offenders (Beirness et al., 1997), and the extent to which aspects of the combined countermeasures account for reduced re-offence rates remains unclear (Wells-Parker & Popkin, 1994).

In light of this, combinations of rehabilitative and deterrence interventions with vehicle-based sanctions are being implemented in a further attempt to reduce repeat offending (Marques et al., 1998; Weinrath, 1997), as well as the prevalence of unlicensed driving (Voas et al., 1997). One type of vehicle-based sanction which is becoming increasingly popular in a number of jurisdictions to reduce recidivist drink driving are alcohol ignition interlocks (Morse & Elliott, 1992; Popkin et al., 1992; Voas et al., 1999).

2.5 Alcohol Ignition Interlock Devices

2.5.1 Aim of Interlocks

An alcohol ignition interlock is an electronic device that measures an individual's blood alcohol content. The device is connected to the ignition and power system of a vehicle and is designed to prevent the vehicle being started should the driver's blood alcohol concentration exceed a predefined limit. Drivers must provide a breath sample each time they attempt to start the vehicle and also provide "running re-tests" once they are driving (10-20 minute intervals). This occurs in order to reduce the likelihood that a sober individual does not initially start a vehicle for an intoxicated driver.

In contrast to other countermeasures that focus primarily on traditional deterrence-based strategies (e.g., random breath testing, fines and licence disqualification), interlocks provide drivers with the opportunity to develop and practice strategies to avoid drink driving (Weinrath, 1997). In addition, the device allows drivers to re-enter the licensing system legally, with insurance, rather than permitting offenders to continue to drive unlicensed without supervision (Beirness & Simpson, 1991). Further benefits of interlocks include: the prevention of a vehicle being started should the driver exceed the previously specified BAC level, the instrument serves as a constant reminder to drivers of possible alcohol problems and

the difficulties that have arisen from drink driving, and offers many offenders the opportunity to maintain employment (Beirness & Simpson, 1991).

Interlocks have been commercially available to road users for over ten years (Longest, 1999). In 2001, approximately 65,000 interlocks were in use in the United States (Rauch, Berlin et al., 2002) with 38 North American States having enacted interlock legislation (Voas et al., 2002). However, considering that more than 1.4 million drivers in the US are convicted of drink driving every year, take-up rates of interlocks remain low (Marques, Voas, Tippetts & Beirness, 2000). In Australia, there has been increasing interest in the utilisation of interlocks to reduce repeat offending among recidivist drink drivers, with four states amending legislation and preparing to implement interlocks, with two trials currently underway in Queensland and South Australia.

2.5.2 Effectiveness of Interlocks

Since the 1980's there have been a number of interlock trials in the US and Canada (Beck et al., 1997; EMT, 1990; Jones, 1992; Popkin et al., 1992; Tippetts & Voas, 1998; Voas, Marques, Tippetts & Beirness, 1999; Weinrath, 1997) and two preliminary trials in Australia (Coxon & Earl, 1998; Spencer, 2000). Despite the methodological difficulties associated with evaluating interlocks highlighted earlier the results are markedly consistent.

Firstly, the majority of interlock studies have demonstrated that the device significantly reduces recidivism whilst the interlock is installed in participants' vehicles (Baker, 1987; Beck et al., 1997; Bjerre, 2002; Morse & Elliot, 1992; Sanderson, 1996; Weinrath, 1997). For example, Morse & Elliot (1992) in Ohio reported that when interlocks were installed, recidivism rates were three times lower compared with offenders given only licence suspension sentences during the same period of time (65% reduction), while unlicensed driving was reduced by 91%. Furthermore, Popkin, et al. (1992) in North Carolina and Jones (1992) in Oregon performed quasi-experimental interlock trials and reported significant reductions in re-arrest rates for interlock participants while the device was installed.

Beck, et al. (1997) in Maryland conducted the only complete randomised interlock trial involving 1396 multiple drink driving offenders who were allocated to one of two treatment groups: (a) early reinstatement of their licence on the condition of interlock installation and attendance of Alcohol Anonymous meetings (AA), or (b) a comparison group which completed a drink driving rehabilitation program

named Maryland's Drinking Driving Monitoring Program. The researchers also reported a 65% reduction in recidivism rates while the interlock was installed. Finally, Voas, Marques, Tippetts & Beirness (1999) in Alberta reported that first time and multiple offenders ($N = 1982$) who used interlocks and completed a weekend intervention program recorded significantly lower levels of repeat offences whilst the device was installed compared to offenders who were licensed ($N = 17587$).

However, this reduction in drink driving behaviours appears to be lost upon interlock removal, as re-offence rates are comparable between interlock and non-interlock drivers (Beck et al., 1997; Frank, Raub, Lucke & Wark, 2002; Jones, 1992; Morse & Elliott, Popkin et al., 1992; Rauch, Zador et al., 2002; Tippetts & Voas, 1998; Voas, Marques, Tippetts & Beirness, 1999). For example, the majority of interlock trials that have reported significant reductions in the prevalence of re-offending whilst the device was installed also indicate that offenders substantially increase their drink driving behaviour(s) once the device is removed (Beck, Rauch & Baker, 1997; Frank et al., 2002; Popkin et al., 1992; Voas et al., 1999). Overall, the research suggests that interlocks are effective in incapacitating or restricting individuals from drink driving whilst installed in the vehicle, but the device appears to provide few long-term benefits as post interlock recidivism rates are similar to control groups (Frank et al., 2002; Weinrath, 1997). At present it remains unclear why offenders revert to drinking and driving once the device is removed from the vehicle, or what (if any) long term beneficial effects result from interlock usage.

2.5.3 Australian Interlock Programs

There have only been two interlock trials in Australia that have focused primarily on the feasibility of such programs. Both trials consisted of volunteer participants. The first study was conducted in Riverland, South Australia, over a 6-month period during 1998 and consisted of 24 volunteers who were employees or were affiliated to one of a number of road safety departments in South Australia (Coxon & Earl, 1998). The second trial was conducted in New South Wales between January 1999 and March 2000 and consisted of 23 repeat offenders who volunteered to install an interlock and were interviewed both during interlock installation and at the time the device was removed from their vehicles (Spencer, 2000).

Both of these studies demonstrated that interlocks were a viable countermeasure for use in Australia (e.g., reliability and servicing of the device) and participants reported positive experiences regarding the use of interlocks. For example, participants indicated that using the device increased their knowledge regarding appropriate drinking levels in order to remain under the legal blood alcohol limit and most believed that the device was a viable sentencing option to traditional legal sanctions (Coxon & Earl, 1998; Spencer, 2000).

In summary, a consistent finding of interlock research is that the device appears extremely effective at reducing recidivism rates whilst installed, but produces few long-term behavioural changes as re-offence rates are comparable to non-interlock groups after the device is removed. More recently, a small sample of current interlock trials in North America (Maryland, Alberta) and in Europe (Sweden) are combining treatment, rehabilitation and intensive supervision programs with interlock installation with the aim being to increase the possibility of long-term behavioural change (Beck et al., 1997; Marques et al., 2001). Although most of these programs are currently being implemented and have not been comprehensively evaluated, early indications suggest that the combination of supportive initiatives with interlock programs provides positive results such as lower rates of failed start-up attempts (Marques et al., 2001), and post-interlock recidivism (Marques, Voas et al., 2000).

Apart from the lack of long term behavioural change resulting from interlocks, very little is known about why the device is only effective whilst installed, what impact (if any) interlocks have on participants' drinking behaviours, or the reasons why a considerable proportion of offenders continue to drink and drive once the device is removed. Direct examination of these factors through interviews and self-reported data will provide valuable insight into the effect that perceptions of and attitudes to interlocks have on frequent usage of the device, as well as on successful program outcomes e.g. the avoidance of further offending.

2.6 Summary

This chapter has reviewed current knowledge regarding the impact of legal sanctions, drink driving rehabilitation programs and alcohol ignition interlocks to reduce recidivism rates among convicted drink drivers. In summary legal sanctions, rehabilitation and interlock programs demonstrate differing patterns of reductions in the offending behaviours of recidivist drink drivers. Both legal sanctions and

interlock programs appear to produce short-term behavioural change through the process of restriction and/or incapacitation. Rehabilitation/intervention programs have the capacity to produce longer-term behaviour change, but no intervention appears able to completely remove recidivism (Beirness et al., 1997). As a result, research initiatives are now combining drink driving penalties with intervention programs (e.g., legal sanctions, rehabilitation and interlocks) in an attempt to further enhance the level of behavioural change experienced by repeat offenders.

Due to the heavy reliance on summative outcomes such as recidivism rates and crash statistics, it remains unclear as to what aspects of each countermeasure produces behavioural change, what type and level of change occurs, what factors negate or facilitate change, or how long change can be reliably maintained. Thus a need remains to conduct *outcome* evaluations that examine the impact of countermeasures on repeat offenders' self-reported attitudes, motivations and actual drinking and drink driving levels. Such research initiatives will increase current knowledge regarding what current countermeasures, or aspects of countermeasures, successfully influence and change repeat offenders' drinking and driving behaviour(s) and possibly which initiatives need to be implemented to ensure this change is both attained and long lasting.

As highlighted in Chapter One, studies that focus on the self-reported "experiences and processes" of participants as they incur legal sanctions and complete interventions have the potential to provide a more accurate description of the impact and effects countermeasures have on a range of important characteristics (TIRF, 2001), as well as shed light on factors that effect behavioural change e.g., drinking levels, mandatory vs voluntary enrolment. Multiple measures of change may provide valuable insights into the strengths and weaknesses of specific countermeasures rather than supply global representations of program success. Participants' beliefs regarding rehabilitative outcomes are at least as important as global representations of change. As a result, the present study aims to focus on repeat offenders' self-reported experiences, behaviours and intentions, to develop a greater understanding of the impact of current countermeasures on recidivist drink drivers.

Chapter Three reviews the perceptual deterrence literature, focusing on current knowledge regarding the deterrent impact that sanctions have on drink driving behaviours. The chapter explores previous research on the Classic Deterrence Doctrine (Gibbs, 1975) and acknowledges the growing body of research that has called for the examination of non-legal sanctions. As a result, the review also incorporates three non-legal sanctions that stem from Homel's Model of Deterrence (1988) in preparation for the exploration of the self-reported outcomes of sanctions on a group of repeat offenders' drink driving behaviours, which is reported in Chapter Six.

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3.1 Introduction

The application of legal sanctions following a conviction for drink driving has a number of purposes including punishment, reform, retribution and incapacitation. However, a primary goal of the sanctioning process is to deter offenders from repeating the same crime in the future. This motive is encapsulated within the deterrence theory, which proposes that individuals will avoid offending behaviour(s) if they fear the perceived consequences of being apprehended for the act (Homel, 1988; Von Hirsch, Bottoms, Burney & Wikstrom, 1999). The deterrence theory is central to criminology and criminal justice policy (Andenaes, 1974; Cavaola & Wuth, 2002; Babor et al., 2003; Piquero & Pogarsky, 2002) and provides the foundation for a number of drink driving countermeasures such as legal sanctions (i.e., fines and licence loss), random breath testing, and well-publicised media campaigns. Attempts to deter offenders through the application of legal sanctions form a core component of current sentencing practices (Babor et al., 2003; Smith, 2003), and are the focus of the present work.

Since the development of the deterrence theory by Jeremy Bentham & Cesare Beccaria in the 18th Century, there have been countless research initiatives conducted to determine the impact and effectiveness of deterrence-based sanctions to reduce the prevalence of offending behaviour(s) (Homel, 1988; Paternoster & Piquero, 1995; Stafford & Warr, 1993). Despite the enormous amount of research that has focused on the mechanisms and processes of deterrence, researchers readily admit that it is still not known the precise circumstances under which sanctions are likely to influence or change a person's behaviour (Nagin, 1998; Piquero & Pogarsky, 2002; Tittle, 1980). It remains unclear what deterrent impact legal sanctions have on a number of crimes, what legal and non-legal mechanisms produce the greatest deterrent effects, and whether these perceptions remain constant or diminish over longer periods of time (Green, 1989; Minor & Harry, 1982; Saltzman, Paternoster, Waldo & Chiricos, 1982). In fact, the majority of deterrence research remains a minefield, with contradictory findings evident in all but a minority of factors that have been hypothesized to deter potential offenders from criminal acts.

One major limitation within the deterrence literature is the lack of research that has examined convicted offenders (Decker, Wright & Logie, 1993; Klepper & Nagin, 1993). Instead, the vast majority of deterrence research has focused on college students and the general public (Klepper & Nagin, 1993). For the present context, there has been very little research that has examined the deterrent influence of legal sanctions on recidivist drink drivers.

3.2 Definitions of Deterrence

When examining the deterrent effect sanctions have upon offending behaviour, a distinction needs to be made between the different forms of deterrence. Many forms and definitions of deterrence exist, including general deterrence, absolute deterrence, restrictive deterrence, absolute specific deterrence, and marginal specific deterrence (Homel, 1988; Gibbs, 1975; Zimring & Hawkins, 1973). In fact, Gibbs (1975) identified 16 different deterrent effects that may influence the manner in which an individual perceives and experiences punishment. Furthermore, fear is not the only product of legal sanctions, as punishment serves a number of additional purposes such as: incapacitation, normative validation, retribution, stigmatisation, habituation, etc. (Gibbs, 1975).

Despite the complexity of the different forms of deterrence, in the broadest sense there are two main mechanisms, commonly referred to as *specific* and *general* deterrence. As highlighted in Chapter Two, specific deterrence refers to the process whereby an individual who has been apprehended and punished for a criminal act refrains from further offending behaviour for fear of incurring additional punishment (Homel, 1988; Watson, 1998). In contrast, general deterrence occurs when an individual refrains from committing an offence as a result of observing others being punished for offending behaviour or being warned of the impending penalties for committing such an offence (Homel, 1988; Von Hirsch et al., 1999). A complete review of deterrence is beyond the limits of the current research project. The following review focuses on relevant factors associated with deterring repeat offenders through the application of legal sanctions, but also considers salient non-legal sanctions that have recently been proposed to affect behavioural change.

3.3 *Classic Deterrence Doctrine*

The predominate deterrence theory that has been utilised to investigate the impact of legal sanctions on offending behaviour(s) is generally known as the Classic Deterrence Doctrine. Two 18th century utilitarian philosophers named Bentham and Beccaria are regarded as the founders, and the theory makes implicit assumptions regarding human behaviour, namely that law breaking is inversely related to the certainty, severity and swiftness of punishment (Taxman & Piquero, 1998). That is, legal threats are most effective when possible offenders perceive a high likelihood of apprehension, and believe that the impending punishment will be both severe and swift. Many law enforcement practices rely heavily on the principles of the Classic Deterrence Doctrine to increase the certainty, severity and swiftness of penalties (Babor et al., 2003; Ross, 1992). The present work utilises the Classic Deterrence Doctrine as it provides a coherent framework in which to examine the deterrent influence of licence disqualification periods and fines, which remain the predominant drink driving sentencing practice. The three aspects of this theory will be discussed, beginning with the perceived certainty of apprehension.

3.3.1 *The Certainty of Apprehension*

Within the Classic Deterrence Doctrine, a number of researchers have asserted that the most powerful deterrent effects on offending behaviour are produced by the perceived threat of the certainty of apprehension (Decker, Wright & Logie, 1993; Grasmick & Milligan, 1976; Homel, 1988; Jones & Lacey, 1991; Nagin & Pogarsky, 2001; Paternoster, Saltzman, Chiricos & Waldo, 1982; Paternoster, Saltzman, Waldo & Chiricos, 1982; Von Hirsch et al., 1999). Certainty in the present context refers to the perceived likelihood that an offender will be arrested and punished for their criminal act. In order for the “fear of punishment” to be effective, individuals must believe that the likelihood of apprehension for breaking the law to be relatively high.

Evaluations regarding the certainty of apprehension have been extensively reviewed for a variety of different criminal acts (e.g., robbery, violent crimes, shop lifting, drug use), with a considerable body of research demonstrating a significant - although weak - negative relationship between certainty of arrest and crime rates (Grasmick, Jacobs & McCollom, 1983; Richards & Tittle, 1982; Silberman, 1976; Teevan, 1976; Tittle, 1980; Von Hirsch et al., 1999). That is, individuals who perceive the chances of arrest as high are more deterred from committing an offence than individuals who believe that they are unlikely to be apprehended.

3.3.1.1 Perceived Certainty and Drink Driving

In relation to the certainty of apprehension for drink driving, the evidence for deterrent effects has been far from conclusive. A large body of research focusing on summative outcomes (e.g., recidivism rates for the general public) has confirmed that the introduction of countermeasures that increase the chances of being apprehended, such as Random Breath Testing (RBT), have resulted in reductions in the prevalence of drink driving (Grasmick & Green, 1980; 1981; Green, 1989; Homel, 1986; 1988; Job, Prabhakar & Lee, 1997; Paternoster & Piquero, 1998).

However for perceptual based studies, the evidence is conflicting. A small body of recent literature has indicated that perceptions of arrest certainty produce a deterrent impact for general motorists (Grosvenor, Toomey & Wagenaar, 1999; Nagin & Pograsky, 2001; Piquero & Paternoster, 1998; Piquero & Pogarsky, 2002). For example, research that has focused on high school students and general motorists has reported that perceived certainty of apprehension was a greater deterrent than perceived severity, and that individuals who feared being caught by the police were least likely to drink and drive (Grosvenor et al., 1999; Piquero & Paternoster, 1998; Piquero & Pogarsky, 2002).

An opposing body of research has suggested that perceptions of the certainty of arrest do not have a significant deterrent effect on offending behaviors (Baum, 1999; Green, 1989; Hedlund & McCartt, 2002; Loxley & Smith, 1991; Norstrom, 1978; Paternoster, 1987). In regards to drink driving, Baum (1999) investigated the deterrent effects of RBT in rural Queensland on 430 motorists and reported that the perceived threat of punishment did not significantly deter drink driving behaviour. Furthermore, Homel (1988) examined 785 motorists' deterrent perceptions of RBT and failed to find a significant relationship between certainty of apprehension and self-reported drink driving behaviour (although this was attributed to RBT only being operational for three months). In addition, Green (1989) investigated the drink driving behaviour of 310 motorists over a 12-month period and also found no relationship between the certainty of apprehension and self-reported offending behaviours.

3.3.1.2 Perceived Certainty and Repeat Offenders

Little is known about recidivist drink drivers' perceptions regarding the certainty of being apprehended for drink driving, what affect perceptual certainty has on intentions to re-offend, or whether this group is concerned about being caught when they drink and drive. What is evident is that a small number of studies have provided evidence that repeat offenders drink and drive regularly whilst avoiding apprehension (Braithwaite, 1998; Smith, 2003; Wiliszowski et al., 1996).

One of few published insights into repeat offenders perceptions was provided by Wiliszowski et al., (1996) who examined 182 recidivist drink drivers' reasons for repeat offending. The majority were found to fear arrest, and this factor appeared to be the motive why many reduced or stopped their drink driving after a recent conviction. In addition, most reduced their drink driving behaviour when they knew of an increase in police presence on the roads (e.g., check points, patrol cars, holiday periods). However, the majority reported regularly drink driving while avoiding apprehension and further, that their offending behaviour often returned after a conviction. Smith (2003) reported similar results after interviewing a smaller sample of 19 repeat offenders who also reported regularly drink driving whilst avoiding apprehension (e.g., ratios up to 100:1) and actively attempting to evade police enforcement (e.g., RBT).

In summary, repeat offenders' perceptions of the certainty of apprehension and the effects these perceptions have on actual drink driving behaviour remains unclear. On the one hand, there is the possibility that a previous conviction increases the perception of being apprehended, as the threat of punishment is not merely theoretical (Homel, 1988; Kraut, 1975). Conversely, it has also been suggested that most illegal acts pass undetected which result in offenders lowering their unrealistically high expectations of apprehension (Nagin & Paternoster, 1991; Stafford & Warr, 1993). Taken together, there appears to be conflicting research regarding the deterrent affects of perceptual certainty of apprehension on drink driving behaviours for general motorists, and very little knowledge of the deterrent threat of perceived certainty for repeat offenders.

3.3.2 *The Severity of Sanctions*

The perceived severity of legal sanctions has also been considered to be extremely important when examining the deterrent effects of legal penalties on offending behaviour(s). The Classic Deterrence Doctrine proposes that individuals will be reluctant to commit an offence if they consider that the penalty for such an offence is severe (Von Hirsch et al., 1999). Although the deterrent effects of perceived severity of punishment have not received the same level of attention as that of certainty (Grasmick & Bryjak, 1980; Ross, 1984), the results within the literature are also conflicting.

A considerable body of early research demonstrated a weak negative relationship between perceived severity of sanctions and a range of illegal behaviours (Grasmick & Bryjak, 1980; Klepper & Nagin, 1993; Paternoster & Iovanni, 1986; Silberman, 1976; Teevan, 1976; Tittle, 1980; Waldo & Chiricos, 1972). That is, as perceptual severity increases, the likelihood of an individual committing that offence decreases. But once again, an opposing body of research demonstrates that perceptions regarding the severity of penalties do not have the salient deterrent impact that was once assumed (Decker et al., 1993; Homel, 1988; Paternoster & Iovanni, 1986; Ross, 1982; 1984; Simon, 1992; Teevan, 1976; Waldo & Chiricos, 1972; Yu & Wilford, 1991). In fact, some researchers have reported a counter-intuitive relationship, with crime rates actually increasing with increases in the severity of the penalty (Mann et al., 1991; Meier & Johnson, 1977; Silberman, 1976; Teevan, 1976).

3.3.2.1 *Perceived Severity and Drink Driving*

Perceptual research on the severity of specific deterrence for drink driving sanctions is also rare (Homel, 1988; Yu, 2000). As highlighted in Chapter Two, a number of summative-based studies have focused on first time offenders and reported that punitive sanctions are generally effective in reducing drink driving (Erickson & Gibbs, 1978; Gibbs, 1979; Watson, 1998). Encouragingly, research has demonstrated that the application of larger fines and licence disqualification periods produce the greatest deterrent effects compared to shorter licence disqualification periods (Homel, 1981; Sadler et al., 1991; Siskind, 1996; Vingilis et al., 1990; Wells-Parker et al., 1995; Yu, 2000).

However, findings are once again far from conclusive as a number of studies have also indicated that even dramatic increases in the severity of penalties for drink driving, such as licence disqualification periods, does not guarantee reductions in the prevalence of further drink driving behaviour for some drivers (Homel, 1980; 1988; Ross, 1982; 1984; Simon, 1992; Weinrath & Gartell, 2001; Yu, 2000; Yu & Wilford, 1991).

With regard to perceptual severity, a small collection of studies focusing on general motorists has confirmed the limited deterrent effect of increasing sanctions (Homel, 1988; Piquero & Pogarsky, 2002). For example, Piquero & Pogarsky (2002) examined the deterrent effect of perceived severity on a group of 250 college students' drink driving behaviour, and reported that neither personal experience of punishment or vicarious experience appeared to greatly influence intentions to drink and drive again. Secondly, a longitudinal study that explored the perceptions and drink driving behaviours of 185 New South Wales motorists (over a 3 month period) demonstrated that perceived increases in the penalty for drink driving did not result in the sample group actively modifying their driving behaviours to avoid drink driving (Homel, 1988).

These conflicting and arguably anti-intuitive results may be explained using a number of theories. Firstly, an effective deterrent must be great enough so as to constitute a considerable cost to a potential offender (Tittle, 1980). That is, similar to perceptions of certainty, it is important to note that severity extends beyond objectivity and often involves a subjective evaluation that suggests offenders receiving the same penalty may rate the severity of that sanction quite differently based on their individual circumstances (Homel, 1988; Tittle, 1980). Secondly, an interaction or "threshold level" may exist between certainty and severity, and if sanctions are not perceived as certain, then it is unlikely that a potential offender would be concerned about incurring theoretical penalties (Decker et al., 1993; Grasmick & Green, 1986; Homel, 1988; Nagin & Pogarsky, 2001; Paternoster & Iovanni, 1986; Paternoster & Piquero, 1998; Tittle, 1980). Thirdly, the assumed perceptual severity of licence disqualification periods (and thus its deterrence value) may differ or disappear if offenders simply continue to drive unlicensed, which appears to be a common practice among both first time offenders (Watson, 1998) and repeat offenders (Wiliszowski et al., 1996).

3.3.2.2 *Perceived Severity and Repeat Offenders*

For repeat offenders, punitive sanctions have not proven extremely effective in ceasing drink driving (Yu, 2000), and significantly increasing the severity of sanctions has met with limited success (Weinrath & Gartell, 2001). Surprisingly, there has been a lack of research that has examined the perceived severity of legal sanctions for repeat offenders or what affect these perceptions have on future intentions to drink and drive. It may be the case that the fear of sanctions are more powerful for individuals who have actually been punished than for those who have not (Homel, 1988; Tittle, 1980), suggesting that convicted offenders should be the most sensitive to the threat of sanctions. However, given that this group continue to drink and drive despite incurring increasingly severe legal sanctions, the foregoing may be incorrect in that perceptions of severity may be negated or limited by compulsions or an inability to avoid drink driving.

Once again, Wiliszowski et al. (1996) provides one of the only glimpses of repeat offenders' attitudes towards legal sanctions, reporting that fines, incarceration and licence loss were all considered strong deterrents among second offenders. In fact, licence loss was reported the strongest deterrent by second offenders followed by fines and then incarceration. However, third time offenders believed incarceration was the strongest deterrent followed by licence loss then fines. Interestingly, for fourth time offenders, only incarceration was reported to have a deterrent effect as both licence loss and fines were deemed to be ineffective. Similarly, Smith (2003) interviewed 19 repeat offenders and reported that licence loss and fines were considered "merely an annoying part of their lives" (p.11). However, those who reported a higher number of previous convictions and penalties were more likely to consider licence loss and imprisonment as having a greater negative effect upon their lives. Apart from these initial investigations, little is known about repeat offenders' perceptions of the severity of legal sanctions, or importantly, whether these perceptions increase with the number of convictions or with actual increases in licence disqualification periods.

3.3.3 *The Celerity of Sanctions*

The third aspect of the Classic Deterrence Doctrine refers to the deterrent effect of celerity, as it is proposed that the application of punishments for illegal behaviour will be most salient when they are administered soon after the criminal act. This belief has direct links to models of learning and experimental psychology

(e.g., conditioning), as it has been demonstrated that the time between stimulus and response is vital in regards to learning new behaviours (Nagin & Pogarsky, 2001). Likewise, it is recognised that for drink driving, the swiftness of impending penalties is an important aspect for achieving deterrence (Homel, 1988; McArthur & Kraus, 1999).

Despite the link between the speed of the response and learned behaviour, the effects of the celerity of legal sanctions is by far the least studied of the three major deterrent mechanisms in the Classic Deterrence Doctrine (Babor et al., 2003; Nagin & Pogarsky, 2001). This is partly because penalties are rarely applied swiftly in the criminal justice system (Babor et al., 2003).

3.3.3.1 Perceived Celerity and Drink Driving

For first time offenders, a small body of summative-based research has confirmed that the impact of punishment appears greatest when the offender experiences the sanctions soon after committing the crime rather than waiting for an extended period of time (McArthur & Kraus, 1999; Wiliszowski et al., 1996; Williams, Weinberg & Fields, 1991; Yu, 1994). This theory has been strengthened by research confirming Administrative “Per Se Laws” that contribute to swift licence removal possess a powerful specific deterrent effect (McArthur et al., 1999; Ross, 1992; Yu, 1994). For example, Yu (1994) found that licensing sanctions that are swift, mandatory and severe reduce the chances of recidivism. Furthermore, Yu & Wilford (1995) examined the driving records of 13,058 convicted offenders and reported that drivers who had not received their penalty within six months of apprehension were most likely to re-offend.

3.3.3.2 Perceived Celerity and Repeat Offenders

Apart from these scant studies, it remains unclear whether convicted drink drivers, and especially repeat offenders, consider the time period between being apprehended for drink driving and receiving sanctions to be swift or delayed. What is currently known is that the period of time between apprehension and licence loss varies considerably between countries and jurisdictions, and licence removal can take up to a year to implement (Beirness et al., 1997). Two preliminary studies that have focused on recidivism rates indicate that longer periods of time between apprehension and conviction were associated with increases in recidivism for repeat offenders (Mann et al., 1991; Vingilis et al., 1990). However, research is yet to

examine repeat offenders' self-reported perceptions regarding the swiftness of the application of legal sanctions, or whether such perceptions have a deterrent influence on further offending behaviours.

3.4 Alcohol Consumption and Deterrence

One factor that has been demonstrated to influence both drink driving and the deterrent impact of legal sanctions is heavy alcohol consumption levels (Baum, 1999; Brown, 1998; Green, 1989; Social Development Committee, 1988; Yu, 2000). Heavier drinkers appear to be less likely to be deterred by legal sanctions, resulting in a higher frequency of drink driving occurrences (Baum, 1999; Loxley & Smith, 1991; Yu, 2000). In fact, an early indication is that severe sanctions reduce the likelihood of drink driving, while alcohol problems appear to increase the chances of re-offending (Yu, 2000). On the one hand, this may result from heavy alcohol users being less able to make rational decisions not to drink and drive, even after being severely punished (Yu, 2000). Conversely, the *need* to drink and drive may simply be greater than the fear of impending sanctions that result from apprehension.

Whilst research has yet to determine the specific relationship between alcohol consumption levels, perceptions of legal sanctions and intentions to re-offend, a growing body of research has implicated alcohol use in re-offence rates (Baum, 1999; Brown, 1998; Green, 1989; Yu, 2000). For example, Baum (1999) examined the deterrent effects of RBT in rural Queensland on 430 motorists and reported that as alcohol consumption increases, so does the likelihood of drink driving.

For repeat offenders, Yu (2000) conducted one of the only studies to examine the relationship between recidivism, the deterrent effects of legal sanctions and alcohol consumption levels on 521 offenders and reported that sanctions reduce the likelihood of repeat offending while alcohol problems appear to increase the probability of drink driving. Considering the popular belief that repeat offenders exhibit harmful alcohol consumption levels (MacDonald & Dooley, 1993; Traffic Injury Research, 2003; Wieczorek et al., 1992; Wilson, 1992), it appears critical to determine the effect that alcohol consumption has both on perceptions of legal sanctions and future intentions to drink and drive. Despite this, few studies have directly examined the drinking behaviours of convicted drink drivers from this perspective (Yu & Wilford, 1993), nor their self-reported drink driving behaviours in addition to official conviction records (Yu & Wilford, 1993). The present study

seeks to examine the relationship between alcohol consumption levels and the deterrent effects of legal sanctions.

3.5 Non-legal Sanctions and Deterrence

Since the 1970's a number of models have stemmed from, and expanded the scope of, the Classic Deterrence Doctrine. One prominent direction of theoretical change has been to consider the deterrent effect that non-legal sanctions have on decisions to commit an offence (e.g., social control theory), resulting in an increase in the number of factors proposed to influence criminal behaviour. This expansion arose from criticisms that the Classic Deterrence Doctrine did not account for the large array of non-legal factors that may affect behaviour, as it is recognised that penalties are not applied within a social vacuum (Anderson, Chiricos & Waldo, 1977; Berger & Snortum, 1986; Klepper & Nagin, 1993; Paternoster & Iovanni, 1986; Sherman, 1993; Snortum, 1988; Vingilis, 1990; Watson, 1998; Williams & Hawkins, 1986).

There has been considerable discussion within the literature regarding which legal and non-legal sanctions should be included in deterrence models or excluded for separate examination (Akers, 1990; Anderson et al., 1977; Gibbs, 1979; Grasmick & Green, 1980; Homel, 1988; Meier & Johnson, 1977; Tittle, 1980; Vingilis, 1990; Zimring & Hawkins, 1973). As Homel (1988, p. 27) rightly states "the literature fairly bristles with reviews, overviews, theoretical arguments, conceptualizations, reconceptualization, criticisms, and rebuttals".

As with the broad field of the Classic Deterrence Doctrine, a comprehensive review of all the relevant factors in deterrence models is beyond the scope of the present research, although it is noted that a number of models have provided valuable insight into the impact of social influences on offending behaviours¹. Moreover, it is not possible to conduct an in depth analysis of the myriad of non-legal factors that have been proposed to affect a person's decision to drink and drive, whilst maintaining the utility and predictive validity of a parsimonious model (Homel, 1988; Stafford & Warr, 1993). Nevertheless, considering that a significant proportion of drink drivers continue to offend whilst remaining undetected, it is of practical and theoretical importance to investigate whether informal sanctions

¹ For a summary of non-legal sanctions that have been proposed to affect offending behaviours, the reader is directed to Berger & Snortum (1986), Homel (1988), Tittle (1980) and Vingilis (1990).

provide a deterrent effect on offending behaviour(s), whilst this group avoids or incurs legal sanctions.

3.5.1 *A Model of Legal and Non-legal Sanctions*

Given the exploratory nature of the present study, a second model of deterrence will be implemented to consider the effects of non-legal sanctions on drink driving behaviour. This model was developed by Homel (1988) and was originally constructed to investigate the deterrent effect of RBT in New South Wales, as well as the deterrent impact of severe versus light penalties imposed on drink drivers. This *criminal event* model (which is an elaboration of Gibb's 1975 deterrence model) draws on rational choice and prospect theories and suggests that both legal and non-legal sanctions affect a person's drink driving behaviour. The model focuses on exposure to law enforcement activities (e.g., sanctions & RBT) and suggests that exposure results in the formation of perceptions regarding the certainty and severity of legal sanctions as well as the internalised threat of non-legal sanctions, which are proposed to ultimately influence drink driving behaviour(s). Once a driver is exposed to law enforcement, the behaviour of the person is influenced by perceptions and evaluations regarding the threat of penalties. As recidivist drink drivers have come in contact with law enforcement and punitive sanctions, the model is offered as ideal to complement the predominant theoretical framework of the Classic Deterrence Doctrine.

The criminal event model consists of four main factors, which are separately discussed below: (a) traditional legal control mechanisms that are considered to pose a threat of material loss (e.g., fines and licence disqualification) and three informal mechanisms that are: (b) stigma resulting from informal sanctions (e.g., peer disapproval), (c) guilt feelings from internalisation of norms (e.g., feeling guilty or ashamed), and (d) the risk of physical deprivation (e.g., an accident or damaging one's vehicle). The model also considers a range of additional factors such as the perceived fairness of the sanction and sentencing process, socio-demographic variables such as age, sex and alcohol consumption which ultimately affect the deterrent mechanism encapsulated in the model (Homel, 1988). However for parsimonious reasons, the present study will focus mainly on the three non-legal sanctions.

3.5.1.1 The Threat of Material Loss

The first factor of Homel's (1988) model considers the effects of official legal activities and exposure to law enforcement on drink driving behaviour. As highlighted above, individuals make assessments regarding the severity of the incurred penalty in relation to their own situation in life, which affects subsequent decisions to drink and drive again in the future. The threat of material loss stems from the Classic Deterrence Doctrine. The relationship between perceptions of sanctions and re-offending have been reviewed above, and hence the following section focuses on the three non-legal sanctions proposed by Homel (1988).

3.5.1.2 The Threat of Social Loss

The first non-legal factor involves the threat of social stigma resulting from informal sanctions. Given that deterrence is a psychological process that takes place within a larger social context of human activity (Homel, 1988), it has been hypothesized that social and cultural norms affect the prevalence of offending behaviours in a community (Akers, 1990; Beirness et al., 1997; Braithwaite, 1989; Grasmick & Bursik, 1990; Nagin & Pograsky, 2001; Sherman, 1993; Sherman & Strang, 2000). Researchers have long considered that the attitudes and behaviours of peers often provide social reinforcement and/or punishment, resulting in these processes forming a central component of social learning models (Akers, 1977; Akers, 1990; Sherman, 1993). For example, offenders may suffer disapproval if the criminal act is perceived by friends as reprehensible, a breach of the rules or some "norm", which they themselves consider legitimate (Homel, 1988; Von Hirsch et al., 1999).

A considerable body of research has demonstrated that informal sanctions such as social disapproval or fear of social stigma produce a significant deterrent effect on a number of illegal acts such as shoplifting, drug taking, using violence, and drunkenness (Baum, 1999; Erickson & Gibbs, 1978; Grasmick & Green, 1981; Green, 1989; Jensen, Erickson & Gibbs, 1978; Kraut, 1975; Paternoster et al., 1983; Paternoster & Iovanni, 1986; Paternoster & Piquero, 1995; Ross, 1984; Von Hirsch et al., 1999). In fact, some researchers have reported that the threat of informal sanctions produces a greater deterrent effect on offending behaviour than the threat of formal legal sanctions (Erickson & Gibbs, 1978; Kraut, 1976; Paternoster & Iovanni, 1986; Snortum, 1988; Tittle, 1980).

Social Sanctions and Drink Driving

In a similar manner to general offending behaviours, social norms are known to influence the prevalence of drink driving. A growing body of summative-based research has proposed that strong social attitudes regarding the inappropriateness of drink driving has contributed to significant declines in the prevalence of the behaviour (Job et al., 1997; Snortum, Hauge & Berger, 1986; Snortum, 1988). Current media campaigns to deter drink driving in Queensland attempt to reinforce the negative social cost of drink driving such as disapproval from friends and/or family.

However once again, perceptual deterrence research regarding the influence of social sanctions has been more conflicting. On the one hand, a body of research has provided evidence that individuals fear being ridiculed or shamed by peers, and may thus avoid drink driving (Baum, 1999; Berger & Snortum, 1986; Brown, 1998; Green, 1989; Homel, 1988; Paternoster et al., 1983). Baum (1999) tested part of Homel's model to examine the deterrent effects of RBT on 430 motorists in rural Queensland, reporting that the perceived threat of social sanctions produced a significant deterrent impact on general motorists. That is, drivers who reported that their friends would think they were "stupid" if they drank and then drove were less than half as likely to offend than the reference group. Another Australian study of 1,500 South Australian drinkers by Brown (1998) reported that respondents whose friends engaged in drink driving practices were more likely to also report offending, whilst perceived peer disapproval was associated with a decreased likelihood of drinking and driving.

On the other hand, informal sanctions have also been shown not to produce a significant deterrent impact on drink driving (Piquero & Paternoster, 1998; Piquero & Pogarsky, 2002). Piquero & Paternoster (1998) re-examined Snortum & Berger's (1989) telephone interview data of 1686 general motorists and found that the threat of informal sanctions did not produce a significant deterrent effect on projections to drink and drive again for general motorists. In addition, Piquero & Pogarsky (2002) investigated the direct and indirect deterrent influences on a group of 250 college students' drink driving behaviour, and demonstrated that those reporting drink driving in the past were less likely to worry about informing their friends of the offence.

Social Sanctions and Repeat Offenders

The deterrent effect of informal sanctions on recidivist drink drivers also remains unclear. One theory proposes that social sanctions decrease with offence history, as the deterrent is greatest for the first offence rather than the second and third when the offenders' peer group have become aware of the illegal behaviour (Dana, 2001; Nagin & Paternoster, 1991; Nagin & Pograsky, 2001). Secondly, some researchers have suggested that rather than informal sanctions producing and/or contributing to deterrence, they may actually create the opposite effect, negating the deterrent effects of formal legal sanctions (Ahlin et al., 2002; Berger & Snortum, 1986; Homel, 1988; Nagin & Paternoster, 1991; Tittle, 1980; Von Hirsch et al., 1999). Theories such as Hirschi's theory of Social Bond (1969) propose that deviant peer expectations may neutralize deterrent mechanisms to the extent that peers promote and encourage courageous risk-taking behaviour (Tittle, 1980).

For drink driving, a deviant "beer-culture" may exist with its own values and standards regarding tolerance and acceptance levels (MacDonald & Dooley, 1993; Mookherjee, 1984). As a result, legal and non-legal sanctions may operate in opposite directions to those intended (Homel, 1988). This idea was recently supported by Smith (2003) who investigated the driving behaviours of 19 repeat offenders and reported that peers and friends actively encouraged and condoned drink driving. Furthermore, Ahlin, et al. (2002) examined the driving behaviours of 1,377 repeat offenders participating in the Maryland interlock trial and reported that social bonds were positively associated with recidivism rates. In summary, preliminary research provides an early indication that social supports may limit or negate the deterrent impact of legal sanctions upon repeat offenders.

3.5.1.3 The Threat of Internal Loss

The second of the three non-legal factors in the model (Homel, 1988) arises from the internal threat of feeling "guilt", "shame" or "remorse", which stems from internalised norms (Grasmick & Bursik, 1990; Homel, 1988; Nagin & Pograsky, 2001). Grasmick, Jacobs & McCollom (1983, p.360) define this threat as the "self-imposed *guilt feelings* if actors violate norms they themselves have internalised." While internalised norms have not received the same level of research consideration as social sanctions, researchers suggest that being motivated to avoid feelings of guilt and shame may promote compliance with the law (Grasmick & Bursik, 1990; Homel, 1988; Nagin & Pograsky, 2001).

At present, very little research has examined the existence of these proposed internalised norms, nor what deterrent effect breaking these norms has on drink driving behaviours. Due to resource limitations, neither Homel (1988) nor Baum (1999) were able to investigate the deterrent effect of internal loss on individuals who were exposed to RBT. One of the only studies to consider this factor was by Piquero & Pogarsky (2002) who examined both direct and indirect deterrent influences on a group of 250 college students' drink driving behaviour, and found that in a similar manner to social sanctions described earlier, those who did not drink and drive reported that they would feel guilty, whilst those who had offended in the past reported the lowest levels of guilt and embarrassment from engaging in drink driving behaviours. In regards to repeat offenders, it is noted that the effect of internalised norms may only be influential for those who have a strong moral connection to the norm or to the law. Von Hirsch, et al. (1999) suggested that an offender may reject the norms underlying the prohibition of an act, and/or question the legitimacy of the punisher which diminishes any moderating affect that feelings of shame may impose. In summary, it is not presently known if recidivist drink drivers feel a sense of internal loss as a result of drink driving. Despite this, assessment of such cognitions has value in determining whether this group recognise the seriousness of their offending behaviours as well as investigating if such feelings have the ability to produce a direct affect on actual drink driving behaviours.

3.5.1.4 The Threat of Physical Loss

The last of the three non-legal factors in Homel's model (1988) considers the deterrent threat of material deprivation on drink driving behaviour. There are many forms of material deprivation that can result from drink driving, such as: (a) formal legal punishment that takes the form of licence disqualification and/or monetary loss, (b) loss of employment as a result of losing one's licence, (c) monetary costs of not drink driving (e.g., paying for a taxi or public transport), and (d) physical injury sustained as a result of drink driving (Homel, 1988). Homel suggested that the greatest threat of material deprivation is physically injuring oneself, and thus the fear of being injured as a result of drink driving has been proposed as a deterrent against committing the offence (Baum, 1999; Homel, 1988; Norstrum, 1978). This deterrent theory forms a central component of many road safety advertising campaigns that promote the serious negative health consequences that may result from drink driving (e.g., crashes and fatalities).

Despite this, once again, there has been very little research effort directed towards the deterrent effect that being injured has on actual drink driving behaviours. A small body of research has begun to demonstrate that the threat of physical injury has the potential to influence the act (Baum, 1999; Norstrom, 1978). For example, Baum (1999) tested aspects of Homel's model in examining the deterrent effects of RBT in rural Queensland and reported that the perceived threat of being injured was a significant deterrent for actually drink driving. That is, respondents who thought that the injury risk associated with drink driving was overrated were 10.5 times more likely to have committed the act than those who expressed a fear of being injured. In addition, Norstrom (1978) examined the attitudes of 1,541 Swedish drivers and reported that the fear of being injured as a result of drink driving had a negative effect on the likelihood of engaging in the offending behaviour.

One of the only studies to explore repeat offenders' perceptions was conducted by Wiliszowski, et al. (1996) who found that the majority of participants did not believe they were endangering themselves as most reported they could drive safely after consuming alcohol. On the other hand, a minority recognised that drink driving was dangerous and reported that they had either stopped drinking or stopped driving after drinking. This finding may indicate that a history of drinking and driving only serves to reinforce to drivers the low likelihood of being injured while committing the offence. If so, a more likely deterrent may be the fear of damaging one's vehicle (e.g., damaging or destroying a panel or fixture) whilst driving under the influence of alcohol (Homel, 2001). As a result, the present study endeavours to firstly examine: (a) whether repeat offenders fear being personally injured or damaging one's vehicle, and (b) what relationship this possible fear has on intentions to drink and drive.

3.6 Research Questions and Summary

The above review of the deterrence literature relating to the perceived threat of legal sanctions has demonstrated that very little is known about repeat offenders' perceptions of such sanctions, or about their deterrent influence on continuing to drink and drive. In addition, it remains unclear whether this group can be influenced by social sanctions, feel guilty after drink driving, or fear being injured from the offence. Although considerable strides have been taken in the investigation of deterrent influences on general criminal activity, there is a genuine lack of research

that has examined convicted or repeat offender's perceptions of legal and non-legal sanctions, nor what impact such sanctions - if any - have on self-reported drink driving behaviours. While not exhaustive, Chapter Three provides a justification for the examination of the possible deterrent effect both legal and non-legal sanctions have on a group of repeat offenders soon after the sanctioning process, as well as the mediating effects drinking behaviours have on intentions to re-offend. The first study in the research program will examine the following four research questions:

1. What are repeat offenders' perceptions of legal and non-legal sanctions soon after being apprehended and convicted?
2. What is the relationship between these perceptions of sanctions and self-reported intentions to re-offend? And what influence does alcohol consumption levels have on the deterrent impact of sanctions?
3. Is there a relationship between the actual length of penalties and perceptions regarding the severity of such sanctions?
4. Is there a relationship between the actual length of penalties and intentions to re-offend? For example, does increasing the length of licence disqualification periods increase perceptual deterrence?

These research questions will be the focus of Chapter Six (Study One), where specific hypotheses will be formulated and tested on a sample of repeat offenders convicted in Queensland courts. The present study aims to extend current knowledge of the influence of deterrent factors on repeat offenders, gaining insight into this groups' perceptions and experiences of sanctions and the effect these perceptions have on future drink driving behaviours.

The exploration of possible deterrent influences contributes to the field of deterrence theory and criminology, as well as providing direction for the management of repeat offenders.

Prior to the examination of repeat offenders' experiences of penalties, Chapter Four provides a review of the literature examining the complementary approach of permitting offenders to participate in a drink driving rehabilitation program whilst they are unlicensed. Researchers have asserted that in addition to being deterred, offenders need to learn the necessary skills and strategies to avoid drink driving (Fell, 1990; Nichols & Ross, 1990; Sanson-Fisher et al., 1990), although questions also remain regarding the exact nature of the self-reported changes that result from such interventions.

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4.1 Introduction

A central theme of the present research program is the need for initiatives that measure the impact of drink driving countermeasures from a number of perspectives. This assertion is not new for rehabilitation programs, as there is general consensus within the literature that comprehensive models of treatment-assisted change are needed to provide frameworks that accurately describe and explain rehabilitative processes (DiClemente & Prochaska, 1998; Wells-Parker et al., 1998). Such initiatives would result in greater understanding of the processes of changes that occur both during and as a result of program completion (Fitzpatrick, 1992; Wells-Parker et al., 1998), and facilitate the development of effective drink driving interventions.

The dynamic process of behavioural change for drink drivers has rarely been examined, despite various behaviour change models being developed and successfully applied to substance abuse and health-related interventions (DiClemente & Hughes, 1990; Lee, Nigg, DiClemente & Courneya, 2001; Schmitz & Grabowski, 2003). Contributing to the lack of drink driving research has been: (a) the formidable task of operationalising and measuring individuals' attempts to cease a problem behaviour, (b) the high resource costs of implementing longitudinal studies that measure change from multiple perspectives over a period of time (e.g., time and money), and (c) the high subject attrition rates that are notoriously common in drink driving research (Ferguson, 1997; Homel, 1988; McCarther, 1998; Silverstein, 1996; Stark, 1990).

A small number of studies have begun to utilise the Transtheoretical model of Change (Prochaska & DiClemente, 1984) to illuminate the effects of drink driving interventions upon key program outcomes such as program participants' motivation and self-efficacy levels to control and to change drinking and drink driving behaviours (Ferguson, 1997; Levy, 1997; Wells-Parker et al., 1998; Wells-Parker et al., 2000). While a complete review and critique of the structure and application of the Transtheoretical model in behavioural research is well beyond the scope of the current study, the following review focuses on the elements of the Transtheoretical model that have been considered most relevant in the drink driving literature.

4.2 The Transtheoretical Model

The Transtheoretical model was originally developed to describe both self-directed and treatment-assisted attempts to change problem behaviours (Gavin, Sobell & Sobell, 1998). The model arose from Prochaska's original investigation into the common principles of behavioural change of 18 different theories of psychotherapy (Prochaska, 1979), and has since been developed to provide a conceptual framework to understand and intervene with individuals who intentionally attempt to change a problem and/or addictive behaviour (DiClemente & Prochaska, 1998). The model has proven useful in describing how individuals modify problem behaviours (Migneault, Velicer, Prochaska & Stevenson, 1999; Tierney & McCabe, 2000), identifying the major predictors for successful and unsuccessful behavioural change (Connors et al., 2001; Goldbeck, Myatt & Aitchison, 1997), as well as developing effective interventions to promote behavioural change (CPRC, 2001).

4.2.1 The Structure of the Transtheoretical Model

The stages of change are the central organising structure of the model. They consist of discrete and separate categories representing motivational readiness to change a problem behaviour (CPRC, 2001), from which other dimensions and processes then arise (CPRC, 2001; Prochaska & DiClemente, 1986). In addition to these stages, the model also incorporates a number of independent variables, including ten separate processes of change and five discrete levels of change that have also proven useful in explaining and predicting successful change in addictive behaviours (DiClemente & Prochaska, 1998; Prochaska & DiClemente, 1992). More recently, the Transtheoretical model has been expanded to include the effects of other factors on the main constructs of change. These include: individuals' levels of self-efficacy to avoid a problem behaviour, as well as environmental, psychological, cultural, socio-economic, physiological, biochemical and genetic influences on behaviour (CPRC, 2001). However, the majority of research using the Transtheoretical model to examine the impact of drink driving interventions has focused primarily on the stages of change for drinking, stages of change for drink driving (i.e., readiness to change) as well as self-efficacy levels to control the two behaviours, and these will remain the major focus of the current review and proceeding study.

4.2.2 *Stages of Change*

The stages of change proposed by the Transtheoretical model focuses on the underlying motivational processes that drive individuals to attempt to change a problem behaviour (Gavin et al., 1998; McCarther, 1997; Prochaska et al., 1992). Stages of change represent a temporal dimension providing an understanding of when particular shifts in attitudes, intentions, and behaviours are likely to occur. The stages of change are; Precontemplation, Contemplation, Preparation, Action and Maintenance. However, the preparation and maintenance stage of change has traditionally been omitted from research into drink driving due to the utilisation of the Readiness to Change Questionnaire (Heather & Rollnick, 1992), which is discussed in section 7.2.2.3. The Transtheoretical model proposes that individuals move through the behavioural change stages before successfully ceasing or avoiding problem behaviour(s) (DiClemente & Prochaska, 1998).

Precontemplation is the first stage in the model that represents an absence of any intention to change the behaviour in the foreseeable future (Prochaska et al., 1992; Prochaska & DiClemente, 2001). Individuals assigned to this stage are usually not aware of any existing problem that needs to be changed, are not usually motivated to agree with the therapist/facilitator's view of the problem, show a lack of distress about the problem and commonly reject the recommendations or suggestions from others (Ferguson, 1997; Levy, 1997). Precontemplators usually attend treatment due to some form of external pressure (i.e., family and friends) or by the courts (e.g., mandated), and they are at the greatest risk of dropping out of the program (Levy, 1997; Prochaska et al., 1992). If the Transtheoretical model is applied to drinking and/or drink driving, precontemplators would not recognise that they have a problem and would not consider changing their drinking levels or drink driving behaviours.

The contemplation stage of change encapsulates individuals who recognise that a problem behaviour exists, but have not yet made a commitment to take action (Prochaska et al., 1992). Despite this, contemplators are open to feedback and information that may help them to initiate change in the future (Levy, 1997; McCarther, 1997). Contemplators are often conscious of both the benefits and costs of the desired behaviour but have yet to make the decision to implement change (Prochaska & DiClemente, 2001). Individuals can remain in the contemplation stage for relatively long periods of time e.g., two years (Prochaska et al., 1992), and thus a

requirement for change is that contemplators make firm decisions to take action and begin implementing strategies to cease the problem behaviour. In regards to motivations to change drink driving, persons in this stage recognise that their drink driving behaviour(s) have become a problem, but have not made the commitment to avoid or reduce the behaviour. Similarly, drinking contemplators recognise their drinking needs changing, but have not taken action to change.

The action stage consists of individuals who are actively attempting to modify their behaviour, experiences and/or environment to change the problem behaviour (DiClemente & Prochaska, 1998), which can last for a period of one day to six months (Prochaska et al., 1992). This stage often involves considerable commitment of time and energy that tends to be most visible and receives the greatest amount of external recognition (Prochaska et al., 1992). Reaching the action stage is often characterised by the criterion of abstinence or an attempt to modify the target behaviour to an acceptable level (Prochaska et al., 1992). In relation to drinking and drink driving, individuals in the action stage would be actively employing skills and strategies to avoid drinking (e.g., abstinence) and drink driving (e.g., monitoring alcohol intake and avoiding driving after drinking). The maintenance stage is the final stage of change in the Transtheoretical model and consists of individuals who have been actively attempting to avoid a problem behaviour for six months (DiClemente & Prochaska, 1998).

4.2.3 Stages of Change: Movement and Measurement

Movement within the Transtheoretical model does not necessarily entail a linear progression through the stages of change but may also involve regression and recycling, as individuals struggle to successfully apply the behavioural skills needed to avoid a problem behaviour. The literature highlights that there is often considerable movement back and forth between the stages (DiClemente & Prochaska, 1998), as “one-trial learning” in both animals and humans is extremely rare and multiple attempts are usually required to successfully change behaviours (DiClemente & Prochaska, 1996).

The measurement of the stages of change has been achieved with an array of behaviours and a number of different measurement tools, demonstrating the robustness of the Transtheoretical model (DiClemente & Prochaska, 1996), as well as the predictive utility of the stages for future change (Prochaska, DiClemente, Velicer, Ginpil & Norcross, 1985). However debate continues as to whether the

stages of change are in fact discrete sections that require successful implementation of skills or whether change exists along a continuum (DiClemente & Prochaska, 1996). It is noted that researchers have proposed that as long as there is an assessment of attitudes and intentions towards changing a specific behaviour, and there is an attempt to define characteristics of successful change, the process of change can be divided into meaningful and applicable parts (DiClemente & Prochaska, 1998).

4.2.4 Self-efficacy

In addition to the stages of change, the notion of self-efficacy is a recent addition to the Transtheoretical model that is beginning to receive attention in the drink driving literature (Levy, 1997; Wells-Parker et al., 1998; Wells-Parker et al., 2000). Self-efficacy has been defined as an individual's capacity to organise, control and execute certain behaviours to attain specific performances (Bandura, 1977). Self-efficacy appears to be a vital outcome of rehabilitation programs, as participants need to be able to control and avoid the drinking and driving sequence. Self-efficacy has been demonstrated to be a significant predictor of achieving behavioural change in a number of treatment areas (Prochaska et al., 1985), as individuals with higher levels of self-efficacy report significantly greater rates of success with changing behaviour(s) as well as preventing relapse (DiClemente, 1981; DiClemente & Hughes, 1990; DiClemente, Prochaska & Gilbertini, 1985; Levy, 1997; Wells-Parker et al., 1998). A small sample of studies have begun to examine the self-efficacy levels of convicted drink drivers in the context of the stages of change (Levy, 1997; Wells-Parker et al., 1998; Wells-Parker et al., 2000), which will be also be reviewed in the following section.

4.3 Transtheoretical Model and Drink Driving Rehabilitation Programs

4.3.1 First Time Offenders

Research that has explored first time offenders' readiness to change drinking and drink driving behaviours has reported that before program commencement, the majority of participants are motivated to change both their drinking and drink driving behaviours (Ferguson et al., 2000; Wells-Parker et al., 1998; Wells-Parker et al., 2000). That is, individuals convicted of their first offence recognise the need to change their drinking as well as their drink driving behaviour(s) soon after being apprehended and punished for the crime (Wells-Parker et al., 1998; Wells-Parker et

al., 2000). As a result of being in the action stage before commencing intervention programs, there is little linear movement through the stages of change (Ferguson et al., 2000; Wells-Parker et al., 2000) or actual reductions in drinking levels (Ferguson et al., 2000). When movement is evident it is most likely to be from the precontemplation to the contemplation stage, which has been proposed to result from becoming aware of the consequences of inappropriate drinking and/or drink driving behaviour (e.g., “consciousness raising”) that stems from program completion (Ferguson et al., 2000; Wells-Parker et al., 1998). However if a disparity exists, first time offenders are more willing to change their drink driving rather than their drinking behaviour (Wells-Parker et al., 1998; Wells-Parker et al., 2000), indicating that avoiding the drinking and driving sequence is more appealing or possible than changing alcohol consumption levels.

Wells-Parker et al. (1998) utilised the Transtheoretical model to examine the stages of change, self-efficacy, and actual drinking levels of 176 predominantly first time offenders in the U.S. who were court-ordered to complete an intervention program. This was one of only two studies to jointly investigate offenders’ motivations to change both drinking and drink driving behaviours, as well as self-efficacy levels before program commencement. For drink driving, the majority of participants were assigned to the action stage (65%), although 20% were considered contemplators and 3% were assigned to the precontemplation stage. A further 11% were tied between two stages, and three participants produced inconsistent results with elevations both on precontemplation and action.

Participants’ stages of change for drinking were similar to their motivations to change drink driving behaviour. That is, 58% were classified into the action stage, 16% were classified as contemplators, and 13% were classified as precontemplators. A further 14% were tied on two adjacent stages. However, four times as many participants were classified into the precontemplation stage (for drinking compared to drink driving), which suggests a certain subgroup of participants were not prepared to change their drinking behaviours.

Cross-tabulation of stages of change revealed that 59% of participants were assigned to the same stage for both drinking and drink driving, with the largest category being the action stage i.e., 66%. For drinking by stages of change, precontemplators for drinking and drink driving reported the lowest levels of alcohol consumption, while those in the contemplation stage reported the highest. In regards

to self-efficacy, the majority reported high abilities to control both their drinking and drink driving behaviours.

Factor analysis revealed that self-efficacy to control drinking and drink driving was distinct from motivations to change the two behaviours for first time offenders (Wells-Parker et al., 1998). Nevertheless, a close relationship was found between motivation and self-efficacy levels. For example, self-efficacy to avoid drink driving was closely related to self-efficacy to controlling drinking, especially among individuals who were classified as heavy drinkers (Wells-Parker et al., 1998). In addition, self-efficacy proved to be a significant predictor of recent self-reported drink driving behaviours as well as accidents after drinking (Wells-Parker et al., 1998).

Wells-Parker et al. (2000) expanded the above study by implementing a longitudinal design which examined 670 drink driving offenders' motivations both before and after completion of a four week court-ordered drink driving program. Of the 670 participants, 122 participants had previous drink driving convictions although no comparisons were made between the two groups. Once again, for both drinking and drink driving, the majority of participants were classified into the action stage before completing the program, and they remained in this stage at program completion (e.g., more than 75%). Contemplation was the least frequent stage classification, with only 2.9% and 1.9% in the drink driving domain at pre and post intervention, respectively. Similar to the previous drink driving study (Wells-Parker et al., 1998), individuals tended to be classified into the same stage of change for both drinking and drink driving (approximately 77%). However when discrepancies were evident, the most common difference was for individuals to be in the action stage in one domain as well as being classified as precontemplators in another domain (e.g., 15-20%).

Due to the high percentage of individuals being in the action stage, there was very little linear movement through the stages of change during the intervention program, as 74% of participants remained in the same stage for the drinking scale, and 89% for the drink driving scale (Wells-Parker et al., 2000). In addition there was little evidence of regression from action or contemplation to precontemplation (<2%), nor action to contemplation (7-8%). Self-efficacy scores were once again reported as high, as most believed they could control both their drinking and drink driving behaviour.

The two studies utilised the stages of change and self-efficacy levels to predict past drink driving behaviours as well as offence history and subsequent recidivism rates. Firstly when predicting the self-reported frequency of drink driving in the two weeks before their most recent conviction, alcohol consumption levels was the best predictor, although self-efficacy levels and the action stage for drink driving were also significant predictors (Wells-Parker et al., 1998). In comparison, the contemplation stage for drink driving and alcohol consumption levels predicted past drink driving offences (Wells-Parker et al., 1998), and the action stage for drink driving and previous convictions predicted those most likely to re-offend (Wells-Parker et al., 2000). Taken together, these results indicate that motivations to change drink driving and alcohol consumption levels are key predictors of past offences as well as subsequent drink driving convictions after completing the program. Given that the action stage was the best predictor of past and future drink driving events, questions remain about the stability of such motivations across time.

The propensity for first time offenders to be assigned to the actions stage for drinking was also supported by Ferguson et al. (2000). The researchers examined 125 drink driving offenders' motivations to change drinking and alcohol consumption levels before and after completion of a court-ordered drink driving program. Firstly, over 80% of the sample was classified by the AUDIT scales as heavy drinkers before program assessment. Similar to the above findings, before commencing the program 32.3% were precontemplators, 19.4% were contemplators and 48.4% were in the action stage. In addition, the greatest linear movement was from precontemplation to contemplation, as only 19.4% were classified as precontemplators, compared to 32% contemplators after completing the program. There was no change in the number of individuals in the action stage (48.4%). Although a similar assessment was not conducted to determine participants' readiness to change their drink driving, most participants (at time 2) reported planning to change their driving behaviours to avoid further offences, which indicates some aspects of being in the action stage. Finally for actual drinking levels over the nine month period, there was a slight reduction in self-reported drinking behaviour measured by the AUDIT (average 1.6 points) although this difference was not found to be significant. The study also considered changes in knowledge and attitudes, and whilst increases in knowledge were not evident, participants were more likely to use new strategies to avoid drink driving at program completion.

4.3.2 Repeat Offenders

A different picture appears to be emerging from the small amount of research that has focused on repeat offenders. Firstly, there is a much greater spread across the stages of change for drinking as higher percentages of individuals are assigned to the precontemplation stage and report not being willing to change their alcohol consumption levels prior to program commencement (Ferguson, 1997; Levy, 1997; McCarther, 1998). Secondly, early indications suggest there may be less movement through the stages of change as participants complete drink driving interventions but remain in the precontemplation stage (Ferguson, 1997; McCarther, 1997). However, a considerable limitation of this research is that few studies have examined actual changes in drinking levels resulting from program completion (e.g., controlled pre-and-post program assessment), and there has been a lack of research that has examined repeat offenders' motivations and ability to change actual drink driving behaviours (Wieczorek, Callahan & Morales, 1997).

Perhaps the only study to examine repeat offenders' motivations to change drink driving behaviours, and investigate the differences between first vs repeat offenders, was conducted by Wieczorek et al. (1997). The study consisted of 656 convicted drink drivers who were to enrol in a drink driving program or were on a probation order. The majority of participants were in the precontemplation stage (62%), 5% in the contemplation stage, 17% in the action stage and 15% in the maintenance stage. In regard to differences between the groups, precontemplators were more likely to be younger, had the lowest number of previous drink driving convictions, and reported the lowest levels of alcohol consumption. In addition, precontemplators did not believe that their conviction indicated a need for treatment and reported the lowest levels of previous treatment experiences. In contrast, those in the contemplation, action and maintenance stage reported the highest number of drink driving and traffic convictions.

In a similar manner as the previous findings for drinking (Wells-Parker et al., 1998), contemplators reported the highest alcohol consumption levels and alcohol problems in the last 12 months. Conversely, individuals in the action stage reported the least amount of drinking in the 30 days prior to the interview. There were no significant differences between the groups on locus of control over their lives. These results tentatively indicate that individuals with higher numbers of convictions are likely to be motivated to change their drink driving behaviours before entering

treatment program. However, it is noted that participants' motivation and self-efficacy levels to control drinking were not assessed, nor was there a post program assessment of drinking and drink driving motivational levels to determine the effect of the program on these key outcomes.

Apart from this initial study, there has been a lack of research that has examined repeat offenders' motivations to change drink driving behaviours, or the impact that rehabilitation interventions have on such factors. In contrast, a small series of studies have considered repeat offenders' motivations to change drinking levels.

One of the first longitudinal studies that focused on multiple offenders' motivation levels during the completion of a court-ordered drink driving program was conducted by McCarther (1998) as a doctoral dissertation. The study involved 151 multiple offenders who completed a substance abuse and drink driving program whilst in prison, and 80% of the sample was considered to be alcohol dependent. Before program commencement, 73% were precontemplators, 19% were in the contemplations stage and only 8% were assigned to the action stage. A series of independent t-tests revealed no significant linear movement through the stages of change for those in the precontemplation or contemplation stage. However, those already in the action stage reported higher levels of motivation at post program completion, indicating the greatest effect of the program was for participants who were already motivated to change their drinking behaviours before program commencement. Contemplators recorded the highest rates of drink driving convictions, whilst precontemplators recorded the greatest number of previous accidents and highest alcohol consumption levels.

A doctoral dissertation by Ferguson (1997) examined the processes and stages of change of 176 recidivist drink drivers who were mandated to enrol in a drink driving rehabilitation program. The program required participants to reside "in house" for 14 days and attend morning, afternoon and evening sessions (Ferguson, 1997). Cluster analysis revealed a group of 53 who were labelled "Unmotivated" and a second group of 123 who were assigned to the "Motivated" group. Similar to McCarther (1997), there was very little movement through the stages of change that resulted from program completion (13 of 151 participants). Alcohol consumption levels and associated problems were significantly lower for the unmotivated group

than the motivated group, possibly indicating that those who consumed harmful levels in the present study were attempting to reduce alcohol consumption.

Another doctoral dissertation (Levy, 1997) also utilised the Transtheoretical model to examine the drinking stages of change and self-efficacy levels of 150 drink driving offenders completing a court-order substance abuse treatment program. The sample was compared to 224 voluntary participants in an outpatient alcohol treatment program in a previous study by DiClemente & Hughes (1990) to investigate the differences between mandated and voluntary enrolment. Whilst it is not known what percentage of the sample had previous drink driving convictions, clients elected to enrol in the program to avoid incarceration, which indicates the existence of prior convictions.

Levy reported that before program commencement, 81% of the sample were Precontemplators, 9% Contemplators and only 10% Actors. Participants reported high self-efficacy levels to control drinking and there were no significant differences on self-efficacy levels between the stages of change. The study was one of the first to consider the effects of mandatory vs voluntary program enrolment on participants' motivations to change as well as levels on self-efficacy, rather than the traditional measure of recidivism rates. Levy found significant differences between the voluntary and mandatory participants on stages of change, as Precontemplators were more likely to be mandated to complete the interventions compared to voluntary clients. In fact, 76% of the court-mandated sample were Precontemplators compared to 28% of the volunteering participants in DiClemente & Hughes's (1990) study.

In addition, approximately 64% of the court-mandated participants completed the treatment, 32% were unsuccessful and 4% moved out of the area during the treatment process. In regards to the effect of voluntary and mandated enrolment, Levy reported no significant differences on the mean number of sessions attended, nor on the client's discharge status (e.g., successful or unsuccessful). However, it is noted that a considerable proportion of the mandated participants (e.g., 32%) failed to successfully complete the program, which raises concerns regarding mandated participants' motivations to address drink driving behaviours. It is of note that Levy was unable to highlight factors associated with premature termination of treatment (alcohol levels were not measured) and post program assessment may have highlighted the level of linear movement through the stages of change.

Although these results are preliminary, early indications suggest that repeat offenders present with lower levels of motivations to change drinking behaviours and rehabilitation programs appear to produce a smaller effect on such motivations compared to first time offenders. In addition, motives for program enrolment may yet prove to significantly effect such motivations to change (Levy, 1997). More recently, researchers have begun to raise questions regarding the detrimental effect that mandatory enrolment may have on motivations to change problem behaviours and attaining successful program outcomes. Considering that a considerable proportion of drink driving programs are court-ordered (Sanson-Fisher et al., 1986; Wells-Parker, 1994), especially for repeat offenders, the present research program aims to extend previous research to examine the impact of mandated enrolment both on successful program completion as well as rehabilitative outcomes such as motivation levels to avoid problem behaviour(s).

4.4 Voluntary vs Mandated Enrolment

As stated above, an increasing number of drink driving offenders are court-ordered to enter treatment programs (Maxwell, 2000; Polcin, 1999; Shuggi et al., 2002; Wells-Parker, 1994; Wild, 1999), and the subsequent motives of individuals to participate in programs have been theorised to have powerful and significant effects on both program completion as well as changes in problem behaviours (Levy, 1997; Wieczorek et al., 1997). Court-ordered treatment is not new, as it has historically been implemented in a range of settings including; psychiatric treatment, employee assistance programs, and offender treatment programs (Maxwell, 2000; Polcin, 1999). One possible outcome of a court-ordered approach is mandated enrolment, which entails compulsory participation in an intervention with no alternative provided to participants. Both in North America and Australia, the process of mandating offenders to enrol in drink driving interventions has become a widespread practice (Sanson-Fisher et al., 1986; Wells-Parker, 1994).

Individuals are mandated to enrol in treatment programs for a number of reasons such as to: “treat” problem behaviours, increase public health and safety, reduce the cost of incarcerating offenders, and bring offenders in contact with treatment and educational information which is anticipated to have beneficial results (Maxwell, 2000; Mulligan & McCarty, 1986; Sanson-Fisher, Redman, Homel & Key, 1990; Silverstein, 1996; Wild, 1999). Importantly, mandated treatment is implemented to increase the notoriously low participant rates for drink driving

interventions (Dicenso & Paull, 1999). Despite the practical benefits, a growing body of research has examined the effects of mandatory enrolment and generally produced conflicting results (Dicenso & Paull, 1999; Donovan, 1989; Howard & McCaughrin, 1996; Miller & Flaherty, 2000; Mulligan & McCarty, 1986; Silverstein, 1996; Wild, 1999).

On the one hand, research that has focused on recidivism rates has highlighted beneficial effects associated with mandatory enrolment (Anglin, Brecht & Maddahian, 1989; Howard & McCaughrin, 1996; Miller & Flaherty, 2000; Wells-Parker, 1994). Specifically, researchers have provided evidence that coercion into treatment programs can be a therapeutic step towards long term recovery and has been successfully applied to a range of populations including; public aid, employment, criminal and child welfare (Miller & Flaherty, 2000). For drink driving, a series of studies and reviews have demonstrated that court-ordered drink driving programs can produce a small but beneficial effect on recidivism rates (Dicenso & Paull, 1999; Kramer, 1986; McCarty & Argeriou, 1988; Wells-Parker, Anderson, McMillen & Landrum, 1989; Wells-Parker et al., 1995). This approach has been shown to be an effective policy in: (a) ensuring participants come in contact with treatment and information, and (b) can result in higher rates of treatment completion (Dicenso & Paul, 1999).

The opposing theory is that mandatory or “coerced” enrolment is both ineffective and counterproductive, as participants raise their defences, which ultimately nullifies any therapeutic effect (Bastien & Adelman, 1984; Cavaiola, 1984; Cavaiola & Wuth, 2002; Chafetz, 1980; Connors, Donovan & DiClemente, 2001; Fagan & Fagan, 1982; Farabee, Nelson & Spence, 1993; Mulligan & McCarty, 1986; Peck et al., 1994; Polcin, 1999; Silverstein, 1996). Researchers have asserted that ambivalence levels are high prior to program commencement (Cavaiola & Wuth, 2002; Nochajski, Stasiewicz & Gonzalez, 2000; Nochajski & Stasiewicz, 2002; Wieczorek et al., 1997) and legal coercion does little to foster therapeutic treatment or behavioural change (Nochajski et al., 2000; Polcin, 1999; Silverstein, 1996). Motivation for treatment is not the same as motivation to change (DiClemente, 1999) as it has been proposed that even when mandatory enrolment is essential, there needs to be some voluntary interest shown by participants to ensure program success (Chafetz, 1980; Howard & McCaughrin, 1999). Otherwise, “legally-forced” program participants may avoid true cognitive re-evaluations

through cooperating by their mere physical presence, with little thought or planning directed towards program content and goals (Silverstein, 1996). As a result, researchers have suggested that mandatory enrolment in treatment programs may be no more effective than no treatment at all, and adversely effects successful rehabilitation outcomes (Howard & McCaughrin, 1996; Mulligan & McCarty, 1986; Silverstein, 1996).

Research initiatives that have incorporated self-reported data have begun to highlight some negative effects associated with mandatory enrolment that result primarily in resistance to change (Levy, 1997; Portman, 1987). For example, Levy (1997) as highlighted in section 4.3.2, investigated the effects of mandatory enrolment on motivations to change, and reported that mandated participants experience higher levels of denial regarding their drinking problems and are less likely to address such issues (Levy, 1997). Furthermore, Portman (1987) examined client resistance in a group of 347 offenders designated to a drink driving program and reported that 119 (34.3%) participants were found to be resistant and were more likely not to complete the treatment compared to compliant participants.

In summary, while mandating drink driving offenders to interventions has clear practical and theoretical advantages for road safety, concerns remain regarding the affect that this approach has on motivations and resistance to change. Despite the frequency of mandating offenders to complete interventions (Sanson-Fisher et al., 1986, Wells-Parker, 1994) there has been a lack of research that has looked beyond the scope of re-offence rates to explore other essential outcomes such as motivations to change drinking and drink driving and whether participants merely comply with the court-order of program enrolment without any real change being accomplished (Levy, 1997).

4.5 Summary and Research Questions

Research initiatives that have focused on self-reported data and behavioural change models such as the Transtheoretical model of Change (Prochaska & DiClemente, 1984) have provided valuable insight into drink driving offenders' willingness to change problem behaviours. Compared to first time offenders, repeat offenders appear less willing to change drinking behaviours (Levy, 1997; McCarther, 1997) and possibly drink driving behaviours (Wieczorek et al., 1997). It is also possible that participating in drink driving programs does not significantly increase motivations to change drinking behaviours (Ferguson, 1997; McCarther,

1997) nor reduce actual drinking levels (Ferguson, 1997). Surprisingly, there has been a lack of research that has investigated repeat offenders' motivations to change drink driving behaviours, nor their self-efficacy levels to control the offending behaviour. In addition, despite the practical and theoretical advantages, concerns remain regarding the negative effect that mandatory enrolment has on successful program outcomes such as motivations to change problem behaviours (Levy, 1997; Portman, 1987).

Chapter Four has reviewed the literature and provided a theoretical rationale for examining the impact of a drink driving rehabilitation programs on repeat offenders' motivations to change drinking and drink driving behaviours. Specifically, the utilisation of the Transtheoretical model of Change (Prochaska & DiClemente, 1984) provides a conceptual framework to investigate the following research questions:

1. What are repeat offenders' motivation and self-efficacy levels to change/control both drinking and drink driving behaviours before commencing a drink driving rehabilitation program?
2. What impact does the drink driving program have on participants' motivation, self-efficacy and alcohol consumption levels?
3. What impact does mandatory enrolment in the program have on motivations to change problem behaviours, as well as attaining successful outcomes?
4. Are motivational levels stable and reflected in self-reported past and future drink driving events?

These research questions will be the focus of Chapter Seven (Study Two), where specific hypotheses will be formulated and tested on a sample of repeat offenders recently convicted in Queensland courts. The study aims to extend current knowledge regarding the impact of drink driving interventions, and provide insight into this group's motivation and self-efficacy levels to change problem and/or habitual behaviours. The exploration of the impact of rehabilitative interventions contributes to theories of behavioural change, as well as to the development of programs that successfully break the drinking and driving sequence. Prior to the examination of the rehabilitative intervention, a review of the research design and methodology is provided in Chapter Five that highlights the characteristics of the study and the mixed method approach.

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5.1 Introduction

The three previous chapters have provided a review of current knowledge regarding the effectiveness of legal sanctions, drink driving rehabilitation programs and alcohol ignition interlocks to reduce recidivism rates among repeat offenders. In addition, the chapters highlight the considerable gaps in present understanding concerning the behavioural impact these countermeasures have on repeat offenders and affirmed the need for research that measures change from multiple perspectives. This Chapter outlines the characteristics of the Queensland Interlock Trial and provides a review of the methodological framework of the present work.

5.2 Characteristics of the Research Study

The present research program is part of a larger three year project examining the first randomised trial of court-ordered alcohol ignition interlocks in Queensland. The larger interlock study aims to determine whether the device in combination with a drink driving rehabilitation program is more effective than the rehabilitation program alone in reducing drink driving recidivism. In the past, the majority of interlock programs that have been implemented to reduce the prevalence of repeat offending have incorporated uni-module characteristics (Freeman & Liossis, 2002a). That is, they have not combined interlock installation with some form of drink driving rehabilitation or support program, and thus drivers are not provided with: (a) the appropriate knowledge, skills and strategies to avoid the drink driving sequence, or (b) treatment for alcohol-dependency problems before interlock installation and removal.

The exception to this pattern are a small number of current interlock trials in North America (Maryland, Alberta) and in Europe (Sweden), which include treatment, rehabilitation and/or intensive supervision programs with interlock installation (Beck et al., 1997; Marques et al., 2001). Although most of these programs are currently being implemented and have not been comprehensively evaluated, early indications suggest that the inclusion of support initiatives with interlock programs provides positive results, such as lower frequency of failed start-up attempts (Marques et al., 2001) and lower post-interlock recidivism rates (Marques, Tippetts et al., 2000). Such practices may ensure that offenders address their drinking and/or drink driving problems by developing new skills and strategies to avoid re-offending before applying these strategies to driving with the assistance of interlocks (Freeman & Liossis, 2002a).

In the Queensland interlock trial, the rehabilitation program that is combined with interlock installation is an 11-week drink driving program known as the “Under the Limit” (UTL) program. The UTL program is an education-based drink driving prevention and rehabilitation program developed in 1993 by an interdisciplinary team of government and non-government agencies including, Magistrates, Community Corrections, TAFE, Police, and the Centre for Accident Research and Road Safety - Queensland. The UTL program is based on best practice models in the areas of problem drinking as well as drinking and driving. The program aims to promote controlled drinking (not abstinence) and separate drinking from driving. The UTL program is implemented at TAFE colleges in weekly sessions of one and a half hours. A recent evaluation regarding the effectiveness of the program demonstrated a 50% reduction in recidivism rates for individuals with prior drink driving convictions who were apprehended with blood alcohol concentration levels above the higher threshold of 0.15g/100ml (Siskind et al., 2000).

The Queensland interlock trial adopted the predominant judicial approach, as drink drivers were court-ordered to install and use an interlock for a period of time determined by a magistrate. Prior to sentencing, offenders are assessed for suitability to install an interlock which consisted of ensuring individuals owned a vehicle and pay for the device. If offenders choose to apply for the interlock probation order, an application may be made to the court. Magistrates sentence offenders to a period of licence loss, and to complete the UTL program before installing and operating an interlock.

Eleven courts are involved in the interlock trial that are divided into two groups consisting of the control courts that only offer participants the UTL program (UTL1) and the experimental courts that offer both the UTL program and interlocks (UTL2). During the 24-month data collection period, 472 repeat offenders were convicted of a drink driving offence in the eleven courts, and 166 volunteered to take part in the research project. Of the 166 volunteers, 138 were given a UTL1 probation order and 28 were placed on a UTL2 order. Assignment to an interlock was implemented under the Penalties and Sentencing Act Queensland (1992), and offenders were placed on a probation order. Compliance with the UTL program and interlock installation became part of the conditions of probation. Permission was obtained to conduct the research from the Australian Research Council, Department of Community Corrections and the Queensland Police Force.

Complete random assignment of participants to either the UTL1 or UTL2 program was not possible due to the court-ordered implementation of the UTL and interlock program. Historically, true random sampling of drink driving offenders is virtually impossible within a legal context, as one group cannot ethically be given a different sentence than others (DeYoung, 1999; Meier-Faust, Cominato, Dorfer & Winker, 2002). Instead, a level of self-selection and judicial selection is evident and the implication of this approach will be discussed in Chapter Nine.

An incentive is provided to enrol in the UTL program that consists of waiving the traditional fine in lieu of paying a \$500 fee to enrol in the program. Furthermore a reduction in the period of licence disqualification, which is dependent upon judicial discretion, is also common. A further reduction in the period of licence disqualification was proposed as an incentive to enrol in the UTL2 program.

5.3 Research Methodology

5.3.1 Research Design

The present thesis incorporates a pre-experimental mixed method design. The study focuses on one group of drink drivers as they experience three drink driving countermeasures, with their perceptions, experiences and behaviours examined using both cross-sectional and longitudinal research designs. As a result, different combinations of data sets are used to investigate research questions and hypotheses across the three studies. All three studies utilise survey methodology to examine self-reported data, as the information will be gathered through the process of structured interviews. Interviews were chosen instead of mail-out questionnaires due to concerns regarding offenders' willingness to accurately complete the questionnaires and provide meaningful responses, which has been noted as a limitation of previous research (Marques, Tippetts et al., 2000; Wells-Parker et al., 1998).

Quantitative and qualitative data will also be used to investigate the impact of the countermeasures. The quantitative aspects involve structured questionnaires, archival traffic histories (Study One & Two), and downloaded interlock recordings (Study Three), while the qualitative approach will incorporate open-ended questions to provide a deeper exploration of participants' experiences and perceptions of interlock usage (Study Three).

The research program incorporates an Analytical Epidemiological approach, as the study aims to investigate the effect of the countermeasures on key program

outcomes such as motivations to change, intentions to re-offend and actual behaviours. In the broadest sense, the research program is a summative evaluation, with the focus remaining on the outcomes of the three countermeasures. More specifically, the study incorporates aspects of an outcome evaluation, as the research considers the effect of the countermeasures on one sample, rather than an impact evaluation which would include a comparison group and compare an intervention to no intervention. The study primarily aims to describe the short-term effect of the countermeasures, rather than evaluate the effectiveness or efficacy of the countermeasures to produce lasting change through recidivism rates.

5.3.2 Self-reported Data

The present research relies heavily on self-reported data. A central theme of the thesis is the need for research that measures behavioural change, and the impact of countermeasures from multiple perspectives. This assertion arises from the difficulties associated with relying on recidivism rates to accurately reflect the effectiveness of countermeasures to reduce drink driving (Fitzpatrick, 1992; Popkin, 1994; Wells-Parker et al., 1995; Wells-Parker & Williams, 2002). Self-reported data has been proposed to provide valuable information regarding offending behaviours as well as the effect of interventions on drink driving (Green, 1989; Homel, 1988; Sanson-Fisher et al., 1990). The collection of self-reported data presents the opportunity to thoroughly probe the psychological factors associated with the intervention of interest (Homel, 1988; Tittle, 1980).

As highlighted in Chapter Three and Four, few studies have included self-reported data in drink driving research initiatives (Wells-Parker et al., 1995, Wells-Parker & Williams, 2002). In addition to the high costs associated with the collection of self-reported data, the sensitive nature of questions that relate to offending behaviours may lead to underestimation, and self-reported information should be interpreted accordingly (Beirness et al., 1997; Sanson-Fisher et al., 1990).

A possible solution to this methodological difficulty is to incorporate both official and unofficial measurement outcomes in research designs. Researchers are now beginning to suggest that interviews with participants that focus on self-reported behaviour (i.e., actual re-offence rates) can provide realistic and valuable indicators of offending behaviour, in addition to official offending statistics (Buchanan, 1995; Freeman & Liopsis, 2002a; Hindeland, Hirschi & Weis, 1979). Stemming from this, the research program combines both official and unofficial drink driving behaviours, with self-reported perceptions and experiences to obtain a more accurate understanding of the impact of countermeasures on a group of repeat offenders.

5.4 Study One: Cross-sectional Design

Study One will implement a cross sectional design to examine the impact of sanctions on a group of repeat offenders. Participants will be interviewed soon after being convicted, with the research questions focusing on current perceptions of sanctions, as well as the relationship these perceptions have with future intentions to re-offend. This design permits the examination of current perceptions of legal and a select group of non-legal sanctions, as well as the relationship between the actual length of sanctions (e.g., objective) and subjective perceptions regarding the severity of such sanctions.

5.4.1 Materials: Piloting Process

A questionnaire was developed to examine repeat offenders' perceptions of sanctions. Initially, a qualitative and quantitative interview was conducted via the telephone with 12 recidivist drink drivers who had been granted a UTL probation order. During the interviews, participants discussed their experiences of being apprehended and convicted for drink driving, their perceptions of legal and non-legal sanctions, and their reasons for program enrolment (which information was used later in Study Two). The primary purpose of this process was to identify the most effective method of presenting questions and gathering information. It soon became evident that participants experienced difficulty responding to 5 or 7-point likert scaled questions via the telephone and were not willing to draw a diagram of the scale to reduce confusion associated with the responding format. Conversely, participants reported being more comfortable answering questions on a 10-point

scale format (e.g., 1 = strongly disagree & 10 = strongly agree) and abstract words such as “severity” and “certainty” were avoided to decrease ambiguity.

Following the initial interviews, a draft quantitative questionnaire was piloted with 51 recidivist drink drivers (40 males & 11 females) during a separate research project designed to evaluate the effects of the “distance version” of the UTL program, which requires the program to be completed via correspondence. Participants were interviewed via the telephone and in a face-to-face format to identify the appropriate use of language and structure of the questionnaire.

During this process it became evident that no more than two questions could be used to measure each factor (e.g., legal and non-legal sanctions) as participants expressed displeasure answering questions they considered to address similar issues. In addition, participants found negatively worded questions difficult to understand and those interviewed via the telephone continued to experience difficulties responding to large numbers of likert scaled questions. As a result, a 10-point scale was predominantly implemented to measure perceptions of legal and non-legal sanctions (1 = strongly disagree, 5 = unsure, 10 = strongly agree) with 5-point likert scales reserved for the measurement of concrete factors (e.g., intentions to re-offend). Study One will also use a demographic questionnaire and alcohol consumption scale (AUDIT), which are described in Chapter Six.

5.5 Study Two: Longitudinal Design

Study Two will incorporate a longitudinal design to examine the impact of a drink driving rehabilitation program (e.g., UTL) on the same group of repeat offenders after they have incurred the legal sanctions in Study One. Participants will be interviewed before they commence the UTL program and again upon program completion. This design permits the examination of the effect of the program on key outcomes such as drinking levels, motivations to change and self-efficacy levels to control both drinking and drink driving behaviours. Similar to Study One, an examination of the relationship between key outcomes and retrospective and prospective drink driving behaviours are implemented.

5.5.1 Materials: Piloting Process

Study Two uses measures of alcohol consumption, motivations to change drinking and drink driving, and self-efficacy levels that are described in Chapter Seven (e.g., Study Two). A measure was also employed to investigate participants' reasons for program enrolment and appraisals regarding the effectiveness of the program.

The main reasons for program enrolment were initially examined during the telephone interviews with 12 repeat offenders. These interviews identified three main themes: (a) voluntary enrolment to receive assistance avoiding drink driving, (b) voluntary enrolment to avoid a larger punitive sanction, and (c) mandatory enrolment from the magistrate or solicitor. Two questions relate to each factor and were measured on a 10-point likert scale. The questions were then piloted with the Deterrence Questionnaire on 51 recidivist drink drivers, with the psychometric properties discussed in Chapter Seven.

The second questionnaire was also developed and piloted with the above scale to determine participants' expectations and appraisals of the effectiveness of the UTL program. The scale comprises of four questions focusing on the ability of the program to reduce the likelihood of re-offending, and two questions on whether participants' believe they *need* to or *want* to complete the program (Q 5 & Q 6, respectively). The 6 questions were measured on a 5-point likert scale (1 = very unlikely to 5 = very likely), as participants in Study Two will be interviewed face-to-face with a response card (e.g., diagram) provided to assist with the responding format. The four appraisal questions are summed to provide an overall indicator of respondents' appraisal of the effectiveness of the program. The structure and psychometric properties of the scale are presented in Chapter Seven.

5.6 Study Three: Longitudinal Design

Study Three implements a longitudinal case study approach to examine the impact of interlocks on a smaller group of repeat offenders after they incur legal sanctions and complete the UTL program (Study One and Two, respectively). Interviews will be performed both before and after completing the UTL program, upon interlock installation, then one month and three months after interlock installation. The longitudinal case study approach allows for the individual examination of participants' interlock usage over an extended period of time, and the impact of the device on key program outcomes e.g., drinking levels and breath test

violations. This approach also facilitates *cross-case comparisons*, and can be utilised to examine the characteristics and processes that differentiate between events and outcomes (Miles & Huberman, 1994), such as successful and unsuccessful interlock usage.

5.6.1 Materials: Questionnaire Development

Study Three will integrate both quantitative and qualitative data to examine repeat offenders' expectations, perceptions and experiences of interlocks at an individual level. The quantitative data will be encapsulated within structured questionnaires to uniformly investigate participants' degree of alcohol-related problems (AUDIT), as well as driving behaviours through downloaded interlock recordings (e.g., driving frequency, BAC readings).

A questionnaire was also developed to investigate participants' experiences and perceptions of interlocks (e.g., INTER questionnaire). The measure incorporates 17 5-point likert scaled questions that will be implemented to uniformly assess changes in participants' behaviours and perceptions on three separate occasions during interlock usage. In addition, the questionnaire contains open-ended questions in order to expand and validate the quantitative data. The qualitative approach aims to identify common themes, provide enriched insight into participants' experiences of using the device, changes that result from interlocks, as well as identify factors associated with successful usage. The open-ended questions follow each likert-scaled response and will provide participants with the opportunity to offer descriptions of interlock usage from a "user's perspective". As a result, a form of methodological triangulation will be implemented, that involves comparing self-reported quantitative and qualitative data with downloaded interlock records, in an attempt to increase the validity of the findings (Denzin & Lincoln, 1998a; Yin, 1993). An opportunity did not exist to pilot this questionnaire prior to the commencement of the interlock trial. Instead, the questionnaire was developed from a previous scale that successfully examined users' experiences of interlocks in the New South Wales program (Spencer, 2000). See Chapter Eight for a description of the sub-sections.

5.7 Chapter Summary

Chapter Five has provided a review of the parameters of the Queensland interlock trial, the methodological design of the present research program, and the piloting process for the questionnaires developed by the researcher. A more complete review of the psychometric properties of the measurement scales are located in the corresponding studies. The following three chapters report the process and findings of the investigation into the impact of three current countermeasures on a group of repeat offenders. Chapter Six reports on a study that examines the effect sanctions have on offenders' self-reported and official offending behaviours. Chapter Seven will present the results of an investigation into the effect of a drink driving rehabilitation program on key outcomes, after participants have been sanctioned in Study One. Chapter Eight will report on a study that explores repeat offenders' experiences of installing and operating an interlock, and will aim to identify factors associated with behavioural change and successful program outcomes.

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6.1 Introduction

The application of legal sanctions to deter convicted offenders from continuing to drink and drive remains a central component of current enforcement practices, and the efficacy of this approach is considered vital for improving road safety. However, as outlined in Chapter Three, at present little is known about the self-reported deterrent impact of legal sanctions on repeat offenders. Specifically, it remains unclear why a considerable proportion continue to drink and drive despite incurring increasingly severe sanctions (Homel, 1988; Ross, 1982; Smith, 2002), how this group perceive the certainty, severity and swiftness of current penalties or if they can be influenced by non-legal sanctions. In addition, considering that research has demonstrated repeat offenders consume large amounts of alcohol (MacDonald & Dooley, 1993; Michiels et al., 2002; Wiczorek, Miller & Nochajski, 1992; Wiliszowski et al., 1996), questions remain regarding the mediating effect heavy alcohol consumption levels have on deterrence and intentions to re-offend.

6.1.1 Perceptions and Evaluations of Sanctions: Subjective vs Objective Severity

Deterrence theory relies heavily on perceptions of sanctions, and thus Study One also endeavours to examine the relationship between subjective perceptions of legal sanctions (e.g., perceptual severity) and the actual objective² punitive sanctions incurred by offenders (e.g., periods of licence loss). A central tenet of the Classic Deterrence Doctrine (Gibbs, 1975) is that punitive sanctions must be perceived as severe if they are to act as a deterrent against further drink driving offences (Von Hirsch et al., 1999).

On the one hand, the public demands that repeat offenders' penalties should escalate to increase the chances of deterrence, which has contributed to the legal system punishing repeat offenders more severely in a further attempt to deter criminal behaviours (Beirness et al., 1997; Dana, 2001; Jacobs, 1990; Snortum, 1988). Conversely, preliminary results have not demonstrated that increasing the severity of sanctions reduces offending among convicted drink drivers (Weinrath & Gartell, 2001; Yu & Wilford, 1991), but may in fact produce a negative effect on traffic safety (Homel, 1988; Mann et al., 1991).

In light of these counter intuitive results, researchers have noted the importance of the subjective nature of perceptions and evaluations in deterrence

research, as it is recognised that individuals may vary considerably in the degree to which they consider penalties to be adverse (Andenaes, 1974; Homel, 1988; Sherman, 1993; Teevan, 1976; Tittle, 1980; Von Hirsch et al., 1999). As a result, individuals may not be equally deterred by the threat of sanctions (Homel, 1988; Tittle, 1980), and escalating the severity (e.g., larger penalties) will only increase the deterrent effect if they are perceived as increasingly severe. Despite the consistent practice of increasing the severity of sanctions, little is currently known of the relationship between increasing the severity of penalties and further recidivism rates for convicted drink drivers (Weinrath & Gartell, 2001).

Given this, the present study aims to extend previous research and investigate three areas of specific deterrence. Firstly, the relationship between the “objective” length of incurred sanctions (e.g., licence loss & fines) and the corresponding perceptions of such sanctions. Secondly, whether increases in the length and amount of sanctions (e.g., objective severity) is associated with self-reported reductions in the likelihood of intending to re-offend in the future. Thirdly, whether increases in the number of drink driving convictions and subsequently the size of the sanctions, results in increases in perceptual severity and certainty.

6.1.2 Socio-demographic Characteristics and Criminal Involvement

Finally, there has been considerable research into the relationship between socio-demographic characteristics (e.g., age, sex, socio-economic class) and deterrent processes that have generally produced conflicting results (Baum, 1999; Homel, 1988; Silberman, 1976; Tittle, 1980). Given the high number of possible interactions between legal, non-legal and socio-demographic characteristics, it has been suggested that interactions may be best dealt with at a post hoc level (Homel, 1988). However, one factor that has been consistently linked to persistent drinking and driving (Bailey & Bailey, 2000; Davies & Broughton, 2002; Nochajski et al., 1993; Stewart, Boase & Reid, 2002) and has been hypothesized to affect deterrence processes (Cornish & Clarke 1986; Homel, 1988), is the propensity to commit general criminal offences.

² The length of sanctions are referred to as “objective” as they can be measured without considering how they are perceived by convicted offenders (Gibbs, 1979).

Some researchers propose that the best predictor of criminal involvement is prior criminal behaviour (Gottfredson & Hirschi, 1990; Nagin & Paternoster, 1991b). In the current context, convictions for unrelated offences may highlight social deviance or a latent criminal disposition, which has been proposed to affect the deterrent influence of legal and non-legal sanctions (Homel, 1988; Nagin & Paternoster, 1992b; Wiliszowski et al., 1996).

As a result, researchers have incorporated the propensity to commit general criminal offences within models of deterrence (Cornish & Clarke, 1986; Homel, 1988; Weinrath & Gartell, 2001). Whilst a complete review of criminal *event* models is beyond the scope of the current research, a number of studies have demonstrated that repeat offenders are likely to have a range of non-traffic convictions (Bailey & Bailey, 2000; Davies & Broughton, 2002; Ferguson et al., 1999; Henderson, 1999; McMillen et al., 1992; Nickel, 1991; Stewart et al., 2002) which may ultimately influence the principles of deterrence. As a result, the present study will investigate the existence of general criminal offences for a group of repeat offenders, and what impact the propensity to commit criminal behaviours has on perceptions of sanctions, and intentions to re-offend.

6.1.3 Summary

The first study in the research program is designed to investigate the impact of legal sanctions, a select group of non-legal sanctions, and alcohol consumption levels on a group of recidivist drink drivers. In doing so, the present study makes use of the Classic Deterrence Doctrine (Gibbs, 1975) and a more recent model that considers the powerful influence of informal sanctions (Homel, 1988). At present, little is known about the deterrent influence sanctions have on repeat offenders, and considering the considerable toll this group enact on road safety, examination of the influence of sanctions is essential to ensure sentencing practices have a salient impact on both the short and long term driving behaviours of habitual offenders.

6.1.4 Research Questions and Hypotheses

Part A: Perceptions of Sanctions

The first part of the study focuses on participants' current perceptions of legal and non-legal sanctions soon after being apprehended and convicted. Given the lack of research that has examined repeat offenders' perceptions, an exploratory analysis will be conducted with the research questions being:

- How do repeat offenders perceive the certainty, severity and swiftness of sanctions?
- Are repeat offenders concerned about social sanctions, feel guilty, or worry about being injured from drink driving?

Part B: Predictors of Intentions to Re-offend

The second part of the study aims to examine the relationship between perceptions of sanctions and intentions to re-offend. Specifically, whether repeat offenders' perceptions of legal and non-legal sanctions, as well as alcohol consumption levels, predict future intentions to drink and drive. A set of hypotheses was developed from the small amount of perceptual deterrence research on general motorists and convicted offenders.

Legal sanctions:

- In accordance with the assumption that repeat offenders are impervious to the threat of legal sanctions (Beirness et al., 1997; Hedlund & McCartt, 2002; Taxman & Piquero, 1998; Yu, 2000), and that a prominent predictor of future criminal involvement is prior offending behaviour(s) (Gottfredson & Hirschi, 1990; Jensen & Stitt, 1982; Nagin & Paternoster, 1991b), it is hypothesized that higher frequencies of self-reported drink driving behaviour(s) before offenders' most recent conviction (e.g., last six months) will predict intentions to re-offend (H₁).
- Consistent with the findings that heavy alcohol consumption levels increase the chances of re-offending (Baum, 1999; Brown, 1998; Loxley & Smith, 1991; Yu, 2000), high levels of self-reported drinking will be a significant predictor of future intentions to drink and drive (H₂).

- Based on the majority of previous research that has demonstrated perceptions regarding the “certainty” of being apprehended does not produce a significant deterrent effect on drink driving behaviour (Baum, 1999; Green, 1989; Homel, 1988), it is hypothesized that perceptions of certainty will not predict repeat offenders’ decisions to drink and drive again (H₃).
- In line with previous research that has found limited results from increasing the severity of drink driving penalties (Homel, 1988; Ross, 1982; Weinrath & Gartell, 2001; Yu, 2000) it is hypothesized that perceptions of severe sanctions will not predict those least likely to re-offend (H₄).

Non-legal sanctions:

- In accordance with the growing body of research that has demonstrated that fearing social disapproval from friends and family can produce strong deterrent effects (Baum, 1999; Berger & Snortum, 1985; Green, 1989; Piquero & Paternoster, 1998) it is hypothesized that higher levels of concern regarding social sanctions will predict those least likely to re-offend (H₅).
- Additionally, based on the findings of Baum (1999) and Norstrum (1978), concern over being physically injured will predict those least likely to re-offend (H₆).
- Resulting from the lack of research on the swiftness of sanctions and internalised norms, no hypotheses were formulated but instead the impact of these two factors on intentions to re-offend remain research questions.

Part C: Legal Sanctions, Perceptions and Intentions to Re-offend

The third part of the study aims to examine the relationship between the objective severity of legal sanctions (e.g., licence loss & fines) and the subjective perceptions regarding the severity of such penalties. Firstly, whether participants’ official offending history and current sanctions (e.g., number of convictions, fines and licence loss) are associated with perceptions of severity as well as future intentions to drink and drive.

- In line with the popular assumption that repeat offenders are impervious to the threat of legal sanctions (Ahlin et al., 2002, Beirness et al., 1997; Hedlund & McCartt, 2002), it is predicted that length of licence loss, length of probation, and amount of monetary fines will not be associated with perceptual severity (H₇).
- Based on the considerable body of research that has demonstrated legal sanctions are not effective in reducing drink driving among repeat offenders (Ahlin et al., 2002; Taxman & Piquero, 1998; Yu, 2000), it is hypothesized that increases in the length of licence loss, amount of fine, or period of probation will not be associated with reductions in the self-reported likelihood of re-offending (H₈).

Secondly, the study aims to examine whether perceptual and behavioural differences exist between those who have only been convicted twice for a drink driving offence, compared to those with multiple convictions. This distinction is drawn as it is of interest to determine whether this group of truly multiple offenders (e.g., more than two convictions), who are deemed impervious to the threat of legal sanctions (Ahlin et al., 2002; Beirness et al., 1997; Hedlund & McCartt, 2002), differ in levels of “deterability” and actual offending behaviours from those who currently exhibit a shorter history of official offending. Or whether the only difference between the two groups is in fact the frequency with which they have been apprehended (AACRT, 1996; Beirness et al., 1997).

- Once again, in line with the assumption that habitual offenders are impervious to the threat of legal sanctions (Beirness et al., 1997; Hedlund & McCartt, 2002), it is predicted that no perceptual differences will be evident between those with only two convictions compared to multiple offenders (H₉).

6.2 Method

6.2.1 Participants and Design

A total of 166 recidivist drink drivers volunteered to participate in the study. The overall response rate for the study was 44.75% as 371 repeat offenders were placed on a UTL1 or UTL2 probation order in Queensland over the course of the 24-month data collection period. There were 149 males and 17 females in the study. A summary of the demographic characteristics is presented in section 6.3.3.

6.2.2 Materials

6.2.2.1 Demographic Survey

A questionnaire was developed to collect demographic information such as the age, employment, marital status, and level of income of participants. The Demographic Survey also incorporates questions that relate to the frequency of participants' past drink driving behaviours over their lifetime (Q 11) as well as in the last six months (Q 12), the reason for the most recent offending behaviour (Q 14), intentions to drive unlicensed during the disqualification period and to drink and drive again in the future (Q 16 & Q 17, respectively). Participants' official and unofficial offending history is displayed in section 6.3.3. A copy of the Questionnaire is presented in Appendix A.

6.2.2.2 Deterrence Questionnaire

A second questionnaire employed in the study, referred to as the Deterrence Questionnaire (DQ), collected a variety of information focusing on participants' experiences and perceptions of legal and non-legal sanctions. The DQ is comprised of two sections containing a total of 16 questions.

Non-legal Sanctions

Section one comprises of seven questions and focuses on non-legal sanctions. Items in this section relate to participants' concerns about: (a) informing friends of their drink driving behaviour or conviction, (b) feeling guilty or remorseful after drink driving, and (c) worrying about being injured from the offence. Participants were required to respond on a 10-point scale with two questions pertaining to each factor (1 = strongly disagree, 5 = unsure, 10 = strongly agree). Examples of items include: "When I drink and drive, I am concerned that I might lose my friends' respect" (Q 1: social loss), "When I drink and drive I feel guilty afterwards" (Q 2:

internal loss) and “When I drink and drive I worry that I might get injured or hurt” (Q 3: physical loss). Researchers have proposed that concern regarding damaging one’s vehicle may also provide a deterrent effect against drink driving (Personal Communication, Homel, 2001). As a result, an additional question was formulated for physical loss that focused on vehicle damage “I’m afraid I might damage my car when drinking and driving” (Q 6).

Legal Sanctions

Section two consists of nine items that focus on perceptions regarding the certainty, severity and swiftness of sanctions, and the deterrent influence of licence loss and fines. The section was designed to examine participants’ experiences and perceptions of legal sanctions, and once again incorporated 10-point scales, with two items for each factor. Some examples of the items include: “The time between getting caught for drink driving and going to court was very short” (Q 9: swiftness), “The penalty I have received for drink driving has caused a considerable impact on my life” (Q 10: severity), “I won’t drink and drive again because I don’t want to lose my licence” (Q 11) and “I won’t drink and drive again because I don’t want to receive another fine” (Q 13).

Two questions investigated individuals’ perceptions regarding the certainty of being caught for drink driving. The first question focused on participants’ beliefs about the chances of being caught for the offence (Q 8: objective estimation) “The chances of being caught for drink driving are high”. And the second question measured concern about being apprehended when participants’ offend (Q 14: subjective estimation) “When I drink and drive I am worried that I might get caught”. A copy of the scale is presented in Appendix A.

6.2.2.3 Alcohol Use Disorders Identification Test (AUDIT)

Participants’ alcohol consumption levels were measured by the AUDIT, which is a 10-item scale designed to facilitate the early detection of hazardous or harmful drinking levels (Saunders, Aasland, Babor, De La Fuente & Grant, 1993). The scale was developed for non-specialist settings, and is used primarily as a screening instrument that identifies people who may have a drinking problem (Saunders et al., 1993). Eight of the questions are scored on a 5-point likert scale and two scored on a 3-point scale. A total score of eight or more indicates a pattern of hazardous or harmful alcohol consumption levels and a score of 13 or more

reflects alcohol dependence (Bergman, Hubicka, Laurell, & Schlyter et al., 2000; Conigrave, Hall & Saunders, 1995). Sample items from the scale include “How often do you have six or more drinks on one occasion?” and “How often during the last year have you failed to do what was normally expected from you because of drinking?” The AUDIT has consistently proven to be an unbiased predictor of “at-risk” drinking, (Volk, Steinbauer, Cantor & Holzer, 1997; Wells-Parker et al., 1998; Wells-Parker et al., 2000), with alpha co-efficients reported between .80 and .90 (Leung & Arthur, 2000; Maisto et al., 2000; Medina-Mora, Carreno & De la Fuente, 1998), and more recently has been associated with predicting self-reported drink driving events (Wells-Parker et al., 1998). A copy is presented in Appendix A.

To avoid bias from ordering effects, two versions of the series of questionnaires were implemented. The first version required responses on non-legal sanctions, and then perceptions of legal sanctions and alcohol consumption levels. The second version reversed the order, with participants examined on alcohol consumption levels and perceptions of legal sanctions, then non-legal sanctions. Between-groups analysis revealed the ordering process had no effect on self-reported responses.

6.2.3 Procedure

Individuals convicted of a drink driving offence in 1 of the 11 courts were asked by their probation officer (during a scheduled meeting) to participate in the research program. The probation officers provided a list of individuals who agreed to participate, and a time was organised to conduct the interview that usually consisted of the next scheduled appointment between the probation officer and the offender. Participation was on a voluntary basis and withdrawal was permitted from the study at any time, without inquiry. Two participants originally interviewed requested their self-reported data not be included in the analysis and they were subsequently removed from the study.

Data were collected through structured interviews via two procedures. Firstly, the majority of participants (79.5%, $n = 132$) were interviewed at their local Community Corrections regional centre after they had met with their probation officer. Only the researcher and the participant were present during the interview. Secondly, when face-to-face interviews were not possible due to logistical problems (e.g., time and travel) telephone interviews were conducted at a convenient time for participants (20.5%, $n = 34$). Both forms of interviews took approximately 20-30 minutes to complete. Participants signed a “Statement of Release” consent form that allowed the researcher to obtain information regarding previous traffic and non-traffic convictions (see Appendix B) that was provided by the Queensland Police Service and Queensland Transport Department.

6.3 Results

6.3.1 Data Cleaning and Assumption Testing

Before commencing data analysis, the data were cleaned using the Statistical Package for the Social Sciences (SPSS) Version 10 to check for the accuracy of data entry, missing values, outliers and assumptions of univariate and multivariate analysis. There was no missing data for participants’ self-reported perceptions, and a small amount of missing data for the history of penalties (10) were controlled through mean substitution. Assumptions of linearity, homogeneity of variance and normality were breached as the distribution of data was severely negatively and positively skewed. As a result, normal distributional theory could not be applied, but rather the nature of the data was predominately controlled through the utilisation of non-parametric and non-linear analysis. There was no evidence of multicollinearity.

Resulting from the skewed data, a number of univariate outliers were identified for variables that were measured on a 10-point scale. In addition, regression analysis identified 4 multivariate outliers at the $p < .001$ level. Analyses were employed with and without the multivariate outliers and all were retained, as they did not significantly influence analysis outcomes.

Between groups analysis revealed no significant differences between the UTL1 ($n = 138$) and UTL2 group ($n = 28$) nor those who were interviewed face-to-face ($n = 132$) compared to over the phone ($n = 34$) on a number of key research outcomes such as: perceptual deterrence factors (e.g., legal and non-legal deterrence), number of official drink driving convictions, self-reported offending

behaviour(s), or socio-demographic characteristics. However, it is noted that UTL2 participants received slightly shorter licence disqualification periods (13.3 mths vs 15.5 mths) and larger fines (\$525 vs \$600). Separate analyses confirmed the differences did not influence outcomes and the groups were combined to increase statistical power for further analyses.

6.3.2 Scale Reliability

Cronbach's alpha coefficients were calculated to investigate the internal reliability of the scales used in the study. Table 6.1 presents Cronbach's alpha scores for the AUDIT questionnaire and the deterrence subscales. The scores demonstrated sound to moderate psychometric properties (Tabachnick & Fidell, 1996) confirming the appropriateness of their use.

Table 6.1

Cronbach's Alpha Coefficients for the Scales

Scale	No. of items	Cronbach's alpha coefficient
AUDIT	10	.74
DQ		
Perceived Certainty	2	.89
Perceived Severity	2	.81
Perceived Swiftness	2	.89
Social Loss	2	.95
Internal Loss	2	.97
Physical Loss	3	.93

Note. AUDIT = Alcohol Use Disorders Identification Test; DQ = Deterrence Questionnaire.

6.3.3 Demographic Characteristics

All subjects completed a demographic survey and the sample characteristics are depicted in Table 6.2. The average age of the participants was 37, ($SD = 9.96$), with a range from 20 to 67. In summary, the majority of participants were male Caucasians who were mostly employed (66.3%), on a full-time basis in blue-collar occupations, earning approximately \$12,000 - \$35,000. There was considerable variation in the level of participants' education and more than half the sample reported currently being in a relationship. The socio-demographic characteristics of the sample are comparable to recent studies that have focused on drink driving repeat offenders apprehended in Queensland (Buchanan, 1995; Ferguson et al.,

2000) and appear to be consistent with the general typology of this population highlighted in Chapter One.

Table 6.2
Demographic Characteristics of the Sample

Age:	$M = 37$ ($SD = 10$)	Gender:	
		Male	89.8% ($n = 149$)
		Female	10.2% ($n = 17$)
Employment Status:		Marital Status:	
Employed	66.3% ($n = 110$)	In relationship	60.8% ($n = 101$)
Blue collar	84.5% ($n = 93$)	Not in relationship	39.2% ($n = 65$)
White collar	15.5% ($n = 17$)		
Full-time	78.0% ($n = 86$)	Ethnicity:	
Part-time	22.0% ($n = 24$)	Caucasian	98% ($n = 163$)
Unemployed	33.7% ($n = 56$)	Aboriginal/Torres	2% ($n = 3$)
Level of Education:		Income:	
Primary	13.9% ($n = 23$)	Less than \$12,000	13.3% ($n = 22$)
Junior (Grade 10)	52.4% ($n = 87$)	\$12,001 - \$20,000	37.3% ($n = 62$)
Senior (Grade 12)	22.3% ($n = 37$)	\$20,001 - \$35,000	28.3% ($n = 47$)
TAFE/Tech college	9.6% ($n = 16$)	\$35,001 - \$50,000	13.3% ($n = 22$)
University	1.8% ($n = 3$)	More than \$50,000	7.8% ($n = 13$)

Table 6.3 displays the official conviction records of participants obtained from the Queensland Police Force and Table 6.4 depicts self-reported offending behaviours for the UTL1 & UTL2 groups combined. Table 6.3 indicates that on average participants were disqualified for approximately 15 months, the majority received a \$500 fine (although some participants received a significantly larger fine), and were placed on a probation order for 16 months. On average, participants had been convicted of almost three drink driving offences (range 2-7), and their BAC reading for the most recent offence was on average three times the legal limit (range .05-.317). Approximately half the sample had been convicted of a criminal offence that consisted mainly of crimes against people, property or drug related offences.

For self-reported offending behaviours (Table 6.4), the majority reported drink driving more than 10 times in their lifetime, were offending regularly in the last 6 months before their most recent apprehension, and started drink driving at a relatively young age (e.g., 19 yrs). The high frequency of self-reported drink driving confirms a central premise of the thesis being that recidivism rates are not an accurate reflection of the prevalence of drink driving.

Table 6.3

Official Offending History

Official offending record	Mean	SD	Range
BAC (g/100ml)	.155	.05	.05 – .3178
Number of drink driving offences	2.91	1.09	2 – 7
Period of licence disqualification	15.45 mths	7.90	2 – 60 mths
Period of probation	16.71 mths	6.45	6 – 36 mths
Amount of fine	\$567	222	\$500 – \$1900
Total amount of incurred licence loss	33.04 mths	19.58	6 – 111 mths
Total amount of fines	\$1585	\$885	\$500–\$5000
General convictions	<i>n</i>	%	
No. other traffic or criminal offences	7	4.2	
Traffic offences only	80	48.2	
Criminal offences	79	47.6	

Note. BAC = Blood Alcohol Concentration.

Table 6.4
Self-reported Offending History

Frequency	<i>n</i>	%	Frequency	<i>n</i>	%
Lifetime offending:			Last six months:		
Never	3	1.8	Never	66	39.7
Once or twice	10	6.0	Once or twice	26	15.7
Three to five	21	12.7	Three to five	22	13.3
Six to ten	19	11.4	Six to ten	22	13.3
More than ten	113	68.1	More than ten	30	18.0
Intentions to drive unlicensed:			Intentions to drink & drive again:		
Extremely unlikely	88	53.0	Extremely unlikely	67	40.4
Unlikely	45	27.1	Unlikely	60	36.1
Unsure	4	2.4	Unsure	30	18.1
Likely	23	13.9	Likely	6	3.6
Extremely likely	6	3.6	Extremely likely	3	1.8
Reason for recent offence:			Age at first drink driving event:		
Emergency	5	3	<i>M</i> = 19.72		
Didn't think get caught	60	36.1	<i>S.D.</i> = 5.48		
Thought under limit	39	23.5	Range = 10 - 45		
Personal problems	27	16.3			
No reason	35	21.1			

6.3.4 Part A: Perceptions of Legal and Non-legal Sanctions

The first aim of the study was to examine participants' self-reported perceptions of legal and non-legal sanctions, with the descriptive statistics depicted in Table 6.5. The procedure to divide respondents' scores on the 10-point scale into low, medium and high categories was based on the principle of natural breaks in the distribution of scores. In regards to Classical Deterrence, only half the sample perceived the objective chances of being apprehended for drink driving to be high (56%), as 28.3% reported the probability as low, and 15.7% were undecided ($M = 6.27$). Interestingly, participants' subjective perceptions of being apprehended e.g., worry ($M = 6.39$) were similar to objective perceptions ($M = 6.27$). When summed together, the two items were highly reliable (e.g., Cronbach's alpha of .89), which leads to two possible conclusions. Firstly, those who considered the chances of being caught as high were also worried when they do drink and drive ($\tau = .67^{**}$), whilst those who believe the probability of apprehension as low are least concerned of detection. Secondly, participants perceived the two questions as similar and did

not recognise the different context of the questions, which has been evident in previous deterrence research (Homel, 1988).

For perceptual severity, the majority reported sanctions to be severe, indicating that recently incurred sanctions produced a considerable impact upon their lives (86.2%, $M = 8.35$). However, it is noted that 23 participants did not consider their penalties for drink driving to be severe. Interestingly, fear of losing one's licence was a significantly greater deterrent against further drink driving than concern over being fined for a further offence, Wilcoxon Test, $T(1, N = 166) = -8.75, p = .000$.

Similar to perceptual certainty, a considerable proportion considered the time between apprehension and conviction to be long (43.4%), a further 41% were undecided, and only 15.5% considered application of sanctions to be swift. The probation orders also appeared to have little impact on participants' lives, as 61.4% reported the effect as low, and a quarter (26.5%) perceived probation to cause a considerable effect on one's life.

For non-legal sanctions, the majority of participants were not concerned about social sanctions, such as friends being informed of their drink driving behaviours and conviction (74.6%, $M = 2.86$). However, greater variability was evident for internal and physical loss, as 42.2% of participants felt guilty after drink driving and 40.0% were concerned about injuring themselves or damaging their vehicle. There were no notable differences between self-reported concern regarding personal injury compared to damaging one's vehicle for the internal loss factor.

In regards to actual behaviours, it appears that the majority of participants in the sample consumed relatively high levels of alcohol, with 113 (68.1%) classified as consuming harmful levels and 67 of the 113 participants were classified as alcohol dependent (59%). The mean AUDIT score was 11.05 (median = 11.00), ranging from 1 to 28, although 25% scored higher than 15. A further 7.2% ($n=12$) were attempting to abstain from drinking alcohol at the time of interviewing. An additional noteworthy finding was that despite recently being sanctioned and placed on a probation order, three participants reported it extremely likely they would re-offend (1.8%), six report it likely (3.6%), a relatively large sample of 30 were unsure (18.1%), whilst 58 (34.9%) believed it unlikely and 69 (41.6%) reported it very unlikely.

Self-reported Measures of Legal and Non-legal Deterrence

Perceptions	Mean (SD)	Low	Unsure	High
Objective Certainty	6.27 3.06	28.3% (n = 47)	15.7% (n = 26)	56% (n = 93)
Subjective Certainty	6.39 3.21	26.5% (n = 44)	21.5% (n = 36)	52% (n = 86)
Certainty (total)	6.34 2.97	26.5% (n = 44)	21.7% (n = 36)	51.8% (n = 86)
Severity	8.35 2.22	9.0% (n = 15)	4.8% (n = 8)	86.2% (n = 143)
Swiftiness	4.42 2.22	43.4% (n = 72)	41% (n = 68)	15.6% (n = 26)
Avoid Licence Loss	8.58 2.25	7.8% (n = 13)	6.7% (n = 11)	85.5% (n = 142)
Avoid Fine	5.83 2.82	32.0% (n = 53)	19.8% (n = 33)	48.2% (n = 80)
Impact of Probation	3.95 2.84	61.4% (n = 102)	12.1% (n = 20)	26.5% (n = 44)
Social Loss	2.86 2.95	74.7% (n = 124)	6.0% (n = 10)	19.3% (n = 32)
Internal Loss	4.44 3.62	54.8% (n = 91)	3.0% (n = 5)	42.2% (n = 70)
Physical Loss	5.05 3.35	49.4% (n = 82)	10.2% (n = 17)	40.4% (n = 67)

6.3.4.1 Correlations for Study Variables

Table 6.6 reports on the bi-variate relationship for legal and non-legal sanctions, history of convictions, and official and self-reported offending behaviours. Given the non-normal distribution of the data and the possible existence of outliers, rank-order correlations (e.g., Kendall's Tau) were computed in the place of Pearson's correlations to reduce the influence of distribution anomalies. There are a number of significant correlations that will be explored through further analyses. However at a bivariate level, the non-existence of specific relationships between official records, self-reported behaviours and perceptions are notable.

Firstly, there does not appear to be an "experiential effect" as the period of time between being sanctioned and interviewed (range 1–44 mths) did not have a significant relationship with perceptions of legal sanctions nor intentions to re-offend ($\tau = .07$). For example, increases in the period of time between the application of penalties and being interviewed did not increase the likelihood of participants intending to drink and drive again or decrease perceptions of the severity or certainty of sanctions. Although this is to be expected considering participants were still on a probation order. As a result, the factor was excluded from further analyses.

Secondly, an increase in BAC readings was not associated with significant increases in self-reported alcohol consumption levels ($\tau = .07$). In addition, alcohol consumption does not appear to reduce the saliency of legal and non-legal sanctions, as individuals who consumed the largest quantities of alcohol (and are considered alcohol dependent by the AUDIT) did not report lower levels of perceptual severity, certainty or concern over non-legal sanctions. However the results support the theory that high BAC readings indicate heavy alcohol consumption (MacDonald & Dooley, 1993; Wieczorek, Miller & Nochajski, 1992), as the average BAC reading was three times the legal limit ($M = .155$) and the majority of the sample reported harmful alcohol consumption levels.

In regards to the number of drink driving convictions, increases in the number of offences did not result in increases in perceptions of severity ($\tau = -.06$), certainty ($\tau = -.06$), nor the swiftness of sanctions ($\tau = -.01$). These results will be examined further in section 6.3.6.2. However, a negative relationship was evident between the number of convictions and physical loss ($\tau = -.12^*$), indicating those with the highest number of convictions report the lowest levels of concern about being injured from drink driving.

In contrast, examination of the *self-reported* frequency of drink driving over one's lifetime reveals the only notable relationship was between perceptions of the certainty of apprehension and the frequency of offending behaviours ($\tau = -.17^{**}$). That is, offenders with the lowest perceptions of the certainty of apprehension were more likely to engage in the highest frequency of drink driving over an extended period of time. However, it is also recognised that regularly offending whilst avoiding detection may facilitate the development of lower perceptions regarding the certainty of apprehension (e.g., punishment avoidance). Surprisingly, current alcohol consumption levels were not associated with the frequency of drink driving over one's lifetime ($\tau = .07$), and there were no other significant correlations between the frequency of self-reported offending behaviours over one's lifetime and legal and non-legal sanctions.

In contrast, examination of the bivariate relationships for the last six months revealed negative associations between recently drink driving and non-legal sanctions. Both social loss ($\tau = -.25^{**}$) and internal loss ($\tau = -.14^*$) were found to have a negative relationship with the frequency of recently drink driving. These results indicate that fearing peer disapproval and feeling guilty after drink driving may act to reduce the frequency of the behaviour in the short term. However, given the low proportion of offenders who reported concern about peer disapproval (19.3%) it is more likely that those who report the highest frequency of recent drink driving behaviours are least concerned about informal sanctions. Once again, perceptions of legal sanctions and alcohol consumption levels were not associated with the frequency of drink driving. Nevertheless, it is noted that current perceptions of legal and non-legal sanctions may be spuriously inflated due to participants' most recent conviction, and this limitation should be borne in mind when interpreting the bivariate relationships.

Finally, there does not appear to be a relationship between the existence of criminal convictions and: (a) intentions to re-offend, (b) perceptions of legal and non-legal sanctions, or (c) alcohol consumption levels. For the current sample, indicators of criminal deviance such as convictions for violent or property offences were not associated with intentions to re-offend and were subsequently excluded from further analyses. However, those who intended to drive unlicensed were also more likely to intend to drink and drive again ($\tau = .26^*$), which indicates a "risk-taking" or "social deviance" attribute that manifests itself across different driving behaviours. In addition, those who reported the highest frequency of drink driving in the last six months also reported the highest frequency over their lifetime ($\tau = .32^{**}$), which provides evidence that the frequency of offending behaviours are relatively stable over longer periods of time.

Table 6.6

Intercorrelations Between Perceptual Deterrence, Sanctions, and Socio-demographic Characteristics

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1. Time (Sanction & Interview)	1	.11	.11	.11	-.01	-.02	.00	-.02	-.01	.06	.07	-.05	.05	.02	-.02	-.11	-.05	.07	.00	.00	.02	.12*	.19**	.10	.11	-.08	-.05	-.03	.17**
2. No. of dd Convictions		1	.83**	.24**	-.04	.21**	.07	.02	.48**	.41**	.11	.09	.06	-.06	-.01	-.02	-.12	-.12*	-.02	-.04	-.07	.08	.08	.23**	.22**	-.04	.11	.04	.01
3. Two vs More Convictions ¹			1	.20*	-.06	.20**	.07	.10	.41**	.44**	.10	.06	.03	-.07	-.01	-.03	-.13	-.12	-.06	-.07	-.09	.08	.07	.21**	.22**	-.01	-.08	.04	.00
4. Non-dd Convictions				1	.03	.12	.12	.00	.14*	.14*	.01	.02	.12	.04	-.07	.10	-.05	-.08	.09	-.06	-.13	.04	-.01	.02	-.01	.06	-.11	-.05	.03
5. BAC ²					1	.19**	.18**	-.04	.13*	-.03	-.01	-.02	-.03	.05	-.10	-.03	.02	.07	.07	.10	.03	-.11	-.08	-.04	-.04	-.04	.04	.04	.02
6. Licence Loss (current)						1	.07	.10	.41**	.19**	-.01	.00	-.01	.06	.02	-.01	-.07	-.07	.01	.06	.05	-.01	.02	.00	.03	.03	-.01	.04	.00
7. Probation (current)							1	.02	.16**	.16**	-.04	-.07	-.01	-.01	-.14**	.02	.03	.03	.02	.07	.04	.06	.13	.01	-.01	-.01	-.02	.04	-.10
8. Fine (current)								1	.00	.16*	.07	.00	-.02	.04	.04	.21**	.01	-.03	-.02	.18**	.10	-.01	-.02	.03	.06	-.07	.11	-.04	.16*
9. Licence Loss (total)									1	.47**	.00	.02	.03	.03	.00	-.06	-.17**	-.20**	.01	.05	.01	.04	.01	.14*	.16*	.01	.02	.03	-.03
10. Fine (total)										1	-.02	.00	.01	.01	-.03	.07	-.07	-.13*	.02	.07	-.03	.01	.03	.17**	.20**	-.01	.04	.08	.02
11. Intend to Re-offend											1	.73**	.02	-.12	-.01	-.12	-.13*	-.12*	.08	-.02	-.03	.26**	.21**	.16*	.14	-.05	.02	-.08	.26**
12. Intend to Re-offend ¹												1	.00	-.17*	.03	-.14*	-.12	-.14*	.17**	-.04	-.05	.22**	.19*	.07	.04	-.04	-.08	-.04	.07
13. Certainty													1	.03	-.05	.00	.05	.14*	-.09	-.01	-.06	-.06	-.04	-.17**	-.20**	.02	-.03	.10	.00
14. Severity														1	.11	.08	.03	.03	.02	.19**	.13*	-.05	.05	.03	.01	-.09	.04	-.02	.10
15. Swiftmess															1	-.13*	-.10	.03	-.07	.08	.07	.04	.01	.05	.07	.00	.09	.11	.13
16. Social Loss																1	.40**	.17**	.06	.07	.10	-.25**	-.26**	-.04	.02	.04	.10	.06	-.09
17. Internal Loss																	1	.40**	.01	.04	.05	-.14*	-.15*	-.08	-.09	.01	.00	.06	.15
18. Physical Loss																		1	.01	-.03	.08	-.10	-.08	-.07	-.11	-.03	.05	.05	-.02
19. Alcohol Consumption																			1	-.03	-.03	.08	.06	.07	.06	.01	.10	-.16*	.02
20. Avoid Licence Loss																				1	.21**	.02	.13	-.02	.03	-.01	.02	.12	.06
21. Avoid Fine																					1	-.03	.04	.01	.05	-.09	-.01	-.03	.05
22. No. dd in Last 6 Months																						1	.80**	.32**	.31**	.03	-.04	-.03	.14*
23. No. dd in lLst 6 Months ¹																							1	.31**	.31**	.02	-.08	.02	.13
24. No. dd in Lifetime																								1	.87**	.06	.05	-.01	.13
25. No. dd in Lifetime ¹																									1	.08	.07	.05	.17*
26. Income																										1	.11	.21**	-.14*
27. Education																											1	-.04	.11
28. Relationship																												1	-.01
29. Unlicensed Driving																													1

Note. ¹ Variable dichotomised for logistic regression; ² BAC for most recent offence; * p <.05, **p <.01 (two-tailed).

6.3.5 Part B: Predictors of Intentions to Re-offend

The second part of the study aimed to examine the relationship between perceptions of sanctions and intentions to re-offend. A step-wise logistic regression analysis was performed to examine the contributions of recent drink driving behaviours, the Classic Deterrence Doctrine (e.g., certainty, severity & swiftness), non-legal sanctions (social, internal & physical), and alcohol consumption levels (independent variables) to the prediction of future intentions to drink and drive (dependent variable). The flexibility of logistic regression was chosen after examination of the descriptive statistics revealed breaches of normality, linearity and homoscedasticity (Tibachnick & Fidell, 1996). Intentions to drink and drive in the future were measured on a five point likert scale (Extremely Unlikely = 1 to Extremely Likely = 5) and was collapsed into two categories: (a) the “deterred” group who reported that they would not drink and drive again in the future (scores = 1 or 2), and (b) the “undeterred” group who reported either intending to drink and drive (scores of 4 or 5) and those who reported being “unsure” about avoiding drink driving (score = 3). Participants who reported being “unsure” (e.g., score of 3) were included in the “undeterred” group because it is proposed that the principles of deterrence had not been sufficiently met if participants were unable to report that they would avoid drink driving in the future, despite recently being heavily penalised for the offence (e.g., licence disqualification & probation order).

The bivariate correlations between the variables and intentions to re-offend are depicted above in Table 6.6, which demonstrate five (albeit weak) significant relationships. Intentions to re-offend appear to have a positive relationship with self-reported frequency of drink driving in the past 6 months prior to apprehension ($\tau = .22^{**}$), and alcohol consumption levels ($\tau = .17^*$), and a negative relationship with the severity of sanctions ($\tau = -.17^*$), and the three non-legal sanctions: - social ($\tau = -.14^*$), internal ($\tau = -.11$) and physical loss ($\tau = -.14^*$).

Table 6.7 depicts the variables in each model, the regression coefficients, the Wald & log odds statistics, and the model chi-square values. Self-reported frequency of drink driving in the last six months prior to participants’ most recent apprehension and conviction was entered in the first step to examine, as well as control for, the influence of recent offending behaviour(s) before the inclusion of

the proposed deterrent factors. As predicted (H₁), participants who report regularly drinking and driving in the last six months before their most recent conviction were most likely to indicate that they would drink and drive again in the future. This variable has a Wald statistic equal to 11.62, which is significant at the .001 level (99% confidence level).

Next, the three Classic Deterrence Factors (certainty, severity & swiftness) were entered in combination with the three non-legal sanctions (social, internal & physical loss) and alcohol consumption levels to assess whether the proposed deterrent influences improved the prediction of drink driving intentions over and above recent drink driving behaviours (Step 2). The additional variables collectively were significant, with a chi-square statistic of $\chi^2 (7, N = 166) = 14.81, p = .03$. Confirming (H₂), the model indicates that as alcohol consumption levels increase, so does the likelihood that offenders will report future intentions to drink and drive (Wald statistic= 6.86, $p = .009$). Examination of the odds ratio revealed that a one unit increase in alcohol consumption levels is equal to a 10% increase in the likelihood of re-offending.

As predicted (H₃), perceptions of the certainty of apprehension did not contribute to the prediction of repeat offenders' decisions to drink and drive again. In addition, (H₄) was confirmed as the perceptual severity of legal sanctions did not predict those least likely to re-offend. Despite this, it is noted that perceptions of severe sanctions were negatively associated with intentions to re-offend ($\tau = -.16^*$). Social and internal loss were also negatively associated with intentions to re-offend ($\tau = -.14^*$ & $\tau = -.14^*$, respectively), but (H₅) and (H₆) were not supported in the current model as they did not predict those least likely to re-offend in the presence of the other legal sanctions and alcohol consumption measure. Possible methodological explanations for this finding are provided in section 6.4.4. Finally, similar to the bivariate relationship, the perceived swiftness of sanctions and internal loss did not contribute to the prediction of those most likely to re-offend.

Additional Model Specifications

Several other regression models were estimated to determine the sensitivity of the results. A test of the full model with all eight predictors entered together

confirmed the same significant predictors (e.g., drink driving behaviour and alcohol consumption). Forward and Backward Stepwise Regression identified the same predictors. Inclusion of the number of previous DUI convictions and non-drink driving convictions did not increase the predictive value of the model.

Table 6.7

Logistic Regression Analysis with Intentions to Re-offend as the Dependent Variable

Variables	B	SE	Wald	p	Exp (B)	95% C.I. Exp (B)	
						Lower	Upper
Step 1							
D.D. Last 6 mths	.41**	.12	11.62	.001	1.51	1.19	1.92
Model Chi-Square 12.27** (df = 1)							
Step 2							
D.D. Last 6 mths	.29*	.135	4.83	.028	1.34	1.03	1.75
Certainty	.06	.07	.73	.394	1.06	.92	1.21
Severity	-.14	.09	2.53	.111	.87	.74	1.03
Swiftness	.01	.08	.03	.874	1.01	.86	1.19
Social	-.12	.10	1.48	.223	.89	.74	1.07
Internal	.01	.07	.01	.935	1.01	.87	1.16
Physical	-.14	.07	3.34	.068	.87	.76	1.01
Alcohol	.09**	.04	6.86	.009	1.10	1.02	1.17
Model Chi-Square 27.08** (df = 8)							
Block Chi-Square 14.81* (df = 7)							

Note. DD in last 6 mths = Frequency of drink driving in the last six months; * p<.05, **p<.01.

6.3.6 Part C: Legal Sanctions, Perceptions and Intentions to Re-offend

6.3.6.1 Predictors of Perceptual Severity of Sanctions and Intentions to Re-offend

The third aim of the study was to examine the impact of licence loss, fines and periods of probation (e.g., objective severity) on perceptions of the severity of sanctions (e.g., subjective) as well as intentions to re-offend. The bivariate correlations between these variables are depicted in Table 6.6.

Firstly, in line with (H₇), it appears that perceptual severity is not directly related to the penalties recently incurred by participants. Perceptions of severity were not significantly associated with participants': length of licence loss ($\tau = .06$), period of probation ($\tau = -.01$), or the amount of fine ($\tau = .04$). Also, these

perceptions of severity did not appear to deteriorate during the time since sentencing ($\tau = .02$). In addition, there appeared to be little association between perceptual severity and the number of drink driving convictions ($\tau = -.06$) or the existence of criminal convictions ($\tau = .04$). Furthermore, perceptual severity was not highly correlated with demographic characteristics such as age ($\tau = .03$), income levels ($\tau = -.09$), employment ($\tau = -.03$), nor relationship status ($\tau = -.02$).

Secondly, there appears to be little relationship between the penalties incurred by participants and future intentions to drink and drive. Confirming (H_8), intending to re-offend was not associated with the length of licence loss ($\tau = -.01$), period of probation ($\tau = -.04$), nor the amount of fine ($\tau = .07$). Despite the considerable variation in the length and severity of participants' penalties such as licence loss (range 2 to 60 mths) and periods of probation (range 6 to 36 mths), participants' perceptions of the severity of sanctions were relatively similar (e.g., 86% reported high severity) and were not associated with self-reported intentions to re-offend.

Logistic and linear regression analysis confirmed that present sanctions (e.g., length of licence loss & amount of fine) and socio-demographic factors (e.g., income and employment) did not contribute to the prediction of perceptual severity nor intentions to re-offend. However, it is noted the limited variance due to the skewed nature of the data reduces the possibility of finding relationships between these factors and objective sanctions.

6.3.6.2 Second vs Multiple Convictions: Sanctions & Perceptions

Next an examination was undertaken to determine whether perceptual and behavioural differences exist between those who had only been convicted twice for a drink driving offence ($n = 73$), compared to those who had been convicted on a number of occasions i.e., more than two ($n = 93$). Table 6.8 depicts the penalties, behaviours and perceptions for repeat and multiple offenders. Firstly, participants with only two convictions recorded significantly shorter periods of licence disqualification than those with multiple convictions, Mann-Whitney U

(1, $N = 166$) $z = -2.96$, $p = .003$. No significant differences were found on the periods of probation or size of the incurred fines.

In regards to perceptions of the Classic Deterrence Doctrine (e.g., certainty, severity & swiftness), (H_9) was confirmed as bivariate and chi-square analysis revealed no significant differences between the two groups, as perceptions of severity were reported as high, swiftness relatively low, and considerable variability on perceptual certainty. Firstly, it appears that being repeatedly apprehended and convicted does not result in increases in perceptual certainty ($M = 6.27$ vs $M = 6.39$, $\tau = .07$). Likewise, receiving increasingly larger penalties does not ensure increases in perceptual severity ($M = 8.80$ vs $M = 7.99$, $\tau = -.06$) (H_9), or in fact that legal sanctions are perceived as severe. Interestingly, there was also no difference found between the two groups on alcohol consumption levels, as both consumed relatively high levels on a weekly basis ($M = 11.59$ vs $M = 10.68$).

There were also no significant differences between the two groups on perceptions of non-legal sanctions, as both groups were not concerned about social disapproval, and a sizeable proportion did not report feeling guilty after drink driving nor were they overly concerned about being injured from the offence. Furthermore, there were few differences between the groups on socio-demographic characteristics, general offending history, although repeat offenders ($M = 34.07$ yrs) were slightly younger than multiple offenders ($M = 39.44$ yrs).

Table 6.8

Penalties and Perceptions of Repeat and Multiple Offenders

Deterrence Factors	Two Convictions (<i>n</i> =73)		Multiple Convictions (<i>n</i> =93)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Penalties				
Licence Loss*	13.53	6.64	17.03	8.50
Fine	525.93	89.37	600.62	120.21
Probation	15.93	5.71	17.32	6.94
Classic Deterrence				
Severity	8.80	1.45	7.99	2.63
Certainty	6.27	2.90	6.39	3.03
Swiftness	4.46	2.86	4.39	2.55
Non-legal Deterrence				
Social	2.95	2.99	2.80	2.93
Internal	5.07	3.69	3.94	3.50
Physical	5.55	3.56	4.66	3.23
Alcohol Consumption	11.59	5.56	10.68	6.89

Note. * $p < .01$.

In addition to examining the penalties and perceptions of the two groups, an exploration was undertaken to investigate the self-reported differences on recent drink driving behaviours and offending over their lifetimes. Table 6.9 depicts the self-reported frequency of the two groups' undetected drink driving behaviours. A significant difference was identified between the two groups on the self-reported frequency of drink driving over their lifetime, Mann-Whitney U (1, $N = 166$) = 2662, $p = .004$, with a larger proportion of multiple offenders reporting a higher frequency of drink driving over an extended period of time (e.g., more than 10 times). However, no differences were found between the two groups on recent drink driving behaviours (e.g., last six months), as a considerable proportion of repeat and multiple offenders reported avoiding drink driving (43.8% & 36.6%, respectively).

A logistic regression analysis was performed to examine the contributions of the Classic Deterrence Doctrine (e.g., certainty, severity & swiftness), non-legal sanctions (social, internal & physical), alcohol consumption and drink driving behaviours (e.g., recent and over lifetime) (independent variables) to the prediction of repeat vs multiple convictions (dependent variable). The overall model was

statistically significant with a chi-square statistic of $\chi^2 (8, N = 166) = 17.96$, $p = .036$. In the multivariate model, a higher frequency of self-reported drink driving over one's lifetime was confirmed as a significant predictor of multiple convictions (Wald statistic = 6.07, $p = .014$). Additionally, reporting lower perceptions of the severity of sanctions (Wald statistic = 4.51, $p = .034$), also proved a significant predictor of receiving multiple convictions. The logistic regression analysis table is presented in Appendix C.

Table 6.9

Self-reported Offending Behaviours for Repeat and Multiple Offenders

	Two convictions ($n = 73$)		Multiple convictions ($n = 93$)	
	Count	%	Count	%
Lifetime Offending*				
Never	1	1.4	2	2.1
Once or twice	6	8.2	4	4.3
Three to five	15	20.5	6	6.5
Six to ten	10	13.7	9	9.7
More than ten	41	56.2	72	77.4
Last Six Months				
Never	32	43.8	34	36.6
Once or twice	12	16.4	14	15.1
Three to five	8	11.0	14	15.1
Six to ten	11	15.1	11	11.8
More than ten	10	13.7	20	21.4

Note. * $p < .01$.

6.4 Discussion

Study One examined the impact of legal sanctions, three non-legal sanctions and alcohol consumption levels on a group of recidivist drink drivers' official and self-reported drink driving behaviours. In addition, the study aimed to explore the relationship between objective and subjective perceptions of the severity of sanctions, and what (if any) perceptual and behavioural differences existed between those with two convictions compared to those with a greater number of drink driving convictions and sanctions.

6.4.1 Perceptions of Sanctions

In regard to participants' experiences of legal sanctions, the majority of the sample reported current penalties to be severe, although not entirely swift. The first finding is encouraging, as severe sanctions have proven vital for deterrence theory, and the reduction of future drink driving offences (Sadler, Perrine & Peck, 1991; Siskind, 1996; Vingilis et al., 1990). However, despite being recently apprehended and convicted of the offence, a considerable proportion did not consider the chances of being apprehended to be high, which is reflected in the self-reported frequency of their past offending behaviour(s). The high frequency of self-reported drink driving confirms previous findings (Fitzpatrick, 1992; Voas, 1982; Wells-Parker et al., 1995; Wells-Parker & Williams, 2002) and one of the central themes of the current research, which is that recidivism rates are not an entirely accurate indicator of the prevalence of drink driving among convicted offenders.

A further concern is that despite being recently sanctioned and placed on a probation order, almost a quarter of the sample (23.5%) did not or could not report being certain that they would avoid drink driving again in the future. This finding confirms the assertion that legal sanctions applied in isolation are not very effective in reducing drink driving among repeat offenders (Beirness et al., 1997; Biecheler-Fretel & Peytavin, 2002; Hedlund & McCartt, 2002; Marques, Voas and Hodgins 1998; Nadeau, 2002; Yu, 2000). Interestingly, licence loss appears to be a much greater deterrent against further drink driving behaviour(s) compared to the application of monetary sanctions (e.g., fines). This result has direct implications for legislators and magistrates, as increasing licensing rather than monetary sanctions *may* produce a greater deterrent effect for those who have previously been convicted of a drink driving offence.

For non-legal sanctions, the greatest proportion of participants did not report concern about informing friends of their drink driving behaviours or conviction. Whilst it is difficult to confirm from these findings the theory that social sanctions decrease with offence history (Dana, 2001; Nagin & Paternoster, 1991b; Nagin & Pograsky, 2001), the study supports a small body of research that indicates a considerable proportion of repeat offenders may not be heavily influenced by peer and/or social disapproval resulting from their drink driving behaviour(s) (Ahlin et al., 2002; Smith, 2003).

However, for both internal and physical loss, a surprising proportion (42.2% & 40.4%, respectively) reported feeling guilty after drink driving as well as worrying about being injured (or damaging one's vehicle) from the behaviour. These findings are encouraging as they suggest that some repeat offenders may recognise that drink driving is inappropriate (hence feeling guilty about breaking internalised norms), and believe that drink driving is a health risk. This latter finding provides preliminary support for the proposition that injuring oneself after drinking may act as a deterrent against drink driving (Baum, 1999; Homel, 1988; Norstrum, 1978). Further research is needed to determine whether repeat offenders' drink driving behaviours can be influenced by current media campaigns that focus on the moral and physical consequences of drink driving e.g., accidents and fatalities.

6.4.2 Predictors of Intentions to Re-offend

In regards to intentions to re-offend, self-reported drink driving behaviours (e.g., last six months) was a significant predictor of further offending behaviours. This finding confirms (H_1), and provides support for the premise that some repeat offenders are not heavily influenced by the threat of legal sanctions (Beirness et al., 1997; Hedlund & McCartt, 2002; Taxman & Piquero, 1998; Yu, 2000), and/or that their drink driving behaviours are heavily entrenched. From a road safety perspective, the results indicate that the conditions necessary to deter this population from re-offending are not necessarily being achieved.

From a behavioural change perspective, the results provide support for the popular theory of planned behaviour - and the process of habituation- by signifying that the frequency with which a behaviour is performed in the past is a good predictor of later action (Ajzen, 2002; Ajzen & Madden, 1986). However, the findings also suggest that habitual behaviours may not be heavily influenced by cognitive factors (Ouellette & Wood, 1998) as the behavioural variables were more efficient predictors of intentions to re-offend than self-reported perceptions. A question for further deterrence research remains: how does prior behaviour become entrenched and remain independent of attitudes and perceptions? What the research has confirmed is that a group of individuals exist who will most likely continue to drink and drive despite repeatedly incurring legal sanctions.

In line with previous research that has proposed heavy alcohol consumption increases offending behaviours (Baum, 1999; Brown, 1998; Yu, 2000), participants in the current study who reported higher alcohol consumption levels were also more likely to report intentions to re-offend in the future (H₂). Firstly, the study supports previous research that has demonstrated repeat offenders consume harmful levels of alcohol (MacDonald & Dooley, 1993; Wieczorek et al., 1992; Wiliszowski et al., 1996; Wilson, 1992; Yu & Wilford, 1993). Secondly, the result highlights the serious and deleterious effects that heavy alcohol consumption levels have not only on deterrence but also traffic safety. It appears that heavy drinking behaviours are “overriding” the deterrent mechanisms proposed to stop the offending behaviour, and that alcohol has a strong influence on patterns of behaviour. The relationship between alcohol consumption levels and motivations to change or control drinking behaviours will be more closely examined in Study Two.

In accordance with previous research (Baum, 1999; Green, 1989; Homel, 1988) and (H₃), perceptions of the certainty of apprehension did not significantly predict repeat offenders’ intentions to drink and drive again in the future. This finding is inconsistent with the premise of the Classical Deterrence Doctrine, which proposes that the certainty of apprehension produces the most powerful deterrent impact against offending behaviours (Decker et al., 1993; Grasmick & Milligan, 1976; Homel, 1988; Jones & Lacey, 1991; Nagin & Pogarsky, 2001). One possible explanation for the absence of such an effect is the frequency with which repeat offenders reported avoiding apprehension, which would undoubtedly diminish participants’ perceptions of the certainty of apprehension and the salience of such perceptions as a deterrent factor. The effects of punishment avoidance have recently been considered within the deterrence literature (Paternoster & Piquero, 1995; Piquero & Pogarsky, 2002; Stafford & Warr, 1993), and whilst the findings are preliminary, early indications suggest that punishment avoidance may be as great, or more influential on offending behaviours, than experiencing punishment (Piquero & Paternoster, 1998; Piquero & Pogarsky, 2002).

Similarly, (H₄) was supported, as perceptions of severe sanctions did not predict those least likely to drink and drive again in the future. However, a weak negative bi-variate relationship was evident between perceptual severity and

intentions to re-offend. The failure of perceptual severity to predict intentions to re-offend at the multivariate level may result from the relatively small sample size and the corresponding low power of the predictive model. The relationship between perceptual severity and intending to re-offend for convicted drink drivers needs to be validated with a larger sample size. Whilst the methodological weaknesses limit generalisations, these preliminary findings suggest that sanctions are perceived as severe, and perceptual severity may yet prove to have a negative relationship with intentions to re-offend for repeat offenders, at least in the short-term.

Furthermore, (H₅) and (H₆) were not supported in the model, as fear of social sanctions and fear of being injured did not predict those least likely to intend to drink and drive again in the future. However, examination of the bivariate relationships indicated that social, physical and internal loss were negatively associated with intentions to re-offend and positively correlated with each other. Once again, the failure of (H₅) and (H₆) may be dependent upon the methodological procedure and limitations rather than lack of influence on drink driving. Further research is needed to determine whether repeat offenders are genuinely influenced by informal sanctions, and whether social “rewards” such as increased peer recognition are associated with drink driving. In summary, it appears that behaviours such as recent drink driving and alcohol consumption are superior predictors of intending to re-offend than attitudes/perceptions in the current study.

6.4.3 Predictors of Perceived Severity of Sanctions and Intentions to Re-offend

Next, an examination was undertaken to determine the relationship between objective sanctions (e.g., length of penalties) and perceptual severity, as well as intentions to re-offend. Firstly, it appears that larger licence disqualification and monetary sanctions were not perceived as more severe than shorter and/or lesser sanctions (H₇). For example, short licence disqualification periods were reported to have the same considerable impact on participants’ lives to those who received larger periods of licence loss. In practical terms, shorter licence disqualification periods may still have the potential to be perceived as severe. For up-coming Australian interlock trials and the ongoing debate regarding appropriate lengths of licence disqualification, the results provide initial support for the assertion that

shorter periods of licence loss before interlock installation can still produce a beneficial effect.

Secondly, and more disturbingly, a relationship was not evident between the objective severity of sanctions and intentions to re-offend (H₈). That is, those who reported not intending to drink and drive again did not incur larger punitive sanctions. Whilst it is difficult to make firm conclusions given the small sample size, as above, intentions to re-offend may be separate to the severity of the actual penalties incurred. Both these findings lend support for the theory that re-offending rates for persistent drink drivers may not be dependent on the level or intensity of sanctions (Taxman & Piquero, 1998; Yu, 2000).

6.4.4 Two vs Multiple Convictions

An investigation that considered the history of offenders' convictions also revealed few perceptual differences between those with two convictions compared to multiple convictions (H₉). Firstly, the number of drink driving convictions did not appear to greatly influence perceptions of legal or non-legal sanctions. Perceptions regarding the certainty of apprehension or the severity of sanctions were not heavily influenced by the frequency of conviction for participants. The results indicate that it is quite possible that repeat offenders will eventually become multiple offenders.

Secondly, differences were not found between the two groups on present alcohol consumption levels, general convictions nor recent drink driving behaviours. Rather, repeat offenders were younger and the greatest difference was evident in the frequency of self-reported drink driving behaviours over their lifetime. It remains possible that those with multiple convictions engage in a higher frequency of drink driving over an extended period of time, which ultimately results in a higher number of convictions. However, it is noted that this difference between the groups is dependent upon participants' willingness to accurately indicate the frequency of their past offending behaviours. Whilst it remains difficult to identify the perceptual and behavioural traits associated with multiple offenders, the present results provide preliminary evidence that differences are not found on perceptions of sanctions nor alcohol consumption levels.

Some limitations of the study were identified. Participants were not randomly selected. Participants received a reduction in the severity of their sanctions to encourage UTL program enrolment, which may have affected their perceptions of legal sanctions. The accuracy of the self-reported data remains susceptible to self-reporting bias, especially responses that focus on further offending behaviours. Furthermore, it remains uncertain whether stated intentions are effective predictors of future behaviours. The relatively small sample size limits statistical power and the inclusion of other variables in the analyses (e.g., socio-demographic characteristics). The DQ scale developed for the present research requires further validation and amendment with a larger sample size. In addition, the findings may be heavily influenced by an “experiential” effect, as the majority of participants were recently sanctioned and on probation, as questions remain about the stability of these perceptions over time. The limitations of the study are further explored in Chapter Nine.

A final methodological point is made about the predictive utility of the two deterrence models in identifying those most likely to re-offend. Whilst the primary aim of the study was not to predict those who will continue to drink and drive, the relatively low correlations between the variables and the small odds ratio values in the regression analyses suggest that legal and non-legal sanctions are not very powerful predictors of future intentions to drink and drive. In fact, the proposed behavioural and perceptual factors predicted those who do not intend to drink and drive rather than those who do intend to re-offend. This result may be expected after considering the tremendous array of psychological and environmental factors that have been proposed to affect a person’s decision to drink and drive (Mullahy & Sindelar, 1994; Thurman, Jackson & Zhao, 1993). What remains evident is that alcohol consumption in combination with legal and non-legal sanctions are not the only factors that influence repeat offenders’ intentions to re-offend.

6.5 Summary

Taken together, the results of Study One in the research program provide initial evidence that legal sanctions such as licence disqualification periods are perceived as severe and produce a considerable short-term impact upon repeat offenders’ lives. However, closer examination of their perceptions and behaviours

revealed that a notable proportion were not comprehensively deterred, and that prior drink driving behaviours and heavy alcohol consumption levels influence intentions to re-offend. Furthermore, perceptions of severity and certainty of sanctions, as well as intentions to re-offend appear - at some level - to be separate to the actual punitive sanctions incurred by offenders.

Rather than examine the hypothetical deterrence constructs associated with general motorists and college students, the present study extended previous deterrence research and focused on a group of convicted drink drivers. The study is important because it provides insight into repeat offenders' perceptions of legal and non-legal sanctions, and what factors are associated with past and future drink driving events. Given the limited long-term behavioural impact of the application of legal sanctions in isolation (Beirness et al., 1997; Taxman & Piquero, 1998; Yu, 2000), such countermeasures are being combined with drink driving rehabilitation programs to improve the possibility of producing long-term behavioural change. The impact of a drink driving rehabilitation program will be addressed in Study Two.

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7.1 Introduction

The first study in the research program explored the impact of sanctions on key outcomes for a group of recidivist drink drivers. The second study aims to investigate the effect of the alternative, yet complementary approach, of a drink driving rehabilitation program on the same group of offenders. As highlighted in Chapter Two, current knowledge regarding the effectiveness of drink driving rehabilitation programs to improve road safety is heavily dependent on detected re-offence rates and official crash statistics. More recently, a small body of studies have begun to incorporate offenders' self-reported experiences and perceptions, providing valuable insight into the effects that drink driving programs have upon a number of key program outcomes and goals. For example, the impact of the interventions on the acquisition of new knowledge and strategies to avoid drink driving (Connors, Maisto & Ersner-Herschfield, 1986; Ferguson et al., 2000; Papandreou, Brooksband & McLaughlin, 1985), participants' motivations to change drinking and drink driving, self-efficacy levels to control the two behaviours and actual changes in alcohol consumption levels (Ferguson, 1997; Ferguson et al., 2000; Levy, 1997; Wells-Parker et al., 1998; Wells-Parker et al., 2000).

These research initiatives are crucial for a number of reasons. Firstly, given the well-documented difficulties with relying on recidivism rates as an accurate reflection of program success, there is a need for research that measures change from multiple perspectives (Fitzpatrick, 1992; Lambert & Hill, 1994). Secondly, it is essential to examine the impact of interventions on underlying factors directly influencing offending behaviours (e.g., motivations to change and actual drinking levels) to promote the development of programs that cater for the specific needs and requirements of repeat offenders (Wells-Parker et al., 2000; Wiczorek et al., 1997). Thirdly, the investigation of key program outcomes such as offenders' motivations and self-efficacy levels provides greater insight into the effect these factors have on actual drinking levels, as well as drink driving behaviours.

7.1.1 The Transtheoretical Model

The small amount of exploratory research that has examined the self-reported impact of drink driving interventions has predominantly utilised the

Transtheoretical model of Change (Ferguson, 1997; Levy, 1997; Wells-Parker et al., 1998; Wells-Parker et al., 2000). The model, which is used in the present work, focuses on the underlying factors that are theorised to influence successful or unsuccessful change, including motivations to change problem behaviour(s) and associated self-efficacy levels (CPRC, 2001; Goldbeck, Myatt & Aitchison, 1997). The components of this model have recently been proposed as core determining outcomes of drink driving programs (Wells-Parker et al., 1998; Wieczorek et al., 1997). Despite the practical and theoretical significance of such research, little is known about repeat offenders' motivations or ability to avoid drink driving soon after being sanctioned (Wieczorek et al., 1997), or the impact of rehabilitation programs on participants' willingness to change such persistent behaviours. Further questions remain regarding the stability of such motivations across time, as it is noted that repeat offenders have a history of continuing to drink and drive despite incurring punitive sanctions, and researchers have noted that readiness to change problem behaviours may be temporal and fluctuate with time (DiClemente & Prochaska, 1998; Velicer, 2001; Wells-Parker et al., 1998).

In addition to examining motivations, there is a need to investigate the effects of interventions on actual drinking behaviours. At the heart of the recidivist drink driving problem lays offenders' willingness and ability to reduce or change their drinking behaviours. A common theme in the literature indicates that convicted drink drivers, and particularly repeat offenders, are likely to consume large quantities of alcohol (Beirness et al., 1997; Bergman, Hubicka & Laurell, 2002; Biecheler-Freteck & Peytavin, 2002; Bjerre, 2002; Boudreault, Brassard & Gagnon, 2002; Conigrave & Carseldine, 1996; Michiels et al., 2002; Nadeau, 2002; Traffic Injury Research, 2003; Wilson, 1992), and be at a high risk of suffering from alcohol dependence (Bergman et al., 2002; Bjerre, 2002; Ferguson, 1997; Miller & Windle, 1990; Yu, 2000).

However, it is also recognised that early distinctions between repeat offenders and alcoholic populations have been identified, as repeat offenders do not display the same level of economic, emotional and familial loss as alcohol dependent individuals, and many repeat offenders have not yet progressed to the later stages of alcoholism (Bell et al., 1978; Cavaiola & Wuth, 2002; Fillmore & Kelso, 1987; Panepinto, Garrett, Williford & Priebe, 1982; Selzer, Vinokur &

Wilson, 1977). Despite this, Study One in the present work demonstrated that a considerable proportion of the current sample consume harmful levels of alcohol, and thus Study Two will endeavour to examine the effect of the drink driving rehabilitation program on these heavy drinking behaviours.

7.1.2 Reasons for Program Enrolment: Voluntary vs Mandatory

Finally, the research program aims to extend the Transtheoretical model and examine the impact that mandatory vs voluntary enrolment has on key program outcomes such as motivations to change drinking and drink driving, intentions to re-offend and the acquisition of new skills and knowledge to avoid drink driving. While mandatory enrolment has improved participation rates and road safety at a summative level (e.g., recidivism rates), questions remain about the effect of “coercion” on motivations to engage in programs and to achieve successful rehabilitative outcomes (Cavaiola & Wuth, 2002; Connors et al., 2001; Howard & McCaughrin, 1996; Levy, 1997; O’Callaghan, 1990; Polcin, 1999; Silverstein, 1996). Study One demonstrated that the process of deterrence is far from conclusive for recidivist drink drivers, and thus it remains questionable whether “coercing” offenders to complete programs produces long-term beneficial results.

7.1.3 Summary

The second study in the research program utilises the Transtheoretical model of Change (Prochaska & DiClemente, 1984) to examine the effect of a court-ordered drink driving rehabilitation program on a group of recidivist drink drivers’ motivations, self-efficacy and drinking levels, both before and after program completion. The study focuses not only on drinking, but importantly, upon motivations to change drink driving behaviours as well as the stability of such motivations across time. In addition the study will extend previous research to identify the effect of mandatory vs voluntary enrolment upon motivations to change, as well as “engaging” in the program and achieving successful program outcomes such as: (a) increases in knowledge and skills, and (b) self-reported intentions to avoid further offending behaviours. Given the importance of drink driving rehabilitation programs to produce behavioural change among those who have previously demonstrated resistance, accurate knowledge regarding the effect of such interventions on repeat offenders remains vital.

7.1.4 Research Questions and Hypotheses

Part A: Motivations, Self-efficacy & Drinking Behaviours prior to Program Commencement

The first part of the study focuses on participants' motivations, self-efficacy, drinking levels and appraisals regarding the effectiveness of the intervention before commencing the UTL program e.g., soon after being sanctioned. The study also explores the effect that mandatory vs voluntary enrolment has on these key factors. A set of hypotheses and research questions were developed from the small amount of Transtheoretical research that has considered repeat offenders.

- Consistent with the findings that repeat offenders are not willing to change their drinking behaviours (Ferguson, 1997; Levy, 1997) it is predicted that the majority of participants will not report actively reducing drinking levels prior to program commencement (H₁).
- Based on the findings of Wieczorek, et al. (1997) that demonstrated individuals with a higher number of previous convictions are motivated to change, and the assumption that offenders attempt to avoid drink driving while they are disqualified from driving (Nadeau, 2002; Wells-Parker et al., 1998) it is predicted that the majority of participants will report actively trying to avoid drink driving before program commencement (H₂).
- Is there a relationship between motivations to change drinking and motivations to change drink driving?
- Is there a relationship between alcohol consumption levels and stages of change?
- Do repeat offenders report high self-efficacy levels to control drinking and drink driving behaviours?
- In line with the theory that mandatory enrolment does not foster therapeutic effects (Cavaiola & Wuth, 2002; O'Callaghan, 1991; Peck et al., 1994; Polcin, 1999; Silverstein, 1996), it is predicted that mandated offenders will report the lowest levels of motivation to change their drinking and drink driving behaviours (H₃).

- In accordance with the assumption that mandated participants will be reluctant to “engage” in the content of programs (Cavaiola & Wuth, 2002; Howard & McCaughrin, 1996; Mulligan & McCarty, 1986; O’Callaghan, 1991; Peck et al., 1994; Polcin, 1999; Silverstein, 1996) it is predicted that mandated participants will report lower expectations regarding the value of the UTL program compared to voluntary participants (H₄).
- Is there a relationship between stages of change and expectations of program effectiveness?

Part B: Program Completion

The second part of the study focuses on the affect of UTL program completion and mandatory vs voluntary enrolment on participants’ motivations, self-efficacy, drinking levels and appraisals regarding the effectiveness of the program.

- In line with research that has indicated drink driving programs do not greatly influence repeat offenders’ motivations to change drinking levels (Ferguson, 1997; McCarther, 1997), it is predicted that completing the UTL program will not effect participants’ motivations to change drinking (H₅).
- Furthermore, based on the prediction that participants will be resistant to change their drinking behaviours, it is hypothesized that the UTL program will not significantly reduce self-reported alcohol consumption levels (H₆).
- Considering that the majority of participants are predicted to be in the action stage for drink driving prior to program commencement (H₂), it is also predicted that there will be little movement through the stages of change following from program completion (H₇).
- Extending (H₃), it is predicted that mandated participants will also report lower appraisals of the effectiveness of the program (e.g., increases in knowledge & skills) compared to voluntary participants (H₈).

Part C: Stability of Motivations

The third section of the study will investigate the stability of participants' motivations, which are reflected in self-reported drink driving behaviours before the group's most recent conviction.

- In line with the theory that motivations fluctuate over time (DiClemente & Prochaska, 1998; Velicer, 2001; Wells-Parker et al., 1998), and that the sentencing and punishment process would ensure participants' assignment to the action stage (Nadeau, 2002; Wells-Parker et al., 1998), it is predicted that current motivations to avoid drink driving will not be reflected in the self-reported frequency of drink driving in the last six months prior to participants' most recent apprehension (H₉).

7.2 Method

7.2.1 Participants

The sample consisted of 132 recidivist drink drivers who were involved in Study One. 106 participants were on a UTL1 probation order and 26 on the UTL2 order. Participation in this second study was dependent upon being interviewed face-to-face, which facilitated the completion of the motivational and self-efficacy scales detailed below. It was not possible to complete the scales via the telephone resulting in the elimination of 34 participants who had been part of Study One. Between groups analysis revealed no differences between those excluded and included in the study on past offence history, BAC levels, socio-demographic characteristics (e.g., age, sex, income, education) or self-reported data e.g., drinking and drink driving behaviours. There were 117 males and 15 females in the study. The average age of the participants was 37.46 years, ($SD = 10.68$) with a range from 20 - 67. The sample characteristics are similar to Study One and are depicted in a summary table in Appendix D.

7.2.2 Materials

7.2.2.1 Alcohol Use Disorders Identification Test (AUDIT)

Participants' alcohol consumption levels were measured by the AUDIT, which was used in both Study One and Two. A description of the structure and reliability of the scale is provided in Study One (Section 6.2.2.3), and displayed in Appendix A.

7.2.2.2 Demographic Survey

Three questions from the Demographic Questionnaire employed in Study One were also implemented in Study Two. The questions focused on: past drink driving behaviours (Q 12), reasons for respondents' most recent offence (Q 14), and intentions to drink and drive again (Q 17). See Appendix A for a copy of the survey.

7.2.2.3 Readiness to Change Drinking Questionnaire

Motivation to change drinking behaviour was measured by the Readiness to Change Questionnaire (RCQ) (Heather & Rollnick, 1992), which is a measurement tool used in conjunction with brief, opportunistic interventions for problem drinkers (e.g., general practice and hospitals). The 12-item questionnaire aims to determine respondents' motivational levels to reduce or cease their drinking behaviours. The RCQ is based on concepts derived from the Transtheoretical model of Change (Prochaska & DiClemente, 1984) and uses four items to assess each of the three stages of change e.g., precontemplation, contemplation and action (Heather, Rollnick, Gold & Hall, 1992). Items are presented on a 5-point likert scale ranging from "Strongly Disagree" to "Strongly Agree". Items are scored from -2 through to +2 providing a summed range for each stage from -8 to +8³. Stage allocation was achieved through the "Quick" method, which is the predominant approach that involves adding the scores for the three stages of change, with stage allocation being dependant upon the highest score. That is, if an individual scores 2 on precontemplation, 3 on contemplation and 6 on action, then he/she is considered to be in the action stage. The "Quick" method has proven reliable in classifying general drinking populations (Heather, Rollnick & Bell, 1993) and has more recently been applied to drink driving research (Wells-Parker et al., 1998; Wells-Parker et al., 2000).

The RCQ scale has been extensively used as both a screening tool as well as a predictive device to determine excessive drinkers' stages of change (Gavin et al., 1998; Heather et al., 1993). A considerable body of research has demonstrated the questionnaire to have sound psychometric properties (Heather et al., 1993; Rollnick et al., 1992), and evidence regarding concurrent validity ranges from moderate to good (Heather et al., 1993). Cronbach's alpha was originally calculated and reported as sound for each of the 4-item scales: precontemplation = 0.73, contemplation = 0.80 and action = 0.85 (Rollnick et al., 1992), as was the re-test reliability:

³ For example, Strongly Disagree = -2, Disagree = -1, Unsure = 0, Agree = +1 and Strongly Agree = +2.

precontemplation = 0.82, contemplation = 0.86 and action = 0.78 (Rollnick et al., 1992). See Appendix E for a copy of the questionnaire.

7.2.2.4 Readiness to Change Drink Driving Questionnaire

Motivation to change drink driving behaviour was measured by the Stages of Change for Drink Driving Questionnaire (DRDV) developed by Wells-Parker et al. (1998). The questionnaire was adapted from Heather & Rollnick's (1992) RCQ with the words "drink-driving" being substituted for "drinking"⁴. Given the limited published research measuring drink drivers' motivation levels to change offending behaviours, few studies have reported data on the psychometric properties of the scale. Wells-Parker et al. (1998) initially reported moderate reliability on a sample of 210 offenders:

action = .68, contemplation = .62, and precontemplation = .46.

The scale has been demonstrated to be a significant predictor of recent self-reported drink driving behaviours (i.e., past two weeks), the number of official convictions (Wells-Parker et al., 1998) as well as future recidivism rates (Wells-Parker et al., 2000). The scale is also correlated with readiness to change drinking, and self-efficacy to control drinking and drink driving, although factor analysis has indicated the existence of separate constructs (Wells-Parker et al., 1998). A copy of the Questionnaire is provided in Appendix E.

7.2.2.5 Self-efficacy to Change Drinking and Drink Driving

Self-reported levels of self-efficacy to control both drinking and drink driving behaviours were measured by the Drinking/Driving Efficacy Scale (DDE/3: Wells-Parker, Burnett, Dill & Williams, 1997). The scale consists of 11 questions, 8 regarding efficacy to avoid drink/driving (DRIE), and three items measuring drinking from Donovan and O'Leary's (1978) Locus of Control for Drinking Scale (DDE). Wells-Parker, et al. (1997) reported the alpha coefficient for the scale to be .85, and Wells-Parker, et al. (1998) applied the scale to 210 drink drivers, reporting Cronbach's alpha of .81. The scale has proven to be correlated with both readiness to change drinking and readiness to change drink driving (Wells-Parker et al., 1998), and is a

⁴ Wells-Parker et al. removed two questions (No. 3 & 12) from the RCQ as they had limited utility for assessing drink driving. Question 3 measured Contemplation and question 12 assessed Precontemplation, thus reducing the overall numerical totals for the two stages.

significant predictor of drink driving recidivism (Wells-Parker et al., 2000). See Appendix E for a copy of the Questionnaire.

7.2.2.6 Reasons for Program Enrolment Questionnaire

A questionnaire was developed to assess participants' motives for enrolling in the UTL program. The questionnaire contained six questions focusing on three themes: (a) voluntary enrolment to receive assistance to avoid drink driving in the future, (b) voluntary enrolment to avoid a larger sanction (e.g., licence loss and/or incarceration), and (c) mandatory enrolment by the magistrate or solicitor. Participants responded using a 10-point scale with two questions pertaining to each factor (1 = strongly disagree, 5 = unsure, 10 = strongly agree). A copy of the questionnaire is presented in Appendix E.

7.2.2.7 Expectations and Effectiveness of the Under the Limit Program

Finally, an additional questionnaire was developed to examine participants' expectations regarding the effectiveness of the UTL program prior to program commencement (UTLEXPECT) and then subsequent appraisals of the program upon completion (UTLEFFECT). The scale comprises of four questions focusing on the ability of the program to reduce the likelihood of re-offending, and two questions on whether participants believe they *need* to or *want* to complete the program (Q 5 & Q 6, respectively). The six questions were measured on a 5-point likert scale ranging from very unlikely = 1 to very likely = 5. The questions on the UTLEXPECT and UTLEFFECT scales consist of the same format, with a different context used from pre to post intervention. Examples of items include: "I expect to gain more knowledge about the effects alcohol has on my driving ability as a result of completing the program" (Q 1) and "I believe the program provided me with new skills and strategies to avoid drink driving" (Q 2). The four expectation/appraisal questions were summed to provide an overall indicator of respondents' expectations and appraisal of the effectiveness of the program. See Appendix E for a copy of the Questionnaire.

To avoid bias from ordering effects, two versions of the questionnaire format was implemented. The first version required participants to complete the readiness to change and self-efficacy questionnaires before providing reasons for program enrolment and expectations/appraisals of program effectiveness. The second version reversed the order, requiring participants to report on their expectations/appraisals

before completing the readiness to change and self-efficacy scales. Analyses revealed no significant differences in scale scores between the two versions.

7.2.3 Procedure

Study Two participants were recruited as described in Study One, as data for pre-program commencement was collected for both studies at the same time. However, Study Two consisted of a longitudinal design as participants were also interviewed after completing the UTL program. The average time between pre and post assessment was 20 weeks as considerable difficulties were experienced scheduling post program interviews due to participants' non-attendance and scheduling restrictions imposed by justice system requirements. Interviews were conducted at participants' local Community Corrections regional centre immediately following a scheduled meeting with their probation officer. Once again, only the researcher and the participant were present during the interview. 132 participants were interviewed prior to program commencement and 87 participants were interviewed after program completion. Of the 45 participants who were not interviewed a second time, 15 completed the program but did not agree to be interviewed, 18 did not complete the program, 4 could not be contacted after program completion, and 8 continually failed to present for an interview. Data relating to previous traffic and non-traffic convictions were provided by Queensland Police Service, Queensland Transport Department and the Queensland Department of Community Corrections.

7.3 Results

7.3.1 Data Cleaning and Assumption Testing

Before commencing data analysis, the data were checked for the accuracy of entry, missing values, outliers and assumptions of univariate and multivariate analysis. There was no missing data or outliers. Examination of univariate and multivariate assumptions revealed violations of linearity, homogeneity of variance and normality. Similar to Study One, the nature of the data was predominately controlled through the utilisation of non-parametric analysis. There was no evidence of multicollinearity.

Between groups analysis revealed no significant differences between the UTL1 ($n = 106$) and UTL2 group ($n = 26$) on a number of key research outcomes such as:

stages of change for drinking and drink driving, self-efficacy and alcohol consumption levels, reasons for program enrolment and past drink driving events. In addition, between-group analyses (e.g., chi-square and t-tests) revealed no significant pre-program differences between those interviewed twice vs once on stages of change for drinking, drink driving, alcohol consumption levels or reason for program enrolment.

7.3.2 Scale Reliability

Cronbach's alpha coefficients were calculated to investigate the internal reliability of the scales used in the study and are presented in Table 7.1. The scores range from moderate to strong for the drinking scales (Tabachnick & Fidell, 1996), but participants reported inconsistent motivations to change their drink driving behaviours (e.g., DRDV), as well as varying levels of self-efficacy across different drink driving situations (e.g., DRIE). These inconsistencies are discussed further in section 7.4.3.

Table 7.1

Cronbach's Alpha Coefficients for the Scales

Scale	No. of Items	Cronbach's alpha coefficient (Pre program)	Cronbach's lpha coefficient (Post program)
AUDIT	10	.79	.81
SCD			
Action	4	.92	.94
Contemplation	4	.88	.85
Precontemplation	4	.90	.92
DRDV			
Action	4	.87	.90
Contemplation	3	.67	.71
Precontemplation	3	.64	.69
DDE/3			
DRIE/Drink Driving	8	.69	.75
DDE/Drinking	3	.86	.90
UTLEXPACT	4	.88	
UTL EFFECT	4	.83	
Reason for Program Enrolment			
Rehabilitation	2	.72	
Avoid a Larger Sanction	2	.86	
Mandated	2	.98	

Note. AUDIT = Alcohol Use Disorders Identification Test, SCD = Readiness to Change Drinking Questionnaire; DRDV = Readiness to Change Drink Driving Questionnaire; DDE/3 = Self-efficacy to Change Drinking and Drink Driving; UTLEXPACT & UTLEFFECT = Expectations and Effectiveness of the Under the Limit Program.

7.3.3 Intercorrelations Between Factors

Table 7.2 displays the intercorrelations between the scales prior to program commencement. Similar to the findings of Wells-Parker et al. (1998), the degree of alcohol-related problems measured by the AUDIT were negatively correlated with the total score for self-efficacy to control both drinking and drink driving ($\tau = -.21^{**}$), as well as to specifically control drinking ($\tau = -.21^{**}$ [DDE]), but not to control drink driving ($\tau = .04$, [DRIE]). It appears that as alcohol consumption levels increase, personal belief regarding the ability to control drinking decrease. Unlike the findings of Wells-Parker et al., a significant positive relationship was not found between

self-efficacy and the action stage for drink driving ($\tau = .05$). These results suggest that being in the action stage for drink driving is not necessarily dependent upon -or related to- reporting high personal ability to control both drinking and drink driving behaviour(s). Rather, participants in the contemplation stage for drinking ($\tau = -.15^*$) and drink driving ($\tau = -.20^{**}$) reported the lowest levels of self-efficacy to control drinking and drink driving behaviours. Furthermore, early indications suggest that contemplators for both drinking and drink driving believe they need to complete the program ($\tau = 20^{**}$, $\tau = 27^{**}$, respectively), and have positive expectations regarding the effectiveness of the program ($\tau = 15^*$, $\tau = 17^*$, respectively).

Conversely, participants in the precontemplation stage for drinking reported higher levels of control over their drinking ($\tau = .16^*$), indicating that although not willing, precontemplators believe they are able to control drinking behaviours. For official traffic records, the number of drink driving convictions did not appear to be associated with alcohol consumption, stages of change, or mandatory vs voluntary enrolment. However, an increase in the number of drink driving convictions was associated with decreases in self-efficacy levels to control the offending behaviour ($\tau = -.16^*$). Furthermore, those reporting that they would re-offend in the future reported lower levels of self-efficacy to control both drinking ($\tau = -.19^{**}$) and drink driving ($\tau = -.30^{**}$).

In accordance with previous research (MacDonald & Dooley, 1993; Wieczorek, Miller & Nochajski, 1992; Wilson, 1992), higher BAC readings were associated with increases in alcohol consumption levels ($\tau = .15^*$). The remaining findings are comparable to Wells-Parker et al. (1998), as positive correlations were evident for the contemplation stage for drinking and contemplation for drink driving ($\tau = .14^*$), as well as for the precontemplation stage for drinking and drink driving ($\tau = .16^*$). In addition, the contemplation and precontemplation stages were negatively correlated, which indicates that when participants recognised that their behaviour(s) were a problem (e.g., contemplation) they were not inclined to believe that no further action to change was required.

Table 7.2

Intercorrelations Between Motivation to Change Drinking and Drink Driving, Self-efficacy and Alcohol Consumption Levels

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Audit	1	.00	.08	-.04	-.01	.19**	-.14*	-.21**	.04	-.21**	-.01	-.03	.15*	.08	.09	.01	.15*	.12	.02
2. DRDV (ACT)		1	.17*	-.42**	.08	.14*	-.05	.05	-.13	-.06	.00	.09	-.01	.09	.09	.07	.00	.13	.00
3. DRDV (CON)			1	-.24**	.04	.20**	-.15*	-.20**	-.03	-.21**	.03	.02	.00	.17*	.27**	.14*	.19**	.08	-.09
4. DRDV (PRE)				1	-.06	-.15*	.16*	.06	.12	.15*	.06	-.05	.03	-.08	-.10	-.07	-.14	-.20**	.11
5. SCD (ACT)					1	.38**	-.43**	.03	-.11	-.02	.06	.05	.14*	.07	.04	.03	-.06	-.03	-.17*
6. SCD (CON)						1	-.49**	-.15*	-.01	-.15*	-.03	-.04	.08	.15*	.20**	.10	-.06	.03	-.13
7. SCD (PRE)							1	.14*	.10	.16*	.10	-.08	-.05	-.18**	-.21**	-.14*	-.09	-.04	.18*
8. DDE/3								1	-.08	.65**	.08	-.14	-.02	-.10	-.19**	-.02	-.28**	-.05	-.01
9. DRIE/Drink Driving									1	.07	-.16*	-.12	.09	.01	.01	-.05	-.19**	-.09	.10
10. DDE/Drinking										1	.04	-.10	.03	-.10	-.20**	-.04	-.30**	-.11	.15
11. No. Drink Driving Convictions											1	.02	-.14*	-.03	.00	.03	.11	.04	.02
12. Mandatory vs Voluntary												1	.03	.31**	.29**	.39**	.05	-.04	-.11
13. BAC													1	-.17**	-.10	-.13	-.02	-.12	-.17*
14. EXPECTUTL (total)														1	.46**	.50**	.03	.04	-.09
15. Need UTL															1	.72**	.09	.06	-.09
16. Want UTL																1	.00	-.02	-.08
17. Future D.D.																	1	.16*	-.04
18. Drink Driving last 6 Months																		1	.00
19. Breached																			1

Note. ACT = Action stage; CON = Contemplation stage; PRE = Precontemplation; * $p < .05$, ** $p < .01$ (two-tailed).

7.3.4 Part A: Motivations, Self-efficacy and Drinking Behaviours Prior to Program Commencement

7.3.4.1 Motivation to Change Drinking

The first aim of the study was to investigate participants' motivations, self-efficacy and drinking levels before commencing the UTL program, which is depicted in Table 7.3. As expected (H₁), the majority of participants did not report actively reducing their drinking levels before commencing the program. Specifically, 68 participants (51.5%) were classified in the precontemplation stage, 20 (15.2%) were classified in the contemplation stage, and 44 (33.3%) were classified in the action stage. It appears that despite participants being sanctioned for a drinking related offence, two thirds of the sample was not actively trying to reduce their alcohol consumption levels.

7.3.4.2 Motivation to Change Drink Driving

For the drink driving domain, a different theme emerged as 15 participants (11.4%) were assigned to the precontemplation stage, 5 (3.8%) were classified in the contemplation stage, and 112 (84.8%) were assigned to the action stage (see Table 7.3). Consistent with (H₂), soon after being convicted and sanctioned for their drink driving offence, the majority of participants reported actively trying to change their drink driving behaviours. However, it is recognised that participants' current attempts to avoid drink driving (e.g., action stage) may be strengthened by their court order, including licence loss and probation that required the completion of a drink driving program (Nadeau, 2002; Wells-Parker et al., 1998). This premise is examined in section 7.3.4.5.

Table 7.3

Stages of Change for Drinking and Drink Driving

	%	<i>n</i>	<i>M</i>	<i>SD</i>
SCD				
Action	33.3	44	3.18	.75
Contemplation	15.2	20	3.14	.85
Precontemplation	51.5	68	3.31	1.13
DRDV				
Action	84.8	112	4.15	.84
Contemplation	3.8	5	3.50	.70
Precontemplation	11.4	15	2.56	.78

Note. SCD = Readiness to Change Drinking Questionnaire; DRDV = Readiness to Change Drink Driving Questionnaire; *M* = mean score on each scale.

7.3.4.3 Cross-tabulation of Stages of Change: Time One

Upon examination of the similarities between the stages of change for drinking and drink driving, cross-tabulation demonstrated that 42% of participants were classified in the same stage for both drinking and drink driving. This result is lower than Wells-Parker et al. (2000) who reported 77% in the same stage of change, although it is noted that a considerable proportion of participants in the current study were not inclined to want to reduce drinking levels but reported actively trying to avoid drink driving. In contrast, 41 (33%) drinking actors were also assigned to the drink driving action stage, only 3 participants were contemplators for both drinking and drink driving, and 12 (9%) were precontemplators for both drinking and drink driving. The only other cross domain of more than 2% was the action stage for drink driving and contemplation stage for drinking, with 12% of participants motivated to change their drink driving behaviours, and recognised that their drinking levels needed to be changed in the future. Taken together, the largest group of participants ($n = 55$, 41.5%) were in the precontemplation stage for drinking and the action stage for drink driving. That is, participants were motivated to change their drink driving rather than their drinking behaviours. Finally, cross-tabulation revealed no differences between the number of drink driving convictions and self-efficacy, motivation levels, or actual drinking behaviours.

7.3.4.4 Alcohol Consumption Levels and Drinking Stages

The degree of alcohol-related problems was measured by the AUDIT scale, and as noted in Study One, a considerable proportion reported harmful consumption levels. In the present study, 70.5% ($n = 93$) of the sample was consuming harmful levels of alcohol and 48% ($n = 63$) of these participants were classified as alcohol dependent by the AUDIT. For alcohol consumption levels across the stages of change (Table 7.4), significant differences were identified Kruskal-Wallis $H(2, N = 132) = 6.24, p = .03$, as participants in the contemplation stage reported the highest alcohol consumption levels and similar to research on first time offenders, those in the precontemplation stage reported the lowest (Wells-Parker et al., 1998). Specifically, contemplators' reported significantly higher drinking levels than those in the precontemplation stage, Mann-Whitney $U(1, n = 88) z = -2.74, p = .006$, but not those in the action stage. These findings are consistent with the results of Wells-Parker et al. (1998), indicating individuals with the highest alcohol consumption levels recognise their drinking levels are a problem, but are presently not prepared, or not able, to change such behaviours e.g., contemplation stage.

Examination of alcohol consumption levels across stages of change for drink driving revealed that participants (who were mostly in the action stage, $n = 112$) reported the highest levels compared to those in the contemplation and precontemplation stage. The majority of participants being assigned to the action stage and the small sample size for the precontemplation and contemplation stages for the drink driving domain precluded further analysis of statistical significance between the groups. Finally, there were no significant differences evident between the drinking and drink driving stages of change and participants' BAC readings for their most recent offence, as the majority registered BAC levels almost three times the legal limit.

Table 7.4

Alcohol Consumption Levels and BAC Readings by Stages of Change

	AUDIT		BAC	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
SCD				
Action (<i>n</i> = 44)	12.23	7.27	.158	.06
Contemplation (<i>n</i> = 20)	14.50	4.57	.153	.05
Precontemplation (<i>n</i> = 68)	10.91	6.10	.143	.05
DRDV				
Action (<i>n</i> = 112)	12.20	6.56	.149	.05
Contemplation (<i>n</i> = 5)	9.20	6.22	.127	.03
Precontemplation (<i>n</i> = 15)	10.20	4.97	.161	.06

Note. SCD = Readiness to Change Drinking Questionnaire; DRDV = Readiness to Change Drink Driving Questionnaire.

7.3.4.5 Self-efficacy

Scores for self-efficacy across the stages of change were investigated and are depicted in Table 7.5. Total scores for the self-efficacy scale ranged from 22 to 44 with most participants reporting high self-efficacy to control both drinking and drink driving (total score $M = 37.37$). The self-efficacy scores for repeat offenders in the current study ($M = 3.40$) are comparable to Wells-Parker et al. (2000) who incorporated a much larger sample size ($N = 670$, $M = 3.41$). Closer examination of the stages of change and self-efficacy levels by dividing the DDE/3 scale into the two separate scales (ability to control drink driving [DRIE] & ability to control drinking [DDE]) revealed participants across all stages of change reported significantly higher self-efficacy levels to control their drinking ($M = 3.99$), than their drink driving behaviours ($M = 3.14$), Wilcoxon $T(1, N = 132) = -8.92, p = .000$.

Across the stages of change for drink driving, the total self-efficacy levels (DDE/3) appear to be similar for participants in the precontemplation ($M = 3.51$), contemplation ($M = 3.25$) and the action stage ($M = 3.39$). However for self-efficacy levels across stages of change for drinking, contemplators reported significantly lower levels of control for drinking and drink driving (DDE/3) than precontemplators Mann-Whitney U ($1, n = 88$) $z = -3.85, p = .000$, as well as for actors Mann-Whitney U ($1, n = 64$) $z = -3.52$,

$p = .001$. Furthermore, contemplators reported significantly lower levels of ability to control drinking (DDE) than precontemplators Mann-Whitney U (1, $n = 88$) $z = -3.25$, $p = .001$, but not those in the action stage. An emerging theme of the current study is that drinking contemplators report the highest levels of alcohol consumption and lowest control over their behaviour.

Table 7.5

Self-efficacy Levels Across Stages of Change

	DDE/s <i>SD</i>	DDE <i>SD</i>	DRIE <i>SD</i>
Total Self-Efficacy Score	3.40 (.36)	3.99 (.65)**	3.14 (.24)
SCD			
Action ($n = 44$)	3.45 (.37)	3.96 (.80)	3.07 (.25)
Contemplation ($n = 20$)	3.06 (.44)	3.55 (.76)	3.21 (.22)
Precontemplation ($n = 68$)	3.47 (.27)	4.14 (.43)	3.15 (.23)
DRDV			
Action ($n = 112$)	3.39 (.37)	3.95 (.67)	3.13 (.23)
Contemplation ($n = 5$)	3.25 (.22)	4.00 (.35)	3.00 (.29)
Precontemplation ($n = 15$)	3.51 (.33)	4.32 (.50)	3.23 (.25)

Note. SCD = Readiness to Change Drinking Questionnaire; DRDV = Readiness to Change Drink Driving Questionnaire; DDE = ability to control drinking; DRIE = ability to control drink driving; ** $p < .001$.

7.3.4.6 Reason for Program Enrolment, Readiness to Change and Expectations of Program Effectiveness

Investigation into the reasons for program enrolment revealed that 47.7% of the sample ($n = 63$) believed they were forced to enrol in the program by the magistrate or their solicitor, and 52.3% ($n = 69$) voluntary enrolled in the program. Participants' stages of change were cross-tabulated with reasons for program enrolment. In contrast to (H_3), mandated participants did not report lower levels of motivation to change drinking or drink driving behaviours before program commencement compared to voluntary participants. Self-reported willingness to avoid drink driving or change drinking (e.g., action stage) does not appear to be affected by reasons for program enrolment in the current sample, which

was confirmed through Chi square analysis. However, it is noted that the majority of voluntary and mandated participants were in the precontemplation stage for drinking and action stage for drink driving, which limits comparisons between the groups. Secondly, these findings do little to indicate the level of willingness to “engage” in the program and its content, which will be explored in section 7.3.4.3.

In general, participants reported moderate expectations about the effectiveness of the program ($M = 3.10$, $SD = .97$), although the majority did not believe they needed to ($M = 2.70$, $SD = 1.17$) and did not want to commence the UTL program ($M = 2.90$, $SD = 1.23$). Closer examination of the motives for program enrolment revealed significant differences between participants’ total expectations regarding the effectiveness of the UTL program (UTLEXPECT)⁵, as mandated participants did not expect the program to be effective while voluntary participants reported higher levels of expectations, Mann-Whitney U (1, $N = 132$) $z = -4.10$, $p = .001$. Chi square analysis also revealed that mandated participants reported significantly lower beliefs that they *needed* to enrol in the course, Mann-Whitney U (1, $N = 132$) $z = -3.66$, $p = .000$, as well as lower levels of *wanting* to enrol in the course, Mann-Whitney U (1, $N = 132$) $z = -4.79$, $p = .000$. These results confirm (H₄), and indicate that mandated participants had lower expectations regarding the effectiveness of the UTL program compared to voluntary participants, and reported lower beliefs about their need or willingness to complete the UTL program. Between-groups analysis revealed that mandated participants did not report higher alcohol consumption levels or exhibit a higher number of previous drink driving convictions.

A more in depth examination of the motivations for the voluntary participants revealed that 30 of the 69 (43.5%) participants enrolled in the program primarily to avoid a larger sanction (e.g., licence loss or incarceration) rather than to address possible drinking and drink driving behaviours. Between groups analysis of the two voluntary groups revealed no significant differences on motivations, self-efficacy, or expectations of program success, but similar differences highlighted above were also found between those enrolling to avoid a larger penalty compared to mandatory enrolment. These results indicate that mandated participants had lower expectations regarding the value of the program compared

⁵ Bonferroni type adjustment was made to accommodate for inflated Type I errors.

to voluntarily attendees who either enrolled in the program to: (a) learn how to avoid drink driving, and (b) avoid a larger sanction.

Table 7.6

Reasons for Program Enrolment and Expectations of Program Effectiveness

Time 1	Mandatory	Voluntary
UTLEXPCT	2.76 (<i>SD</i> = .95)**	3.40 (<i>SD</i> = .87)
NEED UTL	2.32 (<i>SD</i> = 1.14)**	3.04 (<i>SD</i> = 1.10)
WANT UTL	2.37 (<i>SD</i> = 1.14)**	3.38 (<i>SD</i> = 1.13)

Note. UTLEXPCT = Expectations of the Under the Limit Program; NEED UTL = do participants need to complete the program; UTL WANT = do participants want to complete the program; ** $p < .001$.

The final pre-program examination focused on motivations to change behaviours and expectations of program effectiveness, which revealed that prior to program commencement, precontemplators for drinking reported lower levels of expectations regarding the effectiveness of the program than actors and contemplators, with the difference between precontemplators and actors proving significant, Mann-Whitney U (1, $n = 112$) $z = -2.55$, $p = .011$. Precontemplators for drinking also reported significantly lower beliefs regarding the need to do the course compared to those in the action stage Mann-Whitney U (1, $n = 112$) $z = -2.88$, $p = .004$. However, no differences were evident between the three groups and their willingness to complete the program, as the majority of participants reported low levels. Similar differences were also found for those in the precontemplation stage for drink driving, as this group reported lower levels of expectations regarding the effectiveness of the program, and need and willingness to complete the intervention. The relationship between stages of change, mandated enrolment and appraisals of program effectiveness will be examined in section 7.3.4.3.

7.3.5 Part B: Program Completion

7.3.5.1 Pre Program Stage Classification

The second section of the study focuses on the effect that completing the UTL program and mandatory vs voluntary enrolment has on participants' motivations, self-efficacy and drinking levels. Of the 132 participants who were interviewed before they commenced the UTL program, 114 (86.4%) successfully completed the program and 18 (13.6%) were breached during the 20-month data collection period. The following section focuses on the successful program participants, as the breached participants were not willing to be interviewed on a second occasion.

Briefly, before commencing the program, 69% ($n = 60$) of the 87 program completers were classified as consuming harmful levels of alcohol. Similar to the larger sample of 132, a considerable proportion of the 87 participants were in the precontemplation stage for drinking (48.3%) and action stage for drink driving prior to program commencement (83.9%). Furthermore, the smallest group was in the contemplation stage for drinking (14.9%) and drink driving (4.6%). Between groups analysis revealed no differences between those interviewed after completing the program and those interviewed only once on pre-program stages of change, self-efficacy levels, nor expectations of UTL effectiveness. However, a smaller percentage of mandated participants were willing to be interviewed at time 2 (e.g., 53% vs 40%).

7.3.5.2 Stages of Change: Time One and Time Two

The impact of the UTL program on alcohol consumption, stages of change and self-efficacy levels are depicted in Table 7.7. Firstly, a significant linear movement through the stages of change was evident for drinking behaviours, as 27 participants moved forward through the stages, 53 remained in the same stage, and 7 regressed, Wilcoxon $T(1, N = 87) = -3.30, p = .001$. The greatest movement was from the precontemplation to the action stage (17.25%, $n = 15$) and contemplation to action (11.5%, $n = 10$). These findings are contrary to previous research (Ferguson, 1997; McCarther, 1997) and (H_5), indicating that the UTL program had a positive impact on participants' motivations to reduce their drinking levels. Participants in the action stage prior to program commencement remained

in the action stage after completing the program (30%), whilst 29% of participants remained in the precontemplation stage.

Secondly, the linear movement was validated by a reduction in self reported alcohol consumption levels from pre to post program completion (pre $M = 11.65$ to post $M = 8.39$), Wilcoxon $T(1, N = 87) = -4.16, p = .000$. Contrary to (H_6), participants reported reducing their drinking behaviours over the course of the UTL program. However, it is noted that the reduction is quite small, and alcohol consumption levels at time 2 ($M = 8.39$) were still considered harmful by the AUDIT. Furthermore, the scale is used primarily as a general screening tool rather than a diagnostic instrument, which may reduce the reliability of such reductions in alcohol consumption levels. Not surprisingly, actors ($M = 7.06$) reported significantly lower levels of alcohol consumption than precontemplators and contemplators combined⁶ ($M = 10.27$), Mann-Whitney $U(1, N = 87) z = -2.67, p = .002$.

Contrary to ($H7$), there was also an unexpected increase in the number of participants who reported actively trying to change their drink driving behaviours after completing the program, Wilcoxon $T(1, N = 87) = -2.13, p = .034$. However, it is noted that this movement consisted of a small number of participants. The largest movement was from the precontemplation stage to the action stage (9.2%, $n = 8$), in addition 4.6% ($n = 4$) contemplators moved to the action stage, 80.5% participants remained in the action stage, with 2 contemplators and one actor regressing to the precontemplation stage.

Examination of the consistency for stages of change at both pre and post program revealed that 61% of participants remained in the same stage for drinking and 83% remained in the same stage for drink driving. A positive outcome of the study was that the action stage was the most common stage for both drinking and drink driving at program completion, which is consistent with the findings of Wells-Parker et al. (2000). Despite the beneficial results, a third of participants were still not willing to change their drinking behaviours at program completion. And for this group of precontemplators, 68% ($n = 20$) were still reporting harmful alcohol consumption levels.

The program appeared to have a mixed effect on the number of participants reporting intentions to drink and drive again. There was a considerable reduction in the

prevalence of participants who were “unsure” about drink driving again (Time 1 = 23 vs Time 2 = 3), although a slight increase in the number of those reporting it “likely” (Time 1 = 4, Time 2 = 7). Chi-square analysis indicated these differences from pre to post intervention were not significant. It is also noted that participants at Time 2 may have felt more comfortable with the researcher to provide accurate responses. Finally, there were no significant changes in reported levels of self-efficacy from pre to post-program for either total score (Time 1 = 37.38 vs Time 2 = 37.76), or for drinking efficacy (Time 1 = 3.99 vs Time 2 = 4.02) and drink driving efficacy (Time 1 = 3.13 vs Time 2 = 3.15), as scores were relatively high at both assessment intervals.

Table 7.7

Changes in Alcohol Consumption, Self-efficacy Levels and Stages of Change from Pre to Post Program

	Time 1	Time 2
AUDIT	$M = 11.65$	$M = 8.39^{**}$
SCD		
Action	36.8% ($n = 32$)	58.6% ($n = 51$)
Contemplation	14.9% ($n = 13$)	8.0% ($n = 7$)
Precontemplation	48.3% ($n = 42$)	33.3% ($n = 29$)
DRDV		
Action	83.9% ($n = 73$)	94.3% ($n = 82$)
Contemplation	4.6% ($n = 4$)	1.1% ($n = 1$)
Precontemplation	11.5% ($n = 10$)	4.6% ($n = 4$)
DDE/3	$M = 36.93$ ($SD = .39$)	$M = 37.75$ ($SD = .20$)
S.E. Drinking	$M = 3.99$ ($SD = .67$)	$M = 4.02$ ($SD = .53$)
S.E. Drink Driving	$M = 3.13$ ($SD = .24$)	$M = 3.15$ ($SD = .19$)

Note. AUDIT = Alcohol Use Disorders Identification Test; SCD = Readiness to Change Drinking Questionnaire; DRDV = Readiness to Change Drink Driving Questionnaire; DDE/3 = Self-efficacy to Change Drinking and Drink Driving; $p < .001^{**}$.

⁶ Precontemplators and Contemplators were combined to increase the cell size.

7.3.5.3 Stages of Change, Reasons for Program Enrolment and Appraisals of Program Effectiveness

The final examination of the impact of the UTL program involves the relationship between motivations to change, reasons for program enrolment and subsequent self-reported appraisals of program effectiveness. In addition to mandated participants reporting lower expectations of the effectiveness of the program (H_4), this group also reported marginally lower levels of appraisal regarding the effectiveness of the program ($M = 3.35$) compared to voluntary participants ($M = 3.70$), Mann-Whitney U (1, $N = 87$) $z = -2.09$, $p = .036$.

While there were less mandated participants willing to be interviewed at Time 2 compared to Time 1, it appears this group had lower expectations before commencing the program and then confirming (H_8), reported lower appraisals of the effectiveness of the program compared to voluntary participants. There were no differences evident between the two groups at program completion on stages of change, alcohol consumption and self-efficacy levels.

Examination of the stages of change and program effectiveness revealed no significant differences for either drinking or drink driving. Firstly, while participants did not report high expectations regarding the effectiveness of the program prior to commencement ($M = 3.13$), participants' (who were interviewed at Time 2) appraisal of the effectiveness of the program increased slightly ($M = 3.51$), Wilcoxon $T(1, N = 87) = -3.77$, $p = .000$. As a result, participants in all three stages of change had a tendency to report - at some level - that the program provided new skills, strategies and knowledge that would assist them in avoiding drink driving in the future.

7.3.5.4 Part C: Stability of Motivations

An additional research question remains regarding the stability of motivations and self-efficacy levels for a group of offenders who display a history of drink driving. Given that repeat offenders usually present with a number of previous convictions, there is a need to investigate the stability of the above reported motivations across time. If these motivations are stable, they should be reflected in self-reported recent drink driving behaviours and future attempts to avoid re-offending.

Prediction of Past Drink Driving Events

Firstly, participants' self-reported frequency of drink driving behaviours in the last six months before their most recent apprehension was cross-tabulated with stages of change for drinking and drink driving and are shown in Table 7.8. In addition, participants' reasons for their most recent offence are also displayed. Once again, given the small sample size, precontemplators and contemplators for the drink driving scale were combined to increase cell frequency.

Firstly, in regards to the frequency of self-reported drink driving behaviours, those in the action stage reported the highest frequency of drink driving in the last 6 months before apprehension. This result suggests that individuals classified in the action stage were not actively attempting to avoid drink driving before their most recent conviction. After collapsing drink driving in the last six months into those who did and those who did not drink and drive to improve cell frequency sizes, Chi Square analysis confirmed that the actors were significantly more likely to report drink driving than contemplators and precontemplators, $\chi^2(1, N = 132) = 5.28, p = .022$. Confirming (H₉), participants' current motivations to avoid drink driving were not reflected in recent drink driving behaviours (e.g., before apprehension), as participants in the action stage for drink driving report the highest levels of offending behaviours.

Secondly, examination of the most common reason provided for participants' recent drink driving offence revealed that the largest group of individuals, who were in the action stage, reported they did not believe they would get caught, rather than an emergency or personal problem. These results once again suggest a more recent move into the action stage, as this group were not actively avoiding the event before their apprehension. Given that a negative relationship does not exist between the action stage for drink driving and self-efficacy levels (highlighted in section 7.3.2), these results suggest that participants in the action stage were not experiencing difficulties controlling their behaviour, but rather were not actively attempting to avoid drink driving.

Interestingly, those in the precontemplation stage for both drinking and drink driving reported the lowest levels of offending behaviours in the last six months which indicates: (a) the offence was genuinely a rare occurrence, or (b) an accurate indication of

their offending behaviours was not reported and/or they were not willing to consider the prevalence of their drink driving. No significant differences were evident between the drinking stages of change and frequency of drink driving in the last six months nor reasons for their most recent drink driving offence. In regards to future drink driving behaviours, the small number of participants who reported intending to re-offend at the completion of the program and the high percentage of individuals assigned to the drink driving action stage precluded meaning analysis regarding possible differences between the groups.

Table 7.8

Stages of Change, Reason and Prevalence of Offending in the Last Six Months

Self-reported data	DRDV			SCD	
	Action (n = 112)	Pre/Con (n = 20)	Action (n = 44)	Con (n = 20)	Pre (n = 68)
Offences in the Last Six Months					
0	28.8%	65%	34.1%	40%	47.1%
1-2	12.5%	10%	18.2%	10%	8.8%
3-5	18.8%	0%	13.6%	30%	10.3%
6-10	15.2%	15%	15.9%	20%	10.3%
>10	25.0%	10%	18.2%	0%	23.5%
Reason for Most Recent Offence					
Emergency	1.8%	5%	4.5%	0%	1.5%
Not Get Caught	33.0%	25%	36.4%	20%	32.4%
Thought Under	25.9%	10%	20.5%	20%	26.5%
Personal Problems	15.2%	30%	20.5%	25%	13.2%
No Reason	24.1%	30%	8.2%	35%	26.5%

Note. Pre/Con = precontemplation and contemplation combined; Con = contemplation; Pre = Precontemplation.

7.3.5.5 *A Note on Non-completers*

It is noteworthy that of the 472 offenders placed on a probation order during the data collection period, almost a quarter (23.5%, $n = 111$) breached their probation order and did not complete the UTL program. In the present study, 18 (13.6%) of the 132 participants did not finish the program due to non-program attendance and further drink driving behaviours. Historically, offenders who do not successfully complete intervention programs (e.g., drop out) have the highest recidivist rates (Nochajski, 1999; Nochajski, Miller, Wieczorek & Whitney, 1993, Peck, 1994; Siskind et al., 2001). While the small sample size and general unwillingness of the breached participants to be interviewed a second time precluded an in depth exploration of the factors associated with non-program completion, a series of post hoc comparisons were implemented to explore possible factors associated with being breached. Between-group analysis for the successful and unsuccessful groups revealed no differences on levels of alcohol consumption, self-efficacy, motivation to change drink driving, reasons for program enrolment or criminal history (traffic and general convictions). There were also no differences between the two groups on expectations of program effectiveness, nor self-reported beliefs regarding their need or willingness (e.g., want) to complete the course.

However, a subtle difference was evident between the two groups on motivation to change drinking, as 15 of the 18 breached were precontemplators (83.3%), whilst 47.8% ($n = 54$) of those who successfully completed the program were precontemplators before program commencement. Chi square analysis was performed for each of the above mentioned variables separately, revealing that breached participants were more likely to be drinking precontemplators before commencing the program, $X^2(1, N = 132) = 8.83$, $p = .012$. While preliminary, this result tentatively supports a small body of research indicating that a lack of motivation to change drinking may be associated with non-program completion (Miller, 1985; Rees, 1985).

7.4 Discussion

Study Two employed the Transtheoretical model of Change (Prochaska & DiClemente, 1984) to explore a group of recidivist drink drivers' readiness to change and ability to control drinking and drink driving behaviour(s), both before and after they completed a rehabilitation program. In addition, the study endeavoured to explore the stability of such motivations over time (e.g., past and future intentions) and identify factors that may be associated with not completing the program and not achieving successful rehabilitative outcomes e.g., new skills and knowledge. The following section reviews the results of these research questions.

7.4.1. Prior to Program Commencement

Similar to previous research that has focused on repeat offenders (Ferguson, 1997; Levy, 1997), the majority of participants did not believe and/or were not willing to decrease their alcohol consumption levels before commencing the UTL program (H_1). In contrast, the majority of participants indicated actively trying to avoid drink driving before program commencement, which was soon after being sanctioned (H_2). These findings suggest that participants are more likely to be willing to change their drink driving, rather than drinking behaviours. The results propose that repeat offenders may be resistant to change drinking behaviours, and being sanctioned and court-ordered to complete a rehabilitation program does not in itself guarantee change. Furthermore, repeat offenders (at some level) may lack insight into the severity of their drinking problems and are known to present with a multitude of defences and general tendencies of denial and/or minimization (Cavaola & Wuth, 2002). From a different perspective, a more accurate description may be that heavy drinkers are not "unmotivated", but rather motivated not to change (Saunders, Wilkinson & Towers, 1996). What is evident is that the results provide an early indication that repeat offenders are less willing to change drinking behaviours compared to first time offenders (Wells-Parker et al., 1998; Wells-Parker et al., 2000), and a considerable proportion may be consuming harmful levels of alcohol when entering rehabilitation programs (Beirness et al., 1997; TIRF, 2003).

The study was one of the first to examine repeat offenders' self-efficacy levels to control drinking and drink driving, and the relationship of this factor with motivations to change. Interestingly, participants reported high self-efficacy levels to control both drinking and drink driving behaviours, indicating that participants believed, or wanted to produce the image, that they could avoid drinking when they needed to drive and refrain from driving when they believed they were over the legal limit. While not discounting the self-reported data, the results may be limited as it is noted that researchers have demonstrated that beliefs can be biased by motivational factors (Ajzen & Sexton, 1999) and individuals display a tendency to be overly optimistic (Buehler, Griffin & Ross, 1994). Additionally, given the high frequency of previous self-reported drink driving behaviours before participants most recent conviction, high levels of confidence to control drinking and avoid drink driving may not be enough to cease offending behaviours (Wells-Parker et al., 2000). Further research is required to validate the veracity of these findings to determine whether this group has an accurate understanding of the influence alcohol has upon their lives and decision making abilities.

An important finding of the research was that participants reported higher efficacy levels to control their drinking, rather than their drink driving behaviour, which suggests that situational/environment factors may play a part in decisions to drink and drive e.g., availability of public transport and drinking location. It is noteworthy that participants with the highest alcohol consumption levels and the lowest self-efficacy levels to control both their drinking and drink driving behaviours (e.g., contemplators), recognised that their drinking was a problem, but were not willing, or perhaps not able, to make immediate changes. The results further indicate that drinking is an entrenched component of some repeat offenders' lifestyles and that additional assistance may be needed for offenders on probation who recognise that their drinking levels have become a problem, but do not currently have the ability to reduce alcohol consumption levels.

7.4.2 Program Completion

In regards to movement through the stages of change as a result of program completion, (H₅) was not supported, as there was significant movement from the lower stages of change to the action stage for motivations to change drinking. The increase in

participants' willingness to change drinking behaviours was also reflected in a moderate reduction in self-reported drinking levels from time one to time two. In contrast to (H₅) and the small amount of previous research on repeat offenders that has highlighted limited change (McCarther, 1997; Ferguson, 1997), it appears that the UTL program had a positive influence on both motivations to change and actual drinking levels in the short term. Although the primary aim of the UTL program is to focus on separating drinking from driving rather than focus heavily on drinking levels, a positive side effect of coming in contact with information regarding safe drinking and drink driving practices may be that participants reduced their weekly alcohol consumption levels over the course of the program. Despite this reduction, it is noted that the majority of participants still consumed harmful levels of alcohol upon program completion, and questions remain about: (a) whether these changes are meaningful and have considerable practical impact, and (b) the stability of this change across longer periods of time.

Another positive outcome of the UTL program was that despite a large percentage of participants being in the action stage for drink driving before commencing the UTL program, there was also a significant, although modest, increase by program completion. This finding led to the rejection of (H₇) as it was predicted that there would be no movement through the stages as a result of pre program assignment to the action stage. The result indicates that the UTL program may have assisted the majority of participants to remain in the action stage of change as well as provide a positive effect for those who did not believe they needed to change their behaviour prior to program commencement. This positive finding was also reflected in the reduction in the number of participants who were "unsure" about intending to re-offend from pre to post program. In summary, the UTL program had a positive impact on both drinking and drink driving behaviours over the data collection period.

The present study initiated a closer examination of participants' motivations to enrol in the program and provided valuable insight into expectations and evaluations regarding the effectiveness of the program. Firstly, the majority of participants did not believe they *needed* to and did not *want* to enrol in the UTL program, which was associated with relatively low expectations regarding the effectiveness of the program. Secondly, drinking

precontemplators reported the lowest expectations and belief regarding the need to complete the program. However, participants presented a generally positive appraisal, which indicates that stages of change prior to program enrolment did not have an effect on subsequent appraisals of the program.

The results have direct implications for both program development and program facilitators. Firstly, attendees may initially have low expectations of the value of the program, and be unwilling to change drinking behaviours, which needs to be accommodated for in early program content. Being sanctioned and court-ordered to complete a drink driving program does not appear to ensure that repeat offenders will recognise a need to change drinking behaviours. Aspects of “consciousness raising” may prove beneficial to facilitate the acknowledgement of the seriousness of their drinking and drink driving behaviours, as well as removing barriers and providing realistic alternatives to such behaviours. Secondly, the findings indicate that programs have the potential to be effective even for participants who initially present with low motivations to change problem behaviours. Difficult and resistant clients have the potential to achieve successful outcomes, which may be dependent upon a number of factors including the program content and the ability of facilitators to “engage” the individual in the intervention. However, it is noted that such a task proves extremely difficult as techniques such as “motivational interviewing” have recently received mixed reviews (Ferguson, 1997; Nochajski & Stasiewicz, 2002). Furthermore, despite the positive results demonstrated from Study Two, questions remain regarding the reliability of the self-reported data and the possibility that participants provided socially desirable answers, which will be addressed in Chapter Nine.

The present study also extended previous Transtheoretical research and examined the effect of reasons for program enrolment (e.g., voluntary vs mandatory) on motivations to change drinking and drink driving behaviours. Rejecting (H₃), mandated participants did not report lower levels of motivation to change drinking and drink driving prior to program commencement. However, it is noted that the majority of voluntary and mandated participants were in the same stages of change (precontemplation stage for drinking and action stage for drink driving), which limits meaningful comparisons between the groups. Despite this, mandated participants reported lower expectations regarding the effectiveness

of the UTL program compared to voluntary participants (H₄) and also reported the lowest beliefs regarding their perceived need, and willingness (e.g., wanting) to complete the program. Following on from this, mandated participants also reported marginally lower appraisals regarding the effectiveness of the program compared to voluntary participants, which confirmed (H₈).

Taken together, the small sample and effect size limit generalisations to the larger population. On the one hand, while the lack of assessment of participants' actual levels of knowledge and skills to avoid drink driving prior to program commencement preclude definitive statements, these preliminary results support the assertion that legal coercion may limit the "therapeutic" effect of treatment (Nochajski et al., 2000; Polcin, 1999; Ward, 1980). Conversely, a positive outcome was that mandated enrolment was not associated with non-program completion or self-reported intentions to re-offend, providing partial support for the predominant policy of court-ordering repeat offenders to complete rehabilitation programs (Sanson-Fisher et al., 1986; Wells-Parker, 1994), as well as offering program enrolment in lieu of increasingly severe penalties. In summary, the findings are inconclusive and future research may benefit from a deeper exploration into mandated participants self-reported feelings towards coerced enrolment (e.g., qualitative methods) and the corresponding affect this approach has on program outcomes.

7.4.3 Stability of Motivations

An exploration of the stability of participants' self-reported motivations to change drink driving behaviours revealed current motivations were not reflected in the frequency of self-reported offending behaviours in the six months prior to participants' most recent apprehension nor participants' reasons for their most recent offence. Individuals in the action stage for drink driving reported the highest frequency of offending behaviours rather than the lowest, which raises concerns regarding the stability of the above reviewed motivations to change and the corresponding intentions to avoid offending behaviours. It is not surprising that the majority of participants report being in the action stage for drink driving after losing their licence and being on probation (Nadeau, 2002; Wells-Parker et al., 1998), but the stability of such motivations over longer periods of time, and when offenders are re-licensed remains unclear. Further research is needed on larger sample sizes to

determine repeat offenders' motivations and actual drink driving behaviours once they are re-licensed (e.g., three wave designs), and what factors are associated with self-reported and official recidivism rates. Despite this, a positive outcome of the current study was that the majority of repeat offenders reported actively avoiding drink driving during the probation and licence disqualification period as well as before and after program completion. A challenge for researchers remains to assess repeat offenders' motivations over an extended period of time after re-licensing, as well as determine the reasons why some offenders continue to remain unwilling to change drinking behaviours.

Finally, an exploratory examination into non-program completion revealed that being "breached" maybe associated with the precontemplation stage for drinking. This preliminary result suggests that being unwilling and resistant to change current drinking behaviours may yet prove to be associated with not completing interventions, and possibly continuing to offend. It was not possible to interview those who breached the program on a second occasion to acquire a more accurate understanding of the individual and environmental circumstances associated with non-program completion. At best the research provides support for future efforts to consider the relationship motivational factors have with "engaging" in programs and successful program completion.

The results indicate that while previous research for first time offenders has demonstrated that alcohol consumption, self-efficacy and motivations to change drink driving are associated with drink driving events (Wells-Parker et al., 2000), motivations to change drinking behaviours appear vital for repeat offenders in the current study. The results do not disregard the importance of motivations and self-efficacy towards drink driving, but rather, willingness to address drinking levels remains at the heart of the drink driving problem. It is important to note that participants continued to report harmful alcohol consumption levels both before and after program completion. The effectiveness of drink driving programs to reduce recidivism rates may prove to be dependent upon the ability to modify participants' drinking behaviours, as well as driving patterns.

Some limitations of the study were identified. The accuracy of the self-reported data remains susceptible to self-reporting bias. In general, researchers have noted that drink driving offenders are unwilling to participate in assessment interviews (Cavaiola & Wuth, 2002), which no doubt results in the accurate measurement of drinking and drink driving

motivations and behaviours difficult to attain. Questions remain regarding the validity and reliability of the DRDV scale and further research is needed to determine the psychometric properties and usefulness of the scale. In addition, the Transtheoretical Model is primarily descriptive in nature and does not explain change, especially in complex diseases. The small sample size limits generalisations and analysis regarding the effect of the program on key outcome measures, and it is difficult to separate the effects of program completion from the application of legal sanctions and a probation order. Furthermore, it is assumed that the process of change is similar for the UTL1 and UTL2 groups, and while between-groups analysis revealed no differences on key program outcomes, subtle differences may exist between the groups. A further threat to internal validity is that reductions in drinking levels may be dependent on changes in life circumstances such as a loss of employment and reduction in disposable income rather than program completion. It is also acknowledged that the generally positive outcomes highlighted in the current study are based upon individuals who successfully completed the program as well as those willing to discuss their experiences with the researcher. Little is known about the sizeable proportion of offenders who were not willing to participate in the study and discuss their drinking and driving motivations at time one ($n = 239$, 64.4%) nor those who were not willing to be interviewed after program completion ($n = 45$). The limitations of the study are further explored in Chapter Nine.

7.5 Summary

In summary, Study Two extended Study One and provided support for the positive effects of a drink driving rehabilitation program on recidivist drink drivers, confirming an effect that has been found in more recent research that has focused on summative outcomes (DeYoung, 1997; Ferguson et al., 2000; Mann et al., 1994; Nickel, 1991; Siskind et al., 2001; Taxman & Piquero, 1998). The study also confirmed that the Transtheoretical model has the potential to be a useful theoretical framework for the development and assessment of drink driving rehabilitative interventions. The markers of change (e.g., motivations) may yet prove to indicate those likely to not complete interventions as well as those intending to re-offend. Taken together, the results signify that the drink driving rehabilitation program in the current study had a positive effect on participants' motivations to change drinking and drink driving as well as actual drinking levels. However, the study also highlighted

that a crucial element of the drink driving problem remains ensuring that repeat offenders recognise their drinking behaviours are a problem as well as developing interventions that facilitate a commitment to change. More recently, drink driving rehabilitation programs are being combined with alcohol ignition interlocks to improve the possibility of producing long-term behavioural change by providing offenders with the opportunity to develop and practice skills and strategies to avoid drink driving while being supervised. The impact of the combined interventions will be addressed in Study Three.

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8.1 Introduction

In addition to combating drink driving through the application of legal sanctions and providing offenders with the opportunity to complete rehabilitation programs, alcohol ignition interlocks have more recently been developed and implemented in a further attempt to reduce re-offending behaviours. Similar to the two former countermeasures, the majority of evaluations have focused on the ability of interlocks to reduce recidivism rates (Beck et al., 1997; EMT, 1990; Jones, 1992; Popkin et al., 1992; Tippetts & Voas, 1998; Voas et al., 1999). As described in Chapter Two, research has demonstrated that interlocks are successful at reducing drink driving offences whilst the interlock remains installed to an offender's vehicle (e.g., 65-95%) (Baker, 1987; Beck et al., 1997; Bjerre, 2002; Morse & Elliot, 1992; Sanderson, 1996; Weinrath, 1997). But upon removal of the device, this reduction in drink driving behaviours appears to disappear, as re-offence rates are comparable between interlock and non-interlock users (Popkin et al., 1992; Tippetts & Voas, 1998; Voas et al., 1999).

Resulting from the majority of research focusing on recidivism rates, it remains unclear why interlocks only appear effective whilst installed to offender's vehicles. Despite approximately 65,000 interlocks currently being used in North America (Rauch et al., 2002), little is known about the impact the device has on key outcomes such as alcohol consumption levels, the acquisition of new skills to avoid drink driving, or intentions to re-offend. Similar to Study One and Two, there is also the need for research initiatives that measure the impact of interlocks from multiple perspectives to gain a greater understanding of the effect that the device has on repeat offenders.

8.1.1 The Impact of Interlocks: Downloaded Recordings

Current knowledge regarding the behavioural effect of interlocks is heavily dependent upon a series of studies in the Alberta trial that have examined downloaded interlock recordings (Beirness, Marques, Voas & Tippetts, 2000; Marques et al., 2000; Marques, Voas, Tippetts & Beirness, 1999; Marques, Tippetts & Voas, 2002; Marques, Voas, Tippetts & Beirness, 2000; Voas, Marques, Tippetts & Beirness, 2000).

In regards to the frequency of interlock usage, Marques, et al. (1999) examined the driving behaviours of 1309 drink drivers (75% first time offenders) and reported that interlocks were used 80% of the days, with 6.5 (+- 3.8) engine starts each day, and on average 12.8 (+-6.5) BAC tests were performed which included rolling re-tests. Interestingly, drivers who had the interlock installed for longer periods of time (\Rightarrow 12 compared to 7 months) recorded a 20% reduction in driving time from the beginning to the end of the interlock trial. More recently, the actual number of breath tests provided during weekend periods has been identified to be lower than during the week-day periods, indicating lower interlock usage during expected “peak” drink driving periods (Marques et al., 2002). However, it is unknown whether this reduction in driving hours results from using other non-interlock vehicles, or a genuine reduction in driving behaviours during the weekend (Marques et al., 2002).

Secondly, investigations into the frequency of breath test failures have revealed a steep initial decline in the number of warnings and failures followed by a smoothing effect (Marques et al., 1999; Marques, Tippetts et al., 2000). The research suggests that as participants gain more experience from using interlocks, drivers learn to accommodate for the requirements of the device, resulting in a significant decline of up to half the total number of failures (Marques, Tippetts et al., 2000). Not surprisingly the highest frequency of start-up warnings and failures have been recorded on Saturday and Sunday mornings with the lowest period being Mondays, Tuesdays and Wednesdays (Marques et al., 1999). The greatest number of failed interlock start-up attempts has been reported to occur between 7am and 8am (e.g., when individuals attempt to start their vehicle in the morning), with a steady rate of failures provided during the middle of the day, and declining in the evenings (Marques et al., 1999).

A number of factors have been identified to predict failed interlock “start up” attempts including: self-reported drinking quantity (number of drinks per day), number of drinking days, participants living alone, more prior drink driving convictions, a longer interlock installation period, expecting the interlock to play a strong role in behaviour change (Marques et al., 1999), and being mandated to install an interlock as a condition of licence reinstatement (Marques, Tippetts et al., 2000). Not surprisingly, higher frequencies of failed start-up attempts has proved to be a significant predictor of

further drink driving offences once the interlock is removed from users' vehicles (Marques Tippetts, et al., 2000; Marques, Voas et al., 2000). A more recent review of the data by Marques et al. (2002) has demonstrated that significant predictors of further offences after interlock removal are: (a) decreases in interlock usage over time, (b) early morning violations, and (c) a higher number of prior drink driving convictions.

8.1.2 Impact of Interlocks: Self-reported Data

In addition to the downloaded interlock recordings, a limited number of published studies have examined participants' self-reported experiences of interlock usage (Baker, 1987; cited in TIRF, 2001; Coxon & Earl, 1998; Morse & Elliott, 1990). Early indications suggest that participants experience relatively minor difficulties operating the device. For example, Morse & Elliott (1990) explored 97 interlock users' experiences over an 18-month period and 90% claimed that they had some operational difficulty starting the device on average about once every two to three weeks. A frequent complaint (30%) was receiving a faulty interlock, 24% experienced problems providing an adequate breath sample and 24% reported the device was sensitive to other substances. However, the majority of these difficulties were overcome with technical adjustments to the device (Morse & Elliott, 1990). It is not known whether such operational difficulties resulted in drivers using the interlock less. Additionally, offenders appear to be the major users of the interlock (Marques et al., 1999), few attempt to circumvent the device (Baker, 1987, cited in TIRF, 2001; Morse & Elliott, 1990), but most believe the device successfully incapacitates users from drink driving (Baker, 1987, cited in TIRF, 2003; Morse & Elliott, 1992). Furthermore, interlock participants have also reported improved awareness about safe drinking levels (Baker, 1987, cited in TIRF, 2001; Coxon & Earl, 1998; Spencer, 2000), but such findings have been dependent upon highly motivated and voluntary participants such as the two Australian interlock trials (Coxon & Earl, 1998; Spencer, 2000).

In relation to changes in actual drink driving behaviours, Morse and Elliott (1990) reported that 82% believed that interlocks helped *prevent* them from drink driving and 68% reported that the device had been effective in *changing* their drinking and driving behaviours. A second study by Baker (1987; cited in TIRF, 2001) examined

15 drivers' interlock users' experiences and also reported that users believed the device assisted them to avoid drink driving. A further reported benefit was that interlocks helped to "remind" users of modifying alcohol consumption levels that subsequently assisted participants to begin planning prior to drinking.

8.1.3 Summary

In summary, the small series of interlock studies that have focused on downloaded recordings and self-reported data have begun to provide valuable insight into interlock usage and factors that influence post-interlock recidivism. The device appears to be used regularly, although usage declines on weekends and over longer installation periods. Failed start-up attempts are at their highest on weekends, and are associated with high self-reported alcohol consumption levels, as well as more prior DUI's, and longer court-ordered interlock installation periods. In addition, higher rates of start-up failures whilst the device is installed have proven to be a valuable predictor of future recidivism once the device is removed.

Following on from these preliminary studies, a deeper exploration is required into the impact of interlocks on the underlying factors associated with drink driving such as alcohol consumption levels and users' willingness to change problem behaviour(s). In addition, research has yet to consider participants' perceptions regarding the value, benefits and effectiveness of interlocks compared to traditional legal sanctions, which may prove vital in improving the extremely low participant rates of current interlock programs. Rather, self-reported data has been limited predominantly to operational factors such as circumvention attempts and difficulties using the device.

There is also a need to compare downloaded interlock recordings with users' self-reported experiences and behaviours to determine if offenders are actually attempting to change entrenched behaviours. Importantly, a primary question remains whether interlocks merely "incapacitate" drivers whilst the interlock is installed (which appears evident based on recidivism rates) or if behavioural change results from users "learning" how to avoid the drink driving sequence through continual operation of the device. An additional question remains whether users "acknowledge" and learn from

breath test violations or if users display a propensity to attribute blame to other causes such as faults with the interlock device e.g., “false positives” (Marques et al., 1999; TIRF, 2001).

Stemming from these broadened research questions, the current study aims to utilise both downloaded and self-report data to examine the impact of court-ordered interlocks on a group of recidivist drink drivers. Firstly, the examination of downloaded interlock recordings provides an opportunity to investigate driving patterns such as the frequency of usage (time and trips), BAC readings, and circumvention attempts. Secondly, the collection and analysis of self-reported data, facilitates the investigation of the effect of interlocks on participants’ drinking as well as general driving behaviours, and perceptions regarding the effectiveness of interlocks as a sentencing option compared to traditional legal sanctions. Thirdly, the comparison of downloaded recordings with self-reported data provides an ideal opportunity to validate and corroborate existing knowledge regarding the effects of interlocks - that is heavily dependent upon downloaded recordings and recidivism rates - providing a closer examination of the factors associated with successful program operation and successful program outcomes.

8.1.4 Research Questions and Hypotheses

Part A: The Combination of Legal Sanctions, a Drink Driving Rehabilitation Program and Alcohol Ignition Interlocks

The Queensland interlock study is one of the first research trials to combine interlocks with legal sanctions and a drink driving rehabilitation program (UTL), in an attempt to enhance the possibility of producing long term behavioural change. As a result, the first aim of the study is to conduct an exploratory analysis to investigate the:

- Combined effect of legal sanctions and the UTL program on participants’ alcohol consumption, self-efficacy and motivation levels to change drinking and drink driving behaviours before interlock installation.

Part B: Downloaded Interlock Data

The second part of the study aims to examine the downloaded interlock recordings, to investigate participants' driving patterns (number of trips & time), the frequency of breath test violations, as well as identify factors associated with such violations e.g., day vs night, week vs weekend. A small set of hypotheses were developed from the Alberta interlock trial that also focused on interlock recordings (Marques et al., 1999):

- It is predicted that there will be a reduction in the frequency of start-up failures over the four month data collection period (H₁).
- It is predicted that the highest frequency of "start-up" failures will be recorded in the mornings, when participants are first attempting to start their vehicles (H₂).
- It is predicted that the highest frequency of recorded "start-up" failures will be on the weekends (e.g., peak drink driving times), with the lowest period during the working week (H₃).

Part C: Self-reported Perceptions of Interlocks

The third part of the study collectively investigates participants' perceptions regarding the benefits of interlocks, the effectiveness of the device in comparison to traditional legal sanctions, and self-reported offending behaviours, such as unlicensed driving (e.g., driving a non-interlock fitted vehicle) and intentions to re-offend. The section focuses on the following research questions:

- What are the self-reported benefits of interlocks?
- Are interlocks perceived as more effective than traditional legal sanctions?
- Do offenders drive non-interlock fitted vehicles?

Part D: Individual Experiences of Interlock Usage

The final section of the study incorporates a longitudinal case study approach and examines each participant's experiences of using interlocks, and the impact of the device on drinking levels and driving behaviours. The study compares downloaded interlock recordings with participants' self-reported responses, with the aim being to

identify the major themes that are associated with successful interlock operation and successful program outcomes e.g., reduction in breath violations during the interlock installation period.

8.2 Method

8.2.1 Participants

The sample consisted of 12 male recidivist drink drivers who were placed on an interlock probation order (UTL2), which involved completing the UTL program during the licence disqualification period (5-18 months) and then installing an interlock once eligible for licence reinstatement. All 12 participants participated in Study One and Two. Eligibility to be included in Study Three was dependent upon both completing the UTL program and installing an interlock within the 24 month data collection period.

During the data collection period, 30 participants were placed on an interlock probation order (UTL2), 12 installed the device, 8 completed the UTL program and were awaiting the end of their licence disqualification period before installing an interlock, another 4 had not commenced the UTL program and the remaining 6 returned to court and had their order amended or revoked.

Of the 12 participants who installed an interlock, 9 operated the interlock for the four-month data collection period, 2 participants had the device removed after one month (one for driving unlicensed during the disqualification period and another for operational difficulties), and another participant had the device removed after 3 months due to the expiration of his probation order.

8.2.2 Materials

8.2.2.1 Deterrence, Drinking, Motivation and Self-efficacy Scales

The DQ scale from Study One and four of the scales from Study Two were utilised in the present study to measure the impact of legal sanctions and the UTL program prior to interlock installation. Similar to Study Two, participants' alcohol consumption levels ([AUDIT]: Saunders et al., 1993), Readiness to Change Drinking ([SCD]: Heather & Rollnick, 1993), Readiness to Change Drink Driving ([DRDV]: Wells-Parker et al., 1998), and Self-efficacy levels to Control Drinking and Drink Driving ([DDE/3]: Wells-Parker et al., 1997) were measured both before and after

completing the UTL. A review of the questionnaires is provided in Study One and Study Two and a copy of the measures presented in Appendix A and D.

8.2.2.2 Interlock Questionnaire

The researcher developed two additional questionnaires. The first aimed to assess participants' expectations of interlock usage prior to installation (INTEREXPECT), and the second measures experiences of interlock usage (INTEREXPER). Both questionnaires have the same content that comprise two sections. The first section focuses on participants' beliefs regarding being able to successfully operate the interlock and the effect the interlock has on drinking and driving behaviours. The second section focuses on perceptions regarding the need and benefits of interlocks, and attitudes regarding the effectiveness of the device compared to traditionally legal sanctions. The scales comprise of 17 questions that require participants to respond on a 5-point likert scale (1 = Strongly Disagree, 3 = Unsure, 5 = Strongly Agree)⁷. The two questionnaires consist of the same format, with a different context used from pre to post intervention. A copy of the two measures is presented in Appendix F.

8.2.2.3 Qualitative Analysis Approach

Open-ended questions were also implemented in the INTEREXPECT and INTEREXPER questionnaires, to supplement, enrich and validate the quantitative data derived from both the likert-scales and downloaded recordings. A predefined set of open-ended questions (that corresponded with the likert-scaled questions) aimed to explore participants' perceptions and experiences of interlocks in a systematic manner. The structured open-ended questions were employed as the researcher had a limited period of time with each participant. An informal conversational approach was utilised with additional probing questions employed to clarify and/or expand on important experiences highlighted by participants during the interviews. A review of the open-

⁷ Likert-scaled questions were employed in the questionnaire as the interlock research team originally anticipated approximately 150 offenders would install the device over the course of the trial, which would facilitate the implementation of quantitative research methods. However, the low participation rates resulted from: (a) offenders being unaware of the interlock option, (b) offenders deeming interlocks undesirable compared to traditional sanctions (e.g., cost of installation), and (c) reluctance of some magistrates to offer interlocks to offenders.

ended questions was undertaken after each data collection phase, although ongoing data analysis revealed no necessary amendments.

A constraint of the data collection approach was that time restrictions with participants and the amount and quality of responses would limit the facilitation of conversational or content analysis, which rely on frequency counts (Patton, 1987). Instead, an inductive “open” coding technique developed by Strauss (1987) was implemented that entails re-reading transcripts, focusing on and coding the “conditions” and “consequences” that emerge from the text (e.g., themes), and developing and revising such codes. The technique is drawn from grounded theory which does not rely on frequency counts of specific words or pre-defined words, but rather facilitates the examination of major themes arising from the experiential data such as participants’ responses (Corbin & Strauss, 1990; Yin, 1993). In essence, the study incorporates an open-ended inquiry method to generate linkages and identify patterns among key variables and outcomes such as the identification of behaviours that are associated with successful interlock usage and successful program outcomes.

Given the inductive nature of the research, coding focused on the spoken word of participants (Jorgensen, 1989; Smith, 2003), as the data and corresponding themes were provided and described by the interlock users. Notes were taken on verbatim statements, as participants’ responses to open-ended questions were jotted down by the researcher during the interview, read back to participants, and then re-written with participants’ necessary amendments included after the completion of the interview. Participants’ relatively brief responses to questions complemented this approach, and making verbal recording of responses (e.g., taping) was not permitted by participants due to the sensitive nature of the data (e.g., reporting on possible offending behaviours), which arguably may have increased the possibility of self-reported biases. The “open” coding technique (Strauss, 1987) entailed repeatedly reading and categorising participants’ responses, focusing on similar experiences and events, which facilitated the development of themes and a coding manual that was employed to analyse the text. The reliability of the coded schemes was addressed by having the transcripts independently coded by a second researcher. After development of the coding manual and analysis of the transcript by the researcher, a second coder, who had an honours

degree in psychology, independently coded the transcripts using the same coding scheme. Minor corrections were then made to the coding scheme and/or the coding of participants⁸. The researcher subsequently reread and recoded the transcripts in order to make the necessary changes that resulted from the coding exercise.

8.2.2.4 Interlock Data Logger

Each interlock device, which is a fuel-cell device, has a data logger that records every engine ignition, breath sample (e.g., BAC reading) and the date, time and length of trips. This logger was utilised in the current study, providing an additional perspective of driving patterns as well as assisting in the identification of possible drinking times and high-risk drink driving periods e.g., failed start-up attempts. The interlock information was downloaded from the logger each month when the device was being serviced at the interlock providers' maintenance station. The source of the BAC samples cannot be identified and it is possible that other family members or participants' friends used the interlock during the probation period. However, breath-test failures in the Queensland interlock study are attributed to participants and result in written warnings and possible re-sentencing at court, which was proposed to reduce the possibility of interlock misuse from others.

8.2.2.5 Conditions of the Interlock Probation Order

The downloaded interlock data was forwarded monthly to participants' probation officer who reviewed the driving patterns. Failed start-up attempts were followed by a written warning for participants to refrain from drinking before driving, as well as inquiry regarding the cause for the offence. The probation order requires participants to have a BAC of 0.00% when operating the vehicle, and the lowest BAC reading displayed by the interlock was 0.008%. An initial BAC of 0.015% or greater resulted in a 5 minute ignition "lock-out" period, a second violation in a 20 minute "lock-out" period, and a high BAC of 0.100% or greater resulting in a one hour "lock-out" period.

⁸ One of the six themes in the coding manual was slightly altered to ensure congruence between the two coders.

The interlock was calibrated to accommodate for low levels of alcohol that may be present in some foods and liquids (e.g., mouthwash), which have previously been suggested to provide “false positives” (Marques et al., 1999). The device incorporated a “suck-blow” anti-circumvention procedure that reduces the chances of un-trained individuals attempting to start participants’ vehicle. Participants were required to provide a breath sample to start the vehicle, provide a random rolling re-test within the first 5 to 15 minutes, and a second random rolling re-test between 15-45 minutes. Participants were issued with a special licence that only allowed them to operate a vehicle fitted with an interlock. Their licensing card was stamped with an “I” to indicate the interlock restriction to licensing authorities and the police.

8.2.3 Procedure

Data were collected through structured interviews on five separate occasions. Interviews were performed at participants’ local Community Corrections Regional Centre both before and after completing the UTL program (DQ, AUDIT, SCD, DRDV, DDE/3), upon interlock installation (AUDIT, INTER EXPECT), then one month and three months after interlock installation⁹ (AUDIT & INTER EXPER). Two participants were not able to be interviewed before commencing the UTL program as they started the program before the researcher could schedule an interview with them. Interviews conducted both pre and post UTL, and before interlock installation and after three months were conducted at participants’ local Community Corrections regional centre after they had met with their probation officer. Only the researcher and the participant were present during the interview. Interviews conducted one month after interlock installation were conducted either at Community Corrections regional centres (n = 9) or via the phone (n = 3). Phone interviews were employed only when it was not possible to conduct face-to-face interviews due to scheduling difficulties.

⁹ Participants were interviewed after one month to explore initial experiences and reactions to interlocks before making comparisons at the third month when the sample had become accustomed to using the device.

8.3 Results

8.3.1 Descriptive Data

Table 8.1 depicts the socio-demographic characteristics of the 12 participants, which are similar to the larger samples presented in Study One and Two. In summary, the majority were employed, on a full-time basis in blue-collar occupations, earning approximately \$12,000 - \$35,000 p.a., with half the sample currently in a relationship. Participants varied in their level of education. Participants in the sample were all male repeat offenders, averaging 39 years of age, who had been convicted of approximately three drink driving offences. The offence histories of the sample are presented in Table 8.2. Licence disqualification periods ranged from 2 to 12 months ($M = 8$), and interlock installation orders varied from 7 to 13 months ($M = 10.75$ months).

Between groups analysis for those who installed interlocks ($n = 12$) and those who had not yet installed the device but participated in Study One and Two ($n = 8$), revealed no differences between the two groups on socio-demographic characteristics, number of drinking driving offences, non-drink driving offences, BAC levels, period of probation, or period of interlock installation. However, those who did not install interlocks during the data collection period received considerably longer periods of licence disqualification (16.19 vs 8.08 mths), which was the primary contributor for these participants being excluded from the current study.

Table 8.1

Demographic Characteristics of the Sample

Age:	$M=39$ ($SD = 10.36$)	Gender:	Male	100% ($n=12$)
			Female	0% ($n = 0$)
Employment Status:		Marital Status:		
Employed	66.7% ($n = 8$)	In relationship	50%	($n = 6$)
Blue collar	62.5% ($n = 5$)	Not in relationship	50%	($n = 6$)
White collar	37.5% ($n = 3$)			
Full-time	87.5% ($n = 7$)	Ethnicity:		
Part-time	12.5% ($n = 1$)	Caucasian	91%	($n = 11$)
Unemployed	33.3% ($n = 4$)	Aboriginal/Torres	9%	($n = 1$)
Level of Education:		Income:		
Primary	25.0% ($n = 3$)	Less than \$12,000	8.3 %	($n = 1$)
Junior (Grade 10)	41.7% ($n = 5$)	\$12,001 – \$20,000	25.0%	($n = 3$)
Senior (Grade 12)	16.7% ($n = 2$)	\$20,001 – \$35,000	33.3%	($n = 4$)
TAFE/Tech college	16.7% ($n = 2$)	\$35,001 – \$50,000	33.3%	($n = 4$)
University	0.0% ($n = 0$)	More than \$50,000	0.0%	($n = 0$)

Table 8.2

Official Offending History

Official offending record	Mean	SD	Range
BAC (g/100ml)	.152	.05	.05 - .27
Number of Drink Driving Offences	3.08	1.00	2 - 5
Period of Licence Disqualification	8.08 mths	3.12	2-12 mths
Interlock Installation	10.75 mths	1.66	7-13 mths
Period of Probation	21.17 mths	3.95	12-24 mths
Amount of Payment	\$500	0.00	0.00
Total amount of Incurred Licence Loss	36.75 mths	25.90	114-111 mths
Total amount of Fines	\$2133	802	\$1000-\$36000
General Convictions	n	%	
No Other Traffic or Criminal Offences	0	0.0	
Traffic Offences Only	6	50	
Criminal Offences	6	50	

8.3.2 Part A: The Effects of Legal Sanctions and the UTL Program Prior to Interlock Installation

Participants completed a licence disqualification period and the UTL program before installing an interlock. As highlighted above, 10 of the 12 participants who installed an interlock were interviewed before commencing the UTL program and all 12 were interviewed upon program completion. Table 8.3 depicts participants' alcohol consumption levels, readiness to change drinking and drink driving, and self-efficacy levels both before and after completing the UTL program. Given the small sample size, participants are numbered in the following review to identify individual scores and facilitate a closer examination of the impact of the combined interventions in proceeding sections.

In regards to legal sanctions, similar to Study One, participants were interviewed soon after being sanctioned and reported that the licence disqualification period had a considerable impact on their lives, and there were no reported intentions of driving unlicensed or drink driving in the future. Once again, there was no relationship between perceptual severity and length of licence loss, and probation was reported to have a minimal impact on participants' lives. Similar to Study Two, the majority of participants were in the action stage for drink driving both before and after completing the UTL program, and reported higher self-efficacy levels to control drinking and drink driving at both assessment intervals. Furthermore, participants were once again unsure regarding the effectiveness of the program but 10 of the 12 reported a positive appraisal upon program completion, as the sample believed the program provided them with new skills and strategies to avoid drink driving. However, it is noted that two participants did not report the program to be effective (participant 3 & 4).

By program completion, 8 of the 12 participants reported being motivated to change their drinking behaviours, resulting in assignment to the action stage. However, completion of the UTL program did not produce a considerable effect on those consuming harmful levels, as seven participants were drinking heavily before UTL commencement and six were still drinking heavily upon completion (e.g., AUDIT score \Rightarrow 8). Finally, one participant reported that they would most likely drink and drive again after completing the program (participant 3) and another participant was

unsure (participant 4). Overall, the results suggest that the majority of the sample believe they benefited from completing the UTL program prior to installing an interlock as they reported increasing their knowledge and skills to avoid further offences, as well as increasing motivations to change harmful drinking behaviours and avoid drink driving. Nevertheless, half the sample continued to consume harmful levels of alcohol.

Table 8.3

The Impact of the UTL Program

Scales	Time 1		Time 2	
SCD				
Action	40%	(n = 4)	33.3%	(n = 4)
Contemplation	10%	(n = 1)	0.00%	(n = 0)
Precontemplation	50%	(n = 5)	66.7%	(n = 8)
DRDV				
Action	90%	(n = 9)	91.7%	(n = 11)
Contemplation	10%	(n = 1)	8.3%	(n = 1)
Precontemplation	0%	(n = 0)	0.0%	(n = 0)
AUDIT	M = 10.93		M = 9.27	
DDE/3	M = 37.50		M = 38.92	

Note. AUDIT = Alcohol Use Disorders Identification Test, SCD = Readiness to Change Drinking Questionnaire; DRDV = Readiness to Change Drink Driving Questionnaire; DDE/3 = Self-efficacy to Change Drinking and Drink Driving.

8.3.3 Part B: Downloaded Interlock Data

The interlock data logger measured the frequency and duration of participants' driving behaviours. Similar to previous research (Marques et al., 1999; Voas, Marques et al., 2000) the data were aggregated at the individual level to examine the relationship between participants' characteristics and key factors such as driving behaviours, frequency of "start-up" failures and drinking behaviours.

Table 8.4 depicts the frequency of vehicle usage, the number of engine starts and re-tests, the total number of "start-up" and "rolling-re-test" failures over the first four months. The downloaded interlock data indicates that the vehicles were used over 80%

of the days, with 4.85 trips (e.g., engine starts) each day, 2.93 rolling re-tests each day, and 1.49 re-tests per trip. Participants drove their vehicles on average three times more often during the week than on weekends (e.g., total driving time in hrs) and twelve times more often during the day than at night. There are a number of possible explanations for these findings. Firstly, it is possible that participants drove a non-interlock fitted vehicle during “peak” drink driving periods such as on weekends. Secondly, the need to drive at night or on weekends may be considerably reduced, as participants are possibly passengers in other vehicles during these times or participants do not need to travel. Thirdly, heavy alcohol consumption during these periods may have resulted in natural reductions in driving behaviours (Marques et al., 2002). These possibilities will be explored further through the self-reported data in section 8.3.4.

Participants recorded a higher level of incorrect breath samples during the first month, and while there are no comparison studies, it appears that the sample experienced initial difficulties with the “suck-blow” anti-circumvention technique of the interlock. These operational difficulties appeared to diminish over the four-month period. However, one participant who recorded 360 incorrect breath samples in the first month heavily skewed the results and was omitted from the mean analysis (participant 3). There were 53 “start-up” breath test failures over the four-month installation period (total cumulative usage by participants = 41 months), and 11 re-test failures. All 12 participants recorded a “start-up” failure at some time during the four-month period, which signifies an attempt to drive after drinking. The average BAC reading for breath-test failures was 0.022%, ranging from 0.016% to 0.166%, and the rolling re-test average was 0.020%, ranging from 0.016% to 0.026%. Five participants failed to provide a rolling re-test on 10 occasions in the first month, 2 participants 12 times in the second month and 2 participants on 2 occasions in the third month. Failure to provide a rolling-re-test resulted in the device needing to be recalibrated within five days at a cost of \$71.50 paid by the participant, which most likely facilitated the reduction in the frequency of failures over the four-month period. A closer examination between length of interlock usage and number and type of failures is provided in section 8.3.4. The interlock usage of participants in the current study is comparable to larger interlock trials. For example, Marques et al. (1999) examined the driving behaviours of 1309

drink driving offenders in the Alberta interlock study and reported participants used the device 80% of the days, with 6.5 engine starts and one rolling-retest per day, and approximately 12 hours of driving time per week.

Table 8.4

Downloaded Interlock Recordings

Downloaded recordings	Month 1 (<i>n</i> = 12)	Month 2 (<i>n</i> = 11)	Month 3 (<i>n</i> = 10)	Month 4 (<i>n</i> = 8)
Vehicle Usage:				
Usage per day	80%	84%	83%	85%
Total Tests (per day)	7.64	7.50	7.70	7.90
Trips (per day)	4.77	4.53	4.72	5.10
Re-tests (per day)	2.88	2.97	2.98	2.88
Re-tests (per trip)	.65	.40	2.5	2.42
Time (hrs per week)	10.69	10.62	13.14	13.53
Time (day time per week)	8.73	8.90	11.43	11.88
Time (night time per week)	1.96	1.72	1.71	1.64
Time (week-day per week)	8.19	7.99	8.84	10.23
Time (week-end per week)	2.50	2.63	4.30	3.30
Incorrect Samples:				
Trips	1.62	.32	.10	.07
Total Tests	94.09	44.10	25.10	19.50
Failures:				
Start-up Failures (total)	17	19	12	5
Start-up (BAC)	.033	.031	.036	.051
Re-test Failures	6	4	1	0
Re-test (BAC)	.021	.026	.016	0.00
Re-tests not provided	10	12	2	0.00

8.3.3.1 Frequency of Failures Over the Four Month Period

Examination of the frequency of breath test failures over the four-month period revealed a considerable reduction from the first to the fourth month. The results confirm (H₁) and supports previous research that has demonstrated a general decline in breath violations (Marques et al., 1999). There were 17 “start-up” breath test failures over the first month provided by 8 participants, 19 by 6 participants in the second month, 12 by 5 in the third month, and 5 by 2 participants in the fourth month. However, examination

of breath test failures at the individual level revealed that a smaller group of heavy drinkers emerged, as 3 participants accounted for 36 “start-up” failures and 8 “rolling re-test” failures over a cumulative period of 8 months (participant 3, 6, & 8). Individual interlock usage and driving behaviours will be explored in section 8.3.4.

8.3.3.2 Frequency of Failures: Day vs Night

As highlighted in section 8.3.3, the frequency and time of interlock usage was much greater during the day than at night. This driving pattern was also reflected in the frequency of “start-up” failures by time of day. Daytime was defined as between 5am and 7pm, and night as 7:01pm to 4:59am. There were 42 “start-up” failures during the day and 12 at night, 10 re-test failures during the day and 1 at night, and 18 re-test breath samples not provided during the day and 6 at night. These findings are in contrast to Marques et al. (1999) who reported failures were highest late on Saturday and Sunday nights and early in the mornings, which actually represented 65% of tests taken.

A more refined examination of the frequency of breath test failures by the hour of the day is depicted in Figure 8.1. Analysis revealed that the highest failure times were around lunchtime (e.g., 13:00), and during the mid-to-late afternoon (14:00 to 17:00). In contrast to (H₂) and the findings of Marques et al. (1999), the highest breath violations were not in the early mornings when vehicles were being first started (e.g., 7 a.m. and 8 a.m.), but rather in the middle of the day. These results indicate that participants consumed alcohol during the day and possibly during or at the completion of work.

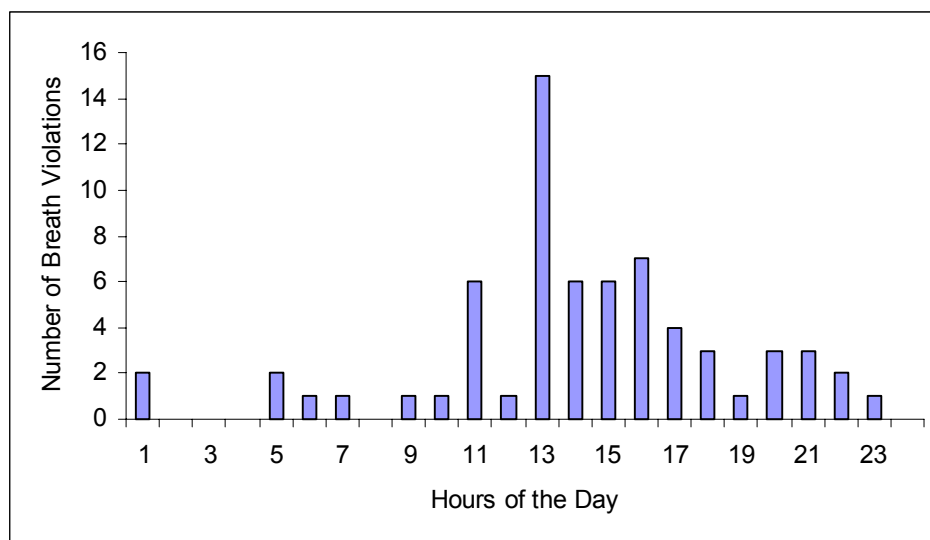


Figure 8.1

Breath-test Violations by Hour of Day

8.3.3.3 Frequency of Failures: Week vs Weekend

In addition to the examination of breath-test failures by time of day, an investigation was undertaken into the frequency of failures by week vs weekend. Rejecting (H_3), the results indicate that 2.5 times as many failures were recorded during the week than on weekends. These results are once again in contrast to the findings of Marques et al. (1999) who reported the highest incidence of failures on Saturdays and Sundays. Taken together, the findings of the above section indicate that participants used the interlock-fitted vehicle mostly during weekdays, which contributed to the highest frequency of violations during this time period.

8.3.4 Part C: Self-reported Perceptions of Interlocks

Participants were interviewed both before and after interlock installation to investigate perceptions regarding the need, benefits and effectiveness of the device compared to traditional legal sanctions. Participants responded to structured likert-scaled questions before answering open-ended questions. The responses to the open-ended questions complemented the quantitative responses, which remain the focus of the following section.

Firstly, the majority of the sample recognised the value of interlocks as a sentencing option. 10 of the 12 participants believed there was a need for interlocks: “*It’s definitely a good idea, there are a lot of drink drivers out there*” (participant 4: third interview), and “*Oh yeah, I think they need them, I don’t think what is currently happening is working*” (participant 2: third interview). However, one participant did not believe there was a need: “*they are pointless, a waste of time*” (participant 3), and one participant was unsure (participant 6). These beliefs did not change during interlock usage, and not surprisingly, positive appraisals were matched with successful interlock usage, which will also be explored further in the case study approach.

In regards to comparisons to traditional legal sanctions, 11 of the 12 participants believed interlocks to be more effective and beneficial, both before interlock installation and while using the device. Two major themes emerged from the qualitative data regarding the benefits of interlocks, which are depicted in Table 8.5. The first theme to emerge was that participants believed they were able to avoid a larger punishment, which was considered extremely desirable as well as more effective. Accepting the interlock option usually resulted in a reduction in participants’ licence disqualification periods (although marginal), which was considered favourable compared to traditional sentencing options. This theme was termed “Punishment Minimisation” and was reported to have both personal and practical results. Firstly, participants expressed pleasure at avoiding a larger sanction “*It’s good. I thought I was going to lose my licence forever, and what good would that do?*” (participant 5: third interview). The sample reported that continually incurring punishment was not an effective method of producing behavioural change (see the associated quote for this theme in Table 8.5). As a result, any reduction in the period of licence disqualification and monetary fine was perceived as desirable and beneficial.

Secondly, there appears to be practical advantages of reducing periods of licence loss as participants were provided with the opportunity to continue employment or search for employment: “*I got my licence back earlier, which means I can now look for a job*” (participant 7: third interview). There also appeared to be a beneficial effect on unlicensed driving as none of the 12 participants reported driving without a licence: “*at least I won’t have to drive unlicensed*” (participant 4: third interview). These findings

provide an early indication that incentives to increase interlock participation rates may benefit from incorporating and highlighting the personal and practical advantages of installation.

The second theme to emerge after one and four months of interlock operation consisted of an educational context, as participants believed that interlocks provided the opportunity to learn how to avoid drink driving. For instance, *“It’s been pretty good, I sort of now know when I can and can’t have a drink”* (participant 4: fourth interview). In addition, 9 of the 12 interlock users reported becoming better at avoiding drink driving over the four month period, which was reported to be an advantage of interlock usage: *“I’ve got smarter, I have a better idea of what to do”* (participant 2: fourth interview). This assertion is reflected in the general reduction in the number of breath test failures recorded by interlocks, highlighted in Table 8.4. However, closer examination revealed considerable differences in participants’ drinking levels and driving behaviours, which will be explored further in section 8.3.4.

Table 8.5

Benefits of Interlock Usage

Theme	Example
Punishment Minimisation	<p><i>“Yeah, I’m sick of being punished. It does little for you. It’s not like I suddenly woke up and changed because of it”</i> (participant 4: third interview)</p> <p><i>“I’ve been able to keep my job. It’s better than just being slugged with a penalty”</i> (participant 1: third interview).</p>
Educational Aspect	<p><i>“I’ve learnt a lot. It’s a good educational tool for conditioning you not to drive with alcohol in your system. It’s in the back of your mind”</i> (participant 2: fourth interview).</p> <p><i>“I think the interlock has changed me in some ways. I’m better at knowing when to stop drinking”</i> (participant 8: fourth interview).</p>

Finally, in regards to general self-reported driving behaviours, the sample did not report driving a non-interlock fitted vehicle, which would have been deemed “unlicensed driving” in the current trial. This finding is in accordance with previous research that has demonstrated that circumvention attempts are relatively low (Baker, 1997, cited in TIRF, 2001; Morse & Elliot, 1990; Voas et al., 2000). However, as highlighted previously, a considerable reduction in vehicle usage and the number of breath-test violations was evident over the weekend, which raises the issue of participants using another vehicle at “peak” drink driving periods. Finally, a positive program outcome was that the sample did not report intending to drink and drive after the fourth month of interlock usage: *“I won’t drink and drive again after going through what I have gone through, this is definitely changed me”* (participant 6: fifth interview).

8.3.5 Part D: Individual Examination of Interlock Experiences

The small sample size in the current study facilitated the examination of participants downloaded and self-reported data at an individual level. The above collective review of the two data sets indicates emerging differences between participants on key program outcomes such as the frequency of breath violations. Table 8.6 depicts a time-ordered matrix of participants’ downloaded interlock recordings, highlighting the number of trips per day, hours of driving and the frequency of breath violations per month (“start-ups” and “rolling re-tests” combined), the average BAC reading, the number of re-tests not provided and the number of incorrect breath samples. In addition, Table 8.7 depicts a time-ordered matrix of participants’ self-reported experiences of interlock usage and highlights participants’ motivation and drinking levels before and after UTL completion, expectations and intentions at interlock installation, and then participants’ operational experiences and appraisals of interlocks.

Table 8.6

Time-ordered Individual Downloaded Interlock Recordings

ID #	MONTH ONE						MONTH TWO						MONTH THREE						MONTH FOUR					
	Trips per day	Breath Failures	Average BAC	In-correct Samples	Time (hrs)	Breath Test Not Given	Trips per day	Breath Failures	Average BAC	In-correct Samples	Time (hrs)	Breath Test Not Given	Trips per day	Breath Failures	Average BAC	In-correct Samples	Time (hrs)	Breath Test Not Given	Trips per day	Breath Failures	Average BAC	In-correct Samples	Time (hrs)	Breath Test Not Given
1	6.33	1	.021	117	49.43	2	3.8	2	.042	9	44.63	0	5.43	1	.041	1	60.33	1	5.20	0	.000	1	69.66	0
2	2.33	1	.025	9	5.25	0	1.30	0	.000	6	5.31	0	2.86	0	.00	7	12.45	0	2.46	0	.000	7	12.40	0
3	2.50	6	.061	360	9.40	3	1	0	.000	45	1.42	11	-	-	-	-	-	-	-	-	-	-	-	-
4	3.86	1	.018	38	37.65	3	3.50	0	.000	6	33.92	1	1.40	0	.000	26	16.98	0	3.16	0	.000	17	24.16	0
5	2.90	2	.078	74	18.25	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	5.40	9	.026	193	48.70	0	6.86	11	.024	52	60.36	0	5.00	6	.025	39	52.16	0	-	-	-	-	-	-
7	6.83	1	.020	73	64.98	0	5.56	1	.036	51	68.66	0	6.20	0	.000	40	58.26	0	6.53	0	.000	25	59.93	0
8	6.23	0	.000	142	55.30	0	7.00	3	.022	180	60.20	0	6.06	5	.031	67	63.53	1	6.60	4	.053	27	59.80	0
9	6.26	1	.022	39	84.48	1	4.63	1	.015	22	46.66	0	4.00	0	.000	4	106.86	0	5.00	0	.000	10	80.33	0
10	3.33	0	.000	120	29.33	0	3.4	0	.000	56	21.33	0	3.36	1	.034	17	39	0	3.93	0	.000	14	36.83	0
11	7.56	1	.015	109	48.50	1	8.66	0	.000	54	73.46	0	8.20	0	.000	40	60.98	0	8.53	0	.000	35	60.85	0
12	6.26	0	.000	121	61.82	0	5.06	3	.074	5	48.33	0	5.66	0	.000	10	55.06	0	6.00	1	.050	9	55.23	0

Table 8.7

Time-ordered Individual Self-reported Interlock Experiences

ID #	TIME ONE			TIME TWO			TIME THREE: INSTALLATION		TIME FOUR: ONE MONTH		TIME FIVE: FOUR MONTHS	
	Audit	SCD	DRDV	Audit	SCD	DRDV	Alcohol Consumption	Interlock Operation	Alcohol Consumption	Interlock Operation	Alcohol Consumption	Interlock Operation
1	1	Act.	Act.	7	Act.	Act.	* AUDIT = 9 * Plans to reduce alcohol	*Positive Expectations *Confident to operate * Unsure if drive less	* AUDIT = 9 * Reduction in alcohol * “false positives” * <i>“I’m not drinking and driving”</i>	* Mixed Appraisal *Unsure of Confidence * Hassle to operate * Drive less	* AUDIT = 12 * Reduction in alcohol * “false positives” * <i>“registers when I haven’t been drinking”</i>	* Mixed Appraisal * Confident to operate * Hassle to operate * Does not drive less
2	16	Con.	Act.	14	Act.	Act.	* AUDIT = 7 * Plans to reduce alcohol	*Positive Expectations * Confident to operate * Expect to drive less	* AUDIT = 11 * No reduction in alcohol * no “false positives”	* Positive Appraisal * Confident to operate * Not a hassle to operate * Drive less	* AUDIT = 10 * Reduction in alcohol * No “false positives” * <i>“It’s helped me drink less”</i>	* Positive Appraisal * Confident to operate * Not a hassle to operate * Drive less
3	28	Pre.	Act.	15	Pre.	Con.	* AUDIT = 20 * No reduction in alcohol	*Negative Expectation * Not confident to use * Expect to drive less	* AUDIT = 15 * No reduction in alcohol * “False positives”	* Negative Appraisal * Not confident to operate/Hassle * Drive less * <i>“I hardly drive it”</i>	-	-
4	8	Pre.	Act.	14	Pre.	Act.	* AUDIT = 9 * Plans to reduce alcohol	*Positive Expectations * Confident to operate * Will not drive less	* AUDIT= 5 * Reduction in alcohol * “false positives”	* Positive Appraisal * Confident to operate * Does not drive less * Not a hassle * <i>“I still drive the same amount”</i>	* AUDIT = 8 * No reduction in alcohol consumption * “false positives”	* Positive Appraisal * Confident to operate * Not a hassle to operate * <i>“in all it’s been a good experience”</i>

	TIME ONE			TIME TWO			TIME THREE: INSTALLATION		TIME FOUR: ONE MONTH		TIME FIVE: FOUR MONTHS	
ID #	Audit	SCD	DRDV	Audit	SCD	DRDV	Alcohol Consumption	Interlock Operation	Alcohol Consumption	Interlock Operation	Alcohol Consumption	Interlock Operation
5	14	Pre.	Act.	9	Pre.	Act.	* AUDIT = 9 * Unsure whether will drink less	* Positive expectations * Confident to operate * Will not drive less	* AUDIT = 12 * Reduction in alcohol * no "false positives"	* Positive Appraisal * Confident to operate * Hassle to operate * Drive less * "it's tough to use"	-	-
6	16	Pre.	Act.	7	Act.	Act.	* AUDIT = 9 * No reduction in alcohol	* Positive expectations * Confident to operate * Will not drive less	* AUDIT = 10 * No reduction in alcohol * "false positives"	* Negative Appraisal * Confident to operate * Hassle to operate * Drive less * "I'm too stressed to drive my car"	* AUDIT = 13 * Reduction in alcohol * "false positives"	* Negative appraisal * Not confident to operation/Hassle * "It's been like a nightmare, the hassle of it all"
7	1	Pre.	Act.	1	Act.	Act.	* AUDIT = 2 * No reduction in alcohol	* Positive expectations * Confident to operate * Will not drive less	* AUDIT = 3 * No reduction in alcohol * "false positive"	* Positive Appraisal * Confident to use * Not a hassle * Does not drive less * "it's generally been a positive experience"	* AUDIT = 2 * No reduction in alcohol * "false positives"	* Positive appraisal * Confident to operate * Not a hassle * Does not drive less
8	10	Act.	Act.	5	Act.	Act.	* AUDIT = 8 * No reduction in alcohol	* Positive expectations * Confident to operate * Will not drive less	* AUDIT = 6 * Reduction in alcohol * No "false positives" * "you can't have a couple in the pub anymore"	* Mixed Appraisal * Confident to operate * Unsure of hassle to operate * Drive less	* AUDIT = 8 * Reduction in alcohol * No "false positives" * "I've tried to drink less, it's not easy."	* Positive appraisal * Confident to operate * A hassle to operate * Drive less * "I can handle it but it's tough to use"

ID #	TIME ONE			TIME TWO			TIME THREE: INSTALLATION		TIME FOUR: ONE MONTH		TIME FIVE: FOUR MONTHS	
	Audit	SCD	DRDV	Audit	SCD	DRDV	Alcohol Consumption	Interlock Operation	Alcohol Consumption	Interlock Operation	Alcohol Consumption	Interlock Operation
9	9	Pre.	Act.	10	Pre.	Act.	* AUDIT = 9 * No reduction in alcohol	* Positive expectations * Confident to operate * Will not drive less	* AUDIT = 10 * No reduction in alcohol * "false positives"	* Mixed Appraisal * Not confident to operate/ Hassle * Does not drive less <i>"it's a pain, not even my father can use it"</i>	* AUDIT = 9 * No reduction in alcohol * No "false positives" <i>"my drinking remains the same"</i>	* Mixed appraisal * Not confident to operate/ Hassle * Drives less <i>"I only drive when I have to"</i>
10	11	Act.	Act.	15	Act.	Act.	* AUDIT = 15 * no reduction in alcohol * <i>"I don't think I will need to change"</i>	* Positive expectations * Confident to operate * Will drive less	* AUDIT = 12 * No reduction in alcohol * No "false positives" * <i>I haven't needed to drink less"</i>	* Positive Appraisal * Confident to operate * Not a hassle * Does not drive less * <i>"it's been fairly good, all in all"</i>	* AUDIT = 4 * Reduction in alcohol * No "false positives" * <i>"I've started to cut back on my drinking"</i>	* Positive appraisal * Confident to operate * Hassle to operate * Drives less * <i>"driving is now just functional"</i>
11				3	Act.	Act.	* AUDIT = 2 * <i>no reduction in alcohol</i> * <i>"I don't drink much, so it shouldn't matter"</i>	* Positive expectations * Confident to operate * Will not drive less	* AUDIT = 5 * Reduction in alcohol * No "false positives" * <i>"it's been fairly good"</i>	* Positive Appraisal * Confident to operate * Not a hassle * Does not drive less	* AUDIT = 6 * Reduction in alcohol * No "false positives"	* Positive appraisal * Confident to operate * Does not drive less * <i>"I can't complain, its been pretty good"</i>
12				5	Act.	Act.	* AUDIT = 5 * No reduction in alcohol *	* Positive expectations * Confident to operate * Will not drive less	* AUDIT = 5 * No reduction in alcohol * No "false positives"	* Positive Appraisal * Confident to operate * Not a hassle * Does not drive less	* AUDIT = 9 * Reduction in alcohol * No "false positives" * <i>"I drink less now during the week."</i>	* Positive appraisal * Confident to operate * Not a hassle * Does not drive less

Note. AUDIT = Alcohol Use Disorders Identification Test; SCD = Readiness to Change Drinking Questionnaire; DRDV = Readiness to Change Drink Driving Questionnaire.

8.3.6 Positive Interlock Experiences and Successful Outcomes

Taken together, there was considerable variability in participants' experiences of operating the interlock, and the impact the device had on both drinking levels and driving behaviours. A complete review of each participant's self-reported experiences of using the interlock and the corresponding downloaded interlock recordings (e.g., number of breaches and driving patterns) is provided in Appendix G. In summary, 8 of the 12 participants reported positive interlock experiences, characterized by frequent interlock usage (participants 2, 4, 5, 7, 8, 10, 11, 12), although there was substantial differences in the level of incorrect breath samples provided, as well as the quantity of alcohol consumed and willingness to reduce drinking behaviours over the four month period. In contrast, two participants reported extremely negative appraisals of interlocks (participant 3 & 6), were not willing to reduce very heavy alcohol consumption levels, and recorded the highest number of breath violations. A further two participants reported mixed experiences as they were confident to use the interlock but were not willing to reduce heavy alcohol consumption levels and indicated that the device was a "*hassle*" to operate (participant 1 & 9).

Examination of the downloaded interlock recordings with participants' self-reported experiences facilitated the emergence of a number of themes associated with positive interlock experiences and attaining successful outcomes, such as avoiding starting one's vehicle after consuming alcohol. Table 8.8 outlines four major themes related to positive interlock experiences and successful interlock outcomes. Each theme is expanded and discussed in the following section.

Table 8.8

Themes Associated with Interlock Operation and Successful Outcomes

Themes	Examples
Incorrect Breath Samples	<p><i>“I couldn’t get the thing to work. I’d suck then blow, suck then blow and I couldn’t get it to work. It’s been terrible. As a result I had heaps of violations”</i> (participant 3: fifth interview).</p> <p><i>“It took me awhile to get used to it, it was frustrating, you know....I had some problems but I’m OK now. I got used to it”</i> (participant 11: fifth interview).</p>
Unwillingness to Reduce Alcohol Levels	<p><i>“I don’t drink less, why should I? It’s not my drinking that is the problem. That’s fine”</i> (participant 3: fourth interview).</p> <p><i>“I don’t care, my drinking is fine. It’s the interlock that is the problem”</i> (participant 6: third interview).</p>
False Positives	<p><i>“Yes, I’ve had some breaches when I wasn’t drinking. Not immediately before anyway. The night before.... but not before I got in the car”</i> (participant 6: fifth interview).</p> <p><i>“It’s locked me out when I wasn’t drinking. Perhaps my cigarette set it off....but I wasn’t drinking before I got in my car”</i> (participant 4: fourth interview).</p>
Reduction in BAC Failures	<p><i>“Despite the difficulties using the darn thing, I got better at avoiding drinking before I drive....I guess I had to, what’s the alternative?”</i> (participant 7: fifth interview).</p> <p><i>“I just realised that I can’t drink much during the week.....when I need to drive. I’ve cut back and it seems to be working. I know when I can and can’t have a beer”</i> (participant 1: fifth interview).</p>

8.3.6.1 Operating the Interlock: Adequate Breath Samples

Similar to previous research (Morse & Elliott, 1990), participants varied considerably in their ability to provide adequate breath samples when operating the interlock. Specifically, the anti-circumvention “suck-blow” technique designed to reduce the possibility of other “non-impaired” drivers starting the vehicle for an intoxicated participant, proved difficult for 6 of the 12 participants in the first month. Not surprisingly, participants who reported interlock usage to be a “hassle” were more likely to record higher levels of incorrect breath samples. For example, participant six who recorded 193 incorrect breath samples in the first month reported: *“It’s been trouble, a real hassle, I’ve had trouble getting it to work”*. In

addition, participants who experienced operational difficulties were more likely to report only using the interlock when they needed to drive: *“I just go to and from work, I don’t drive unless it is unavoidable”* (participant 1: interview three).

A number of important findings are related to this theme. Firstly, despite the self-reported difficulties experienced by half the sample to provide adequate breath specimens in the first month, this did not result in fewer trips or driving hours compared to those reporting few operational difficulties (43 vs 41 hrs, respectively). The result indicates that participants’ *need* to drive continued to outweigh negative experiences associated with operating the device. Secondly, a considerable reduction is evident in the number of incorrect breath samples provided over the four-month data collection period, indicating participants became more proficient with interlock usage through experience. However, it is noted that the two participants who recorded the highest number of incorrect samples had the interlock removed from their vehicles before the fourth month. In summary, the results signify that some participants may experience preliminary difficulties operating the device, which may affect initial appraisals of the device, but not necessarily the frequency of operation.

8.3.6.2 Operating the Interlock: Unwillingness to Reduce Alcohol Levels

A second factor that emerged regarding successful interlock operation - specifically being locked out of one’s vehicle after providing breath violations - was being willing to reduce alcohol consumption levels. Although participants completed a drink driving rehabilitation program that promotes controlled drinking, three quarters (8) of the sample were not planning to reduce their alcohol consumption levels upon interlock installation:

“I don’t think I need to drink less, I’ll be able to operate the interlock without too many problems” (participant 6: third interview). Furthermore, 8 of the 12 participants were consuming harmful levels of alcohol upon interlock installation (e.g., AUDIT score of ≥ 8). After one month of interlock operation only five participants reported attempting to drink less, with three of these five participants not drinking heavily. Importantly, the majority of heavy alcohol users did not reduce their alcohol consumption levels after the first month, and together recorded the highest frequency of breath violations.

The results suggest that heavy alcohol consumption levels combined with an unwillingness to change drinking behaviours increase the likelihood of breath test violations. Closer examination of the pattern of violations indicated that those who registered the highest number of breath test failures also reported the highest alcohol consumption levels (participants: 1, 3, 6). For example, participant one (who reported attempting to reduce his alcohol consumption levels) was still drinking quite heavily after four months of interlock usage (e.g., AUDIT = 12). Participant three reported an extremely negative experience of interlocks, had the device removed after one month, and recorded alcohol levels in excess of markers that indicate alcohol dependence (AUDIT = 15). Participant six also reported an extremely negative interlock experience, did not report drinking less, and by the fourth month recorded alcohol consumption levels equivalent to dependence (AUDIT = 13).

These results are similar to previous research and indicate heavy alcohol consumption levels are associated with a higher frequency of breath-test failures (Marques et al., 1999; Marques, Tippetts et al., 2000; Marques, Voas et al., 2000). While it is not surprising that participants who consumed the most alcohol also recorded the highest frequency of breath test failures, it is notable that this group's extremely negative experiences of interlock operation did not facilitate the reduction of alcohol consumption. Rather, participants reported driving less or had the interlock removed prematurely (participant 3 & 6).

8.3.6.3 Successful Interlock Outcomes: False Positives

A third theme to emerge, that relates to attaining successful interlock outcomes such as avoiding drink driving, was the discrepancy between the downloaded interlock recordings and self-reported data regarding the cause of breath test violations. Counter to expectations, the triangulation of downloaded interlock and self-reported data (e.g., quantitative and qualitative) did not support similar outcomes, as participants attributed a number of breath test violations to "false positives". For example, all 12 participants registered a breath test violation during their interlock usage, and half the sample (6) attributed violations to "reading errors" with the device. Reasons for such errors included: "*smoking set it off*" (participant 5: fourth interview), "*I brushed my teeth in the morning and I couldn't start it*"

(participant 1: fourth interview) and “*I had KFC and it locked me out*” (participant 6: fourth interview). Of note was the strength of participants’ denial of drinking before attempting to drive, and their general resistance to engage in discussions regarding the possibility of making judgement errors.

While it is acknowledged that many products contain alcohol in small dosages (e.g., mouth wash, certain foods), it is unlikely that such substances would exceed the 0.015% BAC breath violation limit that accommodates for such minor dosages. In addition, the interlocks were serviced, checked and recalibrated every month, resulting in a reduction in the possibility of machine error. An alternative hypothesis is that participants were attempting to start their vehicle with “un-metabolised” alcohol in their bodies (Marques et al., 1999; TIRF, 2001). It was proposed that the UTL program (which incorporates a lesson on interlock usage) would provide participants with adequate knowledge regarding appropriate drinking behaviours during the interlock trial. But rather, the high alcohol consumption levels of some participants suggest that residual levels of alcohol were present during attempts to start vehicles. This finding was also evident in the Alberta interlock trial, as the highest rate of failed start-up attempts were on Saturday and Sunday mornings (Marques et al., 1999).

The results indicate that some participants: (a) are not aware of safe drinking levels before using a vehicle, and/or (b) are not willingness to recognise when they have consumed an inappropriate level of alcohol and have made an error in judgement. Firstly, the possibility remains that some participants do not have appropriate knowledge regarding safe drinking levels, or are not willing or able to implement safe drinking practices. Despite the high self-efficacy scores reported during the UTL program, the elevated alcohol consumption levels of some participants suggest alcohol dependency. Secondly, an unwillingness to recognise and acknowledge attempts to drink and drive remains a concern, as it is hoped that interlocks provide users with immediate feedback regarding their intoxication levels, which serves to help participants make better decisions regarding when they should not attempt to drive (Popkin et al., 1992). Despite the negative finding, it is noted that the effectiveness of interlocks in stopping drink driving while the device is installed is clearly evident, with every registered breath-test failure signifying an event where an offender was not able to drive on a public road after they had been

drinking: “*at least it stops you drink driving, that’s one positive*” (participant 2: fifth interview).

8.3.6.4 *Successful Outcomes: Reduction in BAC Failures*

The fourth theme to emerge from the downloaded and self-report data is the general reduction in the frequency of breath-test violations over the four month period, as seven of the nine participants who used an interlock for four months demonstrated a reduction in the number of breath test violations. This theme also emerged as a primary advantage of interlock usage compared to traditional sanctions, which was highlighted in section 8.3.2. From a behavioural change perspective, the results are promising as these early findings suggest that participants became more successful at avoiding drink driving over time, without having to actually drive less. The results also support recent research that has also demonstrated a general reduction in the number of breath violations over the course of the interlock study (Marques et al., 1999; Marques, Tippetts et al., 2000). The reduction in breath violations appears to be associated with a general decline in alcohol consumption levels during “peak” driving periods “*I don’t really drink that much during the week now, well at least when I have to drive*” (participant 9: fifth interview), and “*Now I only really get on the booze on the weekend, when I know I don’t need to drive the car, or if a mate can pick me up*” (participant 2: fifth interview). These results begin to clarify the discrepancy between week vs weekend driving highlighted in section 8.3.2., as participants choose not to drive during these periods. By the fourth month, seven of the ten participants reported drinking less, and only two of the nine participants using interlocks in the fourth month recorded a breath test violation.

Despite this positive reduction in breath violations, it is acknowledged that such changes were small. Six participants only recorded one violation during the first month, and the two participants with the highest number of violations (3 & 6) were excluded from the analysis as they did not have an interlock installed in the fourth month. Furthermore, it is noted that six participants were still consuming harmful levels of alcohol after the fourth month. Taken together, positive outcomes were associated with reductions in difficulties operating the interlock and registered

breath violations, but concerns remain regarding willingness to reduce alcohol consumption and recognition of inappropriate drinking behaviours.

8.4 Discussion

Study Three examined a group of recidivist drink drivers' perceptions and experiences of installing and operating an alcohol ignition interlock, after completing a licence disqualification period and a drink driving rehabilitation program. The aim of the study was to investigate the effect of interlocks on key program outcomes such as alcohol consumption levels, attempts to drink and drive (e.g., breath test violations) and general driving patterns. An exploration of individual experiences and attitudes of the device was proposed to elucidate whether the device "teaches" participants to avoid the drinking and driving sequence, or merely incapacitates users whilst installed to vehicles. The following section reviews this question in regards to the findings of the current study.

8.4.1 Part A: Combining Legal Sanctions, a Rehabilitation Program and Interlocks

The first research question focused on whether the application of legal sanctions and completing a drink driving program had a beneficial effect on participants before interlock installation. In general, the combination of the two countermeasures proved to have a positive effect as participants reported being deterred from drink driving soon after the sanctioning process and increased motivations to reduce their drinking levels, as three quarters of the sample were in the action stage upon program completion. However, a notable finding is that despite the increases in motivation levels, completion of the UTL program did not produce a considerable effect on a group of heavy alcohol users ($n = 6$), as they continued to consume harmful levels of alcohol. By this early stage, there was an indication that some participants were resistant to changing their drinking behaviours, which continued to emerge during interlock installation. The small sample size and lack of a comparison group preclude firm statements and conclusions regarding the efficacy of the combined approach in reducing recidivism rates. Further controlled experimental designs such as the research initiatives in the Alberta province are required to determine the value of combined interventions.

8.4.2 Part B: Downloaded Interlock Recordings

The second part of the study focused on the downloaded interlock recordings to determine the frequency of interlock usage (e.g., number of trips & time), as well as the occurrence of breath test violations and the factors associated with such breaches e.g., day vs night, week vs weekend. Firstly, participants frequently used their vehicle, as the device was operated regularly with 10 hours driving recorded per week. However, participants were more likely to operate their vehicle during the week than on the weekend, as well as during the day rather than at night. These findings reflect a tendency of participants to use their vehicle primarily for “functional” purposes such as to travel to and from work and to avoid driving during peak drinking times. Similar to Study Two, the results indicate that participants were more willing to change their driving than their drinking behaviours (Wells-Parker et al., 1998; Wells-Parker et al., 2000). Further research with larger populations that incorporate self-reported data is needed to determine the influences of vehicle usage, especially at “high-risk” drink driving times.

A noteworthy finding was that all twelve participants recorded a “start-up” failure over the four-month interlock period, indicating that they attempted to start their vehicle after drinking alcohol. A smaller group of heavy drinkers emerged as three participants accounted for 36 “start-up” and 8 “rolling re-test” failures over a cumulative period of 8 months. The “rolling re-test” failures are of particular concern as the data indicates a person who had not been drinking started the vehicle, while a drinking driver provided a rolling retest. These results suggest three possibilities: (a) a sober person started the vehicle for the interlock participant who had been drinking, and/or (b) the interlock participant was literally drinking after they started their vehicle, and/or (c) the interlock recorded a “false positive”. While participants strongly denied drinking, the implications of this finding will be discussed with the emergence of the major themes.

Confirming (H₁), there was a reduction in the frequency of start-up failures provided by participants over the four-month data collection period. The findings provide an early indication that participants “learnt” new skills such as how to avoid drink driving. However, the value of the interlock as an incapacitatory tool is also clearly evident upon review of the downloaded interlock recordings (e.g., vehicle lock-outs), especially during the first month of installation. In contrast to (H₂), the highest frequency of breath violations was presented during the week, rather than on weekends. In addition, (H₃) was not confirmed as the highest frequency of “start-up” failures was during the mid afternoon, rather than in the early morning. Once again, the finding supports the self-reported data that indicates the sample of repeat offenders consumed alcohol regularly (e.g., AUDIT score), and often during the day, despite having to operate their vehicle. This area of research would benefit from a deeper exploration into the self-reported “causes” of individual breath violations, and whether interlock users recognise the need to eliminate alcohol when they are operating a vehicle. The limited time spent with each participant and the strong denial regarding inappropriate drinking behaviours (for half the sample) limited a deeper investigation into the factors associated with breath violations.

8.4.3 Part C: Self-reported Perceptions of Interlocks

Part Three of the study aimed to investigate participants’ expectations of interlock usage, as well as perceptions regarding the need, benefits and effectiveness

of the device compared to traditional legal sanctions. Overall, there was general consensus for the need for interlocks as a sentencing option, and as a preventive tool to reduce drink driving. In regards to comparisons to traditional legal sanctions, there was a common belief that interlocks are more effective than traditional legal sanctions, even despite the operational difficulties experienced by participants. Examination of the quantitative self-reported data revealed these perceptions did not change markedly over the course of the data collection period. These findings have implications for increasing participation rates in interlocks trials, as emphasising punishment minimisation and the educational benefits to prospective users may prove beneficial. Interlock participation rates have been notoriously low (Marques et al., 1999), and future research initiatives are needed to determine what aspects of interlocks are appealing to drink driving offenders, and what needs to be incorporated within programs to ensure participation.

8.4.4 Part D: Individual Examination of Interlock Experiences

The fourth section of the study incorporated aspects of a case study approach and examined the self-reported and downloaded interlock data of the 12 participants, focusing on the experiences of interlock usage and the emerging themes associated with successful usage and outcomes. In summary, there was considerable variability in participants' experiences of operating the interlock, the impact the device had on driving levels, as well as drinking behaviours both before and during interlock installation. Closer examination of participants' individual interlock experiences revealed key themes associated with successful and unsuccessful interlock operation.

Firstly, half the sample reported the device to be a hassle after the first month as users experienced difficulties with the "suck-blow" anti-circumvention technique, which diminished with time. Despite the operational difficulties, the downloaded interlock recordings indicated that the majority of participants continued to use their vehicles regularly, with no apparent differences in driving time between those who did and did not report operation problems. As highlighted above, these results suggest that users may need to be aware of initial operational difficulties or adjustments that need to be made in the first months of usage, and receive appropriate support during this time period. A positive outcome was that initial operational difficulties did not result in prolonged reductions in interlock usage.

A second theme to emerge was that the majority of participants were initially unwilling to reduce their alcohol consumption levels before installing an interlock, and a smaller group of heavy drinkers did not reduce their drinking behaviours while using the device despite being repeatedly locked out of their vehicle i.e, breath violations. The results suggest that heavy alcohol consumption levels combined with an unwillingness to change drinking behaviours increases the likelihood of breath test violations. Subsequently it proves difficult to frequently operate a vehicle fitted with an interlock whilst consuming large quantities of alcohol on a regular basis.

Of concern is that some repeat offenders' drinking levels appear extremely entrenched and are resistant to change despite experiencing the negative consequences associated with breath violations. That is, they continued to drink heavily despite being sanctioned for a drinking related offence, completing a drink driving program, installing an interlock and being regularly locked out of their vehicle, which resulted in written warnings from their probation officer. Taken together, the results support Study Two and suggest that some repeat offenders' drinking levels are resistant to change. In addition, the relatively high frequency of breath test failures casts doubt on participants' reported high self-efficacy levels to control drink driving, provided before and after completing the UTL program.

The results of the current study provide some insight into why interlocks are only effective whilst installed to offenders' vehicles. The high alcohol consumption levels of some participants suggest alcohol misuse or dependence issues, as well as indicating that drinking levels remain resistant to multiple interventions. This finding has direct implications for program developers, facilitators and probation officers who need to be aware of some offenders' unwillingness to change drinking behaviours and the corresponding effect this attitude has on interlock performance. Interlock users may benefit from supervision as well as focused efforts to address drinking levels before interlock installation and during initial periods of operation. In addition, a high number of breath test violations during early interlock usage may prove to effectively identify individuals who should be directed towards additional interventions e.g., alcohol counselling. These recommendations will be discussed further in Chapter Nine.

Similarly, the third theme to emerge from the individual examination of interlock experiences was that half the sample were not willing to accept that they had been drinking alcohol before attempting to start their vehicle, and claimed the device recorded “false-positives”. While it remains possible that “machine error” may occur in some instances, the high levels of alcohol consumption combined with regular interlock usage suggests an alternative hypothesis that participants were attempting to start their vehicle with un-metabolised alcohol still present. It may be more than a coincidence that the frequency of “false positives” declined with reductions in alcohol consumption levels over the four-month period. Of concern is that after four months, four participants were still claiming “false positives”, with three of the four participants still drinking heavily. The results support the assertion that some offenders are not aware of the severity of their drinking behaviours and/or may not be willing to be truthful regarding their drinking behaviours (Cavaiola & Wuth, 2002). If individuals do not acknowledge inappropriate drinking levels during interlock usage, then achieving successful behavioural change once the device is removed from vehicles appears unlikely.

Once again, the results indicate that additional services that focus on appropriate drinking levels during interlock usage (and possible alcohol counselling for dependent individuals) may prove a fruitful avenue for further interlock trials. While program resources will always regulate the level of interlock support, the findings of the present study suggest addressing heavy alcohol consumption levels is essential to achieve successful interlock outcomes.

On a positive note, the fourth theme to emerge from the case study approach was the general reduction in breath test violations over the four-month period, which corresponds with previous research (Marques et al., 1999; Marques, Tippetts et al., 2000). The reduction in the frequency of breath violations may prove to be associated with: (a) the corresponding self-reported reductions in drinking levels for half the sample, or (b) changes in driving patterns such as abstaining from using the vehicle after drinking. Firstly, seven of the nine participants in the fourth month reported reducing their drinking behaviours. However, closer examination revealed that reductions in drinking were slight, and approximately half the sample continued to consume harmful levels of alcohol. Conversely, examination of the self-reported data indicates the sample avoided driving during periods that have traditionally been

considered as “peak” drinking periods such as on weekends. This second premise is also reflected in the low driving times during the weekend. At best, further research that incorporates individual reviews of driving patterns and subsequent interviews with participants that probe violations and possible changes in driving patterns would prove fruitful in determining whether behavioural changes result from interlock usage.

Some limitations of the study were identified. Firstly, while the case study approach employed in the current research facilitates generalisations to theory, rather than the population (Yin, 1993), the small sample size limits comparisons to larger interlock trials. Future research initiatives that incorporate self-reported and downloaded interlock recordings would benefit from considerably larger sample sizes. Once again, the validity of the self-report data remains uncertain, especially when the acknowledgement of drinking before attempting to start a vehicle could result in sanctions such as “written warnings”. A positive side-effect of the discrepancies between the downloaded and self-reported data is that a new line of investigation may have been highlighted, as future research could benefit from closely examining the differences between the two data sources. In addition, the utilisation of such discrepancies may prove fruitful when attempting to increase offenders’ awareness regarding the effect of their drinking patterns e.g., consciousness raising.

Participants completed a drink driving rehabilitation program before interlock installation, and any positive outcomes of the interlock program may reflect this combined intervention rather than purely interlock usage, which again limits generalisations. Furthermore, space constraints did not allow for the combination of variable-oriented and case-oriented strategies such as in depth comparisons of each case before investigating the effect on each salient variable or outcome, which would have strengthened the research findings (Miles & Huberman, 1994).

Finally, it may have been desirable to continue the implementation of a behavioural change framework such as the Transtheoretical Model of Change (Prochaska & DiClemente, 1984) from the UTL program to interlock installation, but this was not possible as participants were unwilling to complete the same scales on a number of occasions. A further attempt to interview participants for a sixth

time (after they were re-licensed) and examine stages of change proved unsuccessful as participants could not be contacted. Despite this, the collection of both the quantitative and qualitative data appear to indicate mixed motivations regarding reducing drinking levels, and in light of the frequency of breath-test violations, call into question participants' motivations and self-efficacy levels to change and control drink driving behaviours. Further research is required to examine the relationship between repeat offenders' motivations and their actual drinking and drink driving behaviours.

8.5 Summary

Taken together, the results of Study Three provide valuable insight into the impact interlocks have on repeat offenders. The study focused on the downloaded and self-reported interlock data and over the four-month data collection period, participants regularly used the device, recorded a reduction in operational difficulties and the frequency of breath test failures, but not necessarily drinking behaviours. In regards to one of the primary research questions, it appears that interlocks both "incapacitate" drivers from offending, and at some level for some individuals, produce changes in drinking and driving behaviours. On the one hand interlocks were effective in stopping drink driving recidivism, specifically 53 times. Conversely, there were early indications that some participants changed drinking as well as driving behaviours, although concerns remain regarding the veracity of such self-reported claims. In summary, the study has provided direction for further research that may combine both downloaded interlock recordings with self-reported data to explore the relationship between offender incapacitation, and true behavioural change.

The following chapter provides a review of the three studies, highlighting and integrating the major findings of the research program. The chapter considers the primary research questions regarding the impact of the countermeasures on key outcomes for a group of repeat offenders such as drinking levels and intentions to re-offend. The discussion considers the contribution of the research findings to the management of repeat offenders as well as upcoming Australian interlock programs and further attempts to produce long-term change among habitual offenders. The strengths and weaknesses of the research program are presented, and suggestions made for the direction of future research.

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9.1 Introduction

The primary aim of the research program was to examine the self-reported impact of current drink driving countermeasures on a group of recidivist offenders. Three studies were implemented to investigate the effects of legal sanctions, a drink driving rehabilitation program and alcohol ignition interlocks, focusing on participants' experiences, perceptions and self-reported changes that result from completing such countermeasures. Prior to this research program, there have been very few documented attempts to investigate the self-reported effect of major countermeasures on repeat offenders. Given the sustained road trauma that repeat offenders inflict on general motorist and the public (Beirness et al., 1997; Brewer et al., 1994), a greater understanding of the effectiveness of countermeasures to reduce recidivism remains an important priority for legislators, licensing authorities and researchers. Furthermore, considering the impending implementation of alcohol ignition interlocks in a number of Australian states (Queensland, New South Wales, Victoria, South Australia and Western Australia), there is a need to identify essential components of successful interlock trials that facilitate lasting attitudinal and behavioural change.

In this chapter, the major empirical findings from the program of research are reviewed and interpreted in terms of the theoretical contribution towards understanding behavioural change for repeat offenders, as well as practical implications for the development and implementation of effective countermeasures to combat re-offending behaviours. In addition, the methodological strengths and limitations of the research program are identified, and direction provided for future research.

9.2 Overview of the Studies, Methodology and Key Findings

The research program focused predominately on the self-reported data provided by participants, while also utilising official traffic histories and downloaded interlock recordings. The study employed cross-sectional and longitudinal designs to investigate participants' perceptions and experiences of contact with the countermeasures. Study One examined participants' experiences and perceptions of legal and a select group of non-legal sanctions soon after being convicted of a drink driving offence. Study Two incorporated a repeated measures

design, investigating the effect of a drink driving rehabilitation program on behaviours, motivations and self-efficacy levels. The third study also utilised a repeated measures design, with participants being interviewed on five separate occasions to determine the impact of interlocks on key program outcomes. Study Three was an extension of Study One and Two, as participants were sanctioned and completed a drink driving rehabilitation program (UTL) before installing an interlock to their vehicle for a time designated by the courts. The research program formed part of a larger study to examine the combined effect that interlock installation with legal sanctions and a drink driving rehabilitation program has on recidivism rates. As a result, different combinations of data sets were utilised to investigate research questions and hypotheses across the three studies.

9.2.1 The Impact of Sanctions

Study One provided evidence that repeat offenders' perceive sanctions to be severe, but not entirely certain nor swift. Although perceptual severity was not identified as a predictor of drink driving in the current model, a negative relationship was evident between severity and intentions to re-offend, which supports previous research proposing severe drink driving sanctions reduce offence rates (Sadler, Perrine & Peck, 1991; Siskind, 1996; Vingilis et al., 1990). However, there were greater levels of variability regarding the certainty and swiftness of sanctions, and neither were directly associated with intentions to re-offend.

Despite the considerable impact of sanctions, a key finding was that approximately a quarter of the sample did not confirm that they would avoid drink driving again in the future. That is, being recently sanctioned and placed on a probation order did not ensure sufficient levels of deterrence for a quarter of the sample. While the primary aim of the research program was not to evaluate the effectiveness of countermeasures such as legal sanctions - as this pursuit would have required control groups- the findings provide support for the theory that sanctions are not extremely effective in producing long-term behavioural change among repeat offenders (Beirness et al., 1997; Marques et al., 1998). Taken together, the results indicate that purely punishing repeat offenders may not ensure long-term behavioural change, and importantly, that a group of offenders exist who are immune or impervious to the threat of legal sanctions.

A second noteworthy finding was that the size of the sanctions did not have a clear relationship with self-reported perceptions for this group, as correlations were not evident between: (a) the size of the penalties and perceptions of severity or future intentions to drink and drive, and (b) the number of previous convictions and self-reported deterrence. Taken together, the results support the theory that perceptions and evaluations are extremely subjective (Andenaes, 1974; Homel, 1988; Teevan, 1976; Tittle, 1980; Von Hirsch et al., 1999), and at best, it appears that perceptual deterrence is not heavily dependent upon the intensity or frequency of the application of legal sanctions for this sub-group. Importantly, the results also present evidence that some repeat offenders are not heavily influenced by the threat or application of severe legal sanctions (Beirness et al., 1997; Biecheler-Fretel & Peytavin, 2002; Hedlund & McCartt, 2002; Marques et al., 1998; Nadeau, 2002; Yu, 2000), and/or that the conditions necessary to deter this population are not being achieved.

Not surprisingly, a considerable proportion of the sample reported drink driving frequently over their lifetime, as well as in the last six months before their most recent apprehension. This finding confirms a central premise of the research project, which is that recidivism rates may not be an accurate indicator of the effectiveness of countermeasures as the chances of being apprehended remains relatively low. In fact, regularly drink driving in the last six months before participants' most recent conviction was the best predictor of future intentions to drink and drive. At one level, these results confirm the previous assumption that repeat offenders are immune or resistant to the threat of legal sanctions (Beirness et al., 1997; Biecheler-Fretel & Peytavin, 2002; Hedlund & McCartt, 2002; Marques et al., 1998; Nadeau, 2002; Yu, 2000), and highlight that offenders' drink driving behaviours are highly entrenched. However, the findings also indicate that continually offending while avoiding punishment may be a powerful moderator of behaviour, which has recently been proposed to be more influential than punishment itself (Piquero & Paternoster, 1998; Piquero & Pogarsky, 2002).

Another key finding was that the study confirmed the popular assumption that repeat offenders consume harmful levels of alcohol (Bergman, Hubicka, & Laurell, 2002; MacDonald & Dooley, 1993; Michiels et al., 2002; TIRF, 2003; Wiliszowski et al., 1996; Wilson, 1992), which also proved to be a significant

predictor of intentions to drink and drive in the future (Baum, 1999; Brown, 1998; Yu, 2000). A strength of the current study was that the impact of alcohol consumption on the deterrent effect of legal and non-legal sanctions could be clearly viewed. Firstly, the results offer support for the proposition that high alcohol consumption levels negate the influence of legal sanctions (Yu, 2000). Secondly, the study demonstrated that behaviours, rather than perceptions, were the best predictors of future intentions to drink and drive. The findings provide support for the theory that past behaviour predicts future behaviour (Ajzen, 2002) and that habitual behaviours are difficult to change.

The study also conducted an exploratory investigation into the deterrent influence of three non-legal sanctions (e.g., social, internal & physical loss) on drink driving behaviours. At the bivariate level, social, internal and physical loss were all negatively associated with intentions to re-offend. However, closer examination of the results provides support for the assertion that social sanctions may diminish after a number of convictions (Dana, 2001; Nagin & Paternoster, 1991a; Nagin & Pograsky, 2001), and that social sanctions may not produce a heavy influence on some drink driving populations (Piquero & Paternoster, 1998; Piquero & Pogarsky, 2002; Smith, 2003).

One possible reason for the failure of social sanctions to provide a deterrent impact is that informal sanctions may be developmental and age specific (Piquero & Pogarsky, 2002). That is, peer approval or disapproval may be most salient during adolescent development, as teenagers are concerned about peer attitudes. Given that the mean age in the current sample was 37, older participants may be less concerned about what their friends think and believe about their drink driving behaviour(s). In fact, the findings tentatively provide support for the theory of a “beer culture” (MacDonald & Dooley, 1993; Mookherjee, 1984) and indicate that the social network of offenders may yet be found to negate the deterrent threat from formal sanctions (Ahlin et al., 2002; Berger & Snortum, 1986; Homel, 1988; Nagin & Paternoster, 1991; Tittle, 1980; Von Hirsch, 1999). It remains possible this group may be immersed within an environment where heavy alcohol consumption and driving after drinking are both accepted and rewarded.

In contrast, nearly half the sample reported feeling guilty after drink driving, even when they were offending whilst avoiding apprehension. Secondly, half the

sample recognised that drink driving was a risk to their health, and were concerned about being injured as a result of the offence. Whilst neither factors proved a significant predictor of future intentions to drink and drive, it appears that some offenders do consider the offence inappropriate and recognise the safety concerns associated with the act. A challenge for researchers and policy makers is to magnify these levels of concern through media campaigns and interventions to the point where they actively influence drink driving decisions.

A final significant finding to emerge from Study One was that the two models of deterrence were not tremendously efficient in predicting offenders' future drinking driving behaviours. This assertion is not new as a number of researchers have reviewed the deterrence theory as problematic (Gibbs, 1975; Zimring & Hawkins, 1973), and a plethora of individual and environmental factors have been proposed to influence decisions to drink and drive (Mullahy & Sindelar, 1994; Thurman, Jackson & Zhao, 1993).

It is also recognised that deterrence theory assumes that individuals are rational, make rational choices, are responsive to the threat of adverse consequences and are able to learn from experiences (Smith, 2003). Given that a considerable proportion of the current sample reported intending to re-offend, the results support – at some level – the assertion that repeat offenders are less rational and spend less time reflecting on the consequences of penalties (Smith, 2003; Weinrath & Gartell, 2001). As a result, a number of alternative theories may prove effective in understanding and dealing with habitual offenders such as theories of deviance (Sherman, 1993; Smith, 2003; Vingilis, 1987; Wilson, 1996), Problem Behaviour Theory (Jessor & Jessor, 1977), as well as Social Cognitive Theory (Bandura, 1977) that considers the close association between the environment and subsequent behaviours.

If the principles of deterrence are to remain a driving force in the reduction of re-offending, the challenge for researchers and policy makers is to develop sentencing strategies and police enforcement practices that increase perceptions of severity and certainty. However, it is noted that the un-wavering faith in the principles of deterrence should not blind policy makers to the need for a variety of countermeasures to deal effectively with the problem of drink driving (Babor et al., 2003), which was the focus of Study Two and Three.

9.2.2 The Impact of a Drink Driving Rehabilitation Program

In general, Study Two provided a positive perspective of the capacity of a drink driving rehabilitation program to produce change on a group of repeat offenders. Similar to the small amount of research in this area, the majority of participants reported harmful alcohol consumption levels (McCarther, 1998; Wiliszowski et al., 1996; Yu, 2000) but were not motivated to change their drinking behaviours prior to program commencement (Ferguson, 1997; Levy, 1997). In contrast, participants indicated actively trying to avoid drink driving soon after being sanctioned, highlighting that participants were more willing to change their drink driving than their drinking behaviours.

Contrary to predictions and previous research (Ferguson, 1997; McCarther, 1997), the UTL program had a positive (although small) effect on self-reported motivations to change drinking, drink driving and actual alcohol consumption levels. That is, reductions were evident in participants' self-reported alcohol consumption levels after completing the program and a greater proportion reported being motivated to actively try to reduce their drinking and drink driving behaviours. Despite this positive effect, it is noted that the majority of participants still consumed harmful levels of alcohol upon program completion, a considerable proportion were still unwilling to change drinking behaviours, and questions remain about the stability of drinking reductions across longer periods of time.

An important finding was that participants reported higher levels of self-efficacy to control their drinking rather than drink driving behaviour(s), which indicates that situational and/or environment factors may play a part in decisions to drink and drive. It is also noteworthy that participants who reported the highest alcohol consumption levels and the lowest self-efficacy levels to control both their drinking and drink driving behaviours, recognised that their drinking was a problem, but were not willing, or perhaps not able, to make immediate changes to their drinking behaviours (e.g., contemplators). These findings are important for drink driving and addictions research, as it indicates some drink driving offenders have the desire, but not the skills to create such change. Additional services such as alcohol treatment/counselling may be needed for individuals who consume high quantities of alcohol, which will be discussed in section 9.4.2.

The study extended the Transtheoretical model of Change (Prochaska & DiClemente, 1984) to examine the impact of mandatory enrolment on motivations to change as well as successful program outcomes. Contrary to predictions, mandated participants did not report lower levels of motivations to change drinking and drink driving compared to voluntary participants. However, it is noted the majority of voluntary and mandated participants were in the same stages of change (precontemplation stage for drinking and action stage for drink driving), which limits comparisons between the groups. A noteworthy finding of the study was that mandated participants reported significantly lower levels of expectations regarding the effectiveness of the program, as well as lower beliefs regarding their *need* as well as *wanting* to complete the program.

On the one hand, the results support previous concerns that mandated participants' are resistant and/or ambivalent to enter programs (Nochajski et al., 2000; Polcin, 1999; Silverstein, 1996) and that legal coercion may limit therapeutic treatment and behavioural change. Additionally, mandated participants' appraisals regarding the effectiveness of the program were moderately lower to those of voluntary participants, which partially supports the assumption that mandated participants are reluctant to "engage" in intervention programs (Cavaiola, 1984; Howard & McCaughrin, 1996; Mulligan & McCarty, 1986; O'Callaghan, 1991; Peck et al., 1994; Polcin, 1999; Silverstein, 1996).

On the other hand, if the assertion that precontemplators do not present for treatment is accurate (Cavaiola & Wuth, 2002), than arguably the practice of mandating repeat offenders to programs at least ensures that a larger number of individuals come in contact with much needed information regarding the seriousness of drinking and drink driving. The challenge remains for program facilitators to break-down levels of "resistance" and scepticism regarding the value of such programs, to ensure interventions have the opportunity to produce behavioural change. For it remains unlikely that entrenched behaviours will be changed unless participants experience an active, emotionally engaging process (Cavaiola & Wuth, 2002). As such, the results have important implications for program facilitators, as there is a need to recognise that program enrolment results from different motives and individuals will present with different levels of awareness, which may prove to

have an effect on the possibility of producing lasting change for drink driving repeat offenders.

In summary, the study provided a positive indication of the short-term effect that a drink driving program can have on repeat offenders drinking and drink driving motivations and behaviours. However as discussed in section 7.3.5.4, questions remain regarding the stability of such changes in motivations and actual drinking levels across longer periods of time. Given the increase in drink driver rehabilitation programs currently being implemented in Australia (Moynham, Perl, Anderson, Jennings, Allender & Starmer, 2002), the results of the research program provide timely insight into the impact of an education-based intervention on repeat offenders. In addition, participants incurred legal sanctions before program commencement (e.g., Study One), and thus the study provides some support for the general practice of combining drink driving interventions with punitive sanctions (Ferguson et al., 2000; Mann et al., 1994; Nichols & Ross, 1990; Popkin et al., 1992; Tashima & Peck, 1986; Wells-Parker et al., 1995).

9.2.3 The Impact of Interlocks: Perceptions and Experiences

Study Three examined a small group of recidivist drink drivers' perceptions and experiences of installing and operating an alcohol ignition interlock, after completing a licence disqualification period and a drink driving rehabilitation program. Two themes emerged regarding the self-reported effectiveness of interlocks compared to traditional legal sanctions that were: (a) the ability to avoid a purely punitive sanction, and (b) interlocks were considered an educational tool that assisted the sample in avoiding drink driving. These themes may prove an aid in designing marketing campaigns and interlock programs to increase notoriously low participation rates. Examination of the quantitative self-reported data revealed these perceptions did not change markedly over the course of the data collection period. Participants also reported positive expectations of being able to successfully operate the interlock, although considerable differences were evident in actual interlock usage.

Exploration into the downloaded recordings revealed similarities with previous programs (Marques et al., 1999), as participants regularly drove their vehicle, although driving times were greatest during the day and during the week,

rather than at night or on weekends. A key finding was that participants used their vehicles only when necessary and generally appeared more willing to change their driving than drinking behaviours. This theme was further reinforced during the closer examination of participants' individual interlock experiences as the majority of participants were initially unwilling to reduce their alcohol consumption levels before installing an interlock, which was reflected in a number of breath violations in the first month of operation.

In addition, participants were generally unwilling to recognise that interlock breath violations resulted from drinking. Rather, participants displayed a propensity to blame the readings on "false positives". Recognition of inappropriate drinking behaviours appears vital for offenders to avoid the drink driving sequence after interlock removal, and further research is required to: (a) determine the propensity of offenders to avoid blame, and (b) the interventions needed to be implemented to increase awareness. The result once again indicates that some offenders' drinking behaviours are extremely entrenched and future interlock programs may benefit from focusing efforts on addressing harmful drinking behaviours both before and during interlock usage.

Taken together, a key discovery to emerge from the three studies was that while researchers have proposed that repeat offenders are immune to the threat of legal sanctions (Ahlin & Berlin, 2002; Beirness et al., 1997; Hedlund & McCartt, 2002; TIRF, 2003), a more accurate assessment may be that repeat offenders' drinking behaviours are immune to some countermeasures. A review of the program of research indicates that alcohol consumption levels were a significant predictor of re-offending in Study One, a considerable proportion were not prepared to change their drinking behaviours even after completing the rehabilitation program in Study Two, and half the sample in Study Three continued to consume harmful levels of alcohol during interlock usage, while others were unresponsive to change whilst being continually "locked out" of their vehicles.

It is well recognised that offenders' drinking levels' remain at the heart of the drink driving problem (Beirness et al., 1997; Ferguson, 1997; Yu, 2000), but the findings of the research program have highlighted that being willing to change drinking, rather than drink driving behaviours, is crucial for successful program completion and successful rehabilitative outcomes. Program facilitators need to be

aware of the possibility of resistance to change drinking behaviours and the accompanying dangers that result from unwillingness to change. If drink driving interventions are to be effective in reducing the prevalence of offending, such interventions need to consider and address participants' alcohol consumption levels, and their willingness and ability to intentionally change such behaviours. As a result, it may prove valuable for researchers and policy makers to look beyond the principles of deterrence to consider public health models, focusing on the causes of the criminal act, the environment that maintains such behaviours, and strategies to persuade offenders to reduce alcohol consumption levels (e.g., harm minimisation). These principles will be discussed further in section 9.4.

9.3 Contribution to Theory and Research

The present research ambitiously attempted to integrate two behavioural change paradigms within the one program of research. The first paradigm combined two deterrence models, focusing on the deterrent effect that legal and non-legal sanctions have on offending behaviours. In doing so, the research united the traditional Classic Deterrence Doctrine with a more recent model (Homel, 1988) that considers the influence of non-legal sanctions. The second paradigm focused on behavioural change from a rehabilitative perspective, employing the Transtheoretical Model of Change (Prochaska & DiClemente, 1984) that provides a conceptual framework to investigate the effect of a drink driving rehabilitation on key program outcomes.

9.3.1 Contributions to the Understanding of Behavioural Change for Repeat Offenders

As discussed in section 3.1, there have been very few attempts to examine the perceived deterrent threat of sanctions on habitual offenders' behaviours, especially recidivist drink drivers (Smith, 2003). The results of Study One have important implications for the employment of the principles of the Classic Deterrence Doctrine within sentencing and enforcement activities and contribute to current knowledge regarding the efficacy of legal sanctions to produce deterrent effects. Firstly, the certainty of apprehension which has been proposed to be the most salient of the three deterrence factors (Decker et al., 1993; Grasmick & Milligan, 1976; Paternoster et

al., 1982; Von Hirsch et al., 1999) does not appear to have a tremendous influence on this group of repeat offenders.

Secondly, there does not appear to be a clear linear relationship between objective severity such as the actual length and amount of penalties and subjective perceptions regarding the severity of such sanctions. While the public demands that repeat offenders require more severe penalties to increase the chances of deterrence (Beirness et al., 1997; Dana, 2001; Jacobs, 1990), theoretically it may appear that shorter licence disqualification periods can be perceived as severe, and longer disqualifications periods do not guarantee deterrence.

Thirdly, the application of the non-legal aspects of Homel's Model (1988) indicated that repeat offenders are not heavily influenced by social sanctions, and questions remain whether fear of physical loss or internal loss influence this group. In contrast to the growing body of research that has proposed that non-legal sanctions can affect individuals' decisions to offend (Berger & Snortum, 1986; Klepper & Nagin, 1993; Paternoster & Iovanni, 1986; Williams & Hawkins, 1986), the present research casts doubt on the effect of such sanctions on repeat offenders. Despite this, the negative relationship between the three non-legal sanctions and intentions to re-offend indicate that there is scope for further research to investigate whether habitual offenders are genuinely affected by the threat of non-legal sanctions or if those who offend at higher levels report the lowest levels of non-legal deterrence. Stemming from this finding there is a need to identify campaigns (e.g., media, educational) that can possibly increase the salience of such sanctions, and fill the void where legal sanctions have failed.

Study One demonstrated that rather than the above mentioned perceptions of legal and non-legal sanctions influencing intentions to re-offend, it was in fact behavioural variables such as recent drink driving events and alcohol consumption levels that produced the greatest effect on further drink driving behaviours within the current models. Once again the results confirm that repeat offenders' drinking and driving behaviours are resistant to change, and that recent behaviours are the best predictors of future behaviours (Ajzen, 2002).

The research program also utilised an opposing theory of change – the Transtheoretical model - to investigate the impact of a drink driving rehabilitation program on the same group of repeat offenders. Firstly, the application of the model

highlighted the importance that “willingness to change” has with attaining successful program outcomes such as being motivated to reduce problem behaviours. The findings confirm previous research that has demonstrated stages of change are a key component of explaining and predicting behavioural change (Prochaska & DiClemente, 1992). As such, the study also adds to a small body of research that is demonstrating motivations to change can predict, or be associated with, behavioural change and targets of drink driving interventions (Wells-Parker et al., 1998; Wells-Parker et al., 2000).

The study provided support for further research to employ aspects of the Transtheoretical model to: (a) understand the factors associated with drink driving, (b) examine the impact of interventions for repeat offenders, and (c) investigate the mediating factors that may influence successful outcomes such as alcohol and mandatory enrolment. In summary, the theoretical framework of the research program has the potential to inform and provide direction for the development of effective interventions that increase awareness and enhance motivation levels to address problem behaviours.

9.4 Application of Research to the Management of Recidivist Drink Drivers

9.4.1 Legal Sanctions

The empirical evidence presented in the current research program has clear implications for the sentencing and management of recidivist drink drivers. Firstly, the study confirmed the assumption that the application of punitive legal sanctions to repeat offenders in isolation does not appear to be extremely effective in producing long-term behavioural change for a considerable proportion of offenders (Beirness et al., 1997; Hedlund & McCartt, 2002; Yu, 2000). Furthermore, the present study indicates that consistently increasing the severity of sanctions does not ensure greater levels of deterrence. This also appears to be the case for truly multiple offenders who incur increasingly severe sanctions with each conviction, but do not report the greatest levels of deterrence.

One of the primary areas to which the findings apply is the sentencing of repeat offenders. Stemming from the present research, drink driving offenders who have been convicted of more than one offence would appear to not only benefit from the application of sanctions, but also the opportunity to complete an appropriate

intervention to address problem behaviour(s), such as harmful alcohol consumption levels and the propensity to drive after drinking. More contentiously, Study One suggests that shorter licence disqualification periods can still be perceived as severe and result in a considerable impact on offenders' lives. For impending interlock trials, the call for shorter licence disqualification periods to entice offenders to install interlocks as well as reduce the probability of unlicensed driving appears possible (Beirness et al., 1997; Beirness & Robertson, 2002; TIRFC, 1991). On the one hand, it remains vital that interlock options are presented as attractive and viable alternatives to traditional legal sanctions, which arguably can be achieved by reducing licence disqualification periods. Conversely, given that drink driving interventions have proven most effective when combined with legal sanctions (Mann et al., 1994; McKnight & Voas, 1991; Nichols & Ross, 1990; Sanson-Fisher et al., 1990; Wells-Parker et al., 1995), a balance needs to be maintained between achieving sufficient levels of deterrence and providing offenders with viable options to change engrained behaviours. Further exploration into this field is required to determine appropriate lengths of licence disqualification that meet sufficient levels of deterrence, with or without accompanying interlock installation.

9.4.2 Alcohol Treatment

As highlighted above, all three studies in the research program demonstrated that a considerable proportion of repeat offenders consumed harmful levels of alcohol. While both the UTL program and interlock operation had a positive influence on motivations to change drinking, a large percentage continued to consume substantial quantities of alcohol after successfully completing the interventions. Popular countermeasures such as sanctioning offenders and traditional education-based drink driving programs may not elicit the necessary motivation and provide the necessary treatment for some offenders to break the drinking cycle. Severe punishments will always remain crucial to maintain public confidence in the criminal system (Babor et al., 2003), but there is also a need to look beyond sanctions and punishment to alternative theories such as the public health model and consider the underlying causes of the offending behaviour. The results of the present thesis suggest that there is a need for those who present signs of alcohol dependency to receive appropriate treatment. This approach focuses on resolving the underlying

addiction that directly influences the behaviour, rather than solely relying on traditional punitive approaches (Beirness et al., 1997). Not all habitual offenders will prove to be alcohol dependent, but those who demonstrate or report a history of heavy alcohol consumption may require treatment, in addition to punishment, to enhance the possibility of long-term change (Beirness et al., 1997; TIRF, 2001). The increasingly popular practice of placing repeat offenders on a probation order facilitates the assessment of drinking problems and referral to appropriate interventions, thus providing the opportunity to combine punitive sanctions with a public health perspective.

9.4.3 Matching Procedures

The process of assessing and directing offenders to appropriate treatments and interventions falls within the field of screening and matching. The results of the thesis support the call for quick and clinically reliable techniques of assessing offenders' willingness to engage in interventions (Levy, 1997; Wiliszowski et al., 1996), increasing motivational levels through practices such as "motivational interviewing" (Nochajski & Stasiewicz, 2000; 2002; Silverstein, 1996) and matching offenders to appropriate interventions (Beirness et al., 1997; McCarthy, 1998; Silverstein, 1996). Researchers have continually proposed that the effectiveness of interventions may be dependent upon recognising the individual characteristics of drink drivers and matching participants to the specific interventions (Ferguson et al., 2000; Glitsch et al., 2000; Nochajski et al., 2000; Sanson-Fisher et al., 1986; Wiliszowski et al., 1996; Yu, 2000). According to the matching hypothesis, different types of drink driving offenders require different forms of interventions such as skill-based, educational or treatment programs to ensure successful outcomes (Wells-Parker, 1994).

Matching offenders to specific interventions that cater for individual needs and requirements is not a new assertion as it has long been held as the "gold standard" (Beirness et al., 1997; McCarthy, 1998). Recently, program participants are beginning to be assessed for a range of psycho-biological factors (e.g., alcohol dependence and psychological problems), as these factors have been recognised to affect successful program completion and re-offending rates (Andren et al., 2000; Wells-Parker et al., 2000). However, these procedures have yet to be transferred to

interlock programs, and to date there has been very little examination of the needs and requirements of interlock users before installation (Freeman & Liossis, 2002a). The present research points to the need to consider pre-interlock assessment of offenders' drinking levels and their willingness to change to ensure that the device provides the maximum benefits to participants. Pre-interlock assessment may promote the identification of problem drinking at an early stage, which presents the opportunity for earlier treatment, rather than allowing participants to continually experience negative interlock usage.

While screening and matching offenders to appropriate interventions may be the ultimate goal, these activities are highly dependent upon scarce resources, and the existence of a variety of interventions. Despite this, the research has provided evidence that repeat offenders' willingness to change drinking behaviours may vary considerably, have an affect on successful outcomes, and should be acknowledged – and at some level accommodated for - during the development and implementation of programs.

9.4.4 Interlock Supervision

An important theme to emerge from Study Three is that supervision whilst operating an interlock is vital. For interlocks to be effective, inappropriate driving performances and general program violations need to be adequately addressed to ensure participants become aware of the consequences of their behaviour, in order to reduce the chances of re-offending once the interlock is removed (TIRF, 2001). The assertion for supervision is also not new, as a growing body of research is beginning to demonstrate that supervision, such as probation, has a positive effect on reducing recidivism rates (Harding et al., 1989; Wiliszowski et al., 1996; Marques, Voas et al., 2000; Voas & Tippetts, 1990). In addition, best practices approach currently emphasizes the importance of supervision during interlock usage (ICADTS, 2001). As highlighted in section 8.1.1, the process of monitoring and providing operational assistance to interlock users is beginning to demonstrate positive results such as fewer breath test violations and reductions in post interlock recidivism rates (Marques et al., 1999; Marques, Voas et al., 2000).

The two major themes from Study Three were that participants were not expecting to reduce their alcohol consumption levels (despite consuming harmful

levels) and participants' propensity to report "false positives" and display a tendency to attribute violations to "machine error" rather than examine inappropriate drinking behaviours. Supervision serves a number of purposes including: (a) ensuring participants adequately and regularly use the device, as additional services can be provided for individuals experiencing operational difficulties, and (b) downloaded interlock data can be reviewed with feedback provided to participants regarding performance, and importantly, discrepancies between self reported and interlock data can be investigated to increase awareness (Freeman & Liossis, 2002b; TIRF, 2000). As a result of this process, referrals can be made for alcohol dependent individuals, and appropriate action undertaken when numerous interlock breaches are observed e.g., warnings or sanctions (Freeman & Liossis, 2002b). Prior to this however, further exploration is required into appropriate interventions and sanctions that follow high frequencies of interlock breaches that have the ability to promote behavioural change rather than more resistance.

9.4.5 Combining Interventions

Finally, the results of the present research program provide support for the theory that no single treatment or intervention is effective for all repeat offenders, but rather a range of interventions appear necessary to accommodate for the wide array of characteristics and needs displayed by persistent offenders. The economic cost of attempting to produce long-term behavioural change for habitual offenders remains incredibly high, especially when combining two or three interventions (Beirness et al., 1997). However, given the cost that drink driving and repeat offenders place on community resources and personal lives, sustained efforts to reduce the prevalence of the offence should remain at the fore-front of policing and policy efforts.

Despite the theoretical and practical implications of the present research, the interpretation of the results needs to be viewed while considering the strengths and limitations of the series of studies.

9.5 Strengths and Weaknesses of the Research

The strengths of the program of research are to be found in the contribution to knowledge regarding the self-reported effects of three current countermeasures on a group of recidivist drink drivers. The study is one of the few to examine the

impact of such countermeasures from multiple perspectives and the first to track a group of offenders and investigate the combined effect of legal sanctions, a drink driving rehabilitation program and interlock operation. In doing so, it is anticipated to have provided greater insight into repeat offenders' experiences and perceptions of such countermeasures, and importantly, the impact these interventions have on key outcomes such as drinking levels, motivations to change as well as intentions to re-offend. The results have the potential to facilitate the development of combined interventions that enhance the possibility of producing long term change among repeat offenders, and address the underlying factor(s) that contribute to persistently drinking and driving, such as harmful or abusive drinking behaviours.

While proving extremely arduous, a positive outcome of face-to-face interviewing was that it reduced the likelihood that participants would provide meaningless responses, which has proven to be a problem in previous research with drink drivers (Wells-Parker et al., 1998). In addition, the collection of self-reported data verified claims that recidivism rates are not an accurate indicator of the prevalence of drink driving (Beirness et al., 1997; Fitzpatrick, 1992; Hedlund & McCartt, 2002; Popkin, 1994; Wells-Parker et al., 1995). Rather, the study demonstrated that self-reported data can be useful in determining successful program outcomes. The combination of official and unofficial driving records as well as quantitative and qualitative data techniques added breadth and depth to the investigation and similar to the process of triangulation, increases the validity and credibility of the findings (Denzin & Lincoln, 1998b; Patton, 1987; Yin, 1989). In addition, the utilisation of qualitative data methods in the case study approach facilitated the emergence of key themes of interlock usage, as well as highlighting important discrepancies between the self-reported and downloaded interlock data.

The final strength of the research can be found in the multi-method design of the program of research. The implementation of both cross-sectional and longitudinal designs, in addition to research questions that focused on retrospective, current and prospective behaviours added rigour to the examination of the participants' experiences and the impact of the countermeasures. There is growing consensus within the literature that mixed method approaches enrich investigations into the impact of programs (Denzin & Lincoln, 1998a; Posavac & Carey, 1997), with the current research demonstrating that such an approach can provide a deeper

understanding of the factors that influence successful program completion and outcomes. Case-studies have been proposed as an effective tool for evaluating the effects of programs (Yin, 1993), as they strengthen the validity and stability of findings (Miles & Huberman, 1994), and at some level “individualise” outcomes.

In addition to the strengths, there are also weaknesses evident within the body of research. Firstly, the low response rate resulted in a relatively small sample size that limits the validity, scope of statistical analyses, and generalisability of the findings. The low response rate suggests that a certain subgroup of “willing” participants were most likely to participate in the research program, and the possibility remains that offenders who did not participate demonstrate different characteristics, and report different effects of the countermeasures. Participants were not randomly selected, but rather the highly selective sampling procedure limits generalisations to the larger population of repeat offenders. In general, researchers have experienced considerable difficulties recruiting repeat offenders, as this population appears extremely unwilling to present for interviews (Cavaiola & Wuth, 2002; Ferguson, 1997). Recently, these recruitment difficulties have been highlighted by small sample sizes that have ranged between 40 and 100 participants (Fetherston & Lenton, 2002; Karki, 2002; Nochajski & Stasiewicz, 2002; Smith, 2003). Secondly, the high attrition rate of Study Two limits the robustness of the research findings, which may have been partly attributable to the length of the survey. Once again, high attrition rates in drinking and drink driving research are notoriously common (Dunham & Mauss, 1982; Ferguson, 1997; Homel, 1988; McCarther, 1998; Silverstein, 1996; Stark, 1990) and further techniques and incentives may need to be developed to increase participation rates over longer periods of time.

As discussed in section 5.3.2, concerns remain regarding the reliability of participants’ responses to drinking and drink driving related items. Historically, researchers have questioned the accuracy of self-reported data, as responses may be influenced by such factors as denial, inability to recall events accurately, or when sanctions are perceived to result from responses (Popkin, 1994; Sanson-Fisher et al., 1990). Although the current research demonstrated that self-reported data provides valuable insight into the impact of countermeasures on repeat offenders, it may

prove fruitful for future research to combine self-reported data with third parties to confirm the veracity of presented data (Ferguson, 1997).

An additional concern relates to the validity and reliability of the scales that were developed by the researcher to conduct an exploratory examination of repeat offenders' perceptions of all three countermeasures. Whilst the scales appeared acceptable for use in the current study, further research should be undertaken to amend and validate the scales that measured perceptions of deterrence (DQ), expectations and effectiveness of the drink driving program (UTLEXPEXT/UTLEFFECT) and the impact of interlock usage (INTEREFFECT). In particular, it is noted that implementing 10-point scales (rather than 5 or 7-point likert scales) decreases reliability as meaningful differences between the points become difficult to justify. A refinement of both the questions and the measurement scales may prove fruitful.

In general, better control of the threats to internal validity is desirable (e.g., attrition, history), and would be well matched with some form of random sampling that facilitates comparison with a control group. The inclusion of a comparison group may well have altered the interpretation of the results, as movement through the stages of change may also be associated with the sentencing process, licence disqualification periods, and probation. However, the pre-experimental design of the present study has provided support for the examination of both motivational and behavioural factors that appear related to successful program completion, to be implemented in larger controlled experimental designs. The inclusion of comparison groups would reduce the threats to internal validity, and more accurately determine whether reductions in alcohol consumption and increases in motivation result from the three countermeasures or whether such change is attributable to the sentencing and probationary process.

Finally, it is noted that the exploratory nature of the research limits conclusions and generalisations that can be made from the research program. Similar investigations are needed in this field before the findings of the thesis can be confidently applied to the management of repeat offenders. Suggestions for the direction of future research are provided in the following section.

9.6 Suggestions for Future Research

In light of the serious threat that repeat offenders pose to road safety, the continued effort to understand and intervene with habitual drink drivers is vital. In addition to addressing the limitations highlighted above, there is potential to direct future research towards a number of interesting areas related to both the aetiology of habitual drink driving as well as the effectiveness of current countermeasures to reduce the prevalence of the offending behaviour.

9.6.1 Aetiology

In regard to understanding the act of continually drinking and driving, research has yet to closely examine repeat offenders' decision making processes, the perceived gains and losses of committing the offence, nor what deterrent threats appear influential during offenders' actual decision to drink and drive. For example, does the act of continually drinking and driving stem from being unable to avoid drink driving while intoxicated, lack of knowledge or planning regarding alternative transportation options, or intrinsic pleasures associated with the offence? It may yet be proven that some repeat offenders' cognitive styles are different to those of the general public (Weinrath & Gartell, 2001), which may greatly influence perceptions of deterrence and rational choices regarding decisions to offend and the subsequent development of countermeasures designed to stop the offence.

In the last decade, deterrence researchers have begun to examine the influence that "impulsivity" has on offending behaviours (Gottfredson & Hirschi, 1990) and initial findings have indicated that impulsive traits are positively correlated with criminal activity (Grasmick, Tittle, Bursik & Arnekley, 1993; Nagin & Paternoster, 1993; Nagin & Pogarsky, 2001; Piquero & Pogarsky, 2002; Piquero & Tippetts, 1996). Given that heavy alcohol consumption can possibly encourage impulsive decision-making, research efforts into: (a) the existence of impulsive traits in repeat offenders, (b) the impact of impulsivity on deterrence, and (c) methods to combat the effects (e.g., planning transportation before drinking) may prove vital in reducing offending behaviours.

The current research program confirmed the high prevalence of drink driving that remains undetected for this group of repeat offenders. From a theoretical perspective, it may prove fruitful to apply reconceptualised models of deterrence to

this population that incorporate the powerful effects that personal and vicarious punishment avoidance have on drink driving behaviours. A revised model of deterrence developed by Stafford & Warr (1993) proposes that directly and indirectly avoiding apprehension and punishment may negate the deterrent effects of personal and vicarious experiences of punishment. Early applications of this model that have focused on college students have indicated punishment avoidance produces a greater effect on offending behaviours than apprehension and conviction (Piquero & Paternoster, 1998; Piquero & Pogarsky, 2002). Considering the high self-reported prevalence of avoiding apprehension in the current study, the next step may be to apply the principles to actual offenders to determine the effect that avoiding apprehension and punishment has on: (a) perceived certainty of apprehension, and (b) intentions to re-offend.

9.6.2 Countermeasures

In regards to the impact of countermeasures, further investigation into the deterrent effect of legal sanctions and appropriate lengths of licence disqualification periods will prove productive in developing sentencing strategies that remain severe, but do not promote the likelihood of unlicensed driving or further deviance through “Psychological Reactance” (Brehm, 1966). While the task remains extremely difficult, a greater understanding of the relationship between the length of sanctions and perceptions regarding their deterrent qualities is required if sanctioning repeat offenders is to prove effective.

Study Two indicated that mandated participants maybe reluctant to engage in rehabilitation programs, which has the potential to ultimately affect the acquisition of new skills and knowledge to avoid the drink driving sequence. Further investigation into the impact of mandated enrolment in both rehabilitation and interlock programs may provide greater understanding of the efficacy of this approach and the requirements of both intervention programs and facilitators if successful outcomes are to be achieved. In general, additional research is required into the process of effectively raising awareness levels regarding the serious consequences of drinking and drink driving, as well as maintaining increased motivational levels that may result from program completion. In particular, further research is required to determine efficient methods to move resistant individuals

from the precontemplation stage towards intentional attempts to change problem behaviours, as well as how different drink driving countermeasures and treatments interact with all the stages of change.

Importantly, the considerable discrepancy between the self-reported and downloaded interlock recordings highlighted in Study Three requires further investigation to determine whether repeat offenders are willing to acknowledge and address inappropriate drinking levels or if further interventions are required to separate the drinking and driving sequence. The application of the research questions contained in Study Three to a larger sample would prove fruitful for the understanding of the impact of interlocks on repeat offenders. Participants' inability and/or unwillingness to change harmful drinking behaviours may yet prove to be heavily associated with the inability of interlocks to produce long term change. In addition, research that focuses on the effects of combining interlocks with other drink driving interventions such as rehabilitation programs and supervision is needed to determine the impact on recidivism.

Although expensive, three wave longitudinal designs that not only examine repeat offenders' self-reported experiences of sanctions and various interventions, but also investigate possible changes in this populations' motivations and behaviours after re-licensing may further elucidate the effect of countermeasures. Such initiatives have the potential to provide insight into the perceptual stability of deterrence that has been questioned in the literature (Green, 1989; Homel, 1988; Minor & Harry, 1982; Saltzman et al., 1982), as well as highlight the factors associated with the inability of interlocks to produce long-term behavioural change.

Most importantly, research needs to continue to focus on convicted and active offenders to ensure that current knowledge of habitual drink drivers and the interventions developed to stop the offence remain "empirically faithful" (Decker et al., 1993; Nagin & Paternoster, 1991). While such research initiatives are costly in both time and money, the accurate gathering of this groups' perceptions and experiences of countermeasures and self-reported offending behaviours is crucial if effective interventions are to be developed to reduce habitual drink driving.

9.7 Concluding Remarks

Present understanding of the influence of sanctions and the impact of interventions on repeat offenders remains scant. The program of research presented in this thesis aimed to elucidate the self-reported effect of three drink driving countermeasures on a group of habitual drink drivers in order to inform theory and policy regarding the practical management of repeat offenders. Importantly, the research program demonstrated that excessive drinking behaviours form a central component of the drink driving problem. It cannot be overlooked that alcohol use is heavily entrenched in Australian culture, and serves a number of purposes that permeate both work and recreational related activities. As such, drink driving is a component of a much larger problem pertaining to the appropriate use of alcohol in today's society, as the medical, economic and personal costs of excessive alcohol consumption are well-documented (AIHW, 2000; NHMRC, 2001). While not directly examined in the present research program, a need continues to review and understand societal trends, considering not only the use of alcohol, but also the production of social inequalities and forces that facilitate the development of high-risk offenders (Babor et al., 2003). The examination of the social and physical environment that maintains drink driving behaviour(s) can only complement the development of countermeasures that effectively combat the offending behaviour.

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Appendix A

The following survey is designed to explore your experiences of drink driving and your expectations of the “UNDER THE LIMIT” program.



There are no right and wrong answers for the questions that I will ask. I would like you to answer every question, but if there is a particular question you don't want to answer, please let me know and I'll move onto the next one.

If you would like more information about this questionnaire please call James Freeman on 3864 4685.

If you have any questions concerning your rights as a participant in this research, please call the Ethics Department at QUT on 3864 2902.

Thank you for taking part in this project.

DEMOGRAHPIC QUESTIONNAIRE

- | | |
|--|---|
| <p>1. Are you : (Please circle):</p> <p>Male 1</p> <p>Female..... 2</p> <p>2. What is your age? _____</p> <p>18 – 24 years 1</p> <p>25 – 34 years 2</p> <p>35 – 44 years 3</p> <p>45 – 54 years 4</p> <p>55 – 64 years 5</p> <p>65 years and over 6</p> <p>3. What about your marital status, are you:</p> <p>Single 1</p> <p>Married..... 2</p> <p>De Facto 3</p> <p>Divorced 4</p> <p>Widowed..... 5</p> <p>Separated..... 6</p> <p>4. Do you consider yourself to be an Aboriginal or Torres Strait Islander?</p> <p>Yes 1</p> <p>No 2</p> <p>5. What is the highest level of education you have finished?</p> <p>Primary 1</p> <p>Junior (Grade 10)..... 2</p> <p>Senior (Grade 12) 3</p> <p>TAFE/Tech college/Apprenticeship 4</p> <p>CAE/University 5</p> <p>Other (<i>Please Specify</i>) 6</p> | <p>6. Do you have a job at the moment?</p> <p>Yes 1</p> <p>No 2</p> <p>What is that job?  _____</p> <p>_____</p> <p>7. Is that full time or part time work?</p> <p>Full time 1</p> <p>Regular part time 2</p> <p>Casual part time..... 3</p> <p>If you do work part time, how many hours do you work a week?  _____</p> <p>8. Are you receiving any pensions or government assistance?</p> <p>Yes 1</p> <p>No..... 2</p> <p>9. Please circle the category that best describes how much you would earn a year</p> <p>Less than \$12,000 1</p> <p>\$12,001 - \$20, 000 2</p> <p>\$20,001 - \$35, 000 3</p> <p>\$35,001 - \$50, 000 4</p> <p>More than \$50,000 5</p> <p>Don't Know 6</p> |
|--|---|

<p>10. How old were you the first time you drove when you knew you were over the limit? (<i>Write in your age at that time</i>)</p> <p>_____ yrs</p> <p>11. How many times have you driven whilst over the limit in your lifetime?</p> <p>Never 1 Once or twice.....2 3 to 5 times.....3 6-10 times4 More than 10 times5</p> <p>12. In the last <u>6 months</u> before your apprehension how often had you <u>driven</u> on a public road when you knew you were over the legal limit?</p> <p>Never 1 Once or twice.....2 3 to 5 times3 6-10 times4 More than 10 times5</p> <p>13. Since your conviction, how many times have you driven on a public road when you knew you were over the limit?</p> <p>Never 1 Once or twice.....2 3 to 5 times.....3 6-10 times4 More than 10 times5</p> <p>14. The last time you were caught, do you think you had a sound reason for driving over the legal limit?</p> <p><i>✓</i> _____</p>	<p>15. In the past <u>6 months</u>, how often have you been a passenger when you thought the driver was over the limit?</p> <p>Never 1 Once or twice.....2 3 to 5 times3 6-10 times4 More than 10 times5</p> <p>16. Do you intend to drive unlicensed during your disqualification period?</p> <p>Extremely unlikely 1 Unlikely2 Unsure3 Likely4 Extremely likely5</p> <p>17. If I am completely honest with myself I will probably drink and drive again in the future.</p> <p>Extremely unlikely 1 Unlikely2 Unsure3 Likely4 Extremely likely5</p>
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AUDIT

1. How often do you have a drink containing alcohol?

- never monthly or less 2 to 4 times a month 2 to 3 times a week 4 or more times a week

2. How many “standard” drinks containing alcohol do you have on a typical day when you are drinking?

- 1 or 2 3 or 4 5 to 6 7 to 9 10 or more

3. How often do you have six or more drinks on one occasion?

- never less than monthly monthly weekly daily or almost daily

4. How often during the last year have you found that you were unable to stop drinking once you had started?

- never less than monthly monthly weekly daily or almost daily

5. How often during the last year have you failed to do what was normally expected from you because of drinking?

- never less than monthly monthly weekly daily or almost daily

6. How often during the last year have you needed a drink in the morning to get yourself going after a heavy drinking session?

- never less than monthly monthly weekly daily or almost daily

7. How often during the last year have you had a feeling of guilt or remorse after drinking?

- never less than monthly monthly weekly daily or almost daily

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

- never less than monthly monthly weekly daily or almost daily

9. Have you or someone else been injured as a result of your drinking?

- no yes, but not in the last year yes, during the last year

10. Has a relative, a friend or doctor or other health worker been concerned about your drinking or suggested you cut down?

- no yes, but not in the last year yes, during the last year

DETERRENCE QUESTIONNAIRE

<i>Informal Sanctions</i>	<i>Strongly Disagree</i>	<i>Unsure</i>	<i>Strongly Agree</i>							
1. When I drink and drive, I am concerned that I might lose my friends' respect	1	2	3	4	5	6	7	8	9	10
2. When I do drink and drive, I feel guilty afterwards	1	2	3	4	5	6	7	8	9	10
3. When I do drink and drive, I worry that I might get injured or hurt	1	2	3	4	5	6	7	8	9	10
4. When I was caught for drink driving, I was ashamed when my friends found out	1	2	3	4	5	6	7	8	9	10
5. I feel stupid after I drink and drive	1	2	3	4	5	6	7	8	9	10
6. I'm afraid I might damage my car when drinking and driving	1	2	3	4	5	6	7	8	9	10
7. I think that drinking and driving is a serious risk to my health	1	2	3	4	5	6	7	8	9	10

<i>Formal Sanctions</i>	<i>Strongly Disagree</i>		<i>Unsure</i>						<i>Strongly Agree</i>	
8. The chances of getting caught for drink driving are high	1	2	3	4	5	6	7	8	9	10
9. The time between getting caught for drink driving and going to court was very short	1	2	3	4	5	6	7	8	9	10
10. The penalty I have received for drink driving has caused a considerable impact on my life	1	2	3	4	5	6	7	8	9	10
11. I won't drink and drive again because I don't want to lose my licence	1	2	3	4	5	6	7	8	9	10
12. It did not take long after I was caught by the police before I lost my licence	1	2	3	4	5	6	7	8	9	10
13. I won't drink and drive again because I don't want to get another fine	1	2	3	4	5	6	7	8	9	10
14. When I drink and drive, I worry that I will get caught	1	2	3	4	5	6	7	8	9	10
15. The penalty I received for drink driving had a big affect on the way I live	1	2	3	4	5	6	7	8	9	10
16. Being on probation has had a I considerable impact on my life	1	2	3	4	5	6	7	8	9	10

Appendix B**The Ignition Interlock / “Under the Limit” drink driving program**

If you have questions you would like to ask about this research, please contact:

Professor Mary Sheehan or Mrs Cynthia Schonfeld
Centre for Accident Research and Road Safety – Queensland (CARRS-Q)
Beams Rd, Carseldine. 4034
Telephone: (07) 3864 4566

What is this project about?

A trial of alcohol ignition interlocks is taking place in some magistrates courts in and around Brisbane. You have recently been to a court which is not directly involved in this trial, but which is important as a “comparison” court.

You have decided to take part in the “Under the Limit” drink driving rehabilitation program as part of your sentence for a drink driving offence, and we would like to get some information from you so that we can compare people like yourself with another group of offenders who are going to use the interlock.

We want to find out:

- If you are working, and what sort of work you do
- If you think you could afford to pay extra money for an interlock if it were available to you
- How much time you spend driving in a normal week
- How important having a licence is to you
- Your ideas about how well an interlock would work for you if you had one fitted to your car

How do we plan to do this?

At the time of your first assessment interview with your Community Correctional Officer you will be given a short questionnaire to fill out for us. You can ask them to do it for you if you would prefer. The information is completely confidential.

The Community Corrections Officer will then introduce you to our research interviewer, James Freeman. James would like to ask you a series of questions about drink driving, alcohol, your knowledge about ignition interlock devices and how they work, whether you think the device would be helpful, and any problems that you think might arise if you were using such a device. He would like to see you again when you have finished the “Under the Limit” program.

We will also need to be able to look at your traffic history record at Queensland Transport and your non-traffic offence records from Community Corrections.

The only time we will be using your name is to get your offence records from Transport and Corrections. We will NOT be using your name when we analyse all the data and write a report. All the information we get from everyone will be combined. All the questionnaires will be locked away so that no one else but the researchers can see what is written on them.

If you decide you don’t want to answer some of the questions, that is OK. No one will be able to tell which answers are yours – all the answers will be coded using numbers. Your name will NEVER appear anywhere.

If you are happy to help us, we need you to sign the consent form that is attached to this page.

With thanks

Professor Mary Sheehan

-

If you have any problems with the questions we are asking, you can contact one of the people named at the top of this page, or the Secretary of the University Human Research Ethics Committee on 3864 2902.

-

Statement of consent

By signing below, you are indicating that you:

- have read and understood the information sheet about this project;
- have had any questions answered to your satisfaction;
- agree to the confidential release of your traffic history and non-traffic offence records to the Centre for Accident Research and Road Safety at QUT;
- understand that if you have any other questions you can contact the research team;
- understand that you are free to withdraw from the data collection at any time, without comment or penalty;
- understand that you can contact the research team if you have any questions about the project, or the Secretary of the University Human Research Ethics Committee on 3864 2902 if they have concerns about the ethical conduct of the project.

NAME _____

SIGNATURE _____ DATE / /



The Ignition Interlock / “Under the Limit” drink driving program

If you have questions you would like to ask about this research, please contact:

Professor Mary Sheehan or Mrs Cynthia Schonfeld
 Centre for Accident Research and Road Safety – Queensland (CARRS-Q)
 Beams Rd, Carseldine. 4034
 Telephone: (07) 3864 4566

What is this project about?

You have just been assessed and recommended to have an alcohol ignition interlock fitted to your vehicle after you have completed the “Under the Limit” rehabilitation program. The ignition interlock will be fitted when you have your driver’s licence reinstated. The ignition interlock will prevent you from driving your vehicle if you do not have a zero blood alcohol concentration (BAC), and we hope that you will be able to learn how to avoid drink driving in the future.

To enable us to work out if ignition interlocks are a useful addition to the “Under the Limit” program, we need to find out how you have managed with the device fitted to your vehicle.

We want to find out:

- what **you** thought of the ignition interlock device
- if you had any problems with using the ignition interlock device, for example, learning how to blow into the device
- if you had any problems with getting the device serviced
- if any other users of your vehicle found the device difficult to use
- if you think using the device has helped you learn about avoiding drinking and driving
- if there are any other issues about the device that you would like to discuss

How do we plan to do this?

At the time of your first assessment interview with the Community Correctional Officer, you will be introduced to our research interviewer, James Freeman. James would like to ask you a series of questions about drink driving, alcohol, your knowledge about ignition interlock devices and how they work, whether you think the device will be helpful, and any problems that you think you may have with using the device. He would like to see you again:

- when you have finished the “Under the Limit” program and are about to have the ignition interlock device fitted to your vehicle. At this time you will be given special training in how to use the device, and James will be willing to answer any questions you may have at that stage.
- when you have been using the ignition interlock device for about 3 months, and
- when you are having the device removed from your vehicle.

He will arrange to talk to you about the ignition interlock while your vehicle is in having the device serviced or removed, so it will not take up any more of your time.

We will use the information from everyone using the interlocks to get a good idea of how it affects your lifestyle and whether it would be a good idea to continue using them for other drink drivers who need help to avoid drink driving.

We will also need to be able to look at your traffic history record at Queensland Transport and your non-traffic offence records from Community Corrections.

The only time we will be using your name is when James wants to contact you to arrange an interview, and when we need to get your offence records from Transport and Corrections. We will NOT be using your name when we analyse all the data and write a report. All the information we get from everyone will be combined. All the questionnaires will be locked away so that no one else but the researchers can see what is written on them.

If you decide you don't want to answer some of the questions in the interviews, that is OK. No one will be able to tell which answers are yours – all the answers will be coded using numbers. Your name will NEVER appear anywhere.

If you are happy to help us, we need you to sign the consent form that is attached to this page.

With thanks

Professor Mary Sheehan

If you have any problems with the interview or the person who is interviewing you, you can contact one of the people named at the top of this page, or the Secretary of the University Human Research Ethics Committee on 3864 2902.

Statement of consent

By signing below, you are indicating that you :

- have read and understood the information sheet about this project;
- have had any questions answered to your satisfaction;
- agree to the confidential release of your traffic history and non-traffic offence records to the Centre for Accident Research and Road Safety at QUT;
- understand that if you have any other questions you can contact the research team;
- understand that you are free to withdraw from the data collection at any time, without comment or penalty;
- understand that you can contact the research team if you have any questions about the project, or the Secretary of the University Human Research Ethics Committee on 3864 2902 if they have concerns about the ethical conduct of the project.

NAME _____

SIGNATURE _____ DATE / /

Appendix C

Logistic Regression Analysis with Two vs Multiple Convictions as the Dependent Variable

Variables	B	SE	Wald	p	Exp (B)	95% C.I. Exp (B)	
						Lower	Upper
D.D. Last 6 mths	-.01	.12	.01	.900	.99	.77	1.34
D.D. in lifetime	.43*	.17	6.07	.014	1.53	.90	1.50
Certainty	.06	.06	1.06	.303	1.63	.93	1.18
Severity	-.18*	.89	4.51	.034	.83	.63	1.13
Swiftiness	-.01	.65	.00	.931	.99	.87	1.12
Social	.66	.06	1.08	.299	1.07	.92	1.17
Internal	-.08	.06	2.06	.151	.92	.81	1.01
Physical	-.05	.06	.75	.39	.95	.83	1.04
Alcohol	-.01	.03	.30	.590	.97	.94	1.05

Model Chi-Square 17.96* (df = 9)

Block Chi-Square 17.96* (df = 9)

Note. DD in last 6 mths = Frequency of drink driving in the last six months; DD in lifetime = Frequency of drink driving over lifetime; * p<.05.

Appendix D

Demographic Characteristics of the Sample for Study Two

Age:	<i>M</i> = 37 (<i>SD</i> = 10)	Gender:	
		Male	88.6% (<i>n</i> = 117)
		Female	11.4% (<i>n</i> = 15)
Employment Status		Marital Status	
Employed	65% (<i>n</i> = 85)	In Relationship	59% (<i>n</i> = 77)
Blue Collar:	80% (<i>n</i> = 68)	Not in relationship	41% (<i>n</i> = 55)
White Collar:	20% (<i>n</i> = 17)		
Full-time	75% (<i>n</i> = 64)	Ethnicity	
Part-time	25% (<i>n</i> = 21)	Caucasian	98% (<i>n</i> = 130)
Unemployed:	35% (<i>n</i> = 47)	Aboriginal/Torris	2% (<i>n</i> = 2)
Level of Education		Income	
Primary:	12% (<i>n</i> = 15)	Less than \$12,000	15% (<i>n</i> = 19)
Junior (Grade 10)	50% (<i>n</i> = 66)	\$12,001 - \$20,000	35% (<i>n</i> = 47)
Senior (Grade 12)	25% (<i>n</i> = 33)	\$20,001 - \$35,000	30% (<i>n</i> = 40)
TAFE/Tech college	12% (<i>n</i> = 15)	\$35,001 - \$50,000	10% (<i>n</i> = 13)
University	2% (<i>n</i> = 3)	More than \$50,000	10% (<i>n</i> = 13)

Appendix E

READINESS TO CHANGE DRINKING QUESTIONNAIRE

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1. I don't think I drink too much	1	2	3	4	5
2. I'm trying to drink less than I used to	1	2	3	4	5
3. I enjoy my drinking, but sometimes I think I drink too much	1	2	3	4	5
4. Sometimes I think I should cut down on my drinking	1	2	3	4	5
5. It's a waste of time thinking about my drinking	1	2	3	4	5
6. I have just recently changed my drinking habits	1	2	3	4	5
7. Anyone can talk about wanting to do something about drinking, but I am actually doing something about it	1	2	3	4	5
8. I am at the stage where I should think about drinking less alcohol	1	2	3	4	5
9. My drinking is sometimes a problem	1	2	3	4	5
10. There is no need for me to think about changing my drinking	1	2	3	4	5
11. I am actually changing my drinking habits right now	1	2	3	4	5
12. Drinking less alcohol would be pointless to me	1	2	3	4	5

READINESS TO CHANGE DRINK DRIVING QUESTIONNAIRE

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1. I don't think I drink and drive too much	1	2	3	4	5
2. I am trying to drink and drive less than I used to	1	2	3	4	5
3. I enjoy my drink driving, but sometimes I think I do it too much	1	2	3	4	5
4. Sometimes I think I should cut down on my drinking and driving	1	2	3	4	5
5. It's a waste of time thinking about my drinking and driving	1	2	3	4	5
6. I have recently changed my drinking and driving habits	1	2	3	4	5
7. Anyone can talk about wanting to do something about their drinking and driving, but I am actually doing something about it	1	2	3	4	5
8. I am at the stage where I should think about changing my drinking and driving behaviour	1	2	3	4	5
9. My drinking and driving is a problem sometimes	1	2	3	4	5
10. There is no need for me to think about changing my drinking and driving habits	1	2	3	4	5
11. I am actually changing my drinking and driving habits right now	1	2	3	4	5
12. Drinking and driving less would be pointless to me	1	2	3	4	5

SELF-EFFICACY TO CHANGE DRINKING AND DRINK DRIVING

	Strongly Disagree	Agree	Unsure	Disagree	Strongly Agree
1. I can't control my drinking and driving	1	2	3	4	5
2. Even when I have had too much to drink, I am able to avoid driving if I choose to	1	2	3	4	5
3. There are situations in which I cannot avoid driving after I have had too much to drink	1	2	3	4	5
4. No matter how hard I try not to drink and drive, I am sure I will drive above the legal limit again	1	2	3	4	5
5. Even in situations where I have to drive, I can't control my drinking	1	2	3	4	5
6. I am able to avoid drinking when I know I will need to drive	1	2	3	4	5
7. I feel confident that I can always avoid driving after drinking too much	1	2	3	4	5
8. Even if I try to avoid it, I know that I will drink and drive again	1	2	3	4	5
9. I have no will power when it comes to drinking	1	2	3	4	5
10. Once I start drinking I am out of control	1	2	3	4	5
11. Once I start to drink I can't stop	1	2	3	4	5

EXPECTATIONS OF THE UNDER THE LIMIT PROGRAM

	Extremely Unlikely	Unlikely	Unsure	Likely	Extremely Likely
1. I expect to gain more knowledge about the effects alcohol has on my driving ability as a result of completing the program	1	2	3	4	5
2. I think that the program will provide me with new skills and strategies to avoid drink driving	1	2	3	4	5
3. I think that the program will influence my attitudes so that I am less likely to drink and drive in the future.	1	2	3	4	5
4. I think the program will be effective in stopping me from drink driving again	1	2	3	4	5

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
5. I believe that I need to do this course	1	2	3	4	5
6. I want to do this course	1	2	3	4	5

EFFECTIVENESS OF THE UNDER THE LIMIT PROGRAM

	Extremely Unlikely	Unlikely	Unsure	Likely	Extremely Likely
1. I have gained more knowledge about the effects alcohol has on my driving ability as a result of completing the program	1	2	3	4	5
2. I think that the program has provided me with new skills and strategies to avoid drink driving	1	2	3	4	5
3. I think that the program has influenced my attitudes so that I am less likely to drink and drive in the future.	1	2	3	4	5
4. I think the program has been effective in stopping me from drink driving again	1	2	3	4	5

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
5. I believe that I needed to do the program	1	2	3	4	5
6. I wanted to do the course	1	2	3	4	5

REASONS FOR PROGRAM ENROLMENT QUESTIONNAIRE

	<i>Strongly Disagree</i>	<i>Unsure</i>						<i>Strongly Agree</i>		
1. I voluntarily enrolled in the "Under the Limit" program	1	2	3	4	5	6	7	8	9	10
2. I felt I was forced into enrolling in the "Under the Limit" program by the magistrate or my solicitor	1	2	3	4	5	6	7	8	9	10
3. I enrolled in the program mainly to reduce the amount of money (e.g., fine) I would otherwise had to pay	1	2	3	4	5	6	7	8	9	10
4. I enrolled in the program because it will help me avoid drink driving again	1	2	3	4	5	6	7	8	9	10
5. When the magistrate suggested that I do the program, I couldn't refuse him/her	1	2	3	4	5	6	7	8	9	10
6. I enrolled in the program to reduce my license disqualification period I may have otherwise received.	1	2	3	4	5	6	7	8	9	10
7. Are there any other reasons why you enrolled in the "Under the Limit" program? (<i>Write in your answer</i>)	<p>✎ _____</p> <p>_____</p>									

*Appendix F***Drink Driving Study****Alcohol Ignition Interlock Questionnaire**

The following survey is designed to explore you expectations about installing an alcohol ignition interlock.

The questionnaire is not a test and there are no right and wrong answers. It is important to complete every question and only circle one answer for each question.

If you would like more information about this questionnaire please call James Freeman on 3864 4685.

If you have any questions concerning your rights as a participant in this research, please call the Ethics Department at QUT on 3863 2902.

Thank you for your participation in this project.

<p>1. Since I saw you last, have you driven a vehicle on a public road?</p> <p><input type="checkbox"/> Yes 1</p> <p><input type="checkbox"/> No 2</p> <p>If Yes, how many times? _____</p> <p>For what reasons?</p> <p><input type="checkbox"/> Emergency 1</p> <p><input type="checkbox"/> Didn't think you would get caught 2</p> <p><input type="checkbox"/> Personal Problems..... 3</p> <p><input type="checkbox"/> Other 4</p> <p><input type="checkbox"/> If other, please specify _____</p> <p>2. Since I saw you last, how often have you driven on a public road when you knew you were over the legal limit?</p> <p><input type="checkbox"/> Never..... 1</p> <p><input type="checkbox"/> Once or twice 2</p> <p><input type="checkbox"/> 3 to 5 times..... 3</p> <p><input type="checkbox"/> 6-10 times 4</p> <p><input type="checkbox"/> More than 10 times 5</p> <p>3. What reason would you give for driving over the legal limit?</p> <p><input type="checkbox"/> Emergency 1</p> <p><input type="checkbox"/> Didn't think you would get caught 2</p> <p><input type="checkbox"/> Personal problems..... 3</p> <p><input type="checkbox"/> Other 4</p> <p><input type="checkbox"/> If other, please specify _____</p> <p>4. Since I saw you last, how often have you been a passenger when you thought the driver was over the legal limit?</p> <p><input type="checkbox"/> Never..... 1</p> <p><input type="checkbox"/> Once or twice 2</p> <p><input type="checkbox"/> 3 to 5 times..... 3</p> <p><input type="checkbox"/> 6-10 times 4</p> <p><input type="checkbox"/> More than 10 times 5</p>	<p>5. During your license disqualification period, have you used other forms of transport?</p> <p><input type="checkbox"/> Yes 1</p> <p><input type="checkbox"/> No..... 2</p> <p>If Yes, what was the main forms of transport?</p> <p><input type="checkbox"/> Bus 1</p> <p><input type="checkbox"/> Train..... 2</p> <p><input type="checkbox"/> Bicycle 3</p> <p><input type="checkbox"/> Walk..... 4</p> <p><input type="checkbox"/> Friends/family 5</p> <p><input type="checkbox"/> Taxi 6</p> <p><input type="checkbox"/> Other 7</p>
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INTERLOCK EXPECTATIONS

This is one of the first interlock trials conducted in Australia, and thus the manufacturers and researchers are interested in your expectations and experiences of interlocks. The first few questions are about your attitudes and expectations of using the device.

1. I am confident that I will successfully be able to operate the interlock.

Strongly Disagree 1	Disagree 2	Unsure 3	Agree 4	Strongly Agree 5
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Any comments? _____

2. Using an interlock while I drive my car will become a hassle for me.

Strongly Disagree 1	Disagree 2	Unsure 3	Agree 4	Strongly Agree 5
-------------------------------	----------------------	--------------------	-------------------	----------------------------

Any comments? _____

3. The interlock will ensure drivers do not drink before they operate a vehicle.

Strongly Disagree 1	Disagree 2	Unsure 3	Agree 4	Strongly Agree 5
-------------------------------	----------------------	--------------------	-------------------	----------------------------

Any comments? _____

4. Having an interlock will affect the way I drive my car.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments? _____

5. Having an interlock will affect my general drinking behaviours

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments _____

6. Having an interlock will affect my drink driving behaviour

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments? _____

7. I expect to benefit from having an interlock installed to my car

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments? _____

8. I think there is a need to install interlocks to vehicles

Strongly Disagree 1	Disagree 2	Unsure 3	Agree 4	Strongly Agree 5
-------------------------------	----------------------	--------------------	-------------------	----------------------------

Any comments? _____

9. I expect the community will benefit from having cars fitted with interlocks.

Strongly Disagree 1	Disagree 2	Unsure 3	Agree 4	Strongly Agree 5
-------------------------------	----------------------	--------------------	-------------------	----------------------------

Any comments? _____

10. I expect to keep the interlock installed to my vehicle for the complete time period designated by the courts.

Strongly Disagree 1	Disagree 2	Unsure 3	Agree 4	Strongly Agree 5
-------------------------------	----------------------	--------------------	-------------------	----------------------------

Any comments? _____

11. What do you think will be the advantages of have an interlock installed to your car?

Any comments? _____

12. What do you think will be the disadvantages of have an interlock installed to your car?

Any comments? _____

13. How likely is it that you will drive a non-interlock fitted car during your interlock probation period?

Extremely Unlikely 1	Unlikely 2	Unsure 3	Likely 4	Extremely Likely 5
----------------------------	---------------	-------------	-------------	--------------------------

Any comments? _____

14. In the past, how likely was it that you would drive unlicensed when you lost your licence for drink driving?

Extremely Unlikely 1	Unlikely 2	Unsure 3	Likely 4	Extremely Likely 5
----------------------------	---------------	-------------	-------------	--------------------------

Any comments? _____

15. I think interlocks will be more effective in stopping me from drink driving again, than the penalties received in the past.

Extremely Unlikely 1	Unlikely 2	Unsure 3	Likely 4	Extremely Likely 5
----------------------------	---------------	-------------	-------------	--------------------------

Any comments? _____

16. The interlock will become much more of a hassle than the previous penalties I have received for drink driving in the past.

Extremely Unlikely	Unlikely	Unsure	Likely	Extremely Likely
1	2	3	4	5

Any comments? _____

17. Do you think you will drink and drive again in the future?

Extremely Unlikely	Unlikely	Unsure	Likely	Extremely Likely
1	2	3	4	5

Any comments? _____

Drink Driving Study

Alcohol Ignition Interlock Questionnaire

The following survey is designed to explore you expectations about installing an alcohol ignition interlock.

The questionnaire is not a test and there are no right and wrong answers. It is important to complete every question and only circle one answer for each question.

If you would like more information about this questionnaire please call James Freeman on 3864 4685.

If you have any questions concerning your rights as a participant in this research, please call the Ethics Department at QUT on 3863 2902.

Thank you for your participation in this project.

INTERLOCK EXPERIENCES

1. I am confident that I have successfully operated the interlock.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments? _____

2. Using an interlock while I drive my car has become a hassle for me.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments? _____

3. The interlock ensures drivers do not drink before they operate a vehicle.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments? _____

4. Having an interlock has affected the way I drive my car.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments? _____

5. What sort of driving have you done?

Any comments? _____

6. Has anyone else used the car?

Any comments? _____

7. Have you blown into the device just to see what reading you would blow without intending to drive?

Any comments? _____

8. Have you registered any breath violations?

Any comments? _____

9. Having an interlock has affected my general drinking behaviours.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments _____

10. Having an interlock has affected my drink driving behaviour.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments? _____

11. I believe I have benefited from having an interlock installed to my car				
Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments? _____

12. I think there is a need to install interlocks to vehicles				
Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments? _____

13. I expect the community will benefit from having cars fitted with interlocks				
Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments? _____

14. I expect to keep the interlock installed to my vehicle for the complete time period designated by the courts.				
Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	2	3	4	5

Any comments? _____

15. What do you think are the advantages of have an interlock installed to your car?

Any comments? _____

16. What do you think are the disadvantages of have an interlock installed to your car?
--

Any comments? _____

17. Since I spoke to you last, have you driven a non-interlock fitted vehicle?
YES NO

Any comments? _____

18. In the past, how likely was it that you would drive unlicensed when you lost your licence for drink driving?

Extremely Unlikely 1	Unlikely 2	Unsure 3	Likely 4	Extremely Likely 5
----------------------------	---------------	-------------	-------------	--------------------------

Any comments? _____

19. I think interlocks will be more effective in stopping me from drink driving again, than the penalties I received in the past.

Extremely Unlikely 1	Unlikely 2	Unsure 3	Likely 4	Extremely Likely 5
----------------------------	---------------	-------------	-------------	--------------------------

Any comments? _____

20. The interlock has been much more of a hassle than the previous penalties I have received for drink driving in the past.

Extremely Unlikely 1	Unlikely 2	Unsure 3	Likely 4	Extremely Likely 5
----------------------------	---------------	-------------	-------------	--------------------------

Any comments? _____

21. Do you think you will drink and drive again in the future?				
Extremely Unlikely 1	Unlikely 2	Unsure 3	Likely 4	Extremely Likely 5

Any comments? _____

Any other comments?

Appendix G

Participant One

Participant one was a 45 year old, single, unemployed male, convicted of three drink driving offences who was court-ordered to install an interlock for 11 months after serving a 12 month licence disqualification period. He was actively trying to avoid drinking and drink driving both before and after completing the UTL program and was not consuming harmful levels of alcohol at that time. Upon interlock installation, participant one had positive expectations, was confident of successful operation, although had increased his alcohol consumption levels (AUDIT = 9). In contrast, after one month, he reported considerable difficulties operating the interlock as *“it’s been frustrating, I’m anxious”*, which resulted in him reporting driving less but not drinking less. The primary concern was being locked out of his vehicle when he had not been drinking e.g., *“false positives”*. The self-reported data was partially reflected in the downloaded interlock recordings, which indicated 117 incorrect breath samples, no *“start-up”* failures, but one *“re-test”* failure (BAC = 0.021%) and two *“re-tests not provided”*. All driving violations were presented during the day. Despite the self-reported operational difficulties, the average travelling time and number of trips per day (6.33) was close to the sample’s mean.

Participant one’s experiences had improved by the fourth month, as he reported not driving less, was confident to operate the interlock (confirmed by the reduction in incorrect breath samples), but still reported the interlock was a hassle to operate *“The thing won’t work, I have taken it back twice”*. Examination of his drinking levels (AUDIT = 10) was in contrast to the self-reported indication that *“I have reduced my drinking behaviours...definitely”*. This assertion was again only partially supported as the downloaded interlock recordings indicated two *“start-up”* failures in the second month (one in the early morning and one after lunch, M BAC = .042%), one *“start-up”* failure in the third month at 3pm (BAC = 0.41%), and another re-test not provided at the same time of the day. Participant one provided a mixed appraisal, as he believed interlocks were a viable and effective sentencing option, but continued to report hassles using the device, did not drive less, and reported drinking less that was not reflected in the AUDIT scores.

Participant Two

Participant two was a 45 year old, single, male, employed as a technical officer, convicted of two drink driving offences, who was court-ordered to install an interlock for seven months after serving a nine month licence disqualification period. He was actively trying to avoid drink driving before and after UTL completion, and was contemplating changing drinking before the UTL program but was actively reducing drinking upon completion. Despite increases in motivations, he was still consuming harmful levels of alcohol after completing the UTL program (AUDIT = 14). Upon interlock installation, participant two also reported positive expectations, was confident of successful operation, and had considerably reduced his alcohol consumption levels (AUDIT = 7). These positive expectations were also reflected in experiences after one month, as participant two reported few operational difficulties, no hassles or “false positives”, did not drive less, and did not reduce his alcohol consumption levels “*I still drink the same amount of alcohol, although I have become more aware of when and where I drink*”. The self-reported data was supported by the downloaded interlock recordings, which indicated only 9 incorrect breath samples, and one “start-up” failure during the day (BAC = 0.025) and no retest failures. However, participant two recorded the least amount of driving of the sample (5.25 hrs per month, 2.33 trips per day), indicating that the main purpose of the vehicle was to drive to and from work “I only really drive when I have to”.

Participant two’s experiences continued to remain positive at the fourth month, as he reported being confident to operate the interlock, few hassles, no “false positives” and continued to drive less. Participant two reported drinking less alcohol, which was partially reflected in the AUDIT score of 10. “*I’ve cut back for a number of reasons, the interlock, and because I’m trying to save money*”. This positive interlock appraisal was also reflected in the downloaded interlock recordings with no breath test failures, few incorrect breath samples (11 per month), and an increase in the total amount of driving time per week (e.g., fourth month = 12.40 hrs). Participant two also concluded that interlocks were a viable and effective sentencing option: “*And if I do drink I make plans not to drive, so it’s kind of always in the back of your mind. I’d say it has changed me..... hopefully for the better*”.

Participant Three

Participant three was a 34 year old, single, male, employed as a painter, convicted of three drink driving offences who was court-ordered to install an interlock for 12 months after serving an eight month licence disqualification period. He was not willing to change his drinking behaviours pre and post UTL completion, despite consuming extremely high levels of alcohol (AUDIT = 28 & 15, respectively). However, he reported actively trying to avoid drink driving before program commencement but regressed to the contemplation stage by program completion. Upon interlock installation, his alcohol consumption level had increased (AUDIT = 20) and he reported no plans to reduce his drinking levels during the interlock installation period. In addition, participant three reported concerns regarding interlock usage such as providing an adequate breath sample (e.g., he had one operational lung), and expected to drive less as a result of using the device.

After one month, these negative expectations were supported by reports of operational difficulties (e.g., 360 incorrect samples) and that the device had become a hassle *“I’d suck and blow, and suck and blow, and I just couldn’t get the thing to work”* and *“I can’t use it, it just will not work properly”*. As a result, participant three reported driving less and the device recording “false positives”; *“It’s locked me out a few times when I haven’t been drinking”*. Participant three did not report reducing alcohol consumption during the first month of interlock installation, but continued to consume harmful levels of alcohol (AUDIT = 15). The self-reported data was reflected in the downloaded interlock recordings, which recorded six high “start-up” failures all during the day and mostly during the week (M BAC = .061%), and he did not provide a re-test on three occasions, also during the day. Despite the breaches and operational difficulties, the mean travelling time of 9.40 hrs per week was close to the sample’s average.

Participant three had the interlock removed from his vehicle during the second month after signalling that he could not adequately operate the interlock: *“I don’t have the words to describe how much of a hassle it was....it was just too difficult to operate”*.

He was re-sentenced to a further six month licence disqualification period after removal from the interlock trial. Examination of the downloaded interlock recordings indicated a significant reduction in the frequency of interlock usage (1.5 hrs in the month), no breath test failures were recorded, although he failed to provide a rolling re-test on 11 occasions during this driving period. In summary, participant three experienced considerable difficulties operating the device, continued to consume harmful levels of alcohol throughout the combined intervention, and preferred the traditional sentencing option: *“I just wish I had lost my licence and that would have been the end of it. I have not been able to get around, you know, drive around and that has sucked”*.

Participant Four

Participant four was a 33 year old, single unemployed male, convicted of two drink driving offences who was court-ordered to install an interlock for 11 months after serving a six month disqualification period. He was actively trying to avoid drink driving both before and after completing the UTL program, but was not motivated to change his drinking behaviours despite consuming harmful levels of alcohol that increased by program completion (e.g., AUDIT = 14). Upon interlock installation, participant four reported positive expectations, was confident of successful operation, did not believe he would drive less, but still consumed harmful levels of alcohol (AUDIT = 9). These positive expectations were also reflected in experiences after the first month as he reported few operational difficulties, did not driving less, but rather, reduced his alcohol consumption levels (AUDIT = 5): *“It’s been good....I’ve ended up drinking less which is a bonus, and I’m confident that I can use the darn thing”*. The self-reported data was reflected in the downloaded interlock recordings, which indicated 38 incorrect breath samples, and one “start-up” failure (BAC = .018%) during the day that was reported to be a false positive *“it could have been gases in my body or a cigarette, but after I had an ice coffee I blew zero”*. He averaged 37 hrs of driving in the first month, four trips per day, and did not provide a rolling re-test on three occasion which was reported to be due to breath specimen difficulties *“I didn’t have a chance to blow, sometimes it’s difficult”*.

Participant four's experiences remained positive after the fourth month, as he reported few operational difficulties, did not drive less but continued to reduce his alcohol consumption levels compared to the pre-interlock period (AUDIT = 7). In general, he reported interlocks to be a positive sentencing experience: "*you have to think about avoiding drink driving...this forces you to think which is a positive*". The downloaded interlock recordings that indicated no breath test failures, few incorrect samples and a high level of time spent driving per month, supported the positive appraisal.

Participant Five

Participant five was a 51 year old, single, male, employed as a labourer, convicted of three drink driving offences who was court-ordered to install an interlock for nine months after serving an eight month licence disqualification period. He was not willing to change his drinking behaviours before or after UTL completion, although a reduction was evident in AUDIT scores (14 to 9), which remained at a harmful level. In contrast, he reported being motivated to avoid drink driving both before and after completing the UTL program. Upon interlock installation, participant five was confident of successfully operating the interlock, did not know whether he would drink less, which remained constant (AUDIT = 9). After one month, these positive expectations were reflected in similar experiences as he reported a positive appraisal of the device "*It hasn't been too bad, it's a good idea*", reported drinking less (which was not reflected in the AUDIT score of 12), although he indicated using the device was a hassle that resulted in a reduction in driving time: "*I really only use it for work, I certainly wouldn't drive it on long trips in case I had problems with it*". Participant five did not report any "false positives". The self-reported data indicating operational difficulties was reflected in the downloaded interlock recordings, which revealed 74 incorrect samples in the first month. Participant five also recorded two "start-up" failures, one early on a week morning (BAC = 0.132%) and one on a Friday evening (BAC = 0.024%) that were not reported as "false positives" but rather "*an error in judgement*". He averaged 18 hrs of driving in the first month, with 2 trips per day providing support for the assertion "*I don't drive unless I have to*".

Participant five was court ordered to have the interlock removed from his vehicle after one month of usage as a consequence of being apprehended for unlicensed driving three weeks before installing the device. His delayed court hearing resulted in him installing the interlock for a month before returning to court to be re-sentenced. The magistrate removed him from the interlock trial and suspended his licence for a further two years. Participant five was interviewed after interlock removal where he expressed considerable frustration and disappointment: *“I’m in a prison, I can’t go anywhere. I can’t work, I’m that broke...I’m dead, it’s sickening. If I want to have a drink I have to drink cheap plonk, rather than decent beer!”*. Despite such disappointment, he still believed interlocks to be a viable sentencing option to traditional legal sanctions, expressed regret at his unlicensed driving conviction, and believed his interlock installation period should have had extended rather than his licence being removed.

Participant Six

Participant six was a 53 year old, single, male, employed as a labourer, convicted of five drink driving offences who was court-ordered to install an interlock for nine months after serving a two month disqualification period. The UTL program had a positive impact on his drinking levels (e.g., AUDIT score of 14 to 9), which was confirmed in movement from precontemplation to action. He was actively trying to avoid drink driving before and after UTL completion. Upon interlock installation, participant six also had positive expectations, was confident of successful operation, and did not expect to drive or drink less, which was reflected in his AUDIT score of 9. Similar to participant three, these positive expectations were not reflected in his interlock experiences as he reported extreme difficulties operating the device *“It has become such a hassle, it has totally stressed me out, I am sick of it”* and *“It’s been trouble, a real hassle, I’ve had trouble getting it to work”*. Participant six did not report drinking less (AUDIT = 10) but reported driving considerable less: *“I’m much less likely to drive the car. I won’t go out for fear that I won’t be able to start my car”*. These operational difficulties were reflected in 193 incorrect breath test failures in the first month, although he averaged 5.4 trips per day and 48 hrs of driving time.

Of concern is that participant six recorded nine violations both during the week and weekend: five “start-up” failures during the early morning and evening (M BAC = 0.028%, four of which were at night) and four “re-test” failures during the day, that tentatively indicate another person may have started his vehicle for him (M BAC = 0.020%). *Upon questioning, he fervently denied trying to start his vehicle after drinking “I had KFC and it locked me out, the wipe must have alcohol in it. I’m not drinking but my probation officer does not believe me”.*

Participant six had the interlock removed from his vehicle after three months as his ordered expired due to delays installing the device (e.g., financial difficulties). He was interviewed after interlock removal and continued to report negative experiences of using the device: *“I hope to forget this nightmare I have gone through, although I am seeking legal advice, I need some sort of compensation”.* Participant six had his interlock changed after the second month and continued to report operational difficulties. However, the downloaded recordings indicated a considerable drop in incorrect breath samples from 139 to 39 per month. He reported reducing his drinking levels, which was not reflected in the AUDIT score of 13. Participant six recorded eleven breath test violations in the second month: nine “start-up” failures (M BAC = 0.024%) and two rolling re-test failures (BAC = 0.015 & 0.021%). Five of the violations were registered during the night, one in the morning (6am), two in the middle of the day, and four between 4 and 6pm. There was a slight drop in the number of breath violations in the third month (e.g., 6), which consisted of five “start-up” failures (M BAC = 0.025%) and one “re-test” failure (BAC = 0.016%).

Participant six continued to report the device recorded “false positives” despite the manufacturer of the interlock recalibrating and testing the device. He received a written warning from his probation officer after the second month, which he was not prepared to acknowledge as *“I have not been drinking, it’s just not true”.* In summary, participant six reported an extremely negative experience of interlock usage, reported difficulties operating the device, and continued to consume harmful levels of alcohol throughout the interlock trial.

Participant Seven

Participant seven was a 29 year old, married, unemployed male, convicted of four drink driving offences who was court-ordered to install an interlock for 11 months after serving a 12 month disqualification period. He was actively trying to avoid both drinking and drink driving before and after UTL completion. Upon interlock installation participant 7 reported positive expectations, was confident of successful operation, did not expect to drive less, and was continuing to consume small amounts of alcohol (AUDIT = 2). These positive expectations were reflected in experiences after one month, as participant seven reported few operational difficulties, no hassles, did not drive less, and did not reduce his alcohol consumption levels *“It’s been good, you have to have respect for the machine, otherwise you are going to be punished”*. The self-reported data was supported in the downloaded interlock recordings, which indicated seven trips per day and 65 hrs of driving in the first month. Participant seven recorded 73 incorrect samples and one “start-up” breath test failure late in the night (0.020%) which he attributed to a false positive *“I went over a mate’s house, we had some spicy food, and I couldn’t start my car. I don’t think I had a drink. Although after 10 minutes it did start”*.

Participant seven’s experiences continued to remain positive at the fourth month, as reports indicated that he was confident to operate the interlock, reported few hassles, did not drive less and continued to consume small levels of alcohol (AUDIT = 2). However one “start-up” failure was recorded in the second month (BAC = 0.036%), which was again attributed to a “false positives”: *“I don’t know what happened, I’m pretty sure I did not have a drink”*. His positive interlock experiences were reflected in the downloaded recordings that indicated 6.5 trips per day, 60 hrs driving per month and only 25 incorrect samples in the fourth month. Participant six believed he benefited from installing an interlock and preferred the option to traditional legal sanctions *“they keep me on the road, I have learnt a lot, and I won’t drink and drive again”*.

Participant Eight

Participant eight was a 45 year old, unemployed married male, convicted of two drink driving offences who was court-ordered to install an interlock for 11 months after serving a 7 month disqualification period. He was actively trying to avoid drinking and drink driving before and after UTL completion, and reduced his drinking levels over the period of the program (AUDIT =10 to 5). Upon interlock installation, participant eight also had positive expectations, was confident of successful operation, although did not expect to reduce his alcohol consumption levels after interlock installation (AUDIT = 8). He reported a mixed appraisal after one month of usage, as he was confident to use the interlock, but believed the device was a hassle to operate "*some times I can't get the thing started*", which resulted in him driving less: "*I think they are a good idea, but it's becoming a hassle to use.....I have not got the hang of it yet*". He did not report drinking less but his AUDIT score of 6 indicated safe drinking levels. The self-reported data was reflected in the downloaded recordings indicating 6 trips per day, 55 hrs of driving in the first month, but 142 incorrect breath samples during this time.

Participant eight's experiences continued to remain positive at the fourth month, as reports indicated that he was confident to operate the interlock, reported no "false positives" but continued to drive less as the interlock was "*a hassle to use*". His drinking level's had slightly increased and were classified as harmful (AUDIT = 8) although he reported trying to drink less. In contrast, the downloaded recordings indicated three "start-up" failures in the second month during the mid afternoon (M BAC = 0.022%), five "start-up" failures in the third month during the mid afternoon (M BAC = 0.025%), and four "start-up" failures in the fourth month during the mid afternoon (M BAC = 0.053%). Participant eight did not attribute these violations to "false positives" but rather could not explain the cause of the violations: "*I'm not sure, I haven't been working so I sit at home and mind the kids*". Despite the violations he continued to regularly use the device with 6.6 trips per day and 60 hrs of driving in the fourth month. Participant eight considered his interlock experience as beneficial and did not intend to drink and drive in the future "*I have learnt my lesson, I am changing my ways*".

Participant Nine

Participant nine was a 24 year old, married male, employed as a carpenter, convicted of two drink driving offences who was court-ordered to install an interlock for 12 months after serving a five month disqualification period. He was actively trying to avoid drink driving before and after UTL completion, but remained in the precontemplation stage for drinking despite consuming harmful levels of alcohol (AUDIT = 9 & 10). Upon interlock installation, participant nine also had positive expectations, was confident of successful operation, and did not intend to drink less (AUDIT = 9). A mixed appraisal was reported after one month as he was not confident to operate the device and it had become a hassle "*it's tough to use, I've had trouble getting the thing to start*". However participant nine did not report driving less, nor drinking less, reflected in a high AUDIT score of 10. Despite the self-reported operational difficulties, participant nine averaged six trips per day, drove for 84 hrs in the first month, and recorded 39 incorrect breath samples. During this time, one "start-up" failure was recorded in the middle of the day (BAC = 0.022%) that was attributed to a "false positive": "*I was coming back from a weekend away and I hadn't been drinking before I got in the car*".

Participant nine continued to report difficulties operating the device after the fourth month, as it remained a hassle to operate "*I had the interlock changed but it didn't help, I don't know what's going on*". Participant nine also continued to drink high levels of alcohol (AUDIT = 9) and did not believe he needed to reduce his drinking behaviours: "*My drinking is not the problem, the interlock is the problem*". The downloaded recordings indicated he regularly drove his vehicle with five trips per day, 80 hours of driving in the fourth month, only 10 incorrect breath samples, and one "start-up" failure in the second month during the afternoon (BAC = 0.015%), which was not attributed to a "false positive": "*yeah....made a mistake*". Despite the operational difficulties, participant nine reported interlocks were more effective than traditional legal sanctions and "*if I had my time again, I would take the interlock option*".

Participant Ten

Participant ten was a 32 year old male, in a “de facto” relationship, employed as a machine operator, convicted of four drink driving offences who was court-ordered to install the device for 13 months after serving a six month suspension. He was actively trying to avoid both drinking and drink driving before and after completing the UTL program, although consumed harmful levels of alcohol (AUDIT = 11 & 15). Upon interlock installation, participant ten also had positive expectations, was confident of successful operation, expected to drive less but not drink less after installation (AUDIT = 15). These positive expectations were reflected in similar experiences after one month, as participant ten reported few operational difficulties, no hassles or false positives, did not drive less, and did not reduce his alcohol consumption levels (AUDIT = 12). The self-reported data was supported in the downloaded interlock recordings, which indicated three trips per day, 30 hrs of driving during the first month, no breath test violations, although 130 incorrect samples were registered: *“I had some trouble starting it, but I’ve slowly got better”*.

Participant ten’s experiences continued to remain positive at the fourth month, as reports indicated that he was confident to operate the interlock, no “false positives, but had begun to drive less with the interlock becoming a hassle: *“sometimes I can’t start it and it gets on my nerves”*. The downloaded recordings indicated that participant ten continued to regularly use the device with 4 trips per day, 36 hrs of driving in the fourth month and registered only 14 incorrect samples. There was one “start-up” failure provided in the second month during the morning (BAC = 0.034%), which was attributed to “a big night before”. Importantly, participant ten reduce his alcohol consumption levels by 75% (AUDIT = 4) over the three month period *“I decided to drink less, and I think it helped me out in a number of ways”*. In summary, participant ten reported a positive experience using an interlock as it had helped him reduce his alcohol consumption levels, and he was interested in keeping the device fitted to his vehicle after the court-ordered installation period had elapsed.

Participant Eleven

Participant eleven was a 32 year old married male, employed as a cleaner, convicted of four drink driving offences, who was court-ordered to install an interlock for eleven months after serving a twelve month licence disqualification period. He was not interviewed before commencing the UTL program, but post program assessment indicated he was actively trying to avoid drinking and drink driving and consumed small levels of alcohol (AUDIT = 3). Upon interlock installation, participant eleven also had positive expectations, was confident of successful operation, did not expect to drive less, and continued to consume small amounts of alcohol (AUDIT = 2). These positive expectations were reflected in self-reported experiences after one month, as he reported few operational difficulties, no hassles or false positives, did not drive less, and reported drinking less (AUDIT = 5). *"I don't think I've had any real major problems, it's been good"*. The self-reported data was mostly supported in the downloaded interlock recordings, which indicated 7.5 trips per day, 48 hrs of driving in the first month although 109 incorrect breath tests were provided during this time. In addition, one "start-up" failure was registered in the morning (BAC = 0.034%) was also attributed to *"going out and having a good time"* the night before.

Participant eleven's experiences continued to remain positive at the fourth month, as reports indicated that he was confident to operate the interlock, reported few operational difficulties, no "false positives" and did not drive less. In regards to drinking behaviours, he continued to report drinking less. *"I've cut back, and it's been good, I've ended up saving money"*. This positive interlock appraisal was again reflected in the downloaded interlock recordings with no breath test failures, 8.5 trips per day, 60 hrs driving time a week and 35 incorrect breath test failures. Participant eleven also concluded that interlocks were a viable and effective sentencing option: *"I'd take the interlock any day, it's a good idea, gives people a chance, it should be compulsory"*.

Participant Twelve

Participant twelve was a 55 year old, married male, employed as a labourer, convicted of three drink driving offences who was court-ordered to install an interlock for twelve months after serving a ten month licence disqualification period. He was not interviewed before completing the UTL program, but reported actively trying to reduce his drinking levels after program completion (AUDIT = 5). Similar to participant eleven, upon interlock installation reported positive expectations, was confident of successful operation, did not expect to drive less, and continued to drink low levels of alcohol (AUDIT = 5). These positive expectations were reflected in experiences after one month, as participant twelve reported few operational difficulties, no hassles or false positives, did not drive less, and continued to maintain a low level of alcohol consumption (AUDIT = 5). *“It’s been good, I can drive, I can’t drink and drive, and I can get around”*. The downloaded recordings also indicated a positive experience as there were 6 trips per day, 61 hrs of driving in the first month, but 121 incorrect breath samples: *“sometimes I’ve had trouble getting it started, but I’ve just gotten used to it”*.

Participant twelve’s experiences continued to remain positive at the fourth month, as reports indicated that he was confident to operate the interlock, reported few hassles, no “false positives” and did not drive less. However participant 12 began to increase his alcohol consumption levels over the three month period (AUDIT = 9): *“I’m not drinking less, it’s going well, I still enjoy a beer”*. In addition, participant twelve increased the frequency of breath test failures, as there were three “start-up” failures in the second month during the middle of the day (M BAC = 0.074%), and one “start-up” failure in the fourth month during the late afternoon (BAC = 0.050%). *“Yeah, I’ve been locked out a couple of times, just mistakes, I’ll have to watch it”*. Despite the breath violations, participant twelve continued to make 6 trips per day, 55 driving hours in the fourth month and only 9 incorrect breath samples. In summary participant twelve reported a positive appraisal of interlock usage, believed the device to be more effective than traditional legal sanctions and reported he benefited from the device *“I’ve got my licence back, I’m on the road, it’s good”*.