

Peer Reviewed Papers

It Starts with the Parents and Ends with the Parents

The attitudes, knowledge and practices of metropolitan parents in relation to teenage alcohol use

By Bernadette Ward¹, Pamela Snow¹, Geoffrey Munro²,
Melissa Graham³, Virginia Dickson-Swift¹

Abstract

Alcohol is the most popular recreational drug in Australia. Despite the fact that many people gain enjoyment from alcohol related industries, alcohol is also implicated in much personal trauma and social damage. Parents play a key role in influencing alcohol use and driver behaviour in young people. The aim of this study was to gain an understanding of the attitudes and concerns of parents in Melbourne in relation to their teenage children's use of alcohol and how they educate and/or provide role models for their adolescents with respect to alcohol usage. A convenience sample of parents with adolescent children participated in focus groups. Parents described patterns of alcohol use and perceived influences on consumption. They reported that they wanted to create safe environments for adolescents to consume alcohol but that they needed more support and information on which to base these decisions. There is an opportunity for public health policy makers to specifically address parents and enhance their role in alcohol related road safety.

Introduction

Alcohol is the most popular recreational drug in Australia. Most people begin drinking in their teenage years and 91% of the population aged 14 years and over report having tried alcohol at some time in their life [1]. Alcohol is a significant aspect of youth culture and drinking is a common activity both in itself and as a part of other activities. Australia's tolerance of drunkenness is mirrored in the level of binge drinking by adolescents. In 2004, 28% of adolescents aged between 14 and 19 years consumed alcohol in patterns that are risky/high risk to health in the short term [1].

Early access to alcohol has been correlated with early risky/high risk drinking which in turn is predictive of elevated alcohol consumption in later adolescence, problem drinking or health and social problems [2-4]. Access to alcohol has increased in Victoria in recent years due to the introduction of more liberal licensing laws as more businesses sell alcohol, and for longer hours. In addition there is an increased range of alcoholic drinks available. New, sweet alcoholic drinks, wine coolers and pre-mixed "ready to drink" spirits are popular with young people.

Parents act as information providers and as educators, even though they may not acknowledge or always actively seek to fulfill these roles [5]. Permissive parental attitudes and high levels of parental tolerance towards adolescent drinking are associated with an earlier onset of alcohol consumption among adolescent children with an escalation to higher levels of alcohol use [6, 7]. Adolescents report that parents play an important role in initiating young people to alcohol and influencing their level of drinking [8-10]. Because alcohol is both a legal and a widely used drug, young people typically first witness its use in the home environment, and may be permitted and/or encouraged to drink with or in the presence of their parents.

Short and long term alcohol related harm is associated with negative physical, emotional and social consequences [11]. Immediate harms due to risky/high risk drinking include road trauma, aggression, violence, assault, high risk sexual activity and drink driving [12]. Long term problems include chronic diseases (cardiovascular, cancer, liver cirrhosis, mental disorders) loss of personal relationships, disrupted family relationships, loss of employment, decreased scholastic and sporting performance and financial problems [13].

Despite the fact that many people gain enjoyment from alcohol related industries, alcohol is also implicated in much personal trauma and social damage. It is estimated that 41-70% of violent crimes are committed by people who are under the influence of alcohol [13]. Alcohol is a leading cause of preventable death with 6,590 alcohol-related deaths in Victoria between 1992-2000 [14].

Alcohol misuse is implicated in one third of all road accidents [13]. Young intoxicated drivers are more likely than other groups to drive at excessive speeds, and intoxication increases the probability of other risk-taking behaviours [15]. This is exacerbated by young drivers' lack of experience, limited

1 School of Public Health, La Trobe University, Bendigo, PO Box 199, BENDIGO, Victoria

2 Community Alcohol Action Network, Australian Drug Foundation, PO Box 818, NORTH MELBOURNE, Victoria

3 School of Health and Social Development, Deakin University, Burwood Highway, BURWOOD, Victoria

ability and judgment, underestimation of risks and deliberate risk taking behaviour [16]. This has significant policy implications for reducing the use of alcohol by young people, who are over-represented in driver fatality statistics [17]. Young drivers (18-25 years old) represent only 14% of licence holders, but between 2000-04, accounted for 27% of driver deaths in Victoria [17].

Blood alcohol content readings (BAC) at or over 0.05 were present in 28% of all driver fatalities in the period 2000-04 [17]. Of driver deaths in the 18-20 year old age group, 23% had a BAC at or over 0.05. In contrast, of the driver fatalities in the 21-25 year age group, 58% had a BAC at or over 0.05 [17]. While young people are less likely to drive a vehicle following alcohol consumption, amongst those that do drink, relative inexperience with driving means that their risk of being involved in a crash is higher even at low BAC levels [18].

In Victoria, the graduated licensing system (GLS) is designed to introduce driving exposure gradually over time [16, 18]. Overseas models of GLS have been successful in reducing the risk of road crashes for young drivers and vary in their restrictions on key risk factors including inexperience, drink driving, number of passengers, vehicle power to weight ratio, late night driving and mobile phone use [16, 19-21]. In Victoria, the GLS includes a supervised learning phase, probationary licensing, zero BAC readings and compulsory display of P plates [16].

Parents are in a prime position to teach and supervise their adolescents' driving [22, 23] and parental monitoring of driving has been inversely linked to risky driving behaviours and motor vehicle crashes [24]. Young drivers are 22% more likely to be involved in a crash when their parents have been involved in three or more crashes [25]. Adolescents who have been passengers with alcohol-impaired parents are more likely themselves to drink-drive [26, 27]. US and Canadian research indicates that parents are supportive of GLS programs [18, 20] however 72% of known GLS violations were done with parental permission [28]. While parents are generally concerned about the risk taken by beginner drivers, they themselves are not fully aware of the nature of these risks and their role in promoting safe driving habits [22, 29]. Parents therefore, play a key role in influencing both alcohol use and driver behaviour in young people.

Despite the capacity of illegal drugs to occupy the headlines and "crowd out" alcohol as a drug of concern, research has found that parents of teenagers and young adults identified alcohol use as the third most important problem facing their children [5]. A study in rural Victoria found that parents do not feel well informed about alcohol use and how and when to use harm reduction strategies [30]. A study of this kind has not been conducted in Melbourne and it is not known if metropolitan parents have views about teenage alcohol use that are similar to those of rural/regional parents. The aim of this study therefore was to gain an understanding of the attitudes and concerns of parents in Melbourne in relation to their teenage children's use of alcohol and how they educate and/or provide role models for their teenage children with respect to alcohol usage.

Method

Descriptive qualitative methods were used. These methods provide the opportunity to learn about people's opinions, thoughts, feelings, attitudes or experiences and to obtain data about a given problem, service or other phenomenon [31-33].

A recruitment agency invited parents from an existing database to participate. In the rural study of a similar kind, the authors identified the recruitment of parents to be both time consuming and costly [30]. A sample of parents, from a range of socio-economic backgrounds, with children aged 12-17 years, who were attending secondary schools (government, Catholic or independent), were invited to participate. Postcodes were used as a proxy measure for socio-economic status (SES).

Sixty-five parents participated in seven focus groups. Two focus groups were held with participants from each (low, medium and high) SES group. One group was held which was open to participants from all SES groups. Five focus groups included parents of adolescents from all types of schools while two focus groups were allocated to parents whose children attended private schools only. Participation of parents from diverse backgrounds promoted discussion and exchange of ideas.

A semi-structured interview schedule developed from the current literature was used to guide the focus group discussions. This schedule was also used in the similar study that was conducted in rural Victoria in 2003 [30]. Data saturation was reached after the first five focus groups were conducted. In order to ensure that all SES groups and types of schools were covered and that all issues were elicited, a further two groups were conducted.

Data emerging from the focus groups was transcribed verbatim from audiotapes. The transcripts were then analysed using Nvivo [34] to identify and sort emerging themes. The researchers discussed both the major themes and the sub-themes and how these related until consensus was reached. Implications for policy makers across a range of sectors (health, education, transport, liquor licensing) were identified.

Ethics approval was received from La Trobe University, Bendigo. In recognition of the potential costs involved in attending such a group, all parents were offered payment of \$40 for their participation.

Results and Discussion

Three main themes describe parents' attitudes, concerns, and educational practices in relation to their adolescent's use of alcohol. Each of the main themes and sub-themes was grounded in the parents' experiences. Each of the main themes and sub-themes is described in relation to the Australian context and the current literature. Direct quotes are used to illustrate the views expressed by parents.

1. Drinking patterns

Parents thought that adolescents generally consumed alcohol at home and on weekends. A few parents believed that teenagers thought alcohol was an essential ingredient for the success of a party. This is consistent with the thinking that alcohol is a significant aspect of youth culture and that consumption of alcohol is a common activity both in itself and as a part of other activities. Current measures of alcohol consumption patterns amongst young people further support this [1, 35].

Most parents agreed that sweet flavoured alcoholic drinks were very popular amongst adolescents. This is consistent with findings from Australian research that indicate there is an increase in the proportion of adolescent drinkers who are consuming pre-mixed drinks [36]. There has been a 200% growth in volume and value of sales of flavoured alcohol drinks in Australia in the period 1998-2003 [37].

Many parents indicated that they preferred that alcohol initiation occur in the home and generally, they thought adolescents were initiated to alcohol use at 13-14 years. The latest national survey of school students confirm that perception: 90% of adolescents have tried alcohol by the age of 14 [35].

Parents believed that adolescents consume alcohol to have fun, socialise, belong, be popular, gain confidence, experiment and relieve boredom. Consistent with previous Australian research, [5, 30] many parents indicated that they thought adolescents often drink 'to get drunk'.

It's just not enjoying alcohol for the taste and for the sensation whatever it's actually to binge drink to a point of actually getting drunk or even throwing up and all that sort of stuff.

Many parents told stories of adolescents using alcohol as a way of coping with stress and sadness in their lives. This is summarised by the comments of one parent:

One of the girls has said to me that she likes to drink because it makes her feel not as responsible for what; you know her teenage years and growing up it's all too hard; a form of escapism.

In the United States, a longitudinal study has identified both socialisation and coping as reasons for drinking amongst adolescents [38].

Some parents believed that adolescent drinking was part of 'rites of passage' and so it was seen to be a 'normal' part of adolescent development.

I think it is just a thing that they do, that they go through. It doesn't matter where they come from or you know, what sort of background they come from.

Paradoxically, a number of parents observed that some adolescents do not drink. It was suggested by several parents that a commitment to a sport was protective against drinking. This may however be a myth as Victorian research has identified that harmful patterns of alcohol consumption are common amongst amateur football club members [39, 40].

Some parents also suggested that adolescents can be fearful of the consequences of alcohol misuse. In particular, they suggested that there were fears about the associated violence and sense of being 'out of control'. These findings are consistent with previous Australian research that indicates that some adolescents choose not to drink for reasons including fear of negative consequences, family issues and religious reasons, dispositional risk (including physical ailments and a family history of drinking problems) and a dislike of alcohol [41]. Abstinence may be one of many harm reduction strategies that are aimed at reducing alcohol-related harm for communities or particular individuals [42]. Some parents may mistakenly perceive this to be a 'zero-tolerance' approach instead of one component of a policy that includes supply and demand reduction and harm reduction strategies.

2. Influences on adolescent drinking

Many parents believed that society is "immersed" in alcohol advertising that is strongly targeted at adolescents and has a major influence on adolescent drinking patterns. Whilst several parents believed that advertising was "clever", they also thought that alcohol advertising was somewhat deceptive and that it did not promote responsible drinking amongst adolescents. One parent said:

The girl..... she doesn't have a glass as such, there is this bottle and she is in... a skimpy bikini and the way the photo is taken ... what the story is saying is that it is trendy to glog from the bottle.

Australian research has identified that young people believe that alcohol will contribute to social and sexual success and a decrease in stress and enhanced relaxation will occur following consumption [12]. These parents' concerns are consistent with evidence that suggests that the alcohol industry has shifted its focus by targeting adolescents and young people via the internet [43, 44]. A formal review of alcohol advertising commissioned by the Ministerial Council on Drug Strategy in 2003 found that much advertising failed to comply with the relevant code of practice which states alcohol advertisements "must not have strong or evident appeal to children or adolescents" and must present a "mature, balanced and responsible approach to drinking"[45].

Parents considered alcohol to be relatively inexpensive and felt that this strongly influenced adolescent drinking patterns. A recent study of expenditure on alcohol by underage teenagers in Melbourne and regional Victoria found that 39% of young people aged 13-17 years paid for alcohol and spent 37% of their income on the product. The average amount spent was \$22 with one fifth spending more than half their income on alcohol [46]. These patterns of expenditure indicate that price is not a barrier to alcohol purchase and consumption.

Many parents talked about the strong influence of peers on their adolescent's drinking habits and some parents accepted this as inevitable. Overseas, peer influences and low parental monitoring have been identified as strong risk factors for

advancement to heavy (5 drinks or more on one occasion) drinking patterns amongst adolescents [47, 48]. One way of accounting for the role of peers is the theoretical framework provided by Reputation Enhancement Theory (RET) [49]. RET was proposed as a way of explaining how the self is influenced by and presented to a community of peers. In some groups of adolescents, RET has been shown to predict risky substance use [50-52] by virtue of the fact that adolescents seem to strategically adopt behaviours (such as licit or illicit drug use) which they see as being consistent with their identified and desired reputation. The views of parents interviewed for this study seem to lend support to RET as a way of explaining the importance of peer influence in some decisions to drink and/or drink to excess.

Several parents suggested that it was important that parents role model responsible drinking behaviours but recognised that this was not always the case. Several studies have found that parental role modeling has a strong influence on adolescent drinking patterns [53-55] and that adolescents whose parents are heavy drinkers are more likely to have been initiated to alcohol early (<14 years of age) and report more frequent alcohol consumption than other adolescents [3]. Several studies have shown that parental support and monitoring is positively associated with the prevention of alcohol misuse amongst adolescents [6, 56].

Many parents believed that alcohol use is normalised in Australian society and that it is expected that “everyone drinks alcohol”.

It is as though, if you are not a drinker in Australia there is something wrong with you. It is OK to be a drinker, but not the other way around.

A few parents talked about some European cultures and the practice of introducing alcohol from an early age.

Coming from a European background alcohol isn't an issue, it's always been on the table, have a little bit of wine or grandpas done this or there is no mystery in our house.

It seemed that some European practices influence a number of parents about initiating their children to alcohol. However, it appears that parents do not consider the broader social context of these European settings and changing cultural practices. Traditionally, in the southern areas of Europe, it is thought that alcohol was more integrated into daily life and that governments had fewer restrictions on alcohol consumption. However, young people in southern Europe are changing their drinking practices and adopting drinking patterns that are more like their western counterparts [57]. The northern areas of Europe are more like the western cultural contexts in terms of the use of alcohol. In addition, a comparison of alcohol consumption between adolescents in the United Kingdom (UK) and France identified that French parents are more likely than UK parents to closely monitor their adolescents' whereabouts [58] and such monitoring is associated with lower rates of alcohol related harm in young people [59].

3. Harm minimisation and reduction

Many parents talked about the importance of good communication. The comments of one parent reflect the discussion:

I think all the information is out in the world, but if you are not willing to talk to your kids about it, it doesn't matter what's out there.

The nature of relationships between adolescents and their parents appeared to be diverse. While some parents talked about their adolescent being more of a ‘friend’, others indicated that regardless of their adolescent’s age, they remained the parent. A number of parents indicated that they did not want to be unpopular with their children and so reluctantly, allowed and tolerated access to alcohol. They also wanted their children to be ‘popular’ and ‘happy’ and so often gave them what they want. I don’t want to say yes and I don’t want to say no, I don’t want to be the “baddy.” It is unclear if parents who see themselves as ‘friends’ have abdicated their roles as educators and socialisers or if they continue to maintain a sense of responsibility for the wellbeing of their children. Whilst this may be a popular notion, large scale studies have found that the majority of adolescents continue to seek approval and validation from their parents when they continue in parental roles [60].

A number of parents reported that they believed they have a responsibility to educate their adolescent about responsible alcohol consumption. The comments of one parent were typical of this view:

It helps if they have some education in school and things but... it starts with the parents and ends with the parents. I just see it as being a natural part of every day life and it's the same as any thing else whether it's smoking or driving a car or drugs or whatever they all learn basically from the home.

The content of what parents were teaching their adolescent seemed to differ widely. Parents varied in their approach from zero tolerance, to harm reduction, to acceptance of regular alcohol use.

For example:

I mean my theory is if you're under age you shouldn't have alcohol at the party. I'm old fashioned but [when] I was under age there was no alcohol at my parties.

I always try to talk to them when I pick them up drunk from wherever they have been, which is sometimes 2[am], I pick them up and I really do I try to talk to them.

In the United States, longitudinal studies have identified a link between parental disapproval of adolescent alcohol use and a lower incidence of later adolescent drinking [47, 61]. Parental values and rules about alcohol can influence adolescent drinking patterns [10]. However, it is not clear whether communication alone between parents and their adolescent has a protective value against misuse of alcohol. What is known is that parents' own drinking patterns do influence what they communicate to their adolescents [62].

Parents varied widely in the amount and content of communication with other parents. Some parents

communicated with other parents for monitoring purposes while others seemed to use this communication as a behavioural management strategy. Several parents indicated that when it came to alcohol, they felt responsible for other people's children who were at their home.

Many parents discussed the issue of adolescents drinking in a supervised environment. Several parents thought that it was parents' responsibility to decide when their children should have access to alcohol and "not the role of government". It would seem that these parents might be resentful or unaware of the existing role of government in legislation regarding access to alcohol. A number of parents believed that introducing alcohol in the home meant that adolescents were being supervised and were safe. It seemed that some parents encouraged initiation to alcohol in this setting.

We want our kids to bring their friends home to us. If they want to have a drink then yes, if it's under a controlled environment where I know my husband and I will control how much they drink.

Several parents discussed adolescents' parties and how they believed that, despite the amount of alcohol being consumed, this was safe. For example:

If I am there and I know he is in a safe environment for him to over indulge and see what it's like the next morning to have a hangover and see how bad you feel and see how he handles it.

It seems that parents use these strategies in an attempt to provide some safety for their adolescents whilst monitoring their adolescents' drinking behaviour. However, these comments reflect a tension between parents wanting their child's approval and creating a safe environment. This sends mixed messages to young people who are often unsure of safe drinking habits. The more challenging path from a parenting perspective involves parents risking disapproval through clear limit setting.

Whilst numerous studies have found that parental monitoring reduces the chance of adolescents being involved in problem behaviours [63, 64], other studies have found that low parental monitoring promotes strong peer orientation and deviant behaviour [8, 65]. However, it is not clear that what these parents describe can actually be translated into 'parental monitoring'. It may be that some parents believe that they have adequate knowledge to create safe drinking environments for their adolescents. However, studies in the United States and in Australia have shown that parents and other community members enhance their knowledge after attending educational programs or participating in community programs that are designed to reduce alcohol related harm [66, 67].

A number of parents were concerned about adolescents' legal initiation to alcohol at 18 years of age coinciding with obtaining a motor vehicle licence. For example:

I don't mind people drinking, but I'd prefer my child to learn about drinking before he starts driving so at least he knows how he's going to behave when he's been drinking.

It may be that some parents are not familiar with the rationale for the use of the three stage GLS in Victoria. Crash risk is higher for beginner drivers irrespective of their age when they obtain their licence [18]. However, this risk is even higher amongst young people who are more likely than older people to demonstrate risky behaviour whilst driving [18]. Risky driving leads to hazardous situations and the combination of alcohol and inexperience exacerbates the risk [18]. Young people are less likely than adults to drink drive, but when they do, their crash risks are higher [68]. The GLS is designed to address the age/inexperience factors that are exacerbated by risky behaviour, including the use of alcohol [18]. Parental involvement and monitoring in GLS programs has been associated with lower levels of risky driving [24, 69].

A few parents were supportive of policy that reduces alcohol access for young people (<18 years) and questioned why the community appears more concerned about selling cigarettes to people who are underage than they are about access to alcohol.

The attitudes of people say it is OK for them to have their 14 and 15 year olds in the backyard, all drinking I won't do it for my kids, I did it once and that was enough.

I've got to the stage where I've got little supervision over my children because of other parents' slackness in that area. The community [support] penalties [that] apply to the milk bar man selling cigarettes but they don't feel like the penalties apply to people allowing children to purchase alcohol or even helping them. It's up to the parents, I wish there [were] stronger community support.

This might suggest that while alcohol consumption is an accepted part of Australian life, some parents feel unsupported in their efforts to promote harm reduction strategies for their children.

There was a sense that it was the 'norm' for parents to purchase alcohol for their children. This often included unrestricted access to alcohol at home parties. A number of parents indicated that they were sometimes reluctant to buy alcohol for adolescents but suggested that, in contrast with the evidence, [70] this strategy would protect their children from drink spiking; "at least you know what they're drinking". Some parents also thought that if they did not buy alcohol for their children, then the children would recruit people around bottle shops to buy it for them. Several parents thought that this would expose their adolescents to other risks.

One parent even bought alcohol for someone else's child because she "felt sorry" for him:

I could see what the other kids had and I went and bought it for him; he was a boarder. I felt really sorry for him because he didn't have someone to go and buy it ... and then I was thinking all night, oh my God, what have I done?

Hence, it would appear that in a number of settings, parental attitudes and practices are contributing to the 'normalisation' of alcohol consumption amongst young people. Again, it appears that parents are unsure of their approach to education regarding adolescent alcohol use and that there is ambivalence regarding parents supplying alcohol to young people.

Parents varied in what they thought about the impact of school based education programs. In general, it seemed that while parents thought that information sessions were useful, programs that were interactive or engaged a role model or peer educator had more value.

My daughter and another girl in Year 11 actually gave a talk to Year 7 ... they did it quite seriously and it had quite an impact on the younger year level that these girls were quite honest about that they had got drunk and been sick. I think it had a better impact on the Year 7 kids than the teachers doing it.

Whilst systematic review supports the use of role models in school drug education programs, the evidence regarding peer educators is not as conclusive [71]. There is a risk that older peer educators may actually glamorise alcohol misuse and make it seem like a rite of passage to younger students.

My son says the education programs they have ... have footballers coming in and talking to them about responsible drinking, drugs and things like that. It depends on who is giving the message if it is someone they respect and admire, then they will take notice.

Meta-analyses of school based education programs have revealed that smaller interactive programs are more effective in reducing alcohol related harm [72]. However, most programs are only effective in producing a short-term delay in the onset of substance use by non-users and a reduction in the use by current users [73]. Most of the studies included in meta-analyses of this kind were based overseas. In Australia, it has been identified that effective school-based programs should begin before initiation to drug use and that content should include social skills and resistance training. In addition, community values, societal contexts and information about drug related harm need to be included [74].

Conclusion

Parents in this study perceived that adolescents often drink to get drunk and that adolescent drinking patterns are strongly influenced by peer and parental role modeling. Alcohol advertising and relatively cheap alcohol were also thought to be strong influencing factors. Many parents indicated that they want to create safe environments for adolescents who consume alcohol but ironically many of the practices of these parents may in fact be contributing to the normalisation of alcohol use and hence contributing to ongoing harm. Parents indicated that they need more information on which to base decisions and that sometimes they feel unsupported in their decision making. Parents have an important role in enforcing GLS programs but often do not understand driving risks well and the importance of role modeling safe driving practices. There is an opportunity for public health policy makers and practitioners to specifically promote the role of parents in promoting alcohol related road safety.

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Choice of licensing method and crashes of young drivers

By Robert Anderson, Craig Kloeden, TP Hutchinson and AJ McLean

Centre for Automotive Safety Research, University of Adelaide

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Abstract

Five years of data (1998-2002) were used to examine whether there was a relationship between the method of driver licensing - Competency Based Training (CBT) or Vehicle On-Road Test (VORT) - and the subsequent crash experience of young drivers, using logistic regression analysis.

The main findings of this study were:

Statewide, choosing the VORT was associated with a 6% increase in the odds of having at least one crash in the first 180 days. In one year, if those who chose VORT had an equivalent crash risk to those who chose CBT, there might have been 20 fewer non-casualty and 10 fewer casualty crashes in new drivers' first six months of driving. The choice of licensing method was less important than the variables: area of residence, sex, age and the period spent on a learner's licence.

However, choosing VORT rather than CBT could easily be due to factors (amount of travel, personality, social habits) that are also associated with a greater likelihood of crashing. For example, we found that choosing VORT rather than CBT was associated with a 25% increase in the odds that the driver had been involved in a crash as a driver prior to the issue of a P licence. This means that there is a real possibility that the slight increase in the odds of having at least one subsequent crash (noted in 1. above) is not due primarily to any characteristic of

the VORT test itself but rather something about the drivers who chose to take the VORT.

We therefore found no clear evidence that any differences between the VORT and CBT methods of licensing are related to subsequent crash experience.

In separate analyses, we found no evidence that the choice of examiner for the VORT, or the instructor for the CBT test, has any significant influence on subsequent crash outcome.

Keywords: Young drivers, risk factors for crash involvement, licensing methods, driving instructor, logistic regression, data linkage

Introduction

This paper describes the findings of a study, prepared to assist Sir Eric Neal in his review of driver licensing in South Australia. We have constructed and analysed a dataset consisting of the records of young (18-25 year old) newly-licensed drivers, including whether each had a road crash within 180 days of getting their licence. The data include all drivers in that age range in South Australia who gained their P licence in the years 1998 to 2002. We examined whether certain characteristics of the drivers influenced the probability of crashing. These characteristics were: age, sex, area of residence in South Australia, method by which they obtained their licence, and the period spent on a learner's (L) licence

