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The Young Driver: A Highway Warrior?

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A thesis submitted for the Degree of Doctor of Philosophy in Psychology

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ABSTRACT

Young drivers have high rates of injury in New Zealand and throughout the Western world. It is commonly perceived that a major reason for this is their tendency to engage in unsafe driving behaviours, something that has frequently been labelled “risk taking”. A study of the literature suggested that the term “risk taking” has been used in a variety of different ways and may have obscured our understanding of young people’s motives. Theories and research reviewed on the causes of unsafe driving behaviour amongst adolescents revealed a variety of potential contributors, ranging from the individual to the social. There is little evidence to implicate young women as unsafe drivers, who are most at risk as passengers.

A survey of sixth form students (n = 626) found high levels of unlicensed driving, breaking the rules associated with a restricted licence, failing to wear a seat belt in the back seat, speeding and being the passenger of a drinking driver. In addition, the survey found significantly more males than females reported: driving, engaging in unsafe driving behaviours, drinking and driving, speeding on the open road, breaking the night curfew associated with being on a restricted licence and dangerous thought patterns. Females were more likely to have been the passenger of a drinking driver after the last party they attended.

Interviews with a sub-sample of those surveyed (n = 16) revealed a number of scenarios that led to unsafe driving. These included: peer group dynamics, the adolescent sub-culture, emotional stress, an apparent lack of awareness of risk, and practical considerations. The interviews also indicated a lack of policing of the rules associated with the Graduated Driver Licensing System (G.D.L.S.).

Interventions aimed at changing the behaviour of young drivers are examined and driver education is looked at in some detail. Problems with methodology made it difficult to reach clear conclusions about the efficacy of past programmes. Health education literature was analysed to ascertain what may be the ingredients of effective programmes for driving safety.
An intervention study was carried out that compared a group of sixth form students who received a programme for driving safety \((n = 176)\) with a control group \((n = 146)\). Measures of attitudes, knowledge and self-reported behaviours yielded no significant differences between the two groups in either the post-test or the follow-up. A variety of possible reasons for this outcome are put forward, including the programme’s emphasis on thinking processes and its low fear approach.

The recommendations that are made for decreasing the teenage road injury rate include: better policing of the G.D.I.S., education programmes and media campaigns that focus on the young male’s sense of personal immunity from risk, and increased availability of safe transport on occasions when young people are drinking. It is stressed that comprehensive safety plans that target all age groups are likely to have the greatest impact.
Highway Warriors  
by Shona Laing

I can’t look  
At the road rising on highway one  
Where the tears of the tangi go on and on  
A pagan power  
United now  
Christmas has gone

But you can see  
Along the hard shoulder where the shrines should be  
Where a soul departed the flower of a memory  
An empty stretch  
Where bone and flesh  
Met with machine

And in the war of the road  
Another beautiful young man dies  
Innocent strangers  
Another woman another child  
Drive into danger  
Out of an ordinary day  
While the highway warriors  
Wait in the passing lane
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INTRODUCTION
INTRODUCTION

THE "YOUNG DRIVER PROBLEM"

Road injuries are the leading cause of accidental death in New Zealand and the leading cause of all deaths among teenagers (N.Z. Official Yearbook, 1995). This trend is found throughout the Western world (Evans, 1991; Jung & Huguenin, 1992; Lourens, 1992). While road injuries are clearly a matter of concern with regard to all road users, young drivers, and in particular young males, appear to be especially at risk. The New Zealand road fatality statistics for 1994 (Land Transport Safety Authority, L.T.S.A., 1995), show that in the age bracket 15-19 years, 1201 females were injured and 22 females were killed; with 2009 males injured and 42 males killed. These injury rates were the highest for any age group. The fatality rates were only higher for females aged 20-24 years (with 23 road deaths); and for males aged 20-24 years (with 72 road deaths) and 25-29 years (with 59 road deaths).

The 15-19 year old age group was similarly at risk as drivers and passengers. While 28 were killed as drivers of cars or motorcycles, 30 were killed as passengers in cars or as pillion on motorcycles. The remainder were killed on bicycles or as pedestrians. When these figures are broken down for sex however, it is apparent that males contribute far more to the driver deaths in this age group than do females. In 1994, 22 15-19 year old males were killed as drivers of cars or motorcycles, in comparison to 6 females in this age group who were killed as drivers. However, both sexes were equally vulnerable as passengers, with 15 males and 15 females being killed in this way (personal communication, L.T.S.A.).

The risk young people face of being injured on the roads is one that has prompted a vast body of research and numerous attempts at interventions, both in New Zealand and overseas. Recognition by the New Zealand government of the "young driver problem" has led to special licensing laws, that place restrictions on young novice drivers and a lowering of the legal blood alcohol limit for all drivers under the age of
20 years. However, there is still an urgent need for further understanding of the factors leading to young people’s road injuries and for comprehensive programmes that aim to reduce their incidence.

OBJECTIVES OF THIS THESIS

This thesis is an investigation of two sides to this “young driver problem”: the potential causes and the potential interventions. The “young driver” of interest is mostly the teenage driver, as the empirical work for the thesis concentrated on this age group. However, much of the literature cited applies more widely to drivers under the age of 25, and many of the conclusions drawn are appropriate for both teenage drivers and drivers in their early twenties.

The first part of this thesis, *The Young Driver: a Highway Warrior?*, is an attempt to describe and critique a number of different approaches to understanding the causes of teenagers’ road injuries. While there are several factors that probably contribute to young people’s crashes, including inexperience and the conditions under which they drive, the factor that will be focused on is the apparent tendency of young people (and especially young males) to engage in more unsafe driving behaviours than other age groups. This has been given various labels such as “risk taking” or “reckless behaviour”. Whether teenagers are inherently reckless, whether they conforming to social expectations of what makes a “skilful driver”, or whether they are simply making the decisions they feel best serve their immediate needs, are all possibilities that are examined and discussed. At the end of this part, extracts from interviews that were carried out with sixth form drivers are presented. The interviews were designed to try and help clarify the scenarios and thinking patterns that may lead teenagers into risky driving situations.

In the second part of the thesis, *Changing the Young Driver: Educating for Safety*, the most widely used interventions that aim to change the behaviour of drivers are discussed. Driver education programmes are looked at in some detail. It is apparent in this discussion that the evaluations of such programmes are fraught with methodological difficulties. This part of the thesis tries to go beyond the simple (and
simplistic) question of "Does driver education work?", to look at the type of driver
education that might work best, and the circumstances under which it is most effective.

The major portion of the empirical work is presented in the third part of the thesis and
includes the evaluation of a school-based driver education programme. The
information gathered in the pre-testing for this evaluation also provides some insights
into the current driving and passenger behaviours of adolescents and the gender
differences that exist. Below is an outline of the phases involved in the empirical
studies that were undertaken in 1994.

PHASE 1

*Questionnaire I.* This questionnaire was used for the
pre-test phase of the intervention study that is presented
in Chapters 9, 10 and 12. It was also used for
the descriptive study, presented in Chapters 9, 10
and 11.

PHASE 2

*Interviews- set I.* The participants in these interviews
were a small sample of the subjects who completed
Questionnaire I. The interviews are presented in Chapter 5.

PHASE 3

*Programme delivery.* The driver education programme,
described in Chapter 9, was taught to the treatment
group 3-5 months after the pre-test.

PHASE 4

*Questionnaire II.* This questionnaire formed the post-
test for the intervention study, and was delivered to a
sub-sample of the treatment group immediately on
completion of the programme.
PHASE 5  
*Interviews-set 2.* These interviews involved the same participants as those who were interviewed during phase 2 and are presented, with the first set, in Chapter 5.

PHASE 6  
*Questionnaire III.* This questionnaire formed the follow-up for the intervention study. It was delivered 4-6 months after the treatment group had received the programme.

The thesis concludes with a summary of the insights that have been gained into the nature of the young driver and a discussion of the most promising strategies for reducing young people’s road injuries.
THE YOUNG DRIVER:
A HIGHWAY WARRIOR?
Many researchers worldwide, have tried to pin down the reasons for the high international rates of death and injury amongst young drivers (e.g. Fuller 1988; Hodgdon, Bragg, & Finn, 1981; Jonah, 1986). The general agreement among these researchers seems to be that there may be three main factors that contribute to the problem: exposure (which includes the distance driven and the conditions under which it is driven), inexperience, and "risk taking". Exposure and inexperience will be discussed briefly in this chapter. "Risk taking" is the subject of the remaining three chapters.

EXPOSURE

"Exposure" in the context of driving can be used to refer to two things: either the number of kilometres driven, and so the exposure to driving regardless of the driving conditions, or the degree of exposure to different driving conditions, especially those which appear to be high risk. Each of these will be explored in turn.

Crash rate per kilometre driven

International studies generally show that teenage drivers drive less than older drivers. Therefore, rather than doing anything to improve the picture presented by young drivers' crash records, using crash rate per kilometre driven as a measure actually increases the proportion of crashes young drivers appear to have in comparison to older drivers (Hodgdon, Bragg & Finn, 1981; O.E.C.D., 1975; Pelz & Schuman, 1971).

This has also been found in a recent New Zealand study. The New Zealand Household Traffic Survey (Jones, 1991) that ran from July 1989 to June 1990, showed that teenage drivers were vastly over-represented per kilometre driven. Male drivers aged
15-19 years for example, were involved in nearly 400 injury crashes per million kilometres driven, with female drivers of the same age involved in 300 injury crashes per million kilometres driven. This compares to approximately 150 injury crashes per million kilometres for both males and females aged 20-24 years. For fatal crashes males aged 15-19 years were involved in 20 per million kilometres, with females involved in 7. This compares to males aged 20-24 years being involved in 6 fatal crashes with females involved in 5.

As can also be seen from these figures, the male/female discrepancy shown by the national statistics presented in the introduction remains when using a crash rate per kilometre measure for the teenage drivers, although for the 20-24 year old drivers this discrepancy almost disappears. Although an early American study (Harrington, 1972) found that gender differences for teenage drivers levelled out when using a crash rate per mile measure, a more recent British study found, in keeping with the New Zealand study, that using crash rate per kilometre did not completely account for the sex difference in crashes amongst very young drivers. Maycock, Lockwood and Lester (1991) studied 18,500 British drivers and found that for young novice drivers driving the same annual mileage, women would expect to have 35% fewer accidents than men.

**Exposure to risky driving conditions**

Studies on whether young drivers still compare poorly to older drivers when including the conditions under which driving takes place have been less conclusive than those looking at exposure in general. It is difficult to make exact comparisons between studies, as the conditions they have taken into account, the weighting they give these conditions in terms of “extra danger”, the outcome measures they use (“crashes” or “injury crashes” or “fatalities”) and the way they report their results, all differ.

Hodgdon, Bragg and Finn (1981) in a literature review, noted for example, that it is possible that young drivers do drive in “more dangerous places” and at “more dangerous times”, and that this accounts for 10% of the variance in their crash rate. Pelz and Schuman (1971) in an American study, gathered information through official statistics and interviews on 3,000 drivers aged 16-24 years or 35-44 years. They
looked at the number of days and number of hours driving per week, the number of short trips in the last month and long trips in the last year, and the percentage of driving done on “superhighways” and other types of roads. Accounting for all these factors they found that drivers aged 18 or 19 years still had 10% more crashes (of any severity), than average.

In a New Zealand study, White (1988) looked in some detail at the data collected in the New Zealand Driver Exposure Survey during 1976 and 1977. He suggested that it is possible to break down the factors responsible for the higher injury crash rates of teenage drivers into age inherent factors, that is the differences in risk between younger and older drivers under the same driving conditions, and lifestyle factors, which is the amount of driving performed under specific conditions by the age group. He suggested that teenage drivers do more motorcycling, drive older cars and drive more at night than middle aged drivers.

White reported the effects of these different lifestyle factors in terms of the risk that teenage drivers had compared with the safest group of drivers on that factor (which was either 50-59 year old women, or men aged 40-49 years, depending on the factor being considered). When each lifestyle factor was taken into consideration, and the amount of variance that appeared to be due to that factor was removed, the safety of the teenage driver group in comparison to the safest group, tended to improve.

The baseline measure was young drivers’ crash rate per kilometre. Using this it was found that 16-year-old males had 13.3 times the risk of the safest group (50-59 year old women), and 5.7 times the overall risk. (The figure for 16-year-old females was not reported). The risk dropped to 8.9 times that of the safest group for males and 6.5 times for females when motorcyclists were excluded. The most dangerous times of the day (per kilometre driven) were 2.00-2.59 am and 10.00-10.59 pm. When time of day was taken into consideration, 16-year-old males were then at 7 times more risk than the safest group, and 16-year-old females were 6 times more at risk. When the amount of driving on high risk nights (Thursday to Saturday), vehicle age and time of day were taken into consideration together, 16-year-olds of both sexes were then computed to
be 5.7 more at risk. White concluded that overall, 57% of the difference in injury crash rate between 16-year-olds and older adults could be attributed to these "lifestyle" factors.

It would seem therefore, that some of the "extra" crashes and injuries amongst teenage males and females may be related to their tendency to drive under less safe conditions than older drivers. However, given the variety of measures, outcomes, and methods of reporting used by different studies, it is currently impossible to quantify how much of an impact these conditions might have. It is also important to note that young men are the most physically robust of any group. They are likely to suffer less severe injuries in a crash than either older men or women of any age, and are also more likely to survive serious injuries than other groups (Evans, 1991). If this was taken into account, the risk rating of young men would be further increased. Also, as pointed out by an O.E.C.D. report (1975), it is possible "that drivers who use the roadways at night differ significantly in certain personal characteristics from those who use the highways in the day." (p. 39). This is certainly likely to be true of those who ride motorcycles, that although inherently dangerous are also traditionally favoured by high risk subgroups of youth.

For the purposes of this thesis, it is sufficient to conclude that whatever role driving conditions may play in young people's (and especially young male's) elevated risk of road injury, there is still a large amount of variance that cannot be explained in this way.

**INEXPERIENCE**

While it is clear that teenage drivers are at high risk compared to other drivers, what is not immediately apparent is whether this risk group is teenage drivers per se or rather novice drivers, a large proportion of whom are teenagers. It may be that all novice drivers are at high risk of being involved in a crash. This section looks first at how the effects of inexperience may function to increase crash susceptibility, and second at studies that have attempted to quantify the degree to which inexperience contributes to young drivers' crashes.
The effects of inexperience

1. Levels of functioning: Driving is a complex task that involves advanced perceptual motor skills, as well as judgement skills and the ability to quickly integrate and respond to large amounts of information. It is also a creative activity. This is summed up clearly by Groeger and Chapman (1990): “Our view of the driving task . . . is that skilled performance involves not simply the matching of highly-practised motor outputs to well-specified stimuli, but the ability to produce new sequences of activities in reaction to situations not previously encountered, often without compromising other activities being carried on at the same time.” (p. 1349).

Because of its complexity, driving, as with many other human activities is performed on different levels (Reason, 1990). At the lowest level, the perceptual motor skills are being learnt and practised. Then the individual learns the rules of traffic, how other drivers function, and how to react to common conditions and hazards. Finally, the driver learns how to make sound judgments in novel situations. As driving skill becomes automatic the number of “slips” (to use Reason’s term) decrease. This may happen quite rapidly. Drivers may also quickly learn the basic rules of traffic. However, the experience required to make sound judgements in novel situations may take more time. New drivers may readily suffer from cognitive overload (Gregersen, 1994) and so be unable to quickly analyse a situation and make appropriate defensive manoeuvres.

2. Holistic viewing: Another difference between a novice and an experienced driver, is that experienced drivers view the driving environment holistically, whereas novice drivers tend to see it one piece at a time. Rockwell (1972) looked at the eye movements of the novice driver compared to the experienced driver. He found that the eye movements in the novice driver involve “frantic cue searching” (p. 157) large eye movements and fixations on non-relevant cues. Experienced drivers, on the other hand, concentrate fixation near the focus of expansion and use peripheral vision for feedback. Benda and Hoyos (1983), in two experiments that involved rating hazards, found that less experienced drivers tended to concentrate on the details of a situation, rather than on the situation as a whole. Milech, Glencross and Hartley (1990) looked at the differences between novice and experienced drivers in the ‘knowledge structures’ they
had developed about the driving task. They found that the experienced drivers tended to take into consideration all the relevant information in the driving environment, rather than focus on single events or a single part of it. This made them able to assign priorities to their activities more effectively than the novice drivers.

3. Operant Conditioning: Driving theories based on operant conditioning (Fuller, 1984, 1988, 1990; Perkins, 1990; Rumar, 1988), provide further insight into the dangers of being a novice. A behavioural analysis of the driving task was proposed by Fuller (1984). He suggested that when a driver approaches a discriminative stimulus it is a signal that there may be an aversive stimulus ahead. The driver can then choose to make an anticipatory avoidance response, or a non-avoidance, competing response. Aversive stimuli may be crashes, tickets or just uncomfortable states of high arousal. The driver is only motivated to make such a response when the risk of an aversive stimulus seems high. An anticipatory avoidance response is maintained if it is frequently reinforced, but it is extinguished if it is rarely or never reinforced. An anticipatory response may in fact be punished, for example reducing speed makes a driver late, and a competing response, for example going over the speed limit, may be highly rewarding. Competing responses may be reinforced by the relative certainty in which they will result in meeting a goal. If the discriminative stimulus is followed by a potential aversive stimulus, a delayed avoidance response can occur, that may be more rewarding than the anticipatory avoidance response.

Fuller (1988) suggested that inexperienced drivers' poor recognition of discriminative stimuli (called in this later paper "hazard precursors") leads to slower stopping and means they find themselves in riskier situations where they are coming into contact with other drivers. According to Rumar (1988), novice drivers have fewer memories of previous situations and therefore a very narrow awareness of the possible outcomes of those situations (including negative ones). In addition, the lesser skill of the novice driver means that if an unsafe behaviour does result in a situation in which a crash is imminent, inexperienced drivers may not be able to avoid the crash.
4. Skilled drivers but inexperienced decision makers. The features of inexperience discussed so far, tend to stress its impact on the judgement of the driver. It is likely that it is when drivers have confidence in their skills and are beginning to test their judgements that they are the most vulnerable, as it appears that the most dangerous inexperienced drivers are not those who are brand new to the task, but those who have been driving for a year or more. Forsyth (1992) in a study of 2,700 novice drivers in Britain, found that the increased proportion of new drivers who had been involved in an accident was greater between 18 and 24 months driving experience than between 12 and 18 months driving experience. It may be that because young people acquire the perceptual-motor skills associated with driving reasonably quickly, they soon feel confident with controlling the vehicle and so start to push themselves (by driving too fast, for example), once they have past the absolute novice stage (Brown, 1982).

When drivers are very new to the task, driving feels difficult and the driving situation is unfamiliar. They feel a high degree of subjective risk. Schuman, Pelz, Ehrlich and Selzer (1967) in an early survey of young drivers’ self reported driving behaviours and attitudes found that younger drivers (aged 16-18 years old) thought more about death and injury than slightly older drivers. This may be an important ‘sheltering factor’ that helps the novice driver through the initial learning phase (Naätänen & Summala, 1976).

Indeed, there is some survey evidence that very novice drivers do behave more cautiously on the road than drivers who are slightly more experienced (e.g. Jonah 1990a). This may be particularly true for drinking and driving (e.g. Jonah, 1990a; Cooper, 1987). Naätänen and Summala (1976) suggested that it is after this very early learning phase that the “extra motives” of young drivers: competitiveness, aggression, thrill seeking, relieving tension, demonstrating skill and feeling adult; start to have an impact. From a somewhat different angle, McDonald (1985) suggested that because of the experience of high subjective risk associated with learning the task, novice drivers become used to driving with a feeling of risk. Once they have gained expertise, they may still drive in a manner that maintains the level of subjective risk they felt before, but that in fact increases the level of actual risk.
The contribution of inexperience

A number of studies have attempted to quantify the extent to which young people's crashes can be attributed to inexperience (e.g. Levy, 1990, MacMillan, 1975, Maycock et al., 1991). Levy (1990) examined the fatality rates for 15-17 year olds in a number of American states. He found that age did matter, drivers who were 15 years old had more fatalities proportionately than any other age group, but that driving experience had a minor, if any, influence. In contrast to this, Maycock et al. (1991) found that inexperience was more significant in contributing to what they termed "accident liability", than age. They studied 18,500 British drivers to assess the relationship between accident liability and age, driving experience, sex, socio-economic group and annual mileage. Due to the self-report nature of the data, the study did not include accidents in which the driver was killed. They found that accident frequencies fell by a factor of 7 to 8 from young inexperienced drivers to older, experienced drivers. According to their analysis, the effect of increasing driving experience means that a driver's accident liability decreases by 30% in the first year regardless of age. On the other hand, 17-year-old drivers (the youngest studied) can expect their accident liability to decrease by 6% by the time they are 18 years old as a factor of age. This would suggest, that although age and experience both contribute to crashes, experience has the larger impact. The difference between the two studies cited here may possibly be due to the different measures they used. Levy (1990) measured fatalities, whereas Maycock et al. (1991) measured non-fatal accidents. The use of different measures is a recurring problem when attempting to compare studies on driving risk.

It is possible that the contribution of inexperience is considerably greater for young women's crashes than for those of young men. Female drivers have been found to make more errors with control aspects when sitting a driving test than male drivers (Forsyth, 1993). Teaching them driving skills and knowledge may also be more likely to lower their injury and fatality rates, than teaching these same things to young men (Harrington, 1972). MacMillan (1975) interviewed a random sample of 1,000 British drivers. He found that for young men, there was a difference of 12% between the number of crashes amongst novice male drivers who were under 21 years compared to
novice male drivers who were over 31 years. For women there did not appear to be such a difference, with all novice female drivers having similar crash rates regardless of age. This would suggest an extra age factor in young men’s crashes that is not apparent in those experienced by young women. Harrington (1972) in his longitudinal analysis of the driving records of 13,915 young American drivers during their first 4 years of driving (all drivers were 16 or 17 years in year 1) found that the accident mean for males reached its peak in the second year of driving and then declined, whereas the female mean declined from the first year onwards. Although this finding might be open to a variety of interpretations, it is possible that the young women’s driving was showing a straightforward improvement with experience, whereas men’s driving did not improve with initial experience, but in fact worsened, suggesting again a contribution from other factors.

THE INTEGRATION OF EXPOSURE, INEXPERIENCE AND “RISK TAKING”.

The “age” component, that has been balanced against exposure and inexperience in the above discussion, is equivalent to the “risk taking” factor, a convenient label for all the remaining variance that contributes to young drivers’ road injuries. “Risk taking” even lurks beneath the surface of explanations based on exposure and inexperience. Why, for example do young men ride motorcycles when they are so dangerous? What are they doing on the roads in the middle of the night? Why do young male drivers with a little experience fare worse than those with almost none?

The notion that young drivers, especially males, “take risks” has become a truism in driving research, one that will be examined in detail in the next three chapters. At this stage however, it is important to note that to whatever degree young drivers “take risks”, the impact of this behaviour cannot be fully separated from the conditions under which they drive and their relative inexperience. For example, inexperienced drivers may be more vulnerable to the effects of darkness and poor weather (Jenkins, 1979). Add alcohol to this and you have a potentially fatal cocktail. It is possible to see even what looks like blatant “risk taking”, as inexperience. For example, Beck (1981) suggested that a reason young men drive fast and drink and drive is that they have not
had enough convincing experiences, for example near fatalities, or arrests for drinking and driving, to alter their behaviour. This analysis simply extends the operant emphasis on young people’s insufficient time to learn contingencies into areas of behaviour that are normally considered “volitional”.

Tonkin (1987) captured the complexity of young driver’s crashes when he noted: “For example, the stereotypic young-driver fatality involves an inexperienced driver who is impaired and who is involved in a single-vehicle, high-speed, late-night crash. This event reflects a lack of knowledge, a set of impaired or poorly developed vehicle-control skills, and the consequence of social and emotional events that adults label as ‘party time’.” (p. 215). As Cock (1988) commented: “Risk-taking in traffic may be defined as the result of discrepancy between the road user’s self-imposed demands for speed and accuracy and the actual availability of human aptitudes and psychological resources to meet these demands.” (p. 485). With young drivers, the likelihood is that they demand a little more from the driving experience with a little less skill and knowledge to back it up.
Chapter 2

"RISK TAKING": A DECONSTRUCTION

A QUESTION OF SEMANTICS OR A QUESTION OF MOTIVATION?

As mentioned in the previous chapter, the term “risk taking” has been widely used in the literature on adolescent drivers. The question of why it has been used so extensively, how it has been used, and the problems inherent in it are the subject of this chapter.

The following are illustrations of the three main ways in which the term “risk taking” has been used in the literature:

1. Very commonly, the term “risk taking” has been used to group together a number of behaviours that young (usually male) drivers tend to engage in with greater frequency than older (or female) drivers. These behaviours include such things as speeding, dangerous overtaking, failing to give way, pulling out into a small gap, close following, and drinking and driving (e.g. Harrington & McBride, 1970; Evans & Wasielewski, 1983; Jonah, 1986, 1990a; Cooper, 1987). An early example of this appeared in an American study conducted by Harrington and McBride (1970) in which they found that different age groups tended to be involved in different violations. Speed, equipment and major violations decreased with age, whereas sign, turning, passing and right of way violations increased with age. They commented: “Speed, Major and Drinking violations are not caused by perceptual or motor functioning. Rather, they reflect other factors such as risk-taking and immaturity.” (p. 76). More recently, Jonah (1986), suggested that there may be “a general risk-taking propensity” (p. 261) amongst young drivers, that accounts for their observed over-representation in dangerous driving practices.
2. "Risk taking" has also been used to describe what it is that makes adolescents different from other age groups. A typical comment of this type appears in an article on drinking and driving in adolescence by DiBlasio (1986) who simply noted: "The adolescent years are a time for risk-taking." (p. 173). "Risk taking" may be linked to a kind of learning by discovery, that is felt to characterise adolescence. In a booklet on health issues in adolescence that has a large section on driving injuries, the New Zealand Department of Health wrote: "Exploration and experimentation are a natural part of 'growing up' and risk-taking goes hand in hand with this developmental process." (Department of Health, 1990). Taken one step further, "risk taking" may be linked with the more negative aspects of this "exploration and experimentation": "Adolescence, obviously, is a stage in the life span characterised by more experimentation and exploration, risk-taking and rebellion than is the case in other stages." (Hurrelmann, 1990, p. 231). Or with other negative aspects of adolescence: "What evidence does exist suggests the presence in young drivers of "extra motives" leading to increased risk taking, such as frustration, expediency, competitiveness, aggression, exhibitionism and thrill-seeking." (Hodgdon, Bragg, & Finn, 1981, p. 53).

3. The concept of "taking risks" has also been used simply to explain the difference between young males' crash rates and those of everyone else. (e.g. Barjonet, 1988; Evans, 1991; Harrington, 1972). If they are just as skilful as older men, and just as inexperienced as younger women, then why do they crash more? Answer, they take more risks. Evans (1991), in a summary of the literature on the high crash rates of young, and in particular young male drivers concluded: "The higher involvement rates of younger, and male, drivers seem more related to how they are choosing to drive, particularly their propensity to take driving risks, than to their abilities at the driving task." (p.136). Harrington (1972) in attempting to explain why his study showed that driver education had no effect on lowering injury crash rates amongst young males (although it did amongst females) wrote: "Perhaps one reason no effect was found for males was that their accidents were more due to poor attitudes, risk taking and thrill seeking, than to the driving skills and knowledge taught in the behind-the-wheel course." (p. 238).
But what do we mean when we talk about “risk taking”? Are we describing something objective, an observed driving behaviour that puts a person at an elevated risk of crashing? Or are we describing the motivation behind that behaviour? Are we saying that we know something about the individual’s subjective experience and decision making?

The difficulty in pinning down what we mean by “risk taking” is apparent in both the driving literature and more widely. Trimpop (1994) in a book devoted to “the psychology of risk taking behaviour”, defines it so widely that it encompasses all the different possible uses of the term (and indeed almost all behaviour). “Risk taking is any consciously, or non-consciously controlled behaviour with a perceived uncertainty about its outcome, and/or about possible benefits or costs for the physical, economic or psycho-social well-being of oneself or others.” (p. 9). Lourens (1990), when writing about driver error, argued that because of the complexity of the term attempts to define it are fruitless and it is best avoided. Nevertheless, it continues to be used extensively in attempts to describe adolescent behaviour and health behaviour in general (e.g. Denscombe, 1993; Fischhoff, 1992; Furby & Beyth-Marom, 1992; Gonzalez et al., 1994), and young driver behaviour in particular, both in academic journals (e.g. Canterbury et al., 1992; Papadakis & Moore, 1991) and (at least in New Zealand) in publications commissioned by government organisations (e.g. Colmar Brunton Research, 1993; Elliot & Shanahan Research, 1995).

The reason for the popularity of the term “risk taking” may well be that it implies a great deal, but commits itself to very little. Writers are able through their use of the term to evoke an image of adolescent drivers as being “on the edge”: on the edge of their senses and emotions with their thoughts correspondingly distorted. Recklessness, impatience and thrill seeking all underlie the image in various doses. However, because it has been defined by some in a much narrower fashion, its use can be justified when in fact little or nothing is known about the emotions, thoughts and motivations of the young drivers concerned.
There are, as suggested in the title of this section, two different issues entangled in a deconstruction of “risk taking”. One is a semantic issue, what terms have been used and should be used to describe what we observe and measure. The second concerns what really is going on at a subjective level when drivers are engaging in objectively risky behaviours.

**CLARIFYING THE SEMANTICS**

When writers in the driving area have defined the term “risk taking” (as opposed to using it undefined), they have frequently defined it narrowly, to imply that there is objective risk involved. For example, Jonah (1986) in his article on risk-taking and young drivers wrote: “At the outset, it is important to note that the use of the term “risk-taking” does not necessarily imply volition. Risks can be taken while driving with or without awareness of what one is doing.” (p. 258). Cvetkovich and Earle (1988) in their article on young drivers and risk-taking, defined risk-taking behaviour as “driving that places the subject at a higher statistical chance of experiencing an undesirable outcome.” (p. 9).

Similar definitions have also been commonly used in the general literature on adolescent risk taking (e.g. Furby & Beyth-Marom 1992, Tonkin, Cox, Blackman, & Sheps, 1990), and on risk perception (e.g. Slovic, 1964). “Risk taking” is described as involving the possibility of loss or harm to the individual, without commenting on the motivation of the individual, or the level of conscious awareness of the risk involved.

When looking at adolescent drivers, however, it may be that it is simply confusing to try and use the term in this purely objective sense. Many writers have acknowledged that it is difficult to get away from the inherent notion of conscious knowledge of the risks involved when talking of “risk taking” (Irwin & Millstein, 1992; Jessor, 1992; Wagenaar, 1992; Yates, 1992; Yates & Stone, 1992).

Yates (1992) described his view: “Implicit in the term “risk taking” is the idea that risk taking behaviour is deliberative. That is, it is assumed that the risk taker consciously contemplates how he or she should act, taking into account risk as well as, perhaps,
other considerations.” (p. 321). Within the body of driving literature that looks at
driver decision making and driver error, “risk taking” tends to mean that the individuals
involved are consciously taking a risk. That is, they are aware that there is risk in the
situation they are entering and they are generally assumed to act in such a way that
minimises the risk while still gaining the benefits they are seeking from the situation.

This definition of “risk taking” concentrates not on the objective element of risk, but
on the subjective element of risk. For example in an article on driver error, Groeger
(1990) wrote: "If an act is carried out in spite of beliefs about the possible negative
consequences (irrespective of its actual outcome), it would be an example of 'risk-
taking'. The actual truth of the beliefs concerned, or the veracity of concomitant
feelings, is irrelevant.” (p. 1426).

Taken one step further, “risk taking” may be defined as not just conscious, that is the
person is aware there is risk involved, but also as deliberate, in the sense that the
person is taking a risk for the sake or thrill of taking a risk. Thuen, Klepp and Wold
(1992) suggested this definition: “A further way of defining risk taking refers to the
subjective feeling of risk, and not to the objective risk of injury, even though there is, in
most cases, overlap between them. Engaging in risky driving is, for example, probably
partly caused by the experience of risk associated with such behaviours. The risk itself
is thus an objective of the behaviour and can therefore be labelled risk-taking
behaviour.” (p. 270).

Jessor (1992) also expressed the belief that “risk taking” implies thrill seeking. He
commented: “Its [risk-taking behaviour] wide currency is unfortunate because it
eliminates the problematic nature of adolescent risk behaviour and tends to foreclose
further inquiry. When referred to as risk-taking behaviour, risk behaviour is already
“explained”. That is, it is accounted for simply by the taking of risks, the satisfaction
or thrill of engaging in something risky.” (p. 378).

Each of these differing opinions on what the term “risk taking” means appears to be
concentrating on a single aspect of the complex range of phenomena it can imply. The
lack of agreement concerning how to define “risk taking”, perhaps the reason why (as suggested earlier) “risk taking” has been so commonly used, is also precisely the reason it must be avoided. The different aspects of “risk taking” could be, and indeed have been, at one time or another, re-labelled. It is these new labels that will be used in this thesis to try and clarify what it is we know and what it is we need to know.

Behaviour that is objectively risky, is perhaps is better called “unsafe behaviour”, or “risk behaviour”: the latter being the term Jessors (1992) stated he preferred in order to avoid implying that the motivation for the behaviour is thrill seeking. “Risk behaviour” seems to be becoming the term of preference in many academic articles (e.g. DeJoy, 1992; Rajalin, 1994).

Behaviour that is felt by the individual to be risky, but that may or may not be so in an objective sense, can be split into two types. One type is when the individual is aware of the risk, but would rather avoid that risk if possible. “Risk handling” was the term used by Yates (1992) to describe the individual who is aware of risk, and attempting to minimise risk, while maximising benefits. “Risk management” is a term used extensively in risk homeostasis theory (e.g. Wilde, 1982) with similar implications. The second type of behaviour that is felt by the individual to be risky, is when rather than trying to avoid or at least minimise risk, the individual is going towards risk. This may be re-labelled “risk seeking”. “Risk seeking” is the term Thuen et al. (1992) said is appropriate: “where the experience of risk is in itself an objective.” Used in this way the term is synonymous with “thrill seeking”, but it is important to note that risk may also be sought when an individual has suicidal impulses (Holinger, 1981).

So the terms of preference are:

Safe or risk behaviour: behaviour that is objectively risky, but that may or may not be perceived as such by the individual.
Risk handling or risk management: when the individual is aware that there is risk involved in a behaviour, but is willing to undertake this risk in order to gain some other reward.
Risk seeking: when the individual is engaging in a behaviour because it is perceived to be unsafe.
APPROACHES TO THE MOTIVATION QUESTION

The remaining chapters in this part of the thesis are aimed at clarifying two issues. The first issue concerns the characteristics of individuals who are particularly likely to engage in unsafe driving. The second issue concerns the aetiology and potential motivation behind unsafe driving. Chapter 3 deals with the first issue. It begins by looking at whether young people do indeed engage in more risky driving practices than older people. This as an empirical question, and it has been the focus of a number of studies. This chapter also examines whether risky driving can be viewed as a general problem in adolescence, or one specific to a few "deviant" individuals.

Chapters 4 and 5 look at the decision making and state of mind of the young driver. The previous discussion on how "risk taking" has been used and defined leads to three questions of interest that are the focus of these chapters:

1. If young people do engage in more risky driving practices than older people, are they aware that these practices place them at greater than normal risk of a crash?
2. If they are aware of the dangers involved with their driving practices are they risk handling, that is are they engaging in risky practices in order to gain other benefits, or are they thrill seeking? How much of the unsafe driving that results in crashes is the product of suicidal tendencies?
3. If young people do appear to gain satisfaction of some sort from risky situations, and so deliberately seek them, why are they prone to do this?

Chapter 4 reviews previous research that looks at these questions. The first question on young people's awareness of the risks involved in how they drive is considered in an examination of risk perception studies. These studies look primarily at the differences between younger and older drivers in how they rate accident risk. The second question has been subject to very little empirical study. The attitudes and opinions of young drivers themselves are outlined. The reasons why young people appear to gain satisfaction from risky situations, is the key focus of a number of developmental theories that are discussed. The extent to which unsafe driving practices
are the result of self-destructive impulses, (see for example Peck & Warner, 1995 for a recent discussion of this) is beyond the scope of this thesis as this is seen to be a much wider question that is primarily not about driving.

The most significant gaps that remain in our understanding of the psychology of young driver’s risk behaviour are outlined in the conclusion to Chapter 4. In an attempt to answer these questions, interviews were conducted with a group of “high risk” young drivers. The results of these are detailed in Chapter 5.
Chapter 3

WHO ARE THE UNSAFE DRIVERS?

DO YOUNG PEOPLE ENGAGE IN MORE UNSAFE DRIVING BEHAVIOUR?

Observational studies and other measures
Observational studies have suggested that young drivers are more likely to speed (Jonah, 1986; Wasielewski, 1984), as have analyses of official crash and violation statistics (Cooper, 1987; Harrington & McBride, 1970). Young people have also been found to drive without due care more frequently than older people (Cooper, 1987), to fail to wear a seat belt more frequently (Cooper, 1987; Jonah, 1986), and to follow the vehicle in front more closely (Evans & Wasielewski, 1983). They have been observed accepting narrower gaps when moving into traffic (Jonah 1986). They are also more likely to admit to and receive convictions for aggressive or reckless driving and driving under the influence of alcohol (Harrington & McBride, 1970; Jonah, 1990a).

The exact age group within the more general category of “young driver” for which these behaviours have been found to exist at a higher rate than for the rest of the population is in some dispute. Observational studies in particular may be forced to simply guess the driver’s age and therefore tend to band together a wide range of ages. There is some evidence that the very youngest group of drivers (15-19 years) may not engage in as much risk behaviour as slightly older drivers (20-24 years). For example Cooper (1987) in an analysis of official Canadian statistics on 21,000 drivers, found that drivers aged 16-18 years had a higher seat belt wearing rate than drivers aged 19-21 years. Jonah (1990a) in his survey of 10,000 Canadian drivers found that the age group 20-24 years was more likely to report risk behaviour (such as drinking and driving, aggressive driving, and non-use of seat belts) than the 16-19 years age group. Drinking and driving in particular appears to be less likely in very young drivers than in slightly older drivers (Cooper, 1987; Jonah, 1990a; Schuman et al., 1967).
This pattern is consistent with the findings on inexperience discussed in Chapter 1 of this thesis, in which the most novice drivers (who will also tend to be the youngest) did not appear to engage in as much unsafe driving behaviour as the slightly experienced drivers (who will also tend to be slightly older).

**Gender differences**

There is a large body of evidence that men engage in more illegal and risky driving behaviour than women, no matter what is measured. Men, and especially young men, have been found to have higher self-reported driving speeds than other groups (West, Elander, & French, 1992). They have also been observed to drive faster than other groups (Forsyth, 1992; Hagen, 1975; Wasielewski, 1984). They have been observed following the car in front more closely than other groups (Evans & Wasielewski, 1983), men have been seen pulling out of an intersection with less gap than women (Ebbesen and Haney, 1973), and failing to observe properly at intersections more often than women (Forsyth, 1992). Men have also been found to more often omit necessary signals, to fail to comply with road markings (Forsyth, 1992), to drive closer to the centre line, have a higher rate of accelerator input and to be less consistent in their operation of the accelerator than women (Hagen, 1975). Elliot (1987) in an American study of 11 to 17-year-olds that involved a national sample of 1,725 young people, found that males were involved in twice as much driving under the influence of alcohol or drugs as females. In New Zealand in 1994, young male drivers aged 15-19 years received about seven times as many convictions for driving over the alcohol limit as females of the same age (L.T.S.A., 1995).

There is some evidence however, that young women drivers may be changing their driving behaviour, and becoming more similar to young men. Moore (1994) cited a number of American studies which showed that the rates of arrests for drinking and driving have been increasing rapidly in females in the last 15 to 20 years compared to males. These studies also showed that young women are making up an increasing proportion of the drivers killed in single vehicle night time crashes. The explanations he provided for this included greater mileage by females than in the past and greater acceptance of women in public drinking places. In an analysis of the crash and violation
statistics for North Carolina drivers from 1976-1985, Popkin (1991) found that while in most groups of the population arrests for drinking and driving were decreasing, there was a 26% increase in the rate for females aged 21-24 years. Young females aged 18-24 years (and particularly those aged 21-24 years) also made up an increasing proportion of the fatally injured drivers who were intoxicated. Whether these studies are part of an international trend that extends into other types of unsafe driving behaviour (other than drinking and driving) is not known.

Conclusions
The studies in this area seem to suggest that male drivers under 24 years are involved in more risk behaviour than either male drivers over 24 years or young women, although the patterns of gender difference may need re-investigating. Whereas most of the evidence still suggests that young men engage in risky behaviours more often than young women, it is not clear whether young women engage in a greater or lesser number of risky behaviours than older men or older women, as studies that measure age differences do not always measure sex differences and vice versa. It seems likely that the 20-24 year old age group demonstrates more risky driving behaviour than the 15-19 year old age group.

IS THERE A SUB-GROUP OF YOUNG DRIVERS WHO ARE MAINLY RESPONSIBLE FOR THE “YOUNG DRIVER PROBLEM”?
There has been a large body of research that has attempted to identify particular young people who are at high risk for unsafe driving. Such research assumes that there are personality characteristics or life situations that lead to dangerous driving and crashes. This section looks at whether the research in this area is effective in pin-pointing a subgroup of adolescents who are at the heart of the “young driver problem”.

Personality research
The research in this area has generally identified a similar cluster of characteristics that are claimed to correlate with repeated crashes or violations. These include an anti-social, inconsiderate orientation (e.g. Beamish & Malfetti, 1962; Finch & Smith, 1970; Forsyth, 1992; McGuire, 1976; Moore, 1994; West et al., 1992), a lack of impulse
control or carefully considering the consequences of behaviour (e.g. Finch & Smith, 1970; McGuire, 1976; MacMillan, 1975; West et al., 1992) and a greater intensity of emotions such as anger and aggression (e.g. Donovan et al. 1988; MacMillan, 1975; O.E.C.D., 1975).

However, personality research has also thrown up a number of contradictions. For example, a high sense of self-confidence in their own driving abilities, that presumably equates with high internal locus of control has been found to be problematic (Forsyth, 1992; Rommel, 1959), as has a low general self-confidence and an external locus of control (Beamish & Malfetti, 1962; Donovan, et al., 1988). One recent study (Gregersen & Berg, 1994) found that a number of factors (e.g. extra motives when driving, amount of drinking, “being out and about”) could function as either high risk or low risk for crashes, depending on the combination of other factors that accompanied them.

Some research has emphasised that the correlations discovered linking personality and crashes, are not always large (e.g. Schuster, 1966, 1968), and sometimes, especially in the case of young drivers, they may appear to be non-existent. For example, Levonian (1969) measured the personality characteristics of 1080 American driver education students and found that expediency (oriented towards self-benefit at the expense of others) was positively related to violations, but not to accidents.

In an extensive review of the literature on the subject of individual differences and their relationship to crash involvement, Grayson and Noordzij (1990) pointed out that it is very difficult to compare studies on personality because of the different terms used to describe traits. They said: “The main conclusion which will come as no surprise to anyone familiar with the field, is that the findings are to a large extent inconclusive. Whether this is the result of poor methodology and experimental design, or whether it reflects a genuine absence of clear relationships between individual differences and accident involvement is a matter for debate and cannot easily be resolved. However, the results at this stage are clear. For most of the topics included
in this review, the evidence for a link between individual differences and accidents can at best be described by the Scottish legal term ‘not proven’.” (p. 638).

It may be that what are real “personality risk factors” are in fact obscured if the measure of interest is “crashes” as opposed to specific types of crashes or risky driving. Crashes, as pointed out by Smith and Kirkham (1981) are not a homogeneous class of events. This may be particularly true in the case of young drivers who are likely to be having some crashes (if mostly minor ones) as a result of hesitancy and inexperience. The kind of drivers who make “slips” of this type and crash may well have different personality characteristics from those who crash because of conscious risk behaviour. It has been found, for example that women are more prone to errors (slips, lapses and mistakes) than men, who in turn are more prone to violations than women (Reason, Manstead, Stradling, Baxter, & Campbell, 1990).

In their study on 108 new British drivers, that followed these drivers for 3 years, West et al. (1992) found that the risk of repeated crashes was greater the more specifically the crashes were matched. Having any type of accident in a single year doubled the chance of having an accident in the next 2 years. However, at fault drivers had four times the risk in the following 2 years. Speed related accident drivers had nine times the risk of a speed related accident in the next 2 years.

While West et al.’s study is preliminary evidence for some sort of consistency across time in how novice drivers drive and in particular whether they speed or not, it does not illuminate any “personality characteristics” that underlie their driving behaviour.

It is clear that there must be individual differences in driving behaviour, and many of these are likely to be relatively enduring traits. However, research in this area is a long way from producing means of identifying at risk drivers, prior to crash involvement, through a measure of their “personality characteristics”.

*Problem behaviour theory*
Problem behaviour theory (PBT) (Jessor, 1985, 1987, 1992; Jessor, Donovan, & Costa, 1991; Jessor & Jessor, 1977) has been somewhat more successful than
“personality” research in providing a framework for predicting the degree of risk an adolescent faces for engaging in unsafe driving.

PBT is a general theory of adolescent “problem behaviour” defined as: “Behaviour that departs from the norms of the larger society and that tends to elicit some kind of social control response, whether mild criticism or social rejection or even incarceration.” (Jessor, 1985, p. 71). The term has been used to include: problem drinking, drug taking, smoking, unsafe sex, and risky driving.

The three primary theoretical variables constructed by the theory are: the personality system, the perceived environment system, and the behaviour system. The personality systems consists of values, expectations, beliefs, attitudes, and orientations to self and others. The perceived environment system consists of social norms and expectations, sanctions and controls, and exposure to models. The behaviour system consists of the presence of other problem behaviours than the one being explained. Within each of the three primary systems, there is the possibility of measuring an individual’s proneness towards problem behaviour, and put together they comprise a set of psychosocial risk factors. In a review of the findings of a number of studies that have tested the theory, Jessor (1985) summarised the elements that indicate proneness towards problem behaviour in any of its forms:

**Personality system:** Lower value on academic achievement, higher value on independence, higher value on independence relative to academic achievement, greater social criticism, greater alienation, more external control, greater tolerance of deviance, and less religiosity.

**Perceived environment system:** Less parental and friends’ support and controls, lower compatibility between the expectations of parents and those of friends, lower perceived influence of parents relative to friends, greater friends’ approval and lower parental disapproval of problem behaviour, and more models for problem behaviour among friends.

**Behaviour system:** Higher actual involvement in various problem behaviours (other than the one being predicted), and lesser involvement in conventional behaviours.
There have been a number of studies that have tested the systems within problem behaviour theory and their correlation with risky driving. Klepp, Perry and Jacobs (1991) gave 1700 American 10th and 11th grade students a questionnaire that measured their proneness to problem behaviour, as measured by the personality, perceived environmental, behavioural and demographic factors. Their results showed that those factors combined accounted for 50% of the immediate variance in reported drinking and driving and predicted 40% of the variance in drinking and driving 5 months later. Another study by Beirness and Simpson (1988) looked at problem behaviour theory and its correlation with crash involvement amongst 1,986 9-11th grade Canadian drivers. They found that psychosocial (personality and perceived environment) and behavioural variables accounted for 36% of the variance in reported risky driving behaviour.

One feature of PBT that has received particular attention, is the Behaviour System, which predicts that problem behaviours occur together. If this can be demonstrated then it is clearly of great potential in helping identify young people who are potentially at risk as drivers, prior to them learning to drive. Some consistency has been found between the various risky driving behaviours: drinking and driving, drug taking and driving, and reckless driving (Donovan, 1993; Jonah, 1990b; Jonah & Dawson, 1987). There is also some evidence, both within and outside the theoretical framework of PBT, for a correlation, although this may not always be strong, between risky driving behaviours and other problem behaviours (Donovan, 1993; Jonah, 1990b; Elliot, 1987; Jessor, 1987; Swisher, 1988).

However, as Vingilis and Adlaf (1990) have pointed out, while there may be a degree of correlation between problem behaviours, the variance that cannot be accounted for in this way suggests that each problem behaviour is also unique. It is possible this may be particularly true for risky driving, which is not generally associated with social disadvantage, unlike other problem behaviours (Dryfoos, 1990). On the contrary, because adolescents need access to a vehicle in order to be able to drive (dangerously or otherwise) it may be slightly more common amongst teenagers whose parents have

Unsafe driving is also different from other “problem behaviours” as it is at least in part due to errors in learning a new task. As Elliot & Shanahan (1995) pointed out: “The critical difference between problem behaviours, such as alcohol and drug use or sexual promiscuity, and driving is that the latter involves the development and subsequent execution of a complex skill which draws on both conscious and automatic informational processes.” (p. 65).

Conclusions
There is compelling evidence outside the driving area that people who are involved in anti-social and criminal acts tend to be involved in a number of such behaviours and that the degree of involvement has some consistency over time (see for example, Gottfredson & Hirschi, 1994). The driving research on individual differences reviewed in this section, particularly that on PBT, provides some support for the notion that such “deviant” individuals may be particularly prone to risky driving behaviour. The most powerful means at present for identifying adolescents at greatest risk would seem to be through their behaviour patterns than through their personality characteristics.

However, there are also good reasons for viewing all adolescents as at risk for unsafe driving. There is strong evidence that adolescence is a time when there may be more general involvement in criminal and delinquent behaviours, by otherwise non-deviant individuals (see for example, Moffit, 1993). For many reasons, unsafe driving is a common feature in the lives of adolescents, particularly males, and so its common causes need to be investigated. That is the primary concern of the following two chapters.
Chapter 4
AN EXAMINATION OF THE CAUSES OF ADOLESCENT UNSAFE DRIVING BEHAVIOUR

YOUNG DRIVERS’ ATTITUDES AND EXPLANATIONS

What the young drivers themselves say: reasons for risk behaviour
The first part of the previous chapter presented fairly compelling evidence that young drivers do engage in more unsafe driving behaviours than older drivers. The reasons however, for engaging in these behaviours are quite a different matter. An obvious starting point for examining these reasons is to look at what young drivers themselves say. Nevertheless, there has been little research on young drivers’ own explanations for their risky behaviours or their crashes and violations. The surveys and interviews that could be located are outlined below.

In an early study, Schuman et al. (1967) interviewed 288 unmarried American male drivers aged 16-24 years about their driving habits, attitudes, accidents and violations. Amongst the 16-18 year olds, half reported “dare devil” practices in the last month. Fewer than 1 in 5 reported these factors after the age of 21. Twice as many 16-18 year olds said they had “often taken chances” with one or more friends in their car during the past month as those aged 23-24 years. Forty percent of 16-20 year-olds had driven to “blow off steam” in the past year, compared to 20% of 23-24 year-olds. Feelings of aggression about obstacles when driving (e.g. red lights) were common, but subsided by age 24. This study would appear to support a notion of young drivers as fitting with the “risk taker” stereotype, as thrill seeking and emotionally aroused. (It also reports a concentration of these attributes in teenage drivers as opposed to drivers in their twenties, which does not fit with the more recent observational and self-report data described earlier. Perhaps the teenage drivers were inclined to exaggerate their unsafe behaviours?).
Other studies, however, have found far more mundane reasons given by young drivers to explain their unsafe driving behaviours. The Parliament of NSW Joint Standing Committee upon Road Safety (1990) interviewed 600 Australian secondary school students. The reasons the students gave for speeding were listed as:

1. Thought it safe (car built for speed/ knew the road/ disagree with particular speed limits).
2. Pressure to keep up with other traffic.
3. Encouraged by older passenger (e.g. parent encouraging 120 km/h).
4. Impatient to finish a long trip, or late for a function.
5. Curious to see how fast the car would go. No suitable off-road venue available.
6. Speed crept up without noticing.
7. Downhill.
8. Speedometer broken, or marked in miles per hour.
9. Impress others.
10. Who doesn’t?

It would be hard to categorise most of these reasons as particularly unique to young people or as reflecting undue recklessness. Only reason 5 (curious how fast the car would go) and reason 9 (impress others) seem to potentially fit with the image of the young “risk taker”. Of special interest too, is that pressure from parents to speed is actually ranked higher in the list than either of these “adolescent” traits. Being a qualitative survey however, it is impossible to rule out the possibility that the highest speeds are caused by the desire to see how fast the car would go or to impress others. Without a corresponding survey of older drivers, it is obviously also not possible to be sure that, for example, these young drivers suffer more readily or more extremely from impatience to finish a long trip or fear of being late (number 4) than do older drivers.

Rothe (1987a) similarly found little self-reported recklessness when talking to young Canadian drivers who had been involved in crashes. He interviewed 130 of these drivers, aged 16-18 years. He asked them the actions they were engaged in immediately prior to the crash. Over two-thirds of the young drivers said they were
engaged in driving actions such as going forward with caution, passing with care, avoiding a problem on the road, or just making a turn. They thought the other drivers were making unusual, sudden, unexpected or abnormal driving moves. The majority felt they were driving according to the weather and driving conditions at the time of the crash. Although factors such as being distracted by passengers and driving too fast for the conditions did feature for a small minority in their crashes, the picture which emerged was that they generally thought they were driving normally and the other driver was primarily to blame for the accident. When asked about their normal driving, three-quarters described themselves as "cautious" drivers.

As noted by Rothe, the notion of being "cautious" is open to debate, but it does appear that these young drivers did not perceive themselves, as a rule, to be anything other than normal, safety conscious drivers. While this study does not support a notion of adolescents as risk seeking or thrill seeking, or at least of these behaviours as being a leading cause of their crashes, it may lead us to question the accuracy of adolescent perceptions of their driving. The fact that the teenagers generally thought they were not to blame for the crash they were involved in is possibly a clue that they were not aware of the mistakes they were in fact making when driving "cautiously".

In an American study, Vegaga and Klitzner (1989) surveyed 242 youth, grade 9 to college age, from a variety of geographical locations and ethnic groups, about their reasons for drinking and driving or riding with a drinking driver. They found that many of the young people stressed situational factors, that is the perceived need to get home or to get a passenger home. Furthermore, only just over half of the respondents in the group who said they drove after drinking reported believing that it was risky to drink and drive, (although 72% in the group who rode with a drinking driver thought that was risky). In order to reduce the risks of a crash (or being caught by the police) 72% of the group who drove after drinking reported doing something to make driving safer such as slowing down, watching road signs more carefully, watching for the police and taking back roads.
Another study of interest found both purposeful motivations for risk behaviour and thrill seeking. Klepp and Perry's (1990) study involved interviewing 93 9th and 12th grade high school students from a single school in the Minneapolis-St Paul area about their reasons for drinking and driving (DD). They summed up: "The reasons given by students for DD varied from those that expressed a very positive viewpoint, such as seeing it as "cool, fun, or exciting to drink and drive", to very negative viewpoints portraying DD as a result of peer pressure, personal problems, lack of brains, and poor self image. Another category of responses saw DD merely as a result of someone’s needing to get home with no alternative transportation available. Finally, the discussions pointed out that students see parents and older siblings engaging in DD." (p. 47).

In a piece of New Zealand research, Colmar Brunton Research (1993) interviewed 40 young people aged 11-19 years. There were 12 females and 28 males. The group contained Maori, Pacific Island and Pakeha adolescents, with family incomes ranging from under $15,000 to over $30,000. Their research suggested that "risk taking" in cars to rebel against parents and impress peers was very popular amongst males aged 14+ years.

Together while these studies hint at the possibility that there are some motives for risky driving behaviours that may reflect thrill seeking, peer influence and emotional disturbance of some kind, the kind of influences we would expect from the picture of the adolescent "risk taker", there are other things going on too. Modelling of parents or perhaps even direct pressure from parents to push the limits; and rational, practical reasons for engaging in risk behaviour.

**Gender differences in attitudes**

There is consistent evidence of gender differences in the attitudes of adolescents towards driving.

In a survey of 200 10th-12th grade school students in Canada, Stoddart (1987) found the following differences between girls and boys in their attitudes towards driving:
• Boys wanted to learn to drive more intensely than did girls.
• Boys saw driving as an activity in itself, girls saw it as a facilitator of other activities.
• Boys were inclined to feel they would engage in behaviours like fast take offs, girls felt they were unlikely to.
• Boys reported different driving behaviours depending on audience, girls reported their behaviour as consistent.
• Boys were more interested in the "ideal car".
• Boys wanted to own a car more than girls.
• Girls did not talk about driving in "affective" terms.
• Boys saw driving as always preferable to other methods of transport, unlike girls.
• Boys were much more embarrassed by driving errors than girls.
• Boys did not see the need to participate in a driver education programme.

Similar gender differences in attitudes were revealed in a study by Farrow and Brissing (1990) of 343 American 10th grade students (mean age 15.8 years) which found that males perceived greater skill in risky situations and used the automobile more to enhance self-efficacy than females.

In the study by Rothe (1987a) cited in the previous section in which he interviewed 130 young drivers who had been involved in crashes, it was found that two and a half times as many male as female drivers said they would do nothing differently should the same potential situation arise again. Given that the situation resulted in a crash, and that most two car crashes may be potentially avoidable if either driver is highly vigilant and rule abiding then this blind confidence in their own driving practices on the part of young men could be considered inappropriate (and dangerous). An older study, by Brown and Copeman (1975) similarly found that younger males under-rated the seriousness of their own responsibility for offensive driving compared with other subgroups.
Males may also be more likely to seek risks or risky driving situations than their female counterparts (e.g. Barjonet, 1988; Rothe, 1987b). For example, in a survey of over 1300 young Canadian drivers Rothe (1987b), found that males tended to have less safe attitudes than females and participated in more unsafe situations than did females. Males were found to more often go to parties and believe it is all right to drive while a little impaired, they had a tendency to believe parents should accept illegal drinking by young people, to speed on city streets and highways, to drive without wearing seat belts and to drive around looking for parties.

**Conclusions**

When looking at the research into young drivers' attitudes and their explanations for engaging in risk behaviour, the following points emerge:

1. The majority of young drivers perceive themselves to be responsible and careful drivers.
2. They can and do plan ways of avoiding or reducing the danger of risky driving practices such as drinking and driving.
3. The reasons they give for engaging in objectively risky behaviour (such as speeding or drinking and driving) range from what could be called conventional, everyday reasons such as being late in the case of speeding or needing to get home in the case of drinking and driving, through to what could be labelled as thrill seeking.
4. Young drivers may not always recognise the degree of risk involved in certain practices.
5. At least some risk behaviour may be a result of modelling parents and others.
6. Young males appear to have more problematic attitudes than young females including: overconfidence in their driving skills, less recognition of their errors, less recognition and fear of the risks involved in dangerous driving practices, and more interest in thrill seeking on the road. Many of these attitudes may arise from the interest they have in driving and the importance they attach to being able to drive skilfully.
RISK HOMEOSTASIS THEORY

The road is a risky place to be. Because of this, some theorists have postulated that all driving inherently involves “risk handling” or “risk management” as defined in Chapter 2. The driving theory that has received the most attention in this area is risk homeostasis theory (RHT). The basic premise of RHT (Adams, 1988; Wilde, 1982, 1988; Wilde & Murdoch, 1982) is that drivers accept, and drive in order to maintain, a certain level of subjective risk. “At any moment in time the instantaneously experienced level of risk is compared with the level of risk the individual wishes to take, and decisions to alter behaviour will be made whenever these two levels are discrepant.” (Wilde, 1982, p. 210). The target level of risk, according to RHT, is made up of an equation involving the costs and benefits of risky behaviour on the one hand and the costs and benefits of cautious behaviour on the other. Whether the benefits of risky behaviour and the costs of cautious behaviour outweigh the costs of risky behaviour and the benefits of cautious behaviour will vary depending on the individual and the specific driving occasion.

According to the theory, the only way to change traffic injury rates in the long term, is to change people’s target level of risk. If the objective safety of a stretch of road or a vehicle’s ability to protect occupants in a crash is increased, drivers compensate for this by changing their driving behaviour in some way so that they continue to experience their target level of risk. They might, for example, drive faster. If an intervention targets only one behaviour, and one type of accident, then people will compensate for increased safety in this area by driving in a more dangerous fashion in other areas. “It is, therefore, suggested that the only variable that ultimately controls the systems output (the accident rate) is the target level of accident risk.” (Wilde, 1982, p. 212).

According to Wilde people react in one of three ways to a new safety measure: “With regard to driver behaviour, three different initial responses to a new, non-motivational, safety measure may occur. If anticipation is correct, behaviour will change, but no measurable change in accident rate will occur. If the anticipation results in overestimation of the intrinsic safety benefits, an increase in accident rate will follow. If the
intrinsic safety benefits are underestimated, accident rates will drop.” (Wilde 1982, p. 214). However these changes are short term. Ultimately people will adjust to the new reality and go back to their old level of risk to compensate.

In the long term, the only way to decrease the crash rate is to change people’s target safety levels by:

- Decreasing the expected benefit of risky behaviour
- Decreasing the expected cost of cautious behaviour
- Increasing the expected benefit of cautious behaviour
- Increasing the expected cost of risky behaviour

The theory does acknowledge that people may make ‘mistakes’ in assessing the objective level of risk in a situation, and therefore may drive either more safely or more dangerously than they intended. These ‘mistakes’ are what account for the initial changes in crash rates that may occur when a new safety measure is introduced. There can be ongoing ‘mistakes’ also. “The quality of information intake, anticipations, verifications, estimations of risk, comparison with the target level, decisions taken, and actions executed upon the vehicle controls is influenced by a number of factors. These have been categorised into cognitive states and motivational states, that correspond with the distinction between the driver’s ability to be safe and his willingness to be safe.” (original emphasis, Wilde, 1982, p. 212). Some drivers may have superior danger detection skills than others (Wilde, 1988). It may be possible to change accident rates by targeting people’s mistakes. For example, Wilde (1982) suggested that if people are underestimating the accident rate then telling them the correct accident rate may improve their level of safety. It would also of-course be possible to deliberately induce mistakes in people’s perceptions by, for example, creating the impression that a situation is more risky than it really is or by failing to publicise the full benefits of a new safety device.

The concept of risk homeostasis is probably too simple to be a comprehensive theory on risk handling (Huguenin, 1988). There have been numerous challenges to various aspects of what it proposes (e.g. Howarth, 1987; Janssen & Tenkink, 1988; Koornstra,
1990; Slovic & Fischhoff, 1982). Although there is some empirical evidence for the process of risk compensation (e.g. Jackson & Blackman, 1994; Peterson & Hoffer, 1994), there is also some evidence that it may not inevitably occur when a new safety device is introduced (e.g. Rock, 1993).

One worthwhile modification of the theory may be made by viewing people’s target level of risk as zero, as opposed to some (impossible to measure) level above zero as suggested by RHT. This notion has been discussed in theories put forward by Näätänen and Summala (1976), and Fuller (1992). If zero subjective risk is seen as the normal target for adult drivers, this opens up the possibility that it is not the normal target level for some young drivers (at least some of the time), which could potentially clearly distinguish them from older drivers.

There may also be an under-emphasis in RHT of the “mistakes” people can make in assessing the objective risk. It is highly implausible to imagine that people have particularly accurate means to assess the objective risk they are experiencing on the road (Howarth, 1987; Janssen & Tenkink, 1988; Slovic & Fischhoff, 1982). It seems particularly unlikely that they compensate for the imposed “extra” safety of one driving situation by driving more dangerously in another situation, perhaps even on another journey.

However, the basic notion that it is the target level of risk that primarily controls behaviour provides interesting insights when thinking about drivers and in particular when thinking about young drivers. If young male drivers crash more than other groups of drivers, and this is due to how they drive, then RHT would suggest that they have higher target levels of risk. There is some empirical evidence that this may be the case (Wilson & Anderson, 1980). If we think in terms of zero subjective risk as the normal adult target (a modification of RHT), then we are led to wondering if young men in particular either experience zero risk at what is in fact a higher objective level of risk than other drivers experience it, or if they drive in such a way as to deliberately experience a certain level of subjective risk, which is something other drivers generally
avoid. The first possibility suggests differences in risk perception between young men and other groups. This will be looked at in more detail in the next section.

The second possibility is far more complex and there are a number of explanations that could arise from it. The most obvious one is that young men seek risk. They drive with a sensation of subjective risk because they find this in some way intrinsically enjoyable or satisfying. Another possibility is that they tolerate the feeling of risk because of their other needs that in order to be met require a sensation of subjective risk. Put another way the costs of cautious behaviour may seem too high to them, and the rewards of risk behaviour too appealing (Wilde, 1988). This may be a general feature of their driving behaviour, or arise only in certain circumstances.

Still another possibility is that they, like young women, have a higher tolerance for subjective risk because of their inexperience. As was discussed in Chapter 1, learner drivers experience high levels of subjective risk. It may be that they become used to these levels of subjective risk and once they have gained expertise, continue to drive in a manner that maintains the level of subjective risk they felt before (McDonald, 1985). Their target risk level is higher due to a habituation with the sensation of risk.

From an intervention angle, it would seem vital to explore these possibilities further. It is obviously essential to understand what young drivers perceive to be the costs and benefits of risk behaviour and the costs and benefits of cautious behaviour. It may be possible to target some of these factors. Incentives procedures (increasing the benefits of cautious behaviour) have been demonstrated as being particularly effective under some conditions with young drivers (see Wilde, 1995, for a full discussion of this). These procedures may have an effect well beyond the period in which they operate as stated by Wilde and Murdoch (1982): “If drivers can be induced to engage - even temporarily - in new behaviour, in order to earn an incentive, their attitudes and subsequent behaviour will change accordingly.” (p. 887).
RISK PERCEPTION.

Unlike RHT that relies on an almost perfect translation between objective risk and subjective risk, studies of risk perception focus on the imperfections in this translation. In the area of driving there have been a number of studies devoted to the differences between the perception of risks by young and older drivers as well as male and female drivers.

A questionnaire study by Brown and Copeman (1975) on 224 British drivers (volunteers from the Cambridge Applied Psychology Unit Research Panel) found that when presented with a list of driving offences (e.g. speeding, failing to give way, not indicating a turn), young males (18-24 years) rated each offence as less serious than did young females or older drivers (35-55 years) of either sex. In addition, when asked to rate the seriousness of their own driving offences (e.g. their own speeding or failure to give way), they gave even lower ratings compared with young women or older drivers. A relatively recent German study, by Tränkle, Gelau, & Metker (1990) on 208 male and 100 female drivers in the age groups 18-21, 35-45 and 65-75 years found that young men rated traffic situations as less risky than did older men. This age effect was not found however for the women. A study by DeJoy (1992), looked directly at gender differences by comparing 68 male and 68 female American college student volunteers aged 18-24 years, and also found that the young men considered risky behaviours as less serious and less likely to result in an accident than did the young women.

Matthews and Moran (1986) in a Canadian study looked at the differences between young male (18-25 years) and older male (35-50) drivers in their ratings of the riskiness of a variety of driving scenarios. They found that the young men rated both vehicle handling sequences and sequences involving driving reflexes to put them at less personal risk of an accident than did older drivers. An American study by Bragg and Finn (1982), again compared young (18-24 years) and older (38-50 years) male drivers. They found that the young men saw speeding as less dangerous than did the older drivers, but that the younger drivers saw snow covered roads as more dangerous. The young drivers also found novel situations more hazardous than familiar situations, unlike older drivers for whom the level of hazard did not change.
The pattern that emerges here is that young male drivers are highly confident of their skills and their judgement, within the boundaries of situations with which they are familiar and feel in control. Older drivers and female drivers on the other hand seem more aware of the links between risky driving (i.e. breaking the traffic laws) and crashes. Older drivers also feel more comfortable with external challenges, such as snow or a novel situation. The young man seems to be focusing on himself and his driving skills, whereas the older man and the woman is focused outward on responding to hazards as they arise.

There are some contradictions in the findings concerning age differences when more general ratings of the riskiness of driving are examined. Whereas Jonah and Dawson (1987), found that young male drivers perceived less danger in a wide variety of driving situations, Matthews and Moran (1986) found that young men saw the chances of an accident occurring (although not necessarily to them) in any given situation to be greater than did the older men. Young male drivers have also been found to be generally aware that their age group is at more risk for crashes than older age groups (Finn & Bragg, 1986).

Part of the answer may be that whereas young male drivers are fully aware of the riskiness of a situation, or indeed of being a young male, they see themselves as exceptions. They personally are not at risk in that situation, they personally are different from other young male drivers. International studies have found that young (male) drivers appear to see their chances of having an accident as significantly less than their same sex peers, whereas older (male) drivers see their chances of having an accident as equal to their same sex peers (Bragg & Finn, 1982; Finn & Bragg, 1986; Forsyth, 1992; Matthews & Moran, 1986). Young (male) drivers may also see themselves as more skilled than their peers (Forsyth, 1992; Matthews & Moran, 1986). Matthew and Moran (1986) concluded: “This tendency for young drivers to see themselves as somehow different and an exception to influences and factors affecting their peer’s driving behaviour was a recurring theme through all of the data.” (p. 310).
There is little data on gender differences in this area as most studies have compared younger and older men. One study that looked specifically at this (DeJoy, 1992), found that both young men and young women saw themselves as less vulnerable than their peers. However, young women were less optimistic when comparing themselves to “the average motorist” whereas young men were equally optimistic.

Despite some criticism of the questions asked and the tasks involved in risk perception studies (Groeger & Brown, 1989) it seems reasonable to conclude that there are important differences between young drivers (and probably only young male drivers), and older (or female) drivers in how they perceive driving risk. Young men appear less aware of the dangers involved in illegal driving behaviours, and possibly for this reason show little concern or remorse about their own rule breaking behaviour. They seem to overemphasise the protection they may get from being skilful at handling the vehicle and under-emphasise the potential protection received from following traffic laws.

Why do young men think like this? Is this part of the reason for their high levels of risk behaviour? It is difficult to know, as pointed out by Gardner (1993) whether young men are rationalising the risks they are engaged in anyway, by down playing these risks, or if they genuinely perceive less risk in certain driving conditions than do women and older men.

Some evidence that rationalisation may be involved, or at least some other post hoc process, comes from studies that have looked at younger adolescents. One New Zealand study (Reeder, Chalmers, & Langley, 1992), looked at 739 13-year-olds from the Dunedin Multidisciplinary Health and Development Study, and asked them to imagine themselves in the situation of riding a motorcycle on the road. Only 52% of this sample could actually ride a motorcycle, with only 22% having ridden on the road “at least once”. When asked to rate their own personal risk of having a crash compared to people of their own age, 79% rated their risk as the same as others, with 10% saying it was greater than others, leaving only 11% who said it was less. When “riders” only were asked how safe they considered themselves to be, 67% said average, 14% above average and 13% below average. The rest were unsure. These figures indicate that
amongst this group of young adolescents who were either not engaging in the behaviour of interest, or who had probably only engaged in it on rare occasions, there was little sense of personal immunity from the risks involved. In some American research that compared the risks ratings of younger adolescents with those of older adolescents across a variety of behaviours, it was found that the younger adolescents rated behaviours as much more risky than did the older adolescents who were likely to be engaging in them (Irwin, 1993).

It is even possible that whatever adolescents' feelings about how risky behaviours are, these feelings are not taken into consideration when making decisions about whether to perform a behaviour. One study by Lehto, James & Foley (1994) found that the perceived riskiness of an activity did not predict the propensity to perform the behaviour or the perceived desirability of the behaviour. The perceived value of the behaviour, however, was a strong predictor of these things. Nevertheless, it is possible, and in keeping with other research evidence, that whatever risk the young men perceived in this study, was not a risk they felt applied to them personally.

The concept of “edgework” that was originally developed by the journalist Hunter S. Thompson and is the title of an article by Lyng (1990), is used by Lyng to describe what he calls “voluntary risk taking”. Some of the qualities of “edgework” have similarities with young male driver’s perceptions of their skilfulness, and personal invulnerability. Lyng said: “Activities that can be subsumed under the edgework concept have one central feature in common: they all involve a clearly observable threat to one’s physical or mental well-being or one’s sense of an ordered existence. . . . The threat of death or injury is ever-present in such activities, although participants often claim that only those ‘who don’t know what they are doing’ are at risk. . . . Edgeworkers claim to possess a special ability, one that transcends activity-specific skills. . . . This unique skill which applies to all types of edgework, is the ability to maintain control over a situation that verges on complete chaos, a situation most people would regard as entirely uncontrollable.” (emphasis added, p. 859).
While it may be a little extreme to describe young male drivers (at least most of the time) as driving on the edge of complete chaos, they do appear to have the same feelings of being especially skilful and able to control the vehicle in a way that is superior to other drivers. Is it that young male drivers seek risky situations but do not perceive themselves to be at risk?

THE DEVELOPMENTAL PHASE OF ADOLESCENCE

A popular explanation for why young, mostly male, drivers are involved in a greater than average amount of risk behaviour, is that “reckless behaviour” or “risk taking” is an inherent part of being adolescent (e.g. Arnett, 1992a, 1992b, 1992c; Department of Health, 1990; DiBlasio, 1986; Thuen et al., 1992). For example, Arnett (1992a) wrote: “Adolescence bears a heightened potential for recklessness compared to other developmental periods in every culture and every time.” (p. 339). Put somewhat more kindly, Thuen et al. (1992) suggested that “Adolescence is a period of transition characterised by change from childhood to adulthood, demanding adjustments to a variety of biological, psychological and social strains. Adjusting to these strains often means taking risks.” (p. 269).

It is indeed developmentally adaptive for adolescents to seek out some risky situations (Baumrind, 1987). Risky situations may help young people learn about the world and many of the potential advantages of adulthood can only be gained by entering into situations that carry risk of failure, rejection or physical injury. There is even some evidence that high adolescent “risk takers” have better self esteem and less depression than low “risk takers” (Gonzalez et al., 1994). However, society makes a distinction between healthy or appropriate risk behaviour in adolescence and unhealthy or inappropriate risk behaviour. Unsafe driving is not considered a healthy or appropriate form of risk behaviour (e.g. Colmar Brunton Research, 1993).

The following are the characteristics of adolescents that are seen to contribute towards their seeking of risky situations. They are discussed with a view to how they may impact on driving.
Physical characteristics: It is often noted that adolescent drivers are at their physical peak (e.g., Evans, 1991). They have excellent motor skills (particularly males) and all their senses are performing at optimum levels. They have quicker reaction time performance than any other age group (Creative Challenge Services, 1992). In addition they have low levels of monamine oxidase, a hormone that may act to inhibit dangerous behaviours, and males have more sex hormones such as testosterone circulating at this time than at any other. There may also be a tendency for young people to increase the intensity of a stimulus when it reaches the brain, which has been related to various unsafe behaviours (Arnett, 1992a). It is possible to speculate that young people’s physical competence and alertness may contribute to an overconfidence in their driving ability. The high levels of sex hormones, such as testosterone in males, may also increase their tolerance for and enjoyment of risky behaviours (Irwin, 1993), including the intense sensations involved in risky driving (Arnett, 1992a).

Egocentrism and invulnerability: “Egocentrism” (Arnett, 1992a; Elkind, 1967) is the notion that adolescents confuse their thoughts with the thoughts of others. They invent an imaginary audience that is focused on them and their behaviour. They create a personal fable about their own life that it is in some way blessed and that it is not possible a calamity might befall them. This leads to them underestimating their chances of being involved in an accident and to feeling invulnerable. The literature on risk perception, outlined earlier in this chapter, would suggest that feelings of invulnerability, with regard to crashes, are probably stronger in young men than in any other group. However, there is mixed evidence on whether feelings of invulnerability in general are particularly concentrated in adolescence (Furby & Beyth-Marom, 1992, Quadrel, Fischhoff, & Davis, 1993).

Emotions: Emotions and driving have not been extensively studied. There is some evidence however that both very good and very bad moods have a negative effect on driving (Reason, Manstead, Stradling, Parker, & Baxter, 1991). It may be that adolescents have more volatile moods than adults, and that they do not always control their moods when driving (e.g., Creative Challenge Services, 1992). Stoddart and
Rothe (1987), in a summary of the scant driving research in this area, include the following among the emotional characteristics that may influence the behaviour of young drivers:

1. Emotional milestones (such as falling in and out of love, leaving school) which create stress that may be released in the car.
2. A lack control of emotions and aggressiveness while driving.
3. A tendency to be oriented towards self-benefit at the expense of the other.
4. A hunger for excitement.
5. Their strong motivation to drive that heightens the potential for an emotional component in their driving.

*Sensation seeking:* The term “sensation seeking” was originally coined by Zuckerman (Zuckerman, 1971, 1979; Zuckerman, Eysenck, & Eysenck, 1978). The four factors involved in sensation seeking are: thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility. The sensation seeking scale measures each of these factors. Studies by Arnett (1990, 1992a) found correlations between high scores on sensation seeking scales and reckless behaviour, including driving. McMillen, Smith and Wells-Parker (1989) found greater “risk taking” (in the form of performing lane changes in order to pass cars when using a driving simulator) amongst high than low sensation seekers. It appears that males score more highly with regard to sensation seeking than females (e.g. Farrow & Brissing, 1990) and that younger people score more highly than older people (e.g. Zuckerman, Eysenck, & Eysenck, 1978). Young men have also been found to score more highly than other groups with regard to “lethality”: a related concept with includes an orientation towards danger and violence, bravery and adventure, thrill-seeking, and fast driving (Thorson & Powell, 1987).

*The tasks of adolescence:* Adolescents face different tasks than adults. In his work on problem behaviour (Jessar, 1985, 1992; Jessar, Donovan & Costa, 1991; Jessar & Jessar, 1977), Jessar suggested that risk behaviour (including risky driving) is partly an attempt to achieve the following developmental goals of adolescence: commonality with the peer group, independence from parents/adults, expression of opposition to
values of society, establishing a sense of personal identity and achieving the transition to a more mature status. As Jessor (1992) said: "It is not difficult to see how smoking, drinking, illicit drug use, risky driving or early sexual activity can be instrumental in gaining peer acceptance and respect, in establishing autonomy from parents, in repudiating the norms and values of conventional authority, in coping with anxiety, frustration and the anticipation of failure, or in affirming maturity and making a transition out of adulthood and toward a more adult status." (p. 378).

The goal of achieving adult status has been particularly emphasised by Moffit (1993), who claims that most adolescents are aware of what he calls a "maturity gap". That is, they are biologically mature, whilst being excluded from social adulthood. Entry to adulthood, or bridging this gap is a highly salient goal for them. The only peers they see as leaping this maturity gap are the young "life course persistent offenders" who are engaging in delinquent or illegal behaviour (in which he includes dangerous driving). They therefore imitate these peers in order to feel adult.

Risk behaviour can also be seen as a result of the stresses and conflicts involved in attempting to meet developmental goals (Coleman, 1989). Holinger (1981) in an analysis of the statistics on violent deaths amongst 15-24 year olds in the United States since the 1960's, suggested that some "accidental deaths" may "reflect depression and suicidal tendencies", something he suggested was a growing problem in the adolescent population.

Peers: Adolescents have traditionally been seen as highly susceptible to influence from their peers. For example, in his summary of the developmental tasks of adolescence, Havighurst (1973) commented: "The most potent single influence during the adolescent years is the power of group approval. The youth becomes a slave to the conventions of his age group." (p. 45).

The traditional image of peers is favoured by Arnett (1992a, 1992b) who focused on sensation seeking and invulnerability as the primary causes of "reckless" behaviour in adolescence. Arnett claimed that each individual adolescent’s "personal fable of
invulnerability” is likely to be strengthened when with peers. When their friends don’t seem to be worried about what is going on, then adolescents are more likely to brush aside their own worries. “In this sense, friends may act as an antisocialization influence in that they conspire to engage in behaviour together that most of the other socialisation influences in their environment—parents, school, community, legal system—are trying to socialise out of them and would like to prevent, behaviour that few of the adolescents would participate in if they were by themselves.” (original emphasis, Arnett, 1992b, p. 395).

However, it is difficult to find direct empirical evidence for the impact of peers on risky driving behaviour. Some studies that have examined the impact of peers on decisions to engage in risky driving have found them to be neutral (e.g. Nusbaumer & Zusman, 1981; Vegaga & Klitzner, 1989). Others have found that the effects of peers on risk behaviour in general are mixed. For example, Schwarzer and Leppin (1990) found that that strong relationships with peers may lead to more smoking and drinking, but also to more health regimes. Petersen and Ebata (1987) similarly found that under some circumstances positive peer relationships were related to problem behaviour but not under other circumstances. It is even possible that in some cases it is the adolescents who are poorly integrated into peer groups who demonstrate the highest levels of problem behaviour (Hurrelmann, 1987), although this may be in an attempt to become integrated into a group. Two German studies on substance abuse found evidence for a connection between substance use and the desire for peer group integration (Silbereisen, Noack, & Reitzle, 1987; Silbereisen & Noack, 1988).

There is some evidence that the fear of group pressure may lead to driving risks. Rothe (1992a) in describing the results of two interview studies on Canadian drivers, one that involved 150 young drivers and the other that involved 130 elderly drivers who were the victims of injury producing accidents, reported that young drivers claimed to be scared to admit to feelings of anxiety about driving under poor conditions because they may “become objects of scorn or ridicule if their friends discovered their feelings.” (p. 191).
As hinted at in the Rothe studies above, peer influence (when it operates) appears to function through adolescents responding to what they perceive to be group norms, rather than external peer pressure. Interview studies have shown a link between drinking and peers (Beck & Bargman, 1993; Fontane & Layne, 1979), in which the mechanism of influence appeared to be the individual’s desire to conform to the group rather than any external pressure from the group. Studies on adolescent alcohol and drug use have used path analysis to show that rather than adolescents being directly influenced through their peers’ behaviour, they integrate this into their own norms and preferences that do bear directly on their choices (Biddle, Bank, & Marlin, 1980; Webster, Hunter, & Keats, 1994).

It is also possible that adolescents who want to engage in illicit activities simply congregate together. Coggans and McKellar (1994) have argued that what looks like peer pressure is in fact peer preference. However it is viewed, peer influence is not directly a “risk factor” in itself. It may simply act to reinforce and strengthen any inclination to behave unsafely that has originated from some other source.

Conclusions: The features that have been discussed in this section are nearly all theoretical constructs that attempt to describe a behaviour or thought pattern that appears to be concentrated in adolescence. Because they represent a variety of approaches, they are not all in fact “separate” explanations. The hormonal characteristics of young men, for example, may at least partially explain their tendency towards sensation seeking. Emotions may run high in adolescence, which may disinhibit some risk behaviour, but these emotions may in turn have been generated by the stresses and ambiguities involved in fulfilling the developmental tasks of this age group.

The features discussed in this section do little to help describe the driving of young women. Young women are either not as affected by these features (such as hormonal influences) or possibly do not demonstrate any developmental pre-dispositions they might have by driving unsafely. For example, young women may not use reckless driving to feel adult, but instead use other problematic behaviours such as smoking.
For young men, however, the features of adolescence appear to provide some appealing explanations. It seems plausible that young men, perhaps influenced by hormones, enjoy thrill seeking and because of their physical competence choose the road as a place to do this. As driving skill and male adulthood are symbolically intertwined (this will be discussed later in this chapter), driving is a strong contender for young males' desire to feel adult. If these individual pre-dispositions exist, it is easy to see how male peer group norms will then form to reinforce unsafe driving practices. However, it is important to stress that there is no empirical evidence that any of these features are powerful enough to enable the conclusion that young males are inherently dangerous drivers. They only manifest themselves within a driving environment and social climate that “allows” them to do so.

ALCOHOL
Drinking and driving is probably the most widely recognised contributor to road crashes. Numerous attempts (many of them at least partially successful) have been made to reduce its occurrence, including: tighter surveillance, tougher penalties, media campaigns and school education programmes. This section looks at the way in which alcohol functions to change driver behaviour, and at the significance of how it functions for young drivers.

Many international studies have found that it is common for young people to drink and drive and/or to be the passenger of a drinking driver (DiBlasio, 1988; Parliament of NSW Joint Standing Committee upon Road Safety, 1990; Pelz et al., 1975; Schuman et al., 1967; Vegaga & Klitzner, 1989). The incidence of drinking and driving is likely to be directly related to the amount of drinking in a population (Bailey & Carpinter, 1991). New Zealand studies have found that the vast majority of teenagers drink at least some alcohol and many (especially males) may drink large amounts on occasion (Cullen, 1985; Deaker, 1988).

As mentioned in Chapter 3, it is important to note that studies have tended to find that drivers under the age of 20 are not the worst offenders for drinking and driving.
(Cooper, 1987; Jonah, 1986; Pelz et al. 1975; Schuman et al., 1967). However, it seems that whether or not teenagers in fact drink less frequency or drink smaller amounts than older drivers, they are likely to be more adversely effected by alcohol than older drivers, and crash at lower blood/alcohol levels (Carlson, 1972; Summala, 1987). According to Bailey and Carpinter (1991), in New Zealand in 1988, teenagers made up 20% of drinking drivers killed. This puts them at about two and a half times the risk of the average driver. Over the last 4 years approximately 14% of teenagers who were fatally injured when driving were over the legal alcohol limit of 30 m.g. of alcohol per 100 mls of blood, for under 20 year olds (L. T. S. A., 1995).

Alcohol may increase road fatalities in a number of ways. It may reduce drivers perceptual motor functioning, impair their judgement or decrease the chances of an injured person surviving. It is difficult to separate out statistically the extent to which each of these potential effects of alcohol is responsible for young drivers' alcohol related injuries. Studies suggest however that a highly intoxicated driver has an increased chance of being injured on the road by anywhere from 30-100 times (Phelps 1987, Bailey & Carpinter, 1991). Perceptual/motor effects, judgement effects and the possible impact of these on young drivers are discussed below.

Perceptual/motor effects: Alcohol is a drug and as such has physiological effects on functioning. The major physiological effects that may have an impact on driving and road injuries are:

1. As a sedative, it increases drowsiness (Bailey & Carpinter, 1991).
2. It may impair information acquisition (Johnston, 1982). This could be due to a reduction in the rate of peripheral detection (Rockwell, 1972).
3. It reduces the ability to deal with two tasks at once (Brewer, 1980; Johnston, 1982). This may be particularly evident if the driver is trying to interact with passengers as well as perform driving tasks (Krüger, 1990).
4. People with high blood alcohol levels may be less likely to recover from injuries sustained in a crash (Bailey & Carpinter, 1991).
Judgement effects: Of equal importance are the effects alcohol may have on a driver’s judgement. Several researchers on drinking and driving have suggested that alcohol may act to disinhibit risky behaviour (Caces, Stinson & Harford, 1991; Cohen, 1960; Jonah, 1986; Nusbaumer & Zusman, 1981; O.E.C.D., 1975). It may do this partly by inducing in people a false sense of competence and well being (Bailey & Carpinter, 1991; O.E.C.D., 1975).

However, the effect of alcohol on altering driver judgement is not a straightforward one. Alcohol only functions to change the judgement of a driver in an indirect fashion. Some individuals, for example, seem to be far more susceptible to its effects in this regard than others. In a very early British study that illustrates individual differences, Cohen (1960) gave bus drivers varying amounts of alcohol. He then asked them to drive through gaps that were successively narrower, until the drivers said that the gap was too narrow for them to risk attempting. While alcohol did generally make the drivers more willing to attempt narrower gaps, the blood alcohol level of the most “dangerous” driver by this measure, was less than half that of the most “cautious” one. Another study by McMillen et al. (1989) found that high sensation seekers increased their risky driving on a simulator simply when they believed they had consumed alcohol, contrary to low-sensation seekers who became more cautious. The amount of alcohol consumed however, did not produce a significant effect in itself.

It is possible that rather than being induced by a some sort of biochemical process, the effects of alcohol on the judgement are learned. Park (1984) suggested that it is informal social laws and expectations that govern what is considered an appropriate way to behave when under the influence of alcohol. In reference to dangerous driving in New Zealand she said: “Drink is not necessarily the causal factor, but as with other violence, drinking may act as a signal for risk taking behaviour of this type.” (p. 104).

The likely impact of alcohol on young drivers: Young men have (unfortunately) had ample opportunity to observe the kind of behaviour that is considered culturally normal after drinking. If this behaviour includes reckless driving, and if we consider that young men may be prone to reckless driving for other reasons anyway, then it takes little
imagination to realise that they may be particularly likely to succumb to alcohol's effect on disinhibiting risk behaviour. Especially if being able to “handle” drinking and driving is part of the social construction of the adult male.

The perceptual/motor effects of alcohol, have many similarities to the effects of inexperience (see Chapter 1). Inexperienced drivers are likely to have poor information gathering skills (e.g. Baron & Brown, 1991) and less effective eye movements than highly experienced drivers (Rockwell, 1972). These in combination with alcohol’s tendency to impair information gathering and reduce peripheral detection, would seem to be a particularly dangerous mix. Inexperienced drivers have also been found to be less effective than experienced drivers at assigning priorities to activities (Milech et al., 1990), a difficulty that could only be exacerbated by alcohol’s tendency to reduce the ability of a driver to deal with two tasks at once. If passengers are added to the scenario, the potential for disaster escalates. Young drivers may be particularly susceptible to what they feel the passenger expects of them (Ingham, 1991), which if they are another young male, may be “skilful” (read “reckless”) driving. They may have extreme difficulty in balancing the task of interacting with the passenger and driving. At the same time, they are dealing with the combined effects of alcohol and inexperience in reducing their ability to observe and respond to the road environment.

It certainly seems appropriate in the first instance, to discourage drinking and driving in young people (especially young men) altogether, through strict surveillance and legislation, media and education campaigns and the like. This has been partly achieved in New Zealand by the reduction of the legal blood alcohol limit for drivers under 20-years-old. However, it may also be possible to address some of the problem by educating young people about how alcohol functions on both a physical and psychological level to impair driving, and thus possibly reducing their susceptibility to some of its effects.

THE ROLE OF SOCIETY

It is indisputable that human behaviour is highly informed by culture. However, in looking at the aetiology of risky driving amongst adolescents, the role of culture has
been largely neglected. The wide use of the term “risk taking” in the literature on young drivers (see Chapter 2) can be seen to reflect this stress on the individual rather than the social causes of the behaviour in question (Baumrind, 1987). This overemphasis on the individual and developmental causes of the behaviour, serves to obscure, rather than illuminate the decision making and state of mind of the young driver, who is, as are all people, making choices about how to behave within the constrains of the context and its associated rewards, punishments and messages.

Understanding the social structures that maintain behaviours is also important when designing interventions aimed at changing these behaviours (Denscombe, 1993; Dorn, 1983; May 1993). In particular it is essential to examine how social forces are translated through the psychology of the individuals concerned into risky behaviours (Hurrelman, 1990; May 1993). This may show risk behaviour to be purposeful, rather than being thought of as the result of disorder within the individual (Felner & Felner, 1989).

The next section in this chapter looks at how certain features of Western adolescence fail to inhibit risk behaviour. The next two sections on television, and the social construction of masculinity, look at how Western adolescents (and especially males) are more actively “encouraged” to engage in risky behaviour when driving. The final section examines how parents and peers may also function in this way.

**Does Western adolescence fail to inhibit risk behaviour?**

It is possible to view Western adolescence as being socially constructed in such a form as to fail to inhibit risk behaviour. One feature of Western adolescence that may function like this, is the expectation that Western adolescents will be breaking free from their families, and the restrictions they impose, by becoming emotionally, socially and economically independent during this period (Hurrelman, 1989a). It may even be that part of the expected behaviour of adolescence is to rebel against parental values (Bellaby, 1990). The degree of independence from their family that contemporary young Westerners expect is unusual, both across time and across cultures, and greatly
weakens the family's potential for controlling undesirable behaviour, including that which involves personal risk.

Another feature of Western adolescence that may act to disinhibit risk behaviour is its length. For perhaps a decade (Petersen & Ebata, 1987), young people are expected to live between the world of a child and that of an adult, with little opportunity to express their independence (Baumrind, 1987). This may leave them frustrated and in search of activities (such as driving), that allow them to feel independent. The extended freedom from such things as a job and marriage which traditionally act to inhibit risk behaviour, also leaves the adolescent open to engage in “reckless”, “irresponsible” behaviour (Arnett, 1992a; Sampson & Laub, 1990). The opportunity to be reckless may be particularly tempting in a social climate in which there is so little certainty about the outcome of adolescence (Hurrelmann, 1989a). Reckless behaviour, on the road and elsewhere, may be an act of taking control, when other types of control seem elusive.

The role of television in creating the contradiction
The media is often considered to play a major role in forming adolescents’ constructions (Stoddart & Rothe, 1987; Tonkin et al., 1990). Television may be particularly potent at this developmental stage because it is not associated with adult authority, and so appeals to the adolescent’s desire to be free of such authority (Forman & Linney, 1991). Ironically, it is television that publicises new traffic legislation and that is the primary form of media for traffic safety campaigns, whilst at the same time playing a key role in maintaining the connection between, as Evans (1991) puts it, “the life threatening use of vehicles” and “glamour and excitement” (p. 158).

Two related studies, (Atkin, 1989; Greenberg & Atkin, 1983) carried out an analysis of the portrayal of dangerous driving acts on American television. It is reasonable to assume that New Zealand television would produce highly similar results. The analysis showed:
1. 26% of all driving scenes demonstrated “noisy driving”. In 22% of the driving scenes there were depictions of risky driving, e.g. excessive speed or erratic weaving.

2. In 9% of the scenes there was a positive outcome for the driver.

3. In 1% of the scenes there was a death or injury.

4. In 4% of the scenes there was damage to the driver’s car and in 3% of the scenes a legal penalty imposed on the driver.

5. The highest rate of dangerous driving was performed by males under 30. They were more often villains, but heroes were also highly involved.

Atkin (1989) proposed that these kind of portrayals may have the following impact:

1. Viewers might imitate an array of novel driving behaviours that they have never witnessed first hand.

2. Inhibitory restraints may be lowered as they learn that irregular driving behaviours are commonplace and normative.

3. May induce the feeling among some thrill seekers that irregular driving is exciting and glamorous.

4. This impact is likely to be strongest on young men. They are inexperienced drivers and therefore highly motivated to learn from the behaviour, they may have “risk taking” values and they are most likely to identify with the drivers on TV who are most commonly young men.

5. Television is a shared medium. Any influences it has on individuals are likely to be compounded by the common viewing of groups of individuals with similar values.

Television portrayals of risky driving are at least theoretically more likely to impact on adolescents than adults, according to Roberts (1989) because of adolescents “special characteristics”. “Such factors as adolescent needs to break away from adult authority figures, their tendency to engage in riskier behaviours than do older adults, and to perceive less risk in a variety of situations all indicate that they may interpret portrayals of driving in unique ways. Adolescents may have unique ideas of what constitutes negative or positive consequences of acts, of what is useful or functional, of what
constitutes success. The needs characteristic of adolescence may affect their perceptions of what are appropriate incentives to perform any given behaviour.” (p.17)

While it is very difficult to directly measure the impact of television, Atkin (1990) in a review article cited some evidence that alcohol advertisements may have a small impact on increasing teenage drinking and driving.

Driving and the social construction of masculinity
In Western societies being able to drive skilfully is part of being a man. Driving skill, however, is not equated with caution or primarily about safety. On the contrary it may be that the willingness to drive fast and overtake are generally perceived as “skilful” (Naatänen & Summala, 1976). Drinking and driving, trying out manoeuvres beyond their skills and speeding may help young men create their gender identities (Papadakis & Moore, 1991), in a culture where seeking risks is part of the construction of manliness (Hopkins & Emle, 1990).

What is more, young men are expected by those around them to demonstrate these behaviours to an increased degree. The socially prescribed role of a young man may be that of the “risk taker”, at the same time as it is decried as a fault of young men. Bellaby (1990) suggested that young “bikers” and “boy racers” are doing what is expected of them, primarily by their fathers. In a survey of secondary school students and their parents in Canada, Stoddart (1987) found that parents thought that for boys driving was almost a natural ability and that it was important for them to be good drivers. They believed that boys placed a high value on driving. They also expected that their sons would drive in a manner which they disapproved of and that they were very prone to peer group pressure to drive dangerously. The parents did not believe these things of girls.

Stoddart pointed out that when viewing the socially constructed equation between driving skill and masculinity, it becomes paradoxical to talk about young males risky driving behaviour as deviant. “... it should be mentioned that risky recreational driving is rendered attractive not by adherence to a bizarre morality unique to some
young drivers but by their exaggerated evaluation of widely circulating values that equate driving with masculinity. In a very strong sense, then, our risky recreational drivers are over-conforming.” (p. 182). He went on to say that if young men are engaging in risky driving as a way of “displaying character”, then increasing penalties for breaking traffic laws may have the opposite effect from that intended. “Indeed, “cracking down” on risky recreational driving by, say, allotting more manpower or giving out more severe penalties make the activity even riskier - and as the risk increases so does the subjective value of the activity: when it comes to vehicles for displaying character, the greater the risk the better. When understood in this way, enforcement can be portrayed as encouraging delinquency, not deterring it.” (p. 182). It would certainly seem very difficult for society to escape a cycle in which the expectation is that certain members of it (young men) will deliberately flaunt its rules.

**The role of everyday contacts: families and friends**

In a study of New Zealand secondary school students and their attitudes towards drinking and driving, Burton and Williams (1993), came up with eight factors that influence the degree to which there is a “safety culture” amongst the students that discourages drinking and driving:

1. The existing degree of adolescent safety culture.
2. Perceived double standards of adults in relation to drink driving.
3. Parental attitudes and behaviours towards adolescent drinking and adolescent driving.
4. The nature of adolescent drinking cultures and driving cultures in the local community.
5. The degree of peer support for safe drinking and driving.
6. The balance between school policies and practices that are seen by students to be primarily relating to the interest of the school (e.g. reputation), and those that are seen as primarily relating to the interests of the students.
7. The nature of the practical support within schools for student based drink driving initiatives (e.g. Students Against Driving Drunk).
8. The relationship between the availability of alcohol and adolescent alcohol consumption.
These factors indicate the importance of both adult based institutions, such as parents and schools, as well as peer groups in providing the groundwork for (or against) risky driving behaviour: in this case drinking and driving.

It can be very difficult to separate out the extent to which each of the different contacts of the adolescent helps “teach” and maintain risky driving behaviour. There is some evidence however for the importance of both peers and parents. Nusbaumer and Zusman (1981) in a questionnaire study of 944 senior American high school students found that riding with a drinking driver (whether parent or peer) appeared to be an intermediate step in learning to be a drinking driver. DiBlasio (1986) looked at how drinking and driving or riding with a driver who has been drinking is influenced through emulation of parent models and peer reinforcement and association. In a study of 1082 American 10-12th graders, he found that parental models, as well as peer reinforcement and association each individually significantly explained some of the variance in drinking and driving or riding with a drinking driver. Of these three factors the strongest relationship was differential peer association.

The way in which the peer group functions has previously been discussed in this chapter. The influence of parents has also been the focus of a number of empirical studies. There is some evidence of a positive correlation between a father’s driving convictions and those of his sons (Carlson & Klein, 1970, Stoddart & Rothe, 1987) suggesting the probability of modelling. There is no doubt that young people must observe a number of risky driving behaviours in their parents, who they will have spent an enormous amount of time watching driving. “Bad habits” may also be passed on to them if their parents directly teach them to drive. Stoddart (1987) in interviews with Canadian teenage drivers found that with few exceptions, the young people were taught to drive by members of their own family. Even before this stage, they appeared to keenly observe the driving of others. As well as learning technical skills they learnt a host of attitudes, rationalisations and motives. Most of his subjects spoke of their fathers as speeding, trying to beat red lights, going through stop signs, ignoring pedestrian rights, driving without seat belts and drinking and driving.
There have been a number of studies that have focused on the role of parents in initiating and maintaining drinking behaviour in their children. Young people are more likely to consume alcohol if their parents and other family members drink (Deaker, 1988; Fontane & Layne, 1979). This may lead to more drinking and driving amongst the young people. One study, that looked at Hispanic teenagers in the United States (Beck & Bargman, 1993), found that some parents actively promoted drinking in sons as it was seen as “machismo”. In this context drinking and driving amongst the teenagers was common. It is difficult to know how culturally specific this finding is or if a similar finding could be found in New Zealand. It is likely that parents implicitly encourage drinking (especially in boys) in stories about their own pasts and in helping to construct a connection between adulthood, and in particular, masculinity, on the one hand, and alcohol on the other.

Finally, there is considerable evidence that parenting style is related to a variety of adolescent risk behaviours. Permissive parenting may well be the most problematic (Arnett, 1992a; Baumrind, 1987) with authoritative parenting and its association with both support, warmth and boundary setting being the most advantageous to the young person (Jackson, Bee-Gates & Henriksen, 1994; Turner, Irwin, Tschann, & Millstein, 1993). There needs to be considerably more research however on the mechanisms by which these parenting behaviours are related to risky driving. It is possible to speculate that permissive parenting reflects a more general breakdown of family structures and social support mechanisms. It may be that the permissive parent fails to provide adequate “defence” against the contradictory messages about driving and risk faced by adolescents.

CONCLUSIONS: WHAT IS GOING ON WHEN YOUNG PEOPLE ENGAGE IN RISK BEHAVIOUR?

In Chapter 2, three questions were posed as the essential ones in understanding the reasons for young drivers risk behaviour. These were:
1. If young people do engage in more risky driving practices than older people, are they aware that these practices put them at greater than normal risk of a crash?

2. If they are aware of the dangers involved with their driving practices are they risk handling, that is are they engaging in the risky practice in order to gain other benefits or are they risk seeking, that is getting a thrill from the risk involved?¹

3. If young people do appear to gain satisfaction from risky situations, and so deliberately seek them, why are they prone to do this?

The following is a summary of the extent to which these questions have been answered, or at least addressed, by the literature discussed in Chapters 3 and 4.

1. In the first instance, it needs to be said that there is a convincing evidence that young men engage in more risky driving practices than either young women, or older drivers of either sex. There is no substantial evidence that young women engage in more risky driving practices than older drivers. Their high injury rates as teenagers and young adults (see the introduction), can be plausibly explained by their tendency to be passengers in cars with young men and their inexperience with the perceptual/motor skills involved in driving. However, it cannot be definitely said that young women are not at some elevated risk for dangerous driving. Many studies have been done only on men and some recent studies have indicated that changing social roles for men and women would make it unwise to ignore young women as a potential risk group. Young women may also be seen as engaging in risky behaviour when getting into cars with drunk boyfriends, or in possibly contributing to peer norms concerning drinking, risky driving and masculinity.

2. There is considerable evidence that young male drivers do not perceive as much risk in certain dangerous driving practices as do older male drivers. This is particularly true of situations where they feel in control, such as when they are speeding. It may be that they are aware that the situation is objectively risky, but feel personally immune from the risk. This could be for a number of reasons. First, they have not

¹ Part two of this question, "How much of the unsafe driving which results in crashes is the product of suicidal tendencies?" was not addressed in this thesis.
had sufficient experience with “near misses” to have become wary of dangerous practices. Second they tend to quickly acquire the skills of driving and so feel they are in control of the vehicle. Third they may have a high tolerance for the sensation of risk, partly due to their sex and age and partly because they have just come through the novice phase during which driving feels extremely risky. The feeling of being personally immune in what is a dangerous situation may be particularly exhilarating for the young male, and thus may contribute to maintaining any risky driving practices.

3. The majority of young drivers, of both sexes, may consider themselves to be cautious, or at least safe, drivers.

4. Some of young drivers’ risk behaviour is purposeful. That is they are aware of risk but are not thrill seeking. Instead, they consider that the risk of driving under those conditions does not outweigh the negative consequences of failing to drive under the conditions in question. Because of the tendency of young men to underestimate the risk they take when driving dangerously, this may make them more likely to choose risky driving behaviour when it is balanced against other negative consequences. It is also possible that a single driving situation could involve both purposeful risk behaviour and thrill seeking.

5. It is unclear if young males have a higher general level of “target risk” and drive in a way that is more risky almost all the time, or whether they only engage in risky driving behaviour under certain circumstances (at night, under the influence of alcohol, when trying to impress friends, when feeling angry etc).

6. Young drivers may make unsafe judgements, even when consciously trying to avoid risk, because of their decreased ability to quickly integrate new information and/or a high load of information, due to their inexperience as drivers in combination with their decreased sensitivity to risk.

7. It is unclear whether young drivers are prone to thrill seeking or showing off either when with, or under pressure from, their friends.

8. It is unclear if young people’s driving is more “emotional” than that of adults.

9. All the potential reasons for young males’ risk behaviour will tend to be exacerbated by alcohol, which compromises perceptual motor skills, inhibits information gathering and may decrease concern about risk and increase the motivation for thrill
seeking. The effects of driving at night, in which young drivers of both sexes are over represented and may be particularly problematic for the inexperienced driver, are also likely to be exacerbated by alcohol.

10. Adolescents are highly motivated to feel adult, and they may feel adult when driving. “Skilful” driving, which may include speeding, risky manoeuvres and being able to drink and drive is tied up with being a man. Young men may model the risky driving they view on television, and watch in their fathers. In addition adolescents may be expected by their elders to rebel, and therefore by engaging in risky driving are to an extent fulfilling their socially prescribed role.

Some of these points are further explored in the interviews that are discussed in the next chapter.
Chapter 5

INTERVIEWS WITH YOUNG DRIVERS

AIMS AND RATIONALE

The interview approach is advocated by a number of researchers, interested in understanding how “unhealthy” behaviours are initiated and maintained (e.g. Backett, 1992; Bauman & Adair, 1992; Buchanan, 1991; Rothe, 1987c, 1991; Steckler, McLeroy, Goodman, Bird, & McCormick, 1992). As pointed out by Rothe (1991), to date there has been a dearth of qualitative studies in the driving area, where crash statistics, large surveys and experimental data have been heavily favoured. This has helped maintain a number of gaps in our knowledge about the thought processes that lie behind the risk behaviour of young drivers. The current study used interviews to try and access young drivers’ subjective experience of their risk behaviour. The questions were designed to explore various risk behaviours and to look at how both the social context and the thinking of the young driver functioned to maintain these behaviours.

PARTICIPANTS

Two sets of interviews were conducted with sixth form students, aged 16-18 years. The students were all from a single Auckland school that took part in the driver education programme evaluated in the third part of this thesis. They were all taking “transition”, a non-academic programme. The first set of interviews involved 16 students, 12 males and 4 females, who were identified as “high risk” from their responses to the pre-test questionnaire used for evaluating the education programme. This identification was done simply by comparing the responses of all the students from that school and choosing the ones who admitted to the most risky driving practices. Three of the students were Maori and 5 were of Pacific Island origin. The remaining students were Pakeha/Caucasian. They were all drivers, but 6 of the students did not hold a driver’s licence. Only 1 student had a full licence.
The second set of interviews were conducted 6 months later, and involved 6 students. The initial aim was to re-interview the first set of students. However, 10 of these students had left school since the first interviews, or were absent on the day. In total the second group comprised 5 males and 1 female. Two of the students were Maori, 1 was Pacific Island and 3 were Pakeha/Caucasian. Five out of the 6 students held a driver’s licence by the time of this interview, but only 1 of these had a full licence.

**PROCEDURE**

The participants were interviewed individually, by the author and a senior psychology student. In the first set of interviews they were asked a number of questions about their driving behaviour (see Appendix D). They were asked, for example, how often they broke specific road rules, such as driving over the speed limit, not wearing a seat belt, drinking and driving, and breaking the restrictions of their type of licence. They were also asked how worried they were about getting pulled up by the police. They were asked if they considered themselves more or less at risk of an accident than other students their age and if they thought they were safe drivers. They were asked about the impact of having passengers on their driving behaviour. The second set of interviews (see Appendix E) were more specifically designed to get at the expectations they felt people had of them as teenage drivers and the role models they may have had for risky driving. There were also questions that asked the participants if there had been any changes in their attitudes and behaviours. All the interviews were only semi-structured. The interviewers were able to explore further any of the participants’ responses. Each interview lasted between 20-40 minutes. Where quotations are used, the names of the participants have been changed to protect their confidentiality.

**Organisation of analysis**

The interviews were analysed around seven major areas that focused in particular on the gaps in understanding that were pointed out in the conclusions of the previous chapter. The questions of interest were:

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2 For a full description of the procedure, how information was given and consent obtained, see Chapter 10 in part two of the thesis.
1. **Risk perception:** Does this sample of young drivers underestimate the risk involved in any unsafe driving behaviours they engage in? This may be expected from previous studies that indicate they perceive less risk when compared to older drivers (e.g. Bragg & Finn, 1982; Brown & Copeman, 1987; Jonah & Dawson, 1987). Does the explanation for this lie in seeing themselves as personal exceptions: either “safer” than their peers (Bragg & Finn, 1982; Finn & Bragg, 1986; Forsyth, 1992; Matthews & Moran, 1986) and/or somehow immune to personal risk, as is suggested by the theories on adolescent invulnerability (e.g. Arnett, 1992a, Elkind, 1967)?

2. **Purposeful risk behaviour:** To what extent is the driving risk behaviour of the sample purposeful, a motivation that has been found to have considerable explanatory power in other surveys (e.g. Klepp & Perry, 1990; Vegaga & Klitzner, 1989)?

3. **Thrill seeking:** How much does “thrill seeking” which Jessor (1992) suggested was the presumed cause implicit when researchers used the term “risk taking”; or “sensation seeking” (Zuckerman, 1971, 1979; Zuckerman, Eysenck, & Eysenck, 1978) appear to explain risky driving? In what context does it occur?

4. **Peer group influences:** What role does the peer group play in maintaining and initiating risky driving? Is it a primary context for this kind of behaviour as suggested by Arnett (1992a)? Is it neutral (Nusbaumer & Zusman, 1981; Vegaga & Klitzner, 1989), with young drivers either not encouraging each other to engage in dangerous behaviours, or successfully resisting any such pressure? Do young drivers share common norms that they have internalised (Webster, Hunter, & Keats, 1994; Beck & Bargman, 1993)?

5. **Emotions:** Are young drivers highly “emotional” (e.g. Creative Challenge, 1992)? Does aggression and relieving tension play a part in their driving (Näätänen & Summala, 1976)?

6. **Social constructions:** To what extent does driving appear to be modelled from television (Atkin, 1989; Roberts, 1989) or from parents (DiBlasio, 1986; Nusbaumer & Zusman, 1981)? To what extent are young people fulfilling expectations to drive dangerously (Bellaby, 1990; Stoddart, 1987)?
INTERVIEW EXTRACTS AND DISCUSSION

1. Risk perception

There was considerable evidence the participants did recognize risk in driving, with all of them indicating this in some of the questions they were asked. Comments such as: “Yeah in this day and age it’s dangerous like a big bomb you are driving really” (Aaron), were common. However, statements such as this reflected an awareness of risk at a general level, something that previous research has also found (e.g. Finn & Bragg, 1986; Matthews & Moran, 1987). The question of greater interest was whether the young drivers felt personally at risk of a crash. When asked if they thought that they were more or less likely to have an accident than the other drivers in the school, the responses were mixed. Some young drivers talked about the role of “luck”, for example: “Um, I reckon about the same. Yes, its just a matter of luck I think. Being in the wrong place at the wrong time” (Catherine). However, there were students who considered themselves safer than the other drivers at their school. For example:

Interviewer: Do you think you are more or less likely to have a crash than other drivers at your school?
Raymond: Um, I’m actually less. I wouldn’t crash because I can see the car. If I’m going to have a crash I can see it coming, so I can quickly swerve out of it. Bikes have better steering than cars.

It is notable that Raymond had a clear (if somewhat ironic) reason for feeling less at risk than other drivers: he rode a motorbike. Another participant went into some detail about why he was a safer driver than others in the school:

Wayne: I reckon that there are some guys out there in the school who are just going to kill themselves one day. I don’t know, it’s up to them if they want to speed and kill themselves. I just won’t go in the car with them. If I’m in the car sometimes I’ll tell them to slow down if they’re going a bit too fast. Like if it’s a good car, if it’s an old crappy model, those cars that can’t handle going very fast or going around corners and that I won’t get in the car with them because with those cars could just so easily, something could break in them. But if it’s a brand
new car like a Nissan Bluebird I’ve been, the fastest I’ve ever been in a car is about 210 and that was in a Nissan Bluebird. I want to feel safe and I wouldn’t feel safe going fast in one of those cars.

The extract by Wayne above, appears to show a young driver with a strong motivation to be safe, however who is genuinely unaware of the risk involved in driving any car, no matter what it’s safety features, at an excessive speed. A possible reason for Wayne’s false sense of security in a “brand new car” is his perception that other young men were driving under conditions that were even more dangerous.

Some of the participants explained to the interviewer how they kept themselves safe, in ways that implicitly suggested the potential for a great deal of unsafe driving. This could be seen as further evidence for a lack of awareness of personal risk. For example, Lasi seemed to be willing to drive after drinking unless she was almost completely incapacitated by drink:

*Interviewer:* How about drinking and driving?

*Lasi:* Depends on how drunk I am, because I don't really know how to control my alcohol and stuff. If I've had too much then I know cause I can't stand up straight, and if I go and try to put the key in the hole, and I keep missing, then I know that I've had too much to drink and I'm not driving. I'll just give it to someone else, or I'll catch a taxi or something home.

Like Wayne’s criteria for safe driving, Lasi’s criteria for safe drinking and driving appears to leave room for a great deal of objective risk, while she is feeling subjectively safe.

This presentation by the participants of themselves as safety conscious is in keeping with Rothe’s (1987a) interviews with 130 young Canadian drivers (reported in Chapter 4) who had been involved in crashes, but who none the less perceived themselves as cautious, and who generally did not believe they were doing anything wrong at the time of the crash. “Thought it safe” was also the number one reason for speeding given
by Australian secondary school students in a survey (also reported in Chapter 4) by The Parliament of N.S.W. Joint Standing Committee upon Road Safety (1990). It is notable that whenever the young drivers did present themselves as safe, or at less risk of a crash than their peers, it was never because of superior skill. Rather, it was generally explained in practical terms, such as Raymond's example above of the swerving capabilities of his motorcycle.

Gardner (1993) pointed out that it is difficult to know if the reason for young men's apparent lack of awareness of the risk of some driving activities is a genuine perception of less risk or a rationalisation of the risks they are taking. These interviews do not rule out the possibility that young drivers were rationalising their behaviour. However, they did strongly support a connection between reduced risk perception (or at least risk acknowledgment) and regular risk behaviour. When the young drivers did recognise risk in their behaviours it was almost always in an unusual situation and only rarely in something that they engaged in regularly.

2. Purposeful risk behaviour

When the young drivers did recognise clear personal risk, then the behaviour was most commonly presented as being purposeful. This kind of risk behaviour has been consistently found in interviews with young drivers (e.g. Vegaga & Klitzner, 1989; Klepp & Perry, 1990). Below is an example of how for one young male, the risks involved in drinking and driving were temporarily outweighed by the fear of not getting home before his curfew:

_Interviewer:_ Why were you in a situation where you were drinking and driving?

_Curtis:_ Well at that time I had a curfew and if I wasn't home by half past ten then that was it and I was drinking and I realise, oh no I've got to go home tonight and my mate got as drunk he was meant to be driving but he got as drunk as well but ah, I carried him to the car, but he was in no state to drive either. I tried to get home, but I got up the road and I got around the corner and I nearly went off the road and I thought, nah, I'll stay here the night.
With only 2 drivers out of the interview sample having full licences, breaking the restrictions of a learner’s or restricted licence was extremely common. All the drivers on these licences admitted to breaking some of the rules associated with their type of licence. (New Zealand’s Graduated Driver Licensing System is described in Chapter 6.) Other drivers had no licence at all. Breaking licence rules was always described as a matter of convenience or even necessity.

*Interviewer:* The driver must have a licence. That’s the law.
*Lasti:* I’ve actually thought about that quite a bit cause I learned to drive and I never had a licence. I just got my learner’s yesterday, and I’ve been driving for the past year and a half, two years or something, and I normally did it, I learned to drive in an automatic so I could take my uncle home because he always drank, he got drunk. Even though he’s a careful driver he still scared me. Then my mum did the same thing, and they all thought I was too young to drive. But now they see I’m a careful driver, and they let me drive home for them. If I get caught, I take that responsibility cause I don’t want them to die just yet. Die of natural causes, not of causes brought on by themselves.

Both the extracts above demonstrate how family dynamics can lead to unsafe driving behaviour by adolescents. In the first extract, risk behaviour was made more likely by the imposition of rules that the participant felt overrode safe driving. In the second extract older family members appeared to be using the young person for their own safety needs. Organisations such as Students Against Drunk Driving (Blaylock, 1992) attempt to decrease purposeful drinking and driving by establishing contracts between parents and young people that agree the young person will ring home for assistance whenever he or she feels unable to drive. Clearly this does not address the issue of parents themselves becoming too drunk to drive.

3. *Thrill seeking*

There was evidence for thrill seeking in a number of the interviews, and the context for it did appear to be when with friends, as suggested by Arnett (1992a), or when interacting in some way with other drivers. The participants varied in how much risk
they acknowledged when in a situation that could be described as a thrill seeking. None of the participants described themselves as engaging in situations that they perceived as extremely dangerous, particularly when these were regular events. One extract is given to illustrate what was, for the participant concerned, a regular thrill seeking event:

_Interviewer:_ Have you heard of people actually trying to beat the train, you know playing a game with it?
_Justin:_ Going along F____ and that sort of stuff there's a road right by the train station and everyone races along yeah, but we don't do the lethal moves and stuff.
_Interviewer:_ So what do you do?
_Justin:_ Oh when the train goes past you're waiting for it to go past and then you go onto F____ Rd and you race it along the road and then there is another intersection at the other end you know you have to stop there and its um yeah
_Interviewer:_ Is it quite dangerous to race the train along the road like that?
_Justin:_ Yep
_Interviewer:_ Then why do you do that?
_Justin:_ It's not really it's a 100 k area cause it's like out in the sticks then its just a big long straight.
_Interviewer:_ So what does it feel like?
_Justin:_ Oh it feels pretty cool just racing this train cause they go pretty fast. It feels like you are at the drags or something.

As this extract shows, Justin put limits on how much risk he would take “we don’t do the lethal moves and stuff”, a reference probably to trying to get across the tracks when a train is approaching, “playing chicken”. He later acknowledges the danger involved, but when challenged, discounts it. His initial acknowledgment does, however, suggest that the risk involved was part of the excitement, although he personally does not appear to feel at risk. It was apparent from this and other parts of the interview with Justin that these kinds of driving events were a high point in his life. His description of the situation is consistent with Lyng’s (1990) outline of edgework. Lyng described voluntary risk taking as involving intense sensation and a feeling of
extreme involvement (see the section on risk perception in the previous chapter for more detail). Lyng suggested that the motive for this type of risk taking is self-determination and authenticity. While these are difficult motives to measure, it was clear that for Justin (who had very low academic attainment) racing a car gave him a strong sense of power and control, almost certainly stronger than he was obtaining from any school-based activities.

4. Peer influence
All but 2 of the participants, when asked directly, thought that they were better drivers with their friends than on their own, usually because they expressed a sense of responsibility for their friends' safety. Despite this, it was clear that one way or another, highly risky situations sometimes eventuated when the young people were in a group, here is one example:

Interviewer: Do you think guys [take risks] cause it's a bit of a thrill?
Catherine: Oh most of them I think do it just to show off to others, they probably get a thrill out of what their mates say. Cause I've been in a car like that and they do it to show off to their mates... usually, like if you're going out with your friends, like with your boyfriend and his mates and you're going along and something happens, like if someone is going really slowly up a hill then he'll just go, "Oh" he'll just swear and then he'll hoof it up the hill and try and get passed and the mates will start yahooing and that will give him adrenalin and he'll do more and the girls will get angry, saying "If you don't stop doing that I'll get out of the car." and threaten them. But sometimes when they've been drinking they don't listen.
Interviewer: Do the friends ever suggest to the driver, oh, pass him or...
Catherine: Yep, yep if they're drunk or something like that.

The feeling that “everything is going real haywire”, strongly reflects the edgework sensation (Lyng, 1990) of being on the edge of chaos, while somehow avoiding disaster. It is important to note that while this situation was obviously dependent on a peer group context, the dangerous driving is not a result of direct pressure. It would
appear, instead that these young drivers had common norms which they had internalised (a process described by Beck & Bargman, 1993; and Webster, Hunter, & Keats, 1994 in the previous chapter), and which they were all reinforcing in each other during the scenario described.

There was considerable evidence in the interviews that these norms extended well beyond the young person’s immediate circle of friends and that there was a considerable amount of communication between young drivers on the road, even when they were strangers and in different cars. This suggests an “adolescent sub-culture” (Näätänen & Summala, 1976; Papadakis & Moore, 1991) based on certain common driving practices and shared rules. At the most formal level, this sub-culture was illustrated in the interviews by “boy racers” who put diesel oil on the road in little used streets in Auckland in the early hours of the morning. These were described by Justin (who said he was one of them) as: “Heaps of people about our age with their hotted up cars and that go into town and just burn up some donuts and stuff”

However, on an even more informal level, young men may communicate with each other and mutually engage in risky driving. This example is one of a number of very similar comments:

*Interviewer*: What about racing other drivers?
*Gary*: Oh yeah, heaps.
*Interviewer*: When do you do that?
*Gary*: Oh mainly on motorways or um by lights, you just pull up and this car just pulls up and oh yeah would you like a drag? And you just take off.

It was clear here that Gary found a lot of other young males who were keen to “drag” at the lights and that both drivers were aware of the routine (not clearly described here) involved in initiating this activity. The existence of this adolescent “sub-culture” suggests ways in which norms that equate fast “skilful” driving with masculinity (Stoddart, 1987) may be transmitted, not just through the more widely discussed
socialisation channels such as family, friends and television, but also through the behaviour of other young road users.

6. The role of emotion
There was evidence of some of the participants being motivated by impatience, or intolerance of safe, slow driving conditions. This can be most clearly seen in the comments below on speeding.

_Brent_: Like I speed, I’m going to get a radar detector cause I speed, I don’t know why I just do. I don’t like driving slow. Like I’ll drive the speed limit, I don’t mind it, but I don’t like driving slow. I don’t like driving behind someone who’s going 80 or 50 in a 100 zone it just really gets on my wick. I just don’t like it. That’s why I pass them. But if I’m going a 100, like I know heaps of roads where cops don’t go, that’s where I go and drive home that way. Like I don’t go that fast, I go 50 in a 50 zone, 80-70 in a 70 zone, and about 120 in a 100 zone. Sometimes I go a 150 when I’m in a fast car cause my car can go that fast.

In a home situation where teenagers do not have clearly defined space of their own, they may also use the car as an escape and release for their emotions.

_Interviewer_: Okay. Driving when you’re upset about something?
_Sandra_: Do I do that? Yeah, I have ‘cause my mum and I normally have fights, and I’ll just get in the car and take off. And I’ll calm down, and I’ll come back and then we’ll sort things out. So it takes about two hours to get over it.

The above extracts would seem to support some kind of connection between driving and emotional expression amongst the participants. It is possible this connection was strengthened by the independence offered by the car, both as a private place, and as something over which young drivers feel they have control. The independence and sense of control offered by the car, as discussed in the previous chapter, may be lacking elsewhere in their lives (Baumrind, 1987).
7. Social Constructions

While it was beyond the scope of these interviews to look directly at social pressures, there was evidence that these adolescents felt, in some senses, expected to drive unsafely, as suggested by Bellaby (1990) and Stoddart (1987). In the second group of interviews the participants were asked: “What do you think people think teenagers are like when it comes to driving?”. Every participant indicated that they thought teenagers were viewed negatively with comments such as: “Little hoons”, “Young hoons”, “Morons most probably”, “Overrated lunatics”, “Ruthless” and “Hopeless drivers”. This was an analysis most of the participants agreed with, although they usually saw themselves as exceptions.

Many subjects also described how their parents had told them of various reckless driving behaviours they had engaged in as adolescents, reinforcing the notion that unsafe driving is an inevitable part of adolescence. While most of the subjects said that their parents were good drivers now, there were examples of parents who drove in a way that the participants themselves considered risky. Below is a very vivid example of risky parental behaviour:

*Wayne:* Well, whenever I take my parents in the car they always tell me when to slow down and they say to go 80, but when I’m with them they never go 80. They do stupid things. When, like Dad, right? When he goes to a party or a barbecue, when he drives home and he’s had a few drinks when I can just go and pick him up and take him home. Like that’s such a bad example for me. Like I know I should never do that and I’m not going to. I just can’t understand him sometimes. I’ve just followed him home and he’s been all over the road. Like I went out and followed him home one night just to make sure. It makes my sister and I really worried but it’s their lives, they can do what they want.

It is notable that this participant recognised the “bad example” in his parents’ behaviour, and perhaps because of his ability to analyse the situation appeared to have resolved not to engage in this kind of behaviour himself.
The subjects were not asked directly about the influence of television. However this participant volunteered his analysis of its influence on him and other young drivers:

Gary: I'm more of a you've got a car cool lets just go racing. Because on TV you see the drivers get in the car and just racing it straight away. But they've had practice from years and years and years but most kids see it as oh yeah, car quick let's cane it and just go and just speed heaps. But then there's like parts that just go oh no go slow but then there's times when oh no, slow's too slow let's just go fast. You see but then there's just different points where things happen you know.

This extract also illustrates how Gary felt he was being pulled in different directions, one encouraged by glamorous television models and one influenced by caution. It was clear in the interviews generally of these multiple "styles" the young people were able to draw on in their driving. The primary task of interventions may be to encourage and develop those "styles" that are conducive to safety.

SUMMARY AND RECOMMENDATIONS

These interviews have revealed some possible motivations for unsafe driving amongst this group of participants. Equally they have raised a number of questions that could be further explored.

It was clear that almost all the participants had developed constructions of themselves as safe drivers, and often these constructions involved a contrasting portrayal of the dangerous habits of their peers. Obviously not all the drivers who claimed to be safer, such as Raymond on his motorcycle, were in fact safer, but they had constructed, and were convinced by, their own explanations of why they were safe. By contrast, they had either not been exposed to, or not been convinced by, the constructions of their friends.
There are a number of possible reasons for this. First, young people will usually have had a great deal of experience of being a passenger of their peers. It is possible that a passenger, who has no control over the outcome of a driving experience, is likely to be much more anxious about any risky driving manoeuvres than is the driver who is actively making choices and who feels in control. Thus, the same risk may lead to different constructions depending on whether it is experienced as a driver or a passenger.

Second, it may be that young drivers are simply rationalising the risks they engage in (Gardner, 1993). Whereas they judge the risks others take in an "objective" sense and see them for what they are, when it comes to their own risks, they do not evaluate them objectively. This rationalising could be motivated by a deep-seated feeling of invulnerability or by simply wanting to make themselves feel comfortable with risks they are taking to fulfil some secondary goal.

Third, they may be genuinely naive about the risks involved in certain unsafe driving practices. Through their individual experiences they may have developed images of scenarios that are safe and scenarios that are dangerous. A friend who is killed when speeding may make them wary of speeding, a father who appears in perfect control when driving after heavy drinking may lead to them feeling that drinking and driving is safe.

What is clear is that intervention efforts must work to personalise the risk that young drivers feel. Some of this may be possible on a large scale, if further research is able to identify common unsafe perceptions held by adolescents (e.g. the notion of "safe cars"). However, these interviews suggest that, at least for young drivers who are engaging in a great deal of unsafe driving, it may be essential to work with the individual constructions they have that maintain a dangerous illusion of safety.

In particular, there is room for a great deal more research on how thrill seeking and personal immunity from risk interact. One of the dangers in aiming for a general increase in risk recognition amongst adolescents is that this may increase the desire of
some adolescents to defy the risk (Stoddart, 1987; as discussed in the previous chapter). However, this is probably only the case while the adolescent is able to maintain a feeling of personal immunity to the risk. It is this personal immunity that must therefore be targeted.

Much of the risk behaviour described in these interviews could not have occurred without some kind of breakdown in police or parental control, or both. While parental behaviour is very difficult to target, police behaviour reflects the legal structures and conditions under which they operate. There is currently a review of the penalties associated with breaking the restrictions of the G.D.L.S., as the police have been described as reluctant to enforce the current penalty, an extension of time on a restricted licence, which they apparently see as “too weak” (personal communication with Rachael McLaren, Land Transport Safety Authority). If the road behaviour of young drivers is seen as a priority area, then obviously the police must be given adequate resources to have an impact on the behaviour.

Finally, there needs to be further research into the norms surrounding driving held by the “adolescent sub-culture”. How does risk behaviour increase status with this group? What is a “good” driver like within the norms of this group? What is the role of television in maintaining the groups norms? How can parents or schools successfully modify the norms of this group? What practices amongst adolescent drivers are “safe” and how can these be drawn on and extended? The existence of this “sub-culture” that functions to link all adolescent drivers together, means that no intervention may be fully effective unless it reaches a critical mass of young drivers. Without this critical mass it may be simply swamped by the well-established norms of the larger group. It may also be useful to have messages presented by teenagers themselves (as long as these teenagers are not perceived as “nerds”) who could be perceived to be part of the sub-culture.

It is essential that more work is done to explore the psychological and social functions that driving has for adolescents. The current interviews revealed incidences where driving was used to express and relieve emotions, to impress peers and to experience
extreme sensation. A primary task of safety researchers is to try and shift the expression of these needs outside the driving arena. When directly targeting the young people themselves the analysis presented here would suggest that it is most important to increase their sense of being personally at risk in the unsafe driving situations that they are choosing to engage in on a regular basis. It is also important to target the social structures that allow risky driving behaviours to flourish, in particular breakdowns in parental and police control.
CHANGING THE YOUNG DRIVER:
EDUCATING FOR SAFETY
There are numerous potential approaches to reducing the number of road injuries. Different interventions aim to modify different risk factors that are thought to be involved in crashes. Some interventions are aimed specifically at target groups, such as rehabilitation programmes for drinking drivers, and others are aimed more generally at all road users, such as improvements to road engineering. Clearly there is a place for all approaches and indeed each approach may be strengthened if it is part of a more comprehensive safety plan. While driver education aimed at the primary prevention of road crashes amongst young people is the major focus of this part of the thesis, this chapter briefly considers a variety of intervention strategies that are aimed at reducing road injuries. Those interventions aimed specifically at young drivers are of special interest. This chapter will look at: comprehensive safety plans, restrictions on young drivers, greater enforcement of traffic laws, media campaigns and driver rehabilitation programmes. It concludes with a brief history of driver education in New Zealand.

SAFETY PLANS
Possibly the most comprehensive national safety programme ever, ran in Japan during the 1970's. The programme took the form of two 5-year safety plans that included stricter penalties and enforcement for speeding and drinking and driving, safety improvements to roads and for pedestrians, school-based road safety education and parent run safety clubs. These 5-year plans appear to have been responsible for lowering the number of road fatalities from 16,765 in 1970 to 9,317 in 1978 (Preston, 1990). A similar approach, using multiple interventions simultaneously, was carried out in Harstad, Norway (Ytterstad & Wasmuth, 1995). Part of this intervention programme involved a constant analysis of injury data and re-adjustment of the programme in light of this data. During the 7½ years of the study, a 26.6% overall decrease in traffic injury rates occurred.
One example of a small scale community programme primarily aimed at reducing drinking and driving in New Zealand, was the Wanganui Community Alcohol Action Project (Duignan & Casswell, 1992). This project was undertaken in Wanganui, a provincial town with a population of about 38,000 people. It ran for 3 months. It included regular meetings of a working group and a steering committee; seven extra traffic officers to increase enforcement; an educational kit on alcohol on trial at some Wanganui schools; a Patron Care programme involving police talking to staff of licensed premises; a regular patrol of licensed premises by police; an “I’m Safe Mate” campaign initiated by the Hotel Workers Union (one person in a drinking group nominated as a non-drinking driver); low alcohol beer made available on some licensed premises; publicity material on alcohol problems and treatment; a poster competition for schools run by the Accident Compensation Corporation (the national accident insurance body); and tee-shirts produced for Students Against Drunk Driving. This programme was not able to be formally evaluated because of the diversity of its aims, and the lack of a control group. Nevertheless, it demonstrates the range of activities that can be undertaken on a local scale to try and combat drinking and driving.

RESTRICTIONS ON YOUNG DRIVERS

While comprehensive safety plans include measures aimed at a wide variety of road users, probably the most immediate way of impacting on the behaviour of young drivers alone, is to place legal restrictions on when and whether they may drive.

*Raising the driving age*: Keeping young drivers off the road by delaying the age at which a drivers’ licence can be obtained is perhaps the most straightforward way of tackling the crash rates of this group. In a survey of a number of American states for which the age of licensure varied, Preusser (1988), found that early licensing was associated with significantly more driving, risky driving, crashes, and violations. American studies have suggested that raising the driving age is likely to decrease the number of injuries in teenagers (Levy, 1990; Preusser, 1988). There have been suggestions that some of the benefit gained by increasing the driving age from 16 years (as is currently standard in the United States) to 18 years may be offset by an increase in fatalities in the 18-20 year old group (Karpf & Williams, 1983) however this would
probably be minor (Levy, 1990). It would certainly seem as if 15 years, the legal age for beginning the driving process in New Zealand, is very young by world standards and may well contribute to the poor international standing of New Zealand in relation to the rate of teenage road injuries (see L.T.S.A., 1995, for a summary of the international data).

Curfew Laws: Curfew laws have been shown to have a significant impact on teenage fatality rates in the United States (Karpf & Williams, 1983; National Committee for Injury Prevention and Control, 1989; Stewart and Klitzner, 1990). Possibly the most comprehensive nationwide system of curfew laws however is the New Zealand Graduated Driver Licensing System (G.D.L.S.) that is a comprehensive programme of restrictions and curfews for young drivers. It was introduced in 1985 by the Ministry of Transport. The seven principles that form its basis were outlined by Frith & Perkins (1992, p. 257):

1. Because of the high accident rates of young and inexperienced drivers better preparation for driving is needed.
2. Formal driver training should be encouraged. It should however be required only when research demonstrates that it is both cost beneficial and available to all learners.
3. Any new system should encourage learners to acquire better safe driving skills and attitudes as they are phased in more gradually to a full licence.
4. New drivers should gain on-the-road driving experience under conditions of minimum risk before full licence acquisition. This implies the use of restrictions on manner and time of driving.
5. Safe driving should be encouraged and rewarded, and this should be reflected in the status of the licence.
6. It should not be made more attractive to attain a motorcycle licence before or instead of a car licence.
7. The new system should be as simple as possible, easily enforceable and should not impose any unwarranted drain on resources.
The system involves three steps in the licensing process for new drivers under the age of 25 years. New drivers over the age of 25 are excluded.

1. **Learner’s licence**: requires written, oral, eyesight and hearing tests. Must have a supervisor when driving and no alcohol is allowed. (This latter rule now applies to all drivers under 20 years regardless of licence status).

2. **Restricted licence**: 6 months on learner’s or 3 months with certificate of competency from a driving instructor, practical test. No alcohol, no passengers, no driving after 10 pm.

3. **Full licence**: 18 months on restricted, or 9 if approved course passed.

Motorcycle riders have further restrictions on their licences: no pillion passengers, 250 cc engine restriction, maximum speed of 70 km per hour on learner’s licence, basic skills handling test to obtain a learner’s licence, with these restrictions applying to all applicants regardless of age.

Penalties for breaking the restrictions are an extension of the time on a restricted or learner’s licence.

Frith & Perkins’ (1992) study estimated an eight percent reduction in the proportion of accident involved drivers who were 15-19 years old, 2 years after the introduction of G.D.L.S in 1987. They said that the reduction may have been due to more careful driving or young people covering fewer kilometres than before. It is also possible that youth driving which may be largely “discretionary” was curtailed extensively by the poor economic conditions during the 2 years of Frith and Perkins’ study (see Evans, 1991, for a discussion of how economic conditions are reflected in driving patterns and injury rates). A more recent study (Langley, Wagenaar, & Begg, in press) attempted to take into account the impact of any conditions external to G.D.L.S. on the injury patterns amongst young people since it’s introduction. The authors said that a conservative estimate of the effects of G.D.L.S. would be that it has led to a 7% reduction in young people’s injury rates. It is possible however that its impact has been substantially greater than this, resulting in up to a 23% reduction in injuries.
Raising the drinking age: In New Zealand and many other countries the legal age for public drinking is considerably higher than the legal age for driving. Nevertheless, many researchers believe there to be a relationship between raising the age of drinking and declining road injuries of teenagers (Arnett, 1992b, The National Committee for Injury Prevention and Control, 1989). This relationship is in doubt however, as a recent American study found no relationship between the legal drinking age of a state and the fatality rates of those below the legal drinking age (Levy, 1990).

GREATER ENFORCEMENT OF TRAFFIC LAWS

It would appear that the existence of a law is an insufficient deterrent for young people unless they also feel there is high risk of being detected when breaking it (Peacock, 1992). If detection rates are perceived to be high, fear of detection appears to work as a major deterrent (Hingson & Howland, 1990; Jonah, 1990b). It has been suggested that high enforcement of drinking and driving laws in Scandinavian countries leads to low rates of drinking and driving (Beck, 1981). Random breath testing may also reduce the incidence of drinking and driving, and crashes involving alcohol (Bailey & Carpinter, 1991; Hingson & Howland, 1990).

It is notable than one New Zealand survey of people aged 15-25 years from all parts of the country (Mason, 1992) found that the young people generally perceived it to be easy to get away with illegal behaviour. This was because they did not feel that traffic laws were strongly enforced. The young people themselves recommended that the laws be enforced more rigorously and consistently, and that the penalties be tougher.

It may also be possible to reduce young people’s (and older people’s) drinking and driving through enforcing laws relating to the sale of alcohol to intoxicated patrons (Casswell, 1986; McKnight, 1990).

MEDIA CAMPAIGNS

Media campaigns may be a useful ingredient in motivating safe driving by both raising the driving public’s fear of detection by the police and by raising their fear of injury. Campaigns based on both these motivators run more or less continuously on New
Zealand television. The main protagonist in such campaigns is usually a young man who is portrayed as having caused death or injury through irresponsible driving.

As well as motivating drivers to be more careful, the media can inform about what safe driving is, and demonstrate how to carry out safety behaviours (Wilde, 1993). It can also help shift social norms by implying that safe behaviours are socially appropriate (Atkin, 1989). One New Zealand study looked at the impact of a television documentary about an injured drinking driver. In a before/after survey, it found a number of positive changes in the attitudes of people who had viewed the programme. These included increases in how acceptable it was considered to be for one member of a group to stay sober to drive; how acceptable it was to arrange to have someone pick up a person who had been drinking; and how possible it would be to convince someone not to drink and drive (Toomath, 1976).

**DRIVER REHABILITATION PROGRAMMES**

These programmes have been shown to have some success in improving knowledge (e.g. Russel, Talagrand, & Cahalan, 1989) and self-reported behaviours (e.g. Gramstad, 1990). Two programmes are described briefly here. One is a New Zealand programme, and the other is an American programme, aimed at adolescents.

The New Zealand study (Johns, 1988) involved a 10 session mixed presentation course for drivers who had been convicted of drinking and driving offences. Johns claimed an improvement in drinking attitudes and self-reported drinking behaviour. However the evaluation is inadequately reported, it is unclear how many subjects were involved and how they were selected.

An American programme aimed more specifically at adolescents (Dearing, Caston, & Babin, 1991) looked at the effect of touring a Shock Trauma Centre on 351 teenagers who had received previous convictions for drug or alcohol related offences. There was no control group, but pre-post measures found significant positive changes in the participants’ attitudes towards drinking and driving, being the passenger of a drinking driver, and willingness to intervene in the drinking and driving behaviour of others.
These changes persisted (although gradually declined in magnitude) for each of the three post tests: 3 months, 6 months, and 12 months.

These two studies as well as suggesting that there may be some value in driver rehabilitation programmes, also highlight the poor methodology that appears to be widespread in studies of such programmes. One review (Struckman- Johnson, Lund, Williams & Osbourne, 1989) that looked at 65 studies that evaluated driver improvement programmes found only 19 to be methodologically adequate. Their overall conclusion was that the programmes did result in a reduction in violations but not in a reduction in crashes.

**DRIVER EDUCATION**

Of the approaches to changing (young) drivers' behaviour outlined here, education is probably the most controversial. Certainly in New Zealand, it appears to have been the least popular. In a summary of the history of driver education in New Zealand, Rice (1992) pointed out that there was a 20 year gap during which no accredited driver education courses were introduced in New Zealand. In 1968 Defensive Driving was legislated as an advanced course of traffic instruction and when G.D.L.S. was introduced, it was accepted as adequate for licence reduction in the Restricted stage by 9 months. In 1988 a sixth form certificate motoring studies programme was introduced. DrivePlan a series of interactive videos, was designed as a course that could be part of the Health, Social Studies and Transition syllabuses. DrivePlan was only sold where there were tutors available for training. It is not known how widely it is taught in New Zealand schools. No evaluations of DrivePlan have been published.

In a survey of 71 secondary schools in the Auckland region, Thrush (1992) found that only 3.6% of pupils were involved in some sort of driver education/training, mostly paid for by the student. There were a number of different programmes with very different content. The major emphasis was on the Road Code and learning driving skills. A recent survey of Auckland schools (Dawe, 1995) found that only 15% of the high schools who responded had a road safety charter and only 3% had a policy on road safety.
All the evaluations of New Zealand programmes that were able to be located are outlined in the next chapter. However, these are few in number and there appear to be no evaluations of driver education programmes that are designed to run as part of the regular school timetable (such as DrivePlan and the programme evaluated in the third part of this thesis). Inevitably, therefore, the following chapter relies heavily on studies undertaken in countries other than New Zealand.
Chapter 7

SCHOOL-BASED DRIVER EDUCATION

There are two major components to what is called “driver education”. One of these teaches the skills of driving, and the other teaches appropriate attitudes towards driving. The many programmes that have been evaluated in the literature on driver education focus on different combinations of these two components. Most of the large scale evaluations have been done on driver training. Such programmes have the primary aim of teaching students the driving skills and knowledge of the road code necessary for obtaining a driver’s licence. They may look at areas such as drinking and driving, but this is a likely to be a secondary focus. Other programmes are classroom-based education programmes and do not teach the skills of driving. These focus on driving and passenger safety, covering such topics such as avoiding drinking and driving, and how to make safe judgements about driving. This chapter first looks at driver training programmes, and then at the variety of programmes aimed at educating for driving safety.

DRIVER TRAINING PROGRAMMES

Very early studies in this area were largely conducted in the United States, where it was found that students who had completed driver training were at less risk of crashes and violations than those who had no official driver training (see Asher, 1968 for a summary). However, it was almost concurrently discovered that students who took driver training were different from the group who did not (Asher, 1968; Barnes & Flanigan, 1958; Conger, Miller, & Rainey, 1966; Rainey, Conger, & Walsmith, 1961). For example, after analysing a random sample of 797 American high school seniors, and comparing the students who had completed driver training with those who had not, Asher (1968) concluded: “In summary it can be seen that those variables relating to the decision to take driver education cluster around academic knowledge, intelligence, socioeconomic status and SE related activities such as earning money and
dates per week, academically related activities such as the amount of foreign language that was taken, and the total years education they expect to complete.” (p. 29).

Some researchers who matched driver training groups with non-driver training controls did still find some positive effects that seemed to result from the training. For example, Harrington (1972) in a very large American study that looked at the driving records of 13,915 young drivers during their first 4 years of driving (all drivers were 16 or 17 years old in year 1) found that for males driver training status was a poor predictor of accidents, but for females it seemed to reduce fatal and injury accidents by a factor of 9 to 11 fatal accidents per year, even when the biographical variables between the trained and the untrained groups were taken into consideration. He thought this was because females benefited from the skills training element in the programmes. The opposite gender effect was found in a British study (Shaoul, 1975). This study looked at 1800 students who were allocated to various experimental groups and found that boys, but not girls seemed to have fewer injury accidents if they had been through the course, when compared to a control group.

Other studies however found no measurable positive effects as a result of driver training. One American study (Ferdun, Peck, & Coppin, 1967) involved a detailed analysis of 10,250 teenagers’ driving records selected from a random sample of 225,000 Californian drivers of all ages. The authors concluded: “After considering all the facts available from this study, the authors can find no evidence that, on a state wide basis, behind-the-wheel driver training is effective in reducing the frequency of accidents... It is entirely possible that some effective programmes do exist within the system, but are too insignificant in number to have appreciably affected the overall state wide accident average of the trained group.” (p. 50).

Finally it was found that driver training may actually increase the number of injuries in this age group by helping young people get their licences earlier than they would otherwise. Lund, Williams and Zador (1986) did a re-analysis of an extremely large scale study, that covered the whole of De Kalb county, in the United States. The study involved 16,338 students who applied for driver training and who were assigned to
different treatment groups. They found that students who were assigned to an enhanced driver education programme were more likely to obtain drivers licences, to be in car crashes and to have traffic violations than control students. This was thought to be due to the exposure effect of the students having received their licences earlier.

Robertson (1980) did an analysis of the effect of state funding for high school driver training being cut in Connecticut in 1976. As a result, nine schools dropped the courses from their curriculum with other schools continuing on local funds. In communities that dropped the course there were substantial drops in the number of 16-17 year olds obtaining licences and consequently the number of crashes involving this age group was also substantially reduced. This drop did not occur in communities in which the programmes continued.

A New Zealand study (Wynne-Jones & Hurst, 1984), that was on a much smaller scale, involved a total of 788 secondary schools students who were randomly assigned to the Automobile Association driver training programme or a control group. There were conflicting results on the number of crashes each group were involved in (the sample is much too small to give a reliable result in this regard), with the only clear result being that the trained students got their licences earlier than the untrained group.

It is clearly not desirable for any programme to hasten young people towards driving, as showed by Lund et al. (1986) and Robertson (1980). It may well be that any positive effects from the educating for safe attitudes component of driver training programmes is not outweighed by the negative effect of early licensing. A recent analysis of the fatality rates for 15-17 year olds in 47 American states (Levy, 1990) did find that mandatory driver education had a small positive impact when age of licensing was taken into account. This suggests that it may be a good thing to educate drivers as long as it does not lead to earlier driving.

This possibility is supported by McKnight and Edwards (1982) in a large well designed American study. From a pool of 30,000 applicants for driver’s licences, 6,000 applicants from 28 Northern Virginia high schools were randomly divided by driver
education class into treatment and control groups, with treatment groups receiving a new driver manual that included driving tasks rated "above average", for example adjusting speed to the conditions, and the effects of alcohol and drugs. The control group received the regular manual. After 18 months there were significantly fewer accidents and accidents with convictions amongst the new manual group, when compared to the control group.

A recent Swedish study (Gregersen, 1994) of nearly 20,000 young people, compared those who obtained their licences with and without carefully designed professional instruction. Gregersen found that in the first year after licensure the professionally instructed group reported more crashes than the group who had not received this type of instruction. However, in the second year the professionally instructed group reported fewer crashes than the other group. He suggested that the highly instructed novice driver may initially suffer from cognitive overload which increases crash risk, but that once they are slightly more experienced, the extra knowledge and skills begin to be valuable.

The question that has been traditionally asked, "Does driver education in high schools reduce crashes in this age group?" may not be the appropriate one. Clearly there is a need for further studies that separate out the effects of the content of driver training programmes on young drivers from the effects such programmes have on licensure. The study by Gregersen (1994), also raises the need to look at the timing of programmes and the possibility that educating for driving could be most effective if learning to drive is acknowledged to be a gradual process during which skills are developed and improved over a number of years.

CLASSROOM-BASED EDUCATION PROGRAMMES

Large scale evaluations of driver training programmes give little guidance as to the efficacy of programmes which attempt to improve driving judgements, attitudes and the social skills connected with driving. This section looks in some detail at such programmes. First, measurement issues are discussed, as how to appropriately measure
the efficacy of these programmes is a matter of some contention. Second, a number of evaluations of such programmes are looked at.

**Measurement Issues**

Unfortunately, the “ultimate” measures of the success of a driver training or education programme, crash or injury rates, need very large samples to demonstrate their impact. While it is possible to evaluate something as broad as “school driver training” that may involve tens of thousands of students at different schools by comparing crash rates, it is almost impossible to evaluate programmes that concentrate on classroom education by these means. Each programme generally operates on a small scale. Although it would be possible to evaluate the success of a number of programmes combined in lowering injury rates, no studies have attempted this.

Because of the difficulties with obtaining crash rate outcomes, a number of researchers interested in driver education have argued for an approach that involves looking at “intermediate goals”. These goals usually concentrate on changes to attitudes and unsafe behaviours (e.g. Levonian, Case, & Wilson, 1962; O.E.C.D., 1975; Shaoul, 1976). This is common practice in other areas of programme evaluation (Chen, 1990). This type of approach may more clearly show what type of driver education works and how. It may also be unreasonable to expect driver education to have an impact on crash rates in a direct manner, as it may only be effective when supported by other interventions (e.g. Mann, Vingilis, Leigh, Anglin, & Blefgen, 1986). This issue will be looked at in much more detail in Chapter 12. Even the discovery of short-term attitude and behaviour changes as measured in surveys may be sufficient to argue for the importance of such programmes as part of a comprehensive approach to improved traffic safety.

Methodological concerns over the evaluation of driver education programmes extend beyond the issue of whether “intermediate” goals are an acceptable outcome measure. As with other areas of health education evaluation, driver education evaluation is plagued with studies that have lacked highly rigorous design. Some evaluations are done post-hoc, and few involve completely random allocation of subjects.
This is probably largely due to the difficulties of obtaining tidy, easily analysed data in an applied setting. One review of 127 drug abuse prevention programmes for example, (Schaps, DiBartolo, Moskowitz, Palley, & Churgin, 1981) found that the quality of the research design was inversely related to the intensity of the programme. This appeared to indicate that the smaller and narrower in focus the programme the easier it was for researchers to fully control its administration and to obtain data that was scientifically sound. If this is also true of driver education programmes, then we would expect to find that the more ambitious a programme the more difficult it is to evaluate. Even if schools or classes can be randomly allocated to the different conditions, there may be little control over how programmes are delivered.

The comments of a number of researchers working in health education evaluation have been collated below to form a list of minimum requirements against which evaluations can be measured:

1. The random allocation of subjects (Foon, 1988; Hansen, 1992).
2. A control group (Foon, 1988; Kinder, Pape & Walfish, 1980).
5. Pre-testing and one or more follow-up measures (Foon, 1988; Kinder, Pape & Walfish, 1980).
6. Adequate description of the programme itself and the evaluation procedures (Foon, 1988; Kinder, Pape & Walfish, 1980).

As will be seen in the studies discussed in the remainder of this chapter, many do not fully meet these criteria. It is always difficult to decide at what point a study no longer becomes of interest due to poor methodology. No studies have specifically been excluded from discussion for this reason, but methodological weakness leave many unresolved questions about what the ingredients are for effective driver education. A further problem that inhibits understanding in this area is the lack of standardised tests developed that measure driving attitudes, knowledge and behaviour. This means that comparing different programmes and contexts is extremely difficult.
Programme evaluations

Classroom-based primary prevention education programmes vary considerably in length and orientation. At one extreme are single sessions. There are also programmes that involve a multiple number of sessions and form a short course. At the other end of the continuum are year long courses that run several times a week. The motoring studies programme which is an option for sixth form students in some New Zealand secondary schools is one such example. It has not been scientifically evaluated. For the purposes of reviewing the potential shown by school-based programmes for driving safety, the following discussion has divided programmes into two categories. First one or two session programmes will be looked at, and then programmes that take several sessions and form a short course. Longer programmes are not discussed, as there are no known evaluations of these.

One and two session programmes lie somewhere in the borderline between a demonstration or piece of theatre and a “health education” programme. In terms of evaluation, they have the great advantage of being relatively easy to arrange and standardise and they can often reach a large number of students. Three examples of different programmes of this duration that range from the highly theatrical to the more clearly “teaching” programme are given below.

The first evaluation of interest looked at the impact of the Roadshow, a multimedia road safety stage show that toured almost all New Zealand secondary schools in the early 1980’s. In an evaluation of the show, Harte (1984) claimed that it had what would appear to be a rather dramatic impact:

1. A significant decrease (18% or 8% with a 95% level of confidence) in the proportion of 15-19 year old driver admissions to hospitals relative to all road accident admissions. No significant reduction however was found in the proportion of fatal and serious accidents, which Harte said may be due to a lack of statistical power in the tests conducted.
2. A significant decrease in the proportion of reported 15-19 year old driver
involved accidents relative to all reported accidents (16% or 3% with a 95%
level of confidence).

There were however, major methodological problems with this study. There is no
conclusive evidence that it was the Roadshow that had this impact as no control group
was possible. The time frames were not outlined and the results were reported in such
a way as to make interpretation extremely difficult.

An American study (Frank, Bouman, Cain, & Watts, 1992) looked at a sample of 445
teenagers who attended a high school in which an educational programme aimed at the
prevention of spinal cord injury was presented 3 years earlier. They were compared
with 379 students who had not received the intervention. The programme involved a
single assembly that consisted of speakers, a film, a demonstration of first aid and
physical activity. There were significant differences in questionnaire answers between
the two groups. The treatment group reported more frequent seat belt use, stronger
belief that seat belts were important to their safety, lower likelihood of riding with
friends who had been drinking, higher rates of friends’ use of seat belts, greater
awareness of the age group most likely to be injured, and increased knowledge of how
they could prevent spinal injury. However this study involved no pre-testing, and the
control group was formed post hoc from a different community. These methodological
flaws are of particular concern given that there do not seem to be other studies which
indicate that a single-time intervention could still have an impact 3 years later, and it
seems highly implausible that this could be the case.

The final study (Albert & Simpson, 1985) looked at a teaching programme which
involved two sessions each 60 minutes in duration. The programme was aimed at
reducing the frequency of impaired driving amongst high school students and was
based on the health belief model. It was trialed with 121 Grade 11 students at an
Ontario high school. Ninety-three students from different schools were controls. The
programme showed improvements in knowledge, susceptibility to the consequences of
driving impaired, opposition to driving impaired, and decreases in intention to drive
impaired. It had no effect on the perceived seriousness of consequences. There were no behaviour measures taken.

The studies above, unfortunately more clearly indicate methodological weakness in this area than the potential of such programmes. It remains far from clear whether programmes of such limited duration can have any impact on even short or medium term behaviour.

*Programmes with multiple sessions.* There are remarkably few evaluations of several session, classroom only driver education programmes published in academic journals. It is possible that null results have lead to these evaluations being unavailable. For example, Mann et al. (1986) who reviewed 11 school-based drinking and driving prevention programmes covered only 2 that fit in to this category. As this is the type of programme evaluated in this thesis, the 5 studies that were able to be located are all described and commented on below. They are all American. No New Zealand studies were found, which is not surprising given that driver education has never been taught widely in schools (see previous chapter).

1. McKnight et al. (1979 cited in Mann et al., 1986) looked at a 10 session programme, that involved 8.25 hours in total. The programme included lectures, student readings, audiovisual presentations, group discussion and values clarification activities. The study involved a total of 478 students, between ages of 14-17 years. The treatment group came from two high schools; and there were two control groups, one who completed driver education without the alcohol and traffic safety component and one who did no driver education. Assignment to groups was not random. The subjects were pre and post-tested for knowledge and attitudes. A follow-up post-test measured self-reported drinking and driving. Knowledge gains were significant in the first post-test, but there was no impact on attitudes. On the follow-up post-test, the experimental group indicated greater likelihood of intervening in drink driving behaviour (which involved 5 of the 17 behaviour items measured).
Comments: With non-random allocation and no pre-test of behaviour, it is very difficult to interpret this result as being favourable. There was no impact on attitudes on the first post-test which further questions the likelihood that the apparent impact on behaviour found in the follow-up was actually due to the programme, rather than to pre-existing differences between the treatment and control groups.

2. A study by McKnight and McPherson (1986) compared students who had been involved in a “Peer Intervention Programme” with those who received alcohol instruction during the same time period. The subjects were 667 students from five Rhode Island High Schools. Allocation to conditions was random. The “Peer Intervention Programme”, that was 9 hours in duration, consisted of:

- Information on alcohol, the dangers of drinking and driving and methods of avoiding drinking and driving
- Techniques for intervention in drink/driving situations
- Role plays and discussion.

Knowledge, attitudes and self-reported behaviours were measured in a pre/post and follow-up design. The post-test was immediately after the programme was administered and the follow-up was from 1 to 4 months after administration of the programme. The study found that the peer intervention programme led to significant increases in self-reported intervention behaviour, not found in the conventional alcohol safety programme. Both programmes led to an increase in knowledge. Neither programme led to shifts in attitudes.

Comments: This appears to be a well designed study that meets all the appropriate criteria. It is interesting that behaviour changes have been found while attitude changes have not.

3. Farrow (1989) investigated a 10 hour driving while intoxicated prevention module with a 3 hour reinforcement follow-up. The subjects were 343 American pre-drivers (mean age 15.9 years). The module involved interactive teaching: personal risk identification, skill instruction, discussion of social responsibility and information. Sixty-two high risk students also did a 4 day summer school. They were matched with
150 students who did driver training as usual. All the subjects completed a pre-test self-report questionnaire and were post-tested at a 12 months follow-up. Results showed an increase in the amount of risky behaviour showed by the treatment group and a decrease in the control group. The authors postulated that the reason for this was that the intervention group were more truthful.

Comments: The methodology of the study seems sound, despite non-random allocation of groups. This study highlights a potential problem with self-report: different degrees of honesty in treatment and control groups. It is possible that certain attitude measures could have revealed more encouraging differences between the groups. It is unclear why there was no immediate post-test on the subjects.

4. "Alcohol, Drugs, Driving and You", a programme designed to stop adolescent drinking, drug use and driving was evaluated by Young (1991). Teachers were provided with a number of lessons including information and decision making and resisting peer group pressure skills for students. There were also activities such as debates, speakers, guest speakers and role plays. The students planned and implemented an assembly, were provided with local media messages and there was a discussion guide to be used with parents. The course took 5-15 days (it is not stated how many lessons were involved, but presumably one lesson per day). The first study reported involved a questionnaire evaluation using 544 high school students (ages not given) who were pre and post tested. There was no control group. The results showed a reduction in aggressive driving styles as reported by the students and an increase in knowledge. The second evaluation involved 808 students in the treatment group and 220 students in the control group (ages not given). The results of this study indicated significantly more knowledge gain in the treatment group, and increased intention in some (but not all) of the target areas: increased willingness to avoid riding with a drinking driver and increased understanding of the impact of drink driving.

Comments: This evaluation had several methodological problems. The first study had no control group and in the second study it is not clear how schools were allocated to treatment and control conditions. There was no follow-up for either study. No
behavioural measures were attempted. Only two out of several attitudes that were measured shown changes. The programme itself was not standardised.

5. The final study (Newman, Anderson, & Farrell, 1992) evaluated a programme that involved 3,500 ninth grade American students. The students were randomly allocated to treatment or control conditions. An education programme aimed at reducing drinking, drinking and driving, and riding with a drinking driver was taught to the experimental group. The programme was based on problem behaviour theory (perceived norms in the environment), social cognitive theory and role theory (that human beings base their behaviour on others who serve as models). It involved 10 video based lessons with information, role plays, discussion. Results showed significant increases in knowledge and perceived ability to resist pressures to drink, with greater increases in the treatment group. But there were no differences measured in the drinking or drinking and driving practices of either group. One year after the programme fewer students in the experimental group than in the control group reported riding with a driver who had been drinking. However there were still no differences found in reported drinking or drinking and driving.

Comments: This study had good methodology that meets all the requirements outlined earlier. The finding that the treatment group had greater perceived ability to resist pressures to drink, but did not drink less cast some doubt on the idea that peer resistance is the key to changing drinking or other problem behaviour.

As can be seen from these studies, methodological problems have made some of the results unclear. There are indications, however, that favourable results are possible from a mixed format, multi-sessional approach. All of these studies have focussed exclusively on drinking and driving. There is clearly a need for further well-designed and clearly reported studies in this area, as well as studies that look at a wider range of unsafe driving behaviours.
Chapter 8
MAKING DRIVER EDUCATION WORK: THEORETICAL INPUTS

When designing driver education programmes it is obviously desirable to take into account the research and theory on what appears to be successful in other areas of health education. That is the focus of this chapter that explores four basic areas. First, a profile of the young driver who is likely to be motivated to drive safely is presented. Such a profile is seen as necessary to clarify what it is that programmes need to aim for. This profile is also put forward as a possible basis for designing evaluations of programmes. Second, the appropriate content for programmes is discussed. This discussion involves evaluating the content that has been popular in past programmes as well as looking at some less well established content areas. Third, a number of issues that concern the most effective methods for delivering a programme are discussed. Issues concerning delivery have been looked at fairly extensively in other types of health education programmes, and the aim of this section is to use the findings in these areas to make recommendations for how best to deliver driver education. Finally the chapter looks at the ideal timing of primary prevention driver education programmes.

THE PROFILE OF THE "SAFE" YOUNG DRIVER

A number of theories and models have been proposed that attempt to describe the key social cognitive elements that underlie the choices made about safe versus unsafe health behaviours. These include the health belief model (see Kirsch, 1988); the protection motivation theory (see Wurtele & Maddux, 1987); the theory of reasoned action (see Eiser & Pligt, 1988; Fishbein & Middlestadt, 1989) and its revised version, the theory of planned behaviour (Ajzen, 1985); social learning theory (Bandura, 1977) and its associated concept of self-efficacy (Bandura, 1982); and the theory of personal investment (Tappe, 1992).
Although each of these theories has a slightly different emphasis, a number of overlapping themes can be identified. These themes can then be used to build up a profile of the safe young driver. One such theme is that safe behaviour is correlated with a feeling of vulnerability to the negative outcome in question. In the case of driving it is possible to focus on two major negative outcomes, crashes being one, and police detection when committing an offence being the other. For young drivers, this would imply that in order to be motivated to drive safely, they must ideally feel at high risk of both crashes, and of being detected committing an offence. It has also been suggested that safe behaviour is strengthened the more extreme the negative outcome is perceived to be (see Kirscht, 1988; Tappe, 1992; Wurtele and Maddux, 1987), indicating that we should aim to make young drivers feel vulnerable to severe crashes and strict penalties. Social learning theory recognises that learning often takes place vicariously through watching the effect that behaving in a certain way has on models. This would imply that such a feeling of vulnerability may be induced by seeing how the unsafe driving behaviour of others leads to crashes and convictions, and by being exposed to the consequences that road crashes and convictions can entail, for example by having talks from road victims or seeing graphic films.

A second theme concerns the importance of perceived social norms (see for example Eiser & Pligt, 1988; or Tappe, 1992). Not only is a safe behaviour much more likely to be performed if the individual believes it to be normative, but the individual must also value, and thus want to conform to these norms. Obviously young drivers are surrounded by a variety of different norms. The task of education programmes is to highlight those that are compatible with safety. Norms of safe driving may particularly appeal to young drivers when the individuals performing the behaviour are considered to have high status (Bandura, 1977) such as, perhaps, slightly older peers.

Furthermore, in order for a behaviour that is presented as "safe" to be taken up, it must be perceived to be highly effective in reducing the risk of a negative outcome (see e.g. Kirscht, 1988; Wurtele & Maddux, 1987). This suggests that an exclusive emphasis on the devastating outcomes of unsafe driving may neglect the necessity of also providing examples of how safe driving practices can result in avoiding injury. Related to this is
the concept of self-efficacy. The notion that individuals must not only know how to carry out safe behaviours, but also have the skills and means to do so, is one that is found in all of the theories mentioned here.

Finally, it may be important that the costs of a safe behaviour are perceived as minimal (Tappe, 1992). This concept has also been put forward specifically in relation to driving by Wilde (1982) in a discussion of risk homeostasis theory, who suggested that it is a balance of the costs and rewards of cautious driving against the costs and rewards of risky driving that determine how much risk the individual engages in.

In summary, the safe young driver as suggested by these theories may have the following characteristics, and it is these characteristics that driving for safety programmes may need to consider when formulating their aims:

1. The young driver feels vulnerable to crashes, including severe and fatal crashes, as well as to being detected and penalised for offences.
2. The young driver perceives that significant others drive safely and that safe driving is the social norm. The individual must want to conform to the norms of these groups.
3. The young driver feels that safe driving behaviour is effective in greatly reducing the risk of injury.
4. The young driver is confident about being able to drive safely, that is it is clear what safe driving behaviours are and how to perform them.
5. The costs of safe driving (e.g. arriving at a destination more slowly, not drinking before driving) are perceived as minimal.

It may be unrealistic for every driver education programme to aim for each of these outcomes. Indeed some of them, such as the perception of social norms, may be largely, although not entirely, outside the scope of school-based programmes. However this profile could function as a guideline for formulating programme aims. It would also be possible to evaluate the outcomes of programmes according to their impact on one or more of these key variables. Standardised questionnaires with established reliability and validity, that measure the driving attitudes and self-reported
behaviours consistent with safety are sorely lacking. Most programmes are not large enough, especially in their early development, to be evaluated by their impact on crashes and injuries: as discussed in the previous chapter. Outcome measures in the past have tended to be unique to each programme, making it extremely difficult to make comparisons between programmes. The profile above may be a starting point for developing standardised measures.

THE CONTENT OF PROGRAMMES

Programmes must meet the needs of the target group
Not only is it important when choosing the content of driver education programmes to consider the social cognitions compatible with the safe young driver as put forward above, but it is also essential that the needs of the specific group being targeted are taken into consideration. Clearly, students who do not yet drive have different needs from those who are learning to drive, and from those who have been driving for some time. The social climate of a school and the driving laws of the country or state will also need to be taken into consideration. There is no use telling people what they already know (Fishbein & Middlestadt, 1989) or what they are not ready to hear. It is more plausible to view an education programme to be giving people a nudge in the right direction (Schlesinger, 1972) than to be “converting them” from one position to another. There is a fine line between these latter two points, as there is always the danger in trying to convey novel ideas that these will be too radical, or that in trying to tell people what they are ready to hear that they will have already heard it. This balancing act needs to be a primary concern of the designers of driver education programmes, and demands that the content of programmes be constantly reviewed.

Drinking and driving prevention
The most popular focus for classroom-only driver education programmes is drinking and driving prevention, as discussed in the previous chapter (e.g. Farrow, 1989; Newman et al, 1992; Young, 1991). Programmes aimed at reducing drinking and driving or being the passenger of a drinking driver clearly address substantial risk factors for road injury. They can also be readily structured around specific desirable behaviours such as providing food at parties. Past research has suggested that direct
guidelines may be useful for participants to be clear about what behaviours are appropriate when aiming for safety (Harkness, 1988). Direct guidelines may also function to increase the individual’s belief in the safe behaviour as a way of avoiding risk, and in themselves as capable of carrying out the safe behaviour, both of which were shown earlier to be characteristics of the safe young driver.

Drinking and driving prevention programmes also have the advantage that they can be run with students who are at all levels in the driving process, including those who do not (yet) drive, as passenger behaviour is just as critical as driver behaviour.

The apparent increasing lack of social approval for drinking and driving means that strategies to reduce its occurrence are likely to seem fairly acceptable to students and thus be “nudges” in the right direction. However, there may be a strong overlap between these programmes and current alcohol programmes. Because of this, drinking and driving prevention programmes may function best when incorporated into current alcohol programmes, or at least when there is an awareness on the part of the programme designers about what alcohol education the students have received or are receiving.

**Peer resistance skills**

Peer resistance skills, while taught extensively in health education programmes may not be the most appropriate skills to focus on in a driver education, or any health education programme (see May, 1993; for a discussion of this in relation to alcohol education). As discussed in Chapter 3, some recent studies have suggested that direct peer pressure does not play a significant role in drinking (Beck & Bargman, 1993), or drinking and driving (Vegaga & Klitzner, 1989). The peer group rather works as a normative base to which the adolescent desires to comply (Biddle, Bank, & Marlin, 1980; Webster, Hunter, & Keats, 1994). One focus group interview study on drinking amongst 11th and 12th grade American teenagers for example, found that the young people were wanting more guidance on how to say no to alcohol, *when they really wanted to say yes* (Beck, Summons, & Hanson-Matthews, 1987).
However, programmes that use peer resistance skills have been found to be effective in school-based health programmes (see for example: Hansen, 1992; or Flora & Thoresen, 1989). It is possible that training in peer resistance works not by teaching young people how to perform behaviours they did not know how to perform, but by helping to re-create peer group norms that are more conducive to safety. If role playing with classmates how to refuse a drink under pressure works to reduce the individual’s tendency to drink and drive, it may do so by making it seem normal and reasonable to decline drinks, even if the real “pressure” to accept them on any single occasion is internal to rather than external to the individual. The profile of the safe young driver would suggest that any shifts that can be made in peer group norms towards safety may be very useful in encouraging safe driving.

It is also possible that the students by “pretending” in class to want to refuse alcohol, may move a little closer to actually wanting to do so. This is in keeping with the social psychological principal of cognitive dissonance (Festinger, 1957), which suggests that individuals may shift their attitudes in order to better match them to any induced changes in their behaviours.

**Intervention skills**

Safe driving programmes can also undertake to develop the skills involved in preventing others from unsafe driving or passenger behaviour. According to a review of drinking and driving programmes by McKnight (1990), teenagers are more willing than adults to intervene in others drinking and driving behaviour, with passive forms of intervention such as providing food and a place to sleep being preferred to active and confrontational forms. An American survey of 170 college students found high levels of intervening in drinking and driving (Rabow, Hernandez, & Watts, 1986), suggesting that this may be a behaviour that could be strengthened. One of the programmes discussed in the previous section (McKnight & McPherson, 1986), which taught skills for intervening in others drinking and driving behaviour, appeared to be successful in increasing the participants’ tendency to engage in such behaviour.
Intervention training is an area that holds special promise for teenagers because this age group may be accustomed to commenting on each other’s behaviour. The potential intervener may also be sober (when the potential driver is not) and generally in a calmer state of mind. As was suggested with practicing peer resistance skills, practising intervention skills in a class group may also work to change peer group norms in a positive direction.

**Judgement training**

Judgement training was originally developed from studies on pilot error and pilot training, where it was found that training for judgements in addition to theoretical and skills training led to safer pilot behaviour (Bagheera-Buch, 1984; Jensen, 1982). It has been integrated into some New Zealand school driver education programmes (e.g. Star Driver and DrivePlan: neither of which have been formally evaluated). The programme evaluated in this thesis contains a modified version of the judgement training component used in Star Driver. Essentially, judgement training involves individuals learning to identify the thought patterns that lead them to make unsafe judgements about how, and whether, to drive. They are then shown how to “improve” their thinking patterns. Dealing with stress is also part of judgement training as uncontrolled stress contributes to poor decisions.

Judgement training is process training, it is an attempt to encourage a way of thinking, rather than specific attitudes or behaviours. For this reason it is likely to take a number of lessons. It is also designed for young people who are already driving or just learning to drive, so it is probably inappropriate for a programme that includes non-drivers. Nevertheless, avoiding risks when driving is essentially about making appropriate judgements, not about being skilful behind the wheel. It would therefore seem that judgement training is a potentially useful element in primary prevention programmes.

**Risk Perception**

There is considerable evidence that young drivers (and young males in particular) may under-emphasise their risk of being involved in a traffic crash, as discussed in Chapter 4 (e.g. Matthews & Moran, 1986; Tränkle, Gelau, & Metker, 1990). The problem
does not appear to be a knowledge problem, as young male drivers are aware that their age group is at high risk for crashes (e.g. Finn and Bragg, 1986). Rather, as suggested by the interview study in Chapter 6, it would appear that they do not feel personally vulnerable to crashes and injury. This is clearly problematic, as indicated by the profile of the safe young driver outlined earlier. While there are exercises available on raising risk perception generally (Slovic, 1987), the author knows of no exercises that aim to personalise the risk of unsafe driving behaviours. Such exercises would need to be based on a thorough understanding of the misconceptions held by the young drivers at whom they were aimed.

**Speeding, seat belts and other neglected behaviours**

The heavy emphasis on drinking and driving in classroom-based driver education programmes to date, appears to have led to the neglect of other categories of unsafe driving. The survey of New Zealand secondary students carried out as part of the empirical work for this thesis (the results of which are given in Chapter 11) found that speeding was a very prevalent behaviour, as was failing to wear a seat belt when travelling in the back of a vehicle. Speeding may be the second most important factor in teenage road fatalities in New Zealand, after alcohol and drugs (Creative Challenge Services, 1992).

There are also a variety of other unsafe driving behaviours such as dangerous passing and failing to give way that put young drivers at risk. It may not be desirable for programmes to look at all of these, as this would lead to a diffusing of the target behaviours, but educators need to bear in mind, and convey to students, that safe driving goes beyond getting into the car sober.

**EFFECTIVE METHODS OF DELIVERY**

**Motivation strategies: Reason, fear, protecting others**

Programmes that attempt to motivate people to change for “intellectual” reasons (e.g. Wodarski, 1987) assume that calm, informed personal choices lead to safe and healthy behaviours. Work on attitude change indicates that positive behaviours are more likely to be maintained when individuals feel personally responsible for them (Shaver, 1987)
so it is possible to argue that decisions reached through persuasion are likely to command a higher degree of commitment than those that have been emotionally "coerced". However, arguments for persuasion quickly become arguments for teaching knowledge as a basis for behaviour change and, as will be discussed, knowledge programmes seem to be the least effective of all health education programmes. They simply do not appear to penetrate deeply enough into an individual's motivational structure.

Fear, on the other hand penetrates very deeply, perhaps too deeply. For this reason, there have been mixed findings about the effects of fear on attitude and behaviour change. Some researchers have claimed that fear should be induced with caution (e.g. Eiser & Pligt, 1988; Janis & Fesbach, 1953; Kinder, Pape, & Walfish, 1980). Their arguments generally suggest that individuals who are in a state of high fear will be motivated to ignore or minimise the importance of a threat, as a defensive reaction. Conversely there have been studies on adolescents that have shown fear to be a highly effective means of behaviour change in the areas of drinking (Stainback & Rogers, 1983) and driving (Griffith & Rogers, 1976). One study of an education programme for teenagers who had been arrested for drug or alcohol offences that involved them touring a shock trauma unit, found this extremely emotive method to be effective in positively changing the teenagers' attitudes towards drinking and driving (Dearing, Caston, & Babin, 1991; as discussed in Chapter 6). Teenagers themselves seem to approve of high fear methods. Beck and Bargman (1993) in interviews with Hispanic teenagers, found that the teenagers' suggestions for effective drinking and driving prevention strategies included messages that vividly portray the harmful consequences of alcohol consumption and the use of testimonials from people who have suffered impairment from alcohol abuse.

It may be that high fear messages are effective if combined with approaches that increase the students' understanding of how to avoid the fearful outcome. That is, young drivers are induced to feel more vulnerable and the consequences of crashes are made to seem more vivid and severe, leading to feelings of fear, but at the same time the solutions to the fear, in terms of the strategies for safe driving are also made
available. In this way young people may be able to mitigate their fear through developing strategies for safe driving rather than through ignoring the message. This scenario is also in keeping with the social cognitions put forward earlier in the profile of the safe young driver.

Unlike many other health and safety behaviours, risky driving poses an irrefutable risk to others. While school-based health education programmes have traditionally attempted to motivate students by pointing out the dangers unsafe behaviours hold for themselves, it may also be possible in the case of driving, to motivate students by pointing out the dangers such behaviours impose on others. Teenagers may be particularly motivated to protect their friends (Colmar Brunton Research, 1993) and younger children (Evans, 1991).

**Knowledge, values or skills?**

Several researchers have summarised the most common approaches or orientations of health education programmes aimed at a variety of health and safety behaviours (e.g. Mann, Vingilis, Leigh, Anglin, & Blefgen, 1986; Moskowitz, 1989; Stewart & Klitzner, 1990). These generally fall into three categories: information or knowledge based programmes, “affective” programmes that include values clarification and/or decision making elements, and skill based programmes that develop the skills that are believed to be necessary to achieve the desired behaviours.

These different approaches have all been subject to empirical studies. When they are compared, there seems to be a general consensus that programmes based on knowledge alone are the least effective (Flora & Thoresen, 1989; Hansen, 1992; Moskowitz, 1989). Programmes that can be described as “affective” and involve values clarification and decision making have been found to induce positive changes in some studies that have evaluated school-based programmes based on these methods (e.g. Botvin, Baker, Botvin, Filazzola & Millman, 1984; Forman & Linney, 1991). However, reviews have generally found the most effective programmes to be those based on social skills (Abraham & Sheeran, 1993; Flora & Thoresen, 1989; Hansen, 1992; Moskowitz, 1989; Twentyman & Zimering, 1979).
The effectiveness of skill-based programmes in health education generally would indicate that this approach should also be the primary focus of driver education programmes. Nevertheless, the assumption behind skill-based programmes, that all young people are really wanting to behave safely, it is just that they lack the skills to do so, is undoubtedly flawed, as has been discussed with regard to peer resistance skills. Skill-based programmes without a component to increase the motivation to behave safely do not appear to be soundly based.

*Peer presentation*

There has been an increasing interest in recent years in the concept of peer presentation. While it has been known for some time that in principle people are more likely to imitate models they feel are similar to them (see Bandura, 1977; Shaver, 1987; Wilde, 1993), it is only recently that health education programmes have started to experiment with peer presentation. Peer led interventions, as well as increasing the likelihood that adolescents will identify with the presenter, also may function more effectively than teacher led interventions to develop positive group norms. As can be readily appreciated, however, peer presentation is far more difficult and time consuming to organise than teacher presentation.

While there are no studies (known to this author) on driver education programmes that have used peer presentation as a basis, there are studies that have found peer presentation (Perry, 1989) and peer support (Wodarski, 1987) approaches to be superior to traditional teacher led approaches in alcohol education. While peer led interventions would seem to be enormously promising: potentially overcoming one of the major limitations of the school context which is its association with adult authority (Forman & Linney, 1991), they are extremely difficult to arrange. Students Against Drunk Driving (SADD), for example, that functions as a school “club” designed to promote an anti-drinking and driving message, has a great deal of difficulty in getting established each year in New Zealand schools (Blaylock, 1992), and despite all schools
receiving promotional material may be active in very few, at least in Auckland (Thrush, 1992)³.

TIMING

The timing of a health education programme is vital for optimal change to take place. One study of an adolescent smoking prevention programme found that whereas smokers who had established a daily habit were unaffected, the behaviour of experimental smokers was much more readily modified (Killen & Robinson, 1988). Clearly, therefore, it is ideal if driver education takes place before driving habits are fully established and have become highly resistant to change.

There is in fact a strong argument that driver education should be a follow on from traffic safety education which begins at the pre-school level. Young New Zealand children may currently be taught basic traffic safety with visits from traffic police but traffic safety education fades away sometime during primary school and is completely forgotten until senior secondary school, where it occasionally reappears. The Thrush, 1992 survey previously cited found that only 3.6% of Auckland secondary school students were involved in driver education of some sort: and this was mostly driver training, paid for by the student.

In 1982 the New Zealand Ministry of Transport surveyed 553 boys and girls aged between 9-18 years, and found that attitudes towards drinking and driving, traffic police and driving generally seemed to deteriorate with age. They suggested that some sort of driver education needs to take place before the age at which driving can officially begin. Two further New Zealand studies (Best & Edwards, 1982; Page, 1992) both suggested that young children are learning driving habits from observations of their parents and others and so forming driving attitudes long before they can drive, showing the need for safe driving education at an early age. Another recent New Zealand study (Colmar Brunton Research, 1993) suggested from their interviews that interventions aimed at “risk taking” behaviours should be aimed at the 13-16 year old.

³ A more recent survey however, (Dawe, 1995) found that SADD was operational in nearly 50% of secondary schools in Auckland.
age group as 13-year-olds are a group who haven’t yet entered the cycle of rebellious “risk taking”.

The optimal programme may be one that concentrates on pedestrian and passenger safety in pre-school, adding bicycle safety in primary school and driver safety in mid-secondary school. Adolescent drivers who have been thoroughly and consistently taught to cross at pedestrian crossings, wear their seat belts, and equip themselves with reflective gear when cycling may be much more ready to turn down rides with drunk drivers when they are 13 and to drive safely themselves when they are 16.

RECOMMENDATIONS

While recognising that the ideas in this chapter reflect only a single viewpoint on a body of knowledge that contains many gaps, the following recommendations are put forward for consideration in designing school-based driver education programmes:

1. Programmes need to motivate young people to drive safely. As individuals, first and foremost, they must feel vulnerable to crashes and police detection. Inducing fear, and then presenting methods that the teacher and student both believe will be effective in keeping the student safe, may be a good strategy. Adolescents may also be motivated by a desire to protect others, particularly their friends or younger children.

2. Programmes ideally should contain skills training. Once students are motivated to drive safely, they need to have the strategies readily at hand for dealing with any elements in social situations that may compromise safe driving. Very little is currently known about what exactly these elements are. One area of skills training that does show promise is training in how to intervene in the unsafe driving behaviour of friends.

3. Peer presentation, if it is able to be arranged, appears to be a highly effective way of delivering programmes. Because of the practical hurdles involved in this, it may be more realistic to aim at using young people to present some elements of programmes. Young people who have been involved in crashes may be ideal speakers. It may also be possible to arrange senior students to teach elements of traffic safety to junior students.
4. When designing the content areas of programmes it is important to choose ideas and strategies that are new to the students, but not too far ahead of their current beliefs and behaviours. Clearly targeting specific behaviours may be the best approach for programmes that are to be integrated into a compulsory class. Content that is aimed at thinking processes, for example judgement training and risk perception may be suitable for primary prevention programmes aimed at beginning drivers.

5. Programmes should emphasise the protection gained from safe driving behaviours, and should attempt to reduce the perceived costs associated with these.

6. It is important that standardised measures are developed for assessing the impact of programmes on students' attitudes.
THE QUESTIONNAIRE
STUDIES
Chapter 9

BACKGROUND AND RATIONALE FOR STUDIES

The questionnaires used for this project provided information that was able to be used in two ways and thus formed two separate studies: a descriptive study and an intervention study. The descriptive study focused on the driving behaviour and attitudes of a sample of sixth form students. The intervention study looked at the effectiveness of a school-based, driver education programme. In an attempt to avoid unnecessary repetition, the next four chapters will be laid out in the following way: first, the background and rationale of each study will be described, second the method common to both will be outlined, and third the results and discussion of each study will be presented separately.

DESCRIPTIVE STUDY: BACKGROUND AND RATIONALE

This study had two primary aims. One aim was to describe the current driving and passenger behaviours and attitudes of a sample of New Zealand teenagers. A further aim was to examine any differences in risk behaviour between the males and females in the sample.

Gender differences have been highlighted in a number of areas outlined in the literature in Chapters 3 and 4 of this thesis. For example, males were consistently shown in this literature to engage in more unsafe driving behaviours than females, such as speeding (Forsyth, 1992; Hagen, 1975; Wasielewski, 1984), close following (Evans & Wasielewski, 1983), and drinking and driving (Elliot, 1987). Young men were also found to have riskier attitudes than females, including a greater tendency to seek driving risk (Barjonet, 1988; Rothe, 1987b), less awareness of the seriousness of violations when driving (Brown & Copeman, 1975; DeJoy, 1992) and a greater attachment to being able to drive “skillfully” (Stoddart, 1987). It was noted, however that some American studies have found young women to be “catching up” with young
men in their apparent involvement in drinking and driving (Moore, 1994; Popkin, 1991).

The gender differences component of the descriptive study aimed to re-examine gender differences, that the Moore (1994) and Popkin (1991) studies suggested are constantly shifting. Attitudes were examined to see if the males held beliefs that could be seen to be more consistent with unsafe driving than the females. Because young people are equally at risk as passengers as they are as drivers (see the introduction), several measures were also taken of passenger behaviour. The findings may be particularly relevant to driver training and education programmes, where current attitudes and behaviours and any substantial differences between males and females should be taken into account.

INTERVENTION STUDY: BACKGROUND AND RATIONALE

As discussed in Chapter 8, there have been no studies (published in academic journals) of a multi-session, classroom driver education programme that covers a range of unsafe driving behaviours. Other multi-sessional, classroom-based, driver education programmes that have been evaluated have concentrated on drinking and driving only. The current study therefore is an attempt to assess the efficacy of such a programme. The programme under evaluation is based on Bandura’s social learning theory. As well as evaluating the effectiveness of the programme as a whole, this study will comment on a number of its characteristics:

1. The programme primarily uses a low fear approach, with information being given in a direct and unemotional way. It emphasises personal choice, with the assumption being that informed choices will tend to be safe choices.
2. The students’ perception of their personal risk is strongly targeted with information on injury statistics, the effects of alcohol, and a session on risk perception.
3. The programme consistently attempts to increase feelings of self-efficacy with regard to safe driving. Individuals are not only presented with a variety of safe choices that they may not have considered, but are also given opportunities to
practice safe behaviours (such as refusing a drink when driving) through role play.

4. There is a session on judgement training and a related session on stress management.

The programme also attempts some peer presentation by encouraging teachers to invite a crash victim of the students’ own age to talk about his or her experiences. Responsibility for others is touched on through looking at the repercussions of road crashes for those involved with victims and through discussing strategies for host responsibility. These, however, are “low intensity” elements of the programme.

**Description of Star Driver**

The *Star Driver* Programme was designed as a combined driver training and classroom-based education programme. The rationale for the programme as outlined by Kirkwood (1988, 1992) includes the importance of formally training drivers in both the skills and judgements of driving, and the desirability of targeting young drivers as they have the poorest crash rates and also any improvements in their driving are likely to carry through into later life. The original programme that has been running for several years at one secondary school, includes a minimum of 12 hours driving instruction with a professional instructor, classroom lessons and driving workshops. Kirkwood (1992) reported an injury rate from students who had participated in the programme of 3.5 injuries per million kilometres travelled compared with an injury rate of 6.8 injuries per million kilometres for drivers aged 15-19 years reported in the New Zealand Household Travel Survey (Jones, 1991). However, the students who have been through the programme are self-selected, and no studies have ever attempted to compare them to a matched control group.

The current study is an evaluation of the classroom component of the programme only. This was modified somewhat from the original programme to fit into 10 lessons of 1 hour in duration that would be applicable to all sixth form students (not just those interested in obtaining a driver’s licence). The 10 lessons used a wide variety of teaching techniques including: brainstorming, discussion, problem solving, graphs and
diagrams to display statistics, "fill in the gaps" pencil and paper exercises, role plays, interactive games and self assessment exercises. The content of the lessons was as follows:

**Session 1 - Crash facts 1:** Elicited personal responses to cars and what it is to be a safe driver. Asked about personal crash experience. Introduced the notion that crashes are highly complex with multiple causes.

**Session 2 - Crash facts 2:** Looked at crash statistics and the role of alcohol, the time of day, the age and gender of the driver. Explained the rationale behind traffic laws.

**Session 3 - Risk Perception:** Involved a class exercise and discussion on Slovic’s notion of dread and strangeness as the main dimensions in risk perception. This was followed by discussion on the socially responsible ways of experiencing risk.

**Sessions 4 and 5 - Drinking and Driving:** Brainstormed on the reasons for and consequences of drinking and driving. Information gathering exercise on the effects on alcohol on driving. Peer resistance role plays. Discussion on alternatives to drinking and driving and host responsibility.

**Session 6 - Meeting with crash victim/caregiver:** Talk and informal interaction with one of the following: crash victim, member of crash victim’s family, health professional, or police officer who has involvement with crashes.

**Session 7 - Consequences of crashes:** Debrief on talk with crash victim. Statistics, discussion and games that focused on the costs of road death and injury with emphasis on the frequency of near miss events.

**Session 8 - Driver Judgement Training:** (see the section on judgement training in the previous chapter for a theoretical background to this topic) Introduced “The three mental processes of safe driving”: automatic reaction, problem solving and repeated reviewing. Self assessment on the “Dangerous thought patterns”: conformity, impulsivity, invulnerability, macho, anti-authoritarian and external locus of control.

**Session 9 - Stress management:** Looked at ways of controlling stress, particularly when driving.
Session 10- Keeping ourselves safe: Looked at ways to avoid the worst crashes. Reviewed previous statistics. Attempted to create a “safety culture” within the group of students.

Detailed descriptions of the lesson plans and all the necessary worksheets were presented in a booklet that all the teachers involved in the programme received.
Chapter 10

METHOD

SUBJECTS AND SAMPLING

Eight Auckland secondary schools were invited to participate in the study by running the Star Driver programme with their sixth form students. These schools were all in a single area that contained a wide spectrum of ethnic and socio-economic groups. Two schools refused as they already included driver education as part of the health programme in the sixth form. The other six schools were all willing to be involved. Two of these were only able to offer the participation of one or two classes, so they were eliminated from the study. Of the four schools that remained were two co-educational, one was a boys’ school and one a girls’ school. Three of the schools integrated Star Driver into their health syllabus and one into their transition classes. The girls’ schools was later dropped from the study due to administrative problems.

Three schools with highly similar demographic characteristics to those in the treatment group were invited to participate as controls. They all agreed. The students from two of the schools were drawn from the health classes and from the other school they were drawn from the transition classes. Both the treatment and control groups represented students who were somewhat lower academic achievers than the school population as a whole, as the most highly achieving students did not usually participate in the health programme (only one school was exceptional in this regard) and transition classes are designed for students with low rates of academic achievement.

For the purposes of the descriptive study with a focus on gender differences, there were 636 subjects who returned useable answers to Questionnaire I, the only questionnaire used for this study. For the intervention study, there were 624 subjects in total whose replies to Questionnaire I were useable for the purposes of pre-testing. This figure differed from that in the descriptive study as it included 25 subjects who could not be coded for gender, that had been eliminated from the descriptive study. It
was hoped these data, when missing or unclear, could be gathered in a subsequent questionnaire. It also excluded the 37 subjects from the girls’ school who were dropped from the research after Questionnaire I. Ninety-two subjects returned useable data for Questionnaire II, which was given to a sub-sample of the treatment group immediately on completion of the programme, and so formed the post-test. There were 322 subjects in total who returned useable data for Questionnaire III. This questionnaire, given to both the treatment and control groups 4-6 months after the programme had been delivered, formed the follow-up. The number of subjects completing the questionnaires can be seen in Table 1:

Table 1

<table>
<thead>
<tr>
<th></th>
<th>Treatment</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire I</td>
<td>357</td>
<td>267</td>
</tr>
<tr>
<td>Questionnaire II</td>
<td>92</td>
<td>not applicable</td>
</tr>
<tr>
<td>Questionnaire III</td>
<td>176</td>
<td>146</td>
</tr>
</tbody>
</table>

This represents a total attrition rate from the beginning to the end of the study of 50.70% from the treatment group and 45.32% from the control group. None of this attrition is likely to be due to students voluntarily leaving the study, as no student who had agreed to fill out the initial questionnaire refused to fill out the third questionnaire. Instead the attrition could mainly be attributed to the following:

1. Students who had left school during the year.
2. Students who were absent on the day of the follow-up.
3. Students who made an error in their code on Questionnaire III, so that it could not be matched to a code in Questionnaire I.

**PROCEDURE**

The classes involved were initially visited to invite the students to participate in the study. This visit involved an explanation of the study and the distribution of the information sheet (see Appendix A) and the consent form (see Appendix B). Consent

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4 For an overview of the time-frame of the study, and where it fitted with the interview study, reported in the first part of the thesis, see the introduction.
forms were collected immediately from those 16 years and over, those under 16 years were asked to take their consent forms home and hand them to their teacher when and if they had gained their parent’s permission to participate.

Each school was then visited a second time for delivery of the first questionnaire. Students were asked to code themselves for the purposes of being able to link their questionnaires. Each school had a unique code, as did each class. These were the first two numbers they entered. They then had to construct their own four digit personal code from the last four digits of a relative or friend's phone number. If they thought they might forget who they had used they were able to write their own name and that of their relative or friend on a slip of paper, that was kept in an sealed envelope until the next questionnaire. The students were instructed to answer the questionnaires as truthfully as they could. They were instructed to answer as drivers if they drove a car or rode a motorbike, whether or not they had their licences. Their attention was drawn to how some questions were labelled “driver only” and others were labelled “non-driver only”.

The treatment group then received the programme, 3 to 5 months after the first questionnaire. Attempts were made to standardise the programme across the classes and schools involved by giving the teachers a manual that outlined the structure of each lesson and holding a training day at which they were given instructions about how to deliver the programme. After completion of the programme the teachers were given a questionnaire asking for feedback on the programme and how well they followed it (see Appendix H). Their percentage estimates of the degree to which they adhered to the programme as outlined in the manual varied from 70-90%.

The second questionnaire, the post-test, was delivered at only two of the treatment schools. The teachers received the questionnaire immediately on completion of the programme and were asked to deliver it to their classes at their earliest opportunity.

The third questionnaire, the follow-up, was delivered in the same manner as the first, 4-6 months after the treatment group received the programme. It was stressed to the
students that they were to answer in a manner that was true for them now and to try not to think about what they put on the last questionnaire they answered.

After the delivery of Questionnaires I and III, teachers were left with some extra questionnaires for absent students. Only four out of the seven schools returned these.

DESCRIPTION OF QUESTIONNAIRES

The overall aim of the questionnaires was to measure the driving behaviours and attitudes of the subjects and the impact of the programme on these attitudes and behaviours. The emphasis was on risky behaviour or intentions with regard to risky behaviour. Recent studies have found a positive correlation between this type of behaviour and crashes and violations (Forsyth, 1992; Rajalin, 1994). Measuring behaviour through self-report is not ideal (see for example Popham & Schmidt, 1981), however it is the most practical way of obtaining a behaviour measure and may be more indicative of actual driving practices than measures of attitude and knowledge alone (Mann et al., 1986). There is some evidence that school students are fairly accurate in their reported behaviours (Killen & Robinson, 1988; Single, Kandel, & Johnson, 1975). Jonah and Dawson (1987) suggested that while it may be that people under-report negative behaviour and over-report positive behaviour, self-report is, nevertheless, a reasonable tool for making comparisons between groups or between behaviours.

There were three versions of the questionnaires (see Appendix F). Questionnaire I (pre-test) and III (follow-up) were nearly identical, with the only changes being in some of the questions about behaviour. When there was a question in the first questionnaire that was designed to discover if the subjects had ever engaged in a certain behaviour, this was changed in Questionnaire III to discover if they had engaged in that behaviour in the last 3 months. Both questionnaires contained nine sections. Questionnaire II (post-test) was much shorter and contained only the questions on attitude as the subjects would not have had time to implement a behaviour change immediately after the programme, when this questionnaire was delivered.
Several of the items were designed for drivers only. There was one scale (in Questionnaires I and III) for non-drivers only. The remaining questions were directed at all subjects. The items were presented in a variety of formats, with multiple choice items, Likert scales, yes/no items, true/false items and occasionally items in which the subjects were required to write a word.

Version one of the questionnaire was piloted on a group of 31 sixth formers at a school not involved in the main study. They commented on the clarity of the format and the questions, and some minor changes were made as a result.

Section one
This section consisted of two multiple-choice questions designed to establish whether the subject was a driver, how much driving was done and what vehicles were driven. They were both modifications of questions used by Kirkwood in early evaluations of Star Driver (Unpublished Star Driver programme material).

Section two
The main focus of this section was on alcohol and driving. The questions were presented in a variety of formats. Questions 1 and 2 in this section were modifications of questions asked by Forsyth (1992) in a survey on the attitudes and opinions of newly qualified drivers. The remaining questions were designed specifically for this study. The questions covered attitudes, intentions and behaviours with regard to drinking and driving or being the passenger of a drinking driver. There were also two questions on intervening in the drinking and driving of friends. There was a single question on driving after smoking marijuana. The last item inquired about driving convictions.

Section three
Section three measured the students' attitudes and behaviours with regard to traffic laws. There was a general attitude question, questions on how fast the subjects drove, and on seat belt wearing. These were all designed for the purposes of this study.
was a six-point Likert scale for drivers on how often they broke 13 specific traffic laws: which will be referred to as the Unsafe Driving Behaviours Scale. This was a modified version of a scale used by Forsyth (1992). A similar scale, that focused on the same behaviours, but that asked how acceptable the behaviours were was included for non-drivers. The drivers’ version of the Unsafe Driving Behaviours Scale yielded Cronbach’s coefficient alphas of .90 for Questionnaire I and .88 for Questionnaire III. The Cronbach’s coefficient alphas for the non-drivers version were .87 for Questionnaire I and .92 for Questionnaire III.

Section four

The efficacy of the Judgement Training component of the programme was measured in section four, that was for drivers only. Although the Star Driver programme described by Kirkwood contains exercises that help young drivers identify their dangerous thought patterns, there was no previous scale in existence to measure these patterns. Using the exercises from Star Driver as a basis, the Dangerous Thought Patterns Scale, a five-point Likert scale, was developed for this study. The scale was initially piloted with 137 sixth form students from one secondary school not involved in the main study. The aim of the pilot study was to test the internal consistency of each sub-scale. The pilot study used six sub-scales with between two and seven items in each sub-scale. Some of the items were in a reversed direction. The sub-scales were: anti-authority (seven items), invulnerable (seven items), impulsive (seven items), conforming (two items), macho (five items) and Locus of Control (six items). The items for Locus of Control sub-scale were taken from the Driving Internality and Driving Externality Scales developed by I. Montag (Montag and Comrey, 1987). The other scales were developed directly from the programme, with care being taken to ensure that they were not the same or highly similar to the examples used on the programme. The pilot study produced Cronbach’s Alphas in the range of .42 to .63. As a result of the pilot study a number of changes were made to the Dangerous Thought Patterns scale. The entire Locus of Control scale was dropped as it produced a Cronbach’s Alpha of only .49, despite having six items from a well tested scale. It was felt that it could not be improved and did not yield enough information of interest to justify its inclusion in the main study. Two items were dropped from the impulsive
sub-scale, one from the macho sub-scale. The conforming sub-scale had the lowest Cronbach’s Alpha of only .42. However, it only had two items and so it was felt that it could possibly be improved with the addition of two more items. The final scale consisted of the following sub-scales:

1. **Anti-authority** (seven items): this measured the tendency to distrust and rebel against adult views or rules; e.g. “What teachers, my parents etc say about driving is O.K. for them but they don’t really understand what it is like to be a teenager”.

2. **Invulnerable** (seven items): this measured feelings of invulnerability to road crashes; e.g. “I’m not really the sort of person to get injured on the road”.

3. **Impulsive** (five items): this measured the tendency to act without thinking; e.g. “When I see the opportunity to get somewhere a bit quicker, I take it”.

4. **Conforming** (four items): this measured the extent to which subjects conformed to any perceived unsafe driving norms; e.g. “Sometimes I drive fast because my friends seem to expect it”.

5. **Macho** (four items): this measured the tendency to believe that they had superior driving skills, which they enjoyed displaying; e.g. “Sometimes I do something a bit dangerous when I am driving, just to see if I can handle it”.

The Cronbach’s coefficient alphas for the scale can be seen in Table 2 below:

<table>
<thead>
<tr>
<th>Sub-scale</th>
<th>Questionnaire I</th>
<th>Questionnaire II</th>
<th>Questionnaire III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-authority</td>
<td>.57</td>
<td>.6</td>
<td>.64</td>
</tr>
<tr>
<td>Invulnerable</td>
<td>.37</td>
<td>.49</td>
<td>.49</td>
</tr>
<tr>
<td>Impulsive</td>
<td>.54</td>
<td>.55</td>
<td>.57</td>
</tr>
<tr>
<td>Conforming</td>
<td>.62</td>
<td>.64</td>
<td>.71</td>
</tr>
<tr>
<td>Macho</td>
<td>.62</td>
<td>.75</td>
<td>.67</td>
</tr>
</tbody>
</table>

As can be seen in Table 2, the alpha’s for each sub-scale improve for each successive questionnaire, with the exception of the macho sub-scale, where the highest alpha, of .75 occurs for Questionnaire II. It appears that with re-testing there is greater consistency in the students’ responses. There are a number of possible reasons for this:
1. There was progressively less error in their answers as they completed each questionnaire. The conditions under which Questionnaire III was given were an improvement, in some cases, over the conditions for Questionnaire I. There were no cases in which the conditions declined.

2. Familiarity with the scale brought about consistency as the students did not have to put so much effort into understanding the questions and could put more effort into answering honestly.

3. The students who had completed the programme had been taught to think in terms of the concepts the sub-scales tested. They might have been inclined as a result to have a more consistent self-image with regard to each of the thought patterns. Even students who had not completed the programme may have been starting to respond to potential demand characteristics in the scale.

Section five
All the items in section five, that measured distraction when driving, were created for the purposes of this study. The first item asked about driving with the car stereo on. The next three asked about driving with passengers, and how often the subjects were distracted by their passengers. The final item asked how often the subjects felt they lacked full concentration, for any reason at all, when driving.

Section six
This section was designed to measure the extent to which subjects used driving to express their emotions and the extent to which they “became emotional” when driving. It consisted of a five-point Likert scale with six items: called here the Emotional Driving Scale. These items were modified from a General Factor Driving Scale designed by Gulian, Glendon, Matthews, Davies, and Debney (1988). Item analyses of the Emotional Driving Scale yielded Cronbach’s coefficient alphas of .69 for Questionnaire I and .77 for Questionnaire III.
Section seven

The 12 items in section seven, that was designed to measure the subjects’ knowledge about road injuries, were all derived from the “Crash Facts” section of the programme. Each subject was given a total score for their answers to this section.

Section eight

Section eight inquired about the injury crash involvement of the subjects, who was driving the vehicle in any crashes, the level of injury that occurred and if they had ever been found to be responsible for a crash.

Section nine

The final section concentrated on demographic items, the subjects’ licence status, whether they ever broke the restrictions of their licence, and if they had attended a defensive driving course.
Chapter 11

DESCRIPTIVE STUDY: RESULTS AND DISCUSSION

RESULTS

Sample characteristics

The characteristics of the sample are shown in Table 3.

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=389</td>
<td>n=247</td>
</tr>
<tr>
<td>mean age</td>
<td>15.95</td>
<td>15.76</td>
</tr>
<tr>
<td>Pakeha</td>
<td>208(56%)</td>
<td>141(59%)</td>
</tr>
<tr>
<td>Maori</td>
<td>26(7%)</td>
<td>16(7%)</td>
</tr>
<tr>
<td>Pacific Is</td>
<td>66(18%)</td>
<td>32(13%)</td>
</tr>
<tr>
<td>Asian</td>
<td>22(6%)</td>
<td>14(6%)</td>
</tr>
<tr>
<td>Pakeha &amp; Maori</td>
<td>20(5%)</td>
<td>15(6%)</td>
</tr>
<tr>
<td>P.I &amp; Maori</td>
<td>11(3%)</td>
<td>4(2%)</td>
</tr>
<tr>
<td>P.I &amp; Pakeha</td>
<td>14(4%)</td>
<td>13(5%)</td>
</tr>
<tr>
<td>Other</td>
<td>6(2%)</td>
<td>5(2%)</td>
</tr>
<tr>
<td>mean no of S.C. passes</td>
<td>2.57</td>
<td>2.38</td>
</tr>
<tr>
<td>Social Welfare home</td>
<td>60(16%)</td>
<td>42(18%)</td>
</tr>
</tbody>
</table>

The males and females in this sample had very similar characteristics. The males may have been slightly older on average, however this calculation was based only on year of birth, and almost all students were born in 1977, 1978 or 1979. The ethnic distribution of the males and females was almost identical as can be seen. The boys had achieved a slightly higher number of school certificate passes on average than the girls.
Data Analysis

Where appropriate, Chi-square tests or t-tests were performed to assess whether differences between males and females in the sample were statistically significant. Due to the number of comparisons being made, the acceptable level of significance was set at $p < .01$. The numbers available for each comparison varied for two main reasons. First, a number of the questions applied only to certain categories of subjects: the most common of these being "drivers only". Second, not all subjects completed every question. The number used for each analysis is given.

Driving Status

As can be seen in Table 4, a considerable percentage of these sixth form students were driving at the beginning of the school year, with 56% of males and 30% of females driving (not including learners). Thirty-two percent of the total sample of males and 17% of the total sample of females indicated that they drove three times a week or more. Chi-square analysis showed that the differences between the percentage of males and females who were drivers (as opposed to non-drivers or learners) was statistically significant: $\chi^2 (1, n = 633) = 38.839, p < .0005$. There were also significant differences between the percentage of males and females who reported driving three times a week or more: $\chi^2 (1, n = 633) = 16.943, p < .0005$.

Table 4
Driving Status of Sample: Descriptive Study

<table>
<thead>
<tr>
<th></th>
<th>male</th>
<th>female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n = 387$</td>
<td>$n = 246$</td>
</tr>
<tr>
<td>non driver</td>
<td>22%</td>
<td>34%</td>
</tr>
<tr>
<td>learners</td>
<td>22%</td>
<td>35%</td>
</tr>
<tr>
<td>drivers</td>
<td>56%</td>
<td>30%</td>
</tr>
</tbody>
</table>

The item in the questionnaire pertaining to the amount of driving done was cross tabulated with the item on licence status, to obtain data on how many subjects were driving without licences. Of those who claimed to be learner drivers, 69% of males and 56% of females said they did not have a licence. Of those who claimed to be drivers beyond the learning stage, 28% of males and 41% of females said they did not
have a licence. Eighteen percent of males and 28% of females of those who claimed to drive three times a week or more did not have a licence. Chi-square analyses indicated that there were no significant differences between the males and females above the $p < .01$ level.

**Drinking and driving**

The attitudes of the subjects towards drinking and driving can be seen in Table 5, with the majority of subjects of both genders, 91% of males and 95% of females, indicating that you should either have no drinks, or only one or two, if you intend to drive. A $t$-test showed that there were no significant differences between males and females in this regard (male $m = 1.43, sd = 0.73$; female $m = 1.35, sd = 0.58$, with the lower the mean, the fewer drinks believed acceptable).

<table>
<thead>
<tr>
<th>Attitudes Towards Drinking and Driving</th>
<th>male</th>
<th>female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Should never drink and drive</td>
<td>69%</td>
<td>71%</td>
</tr>
<tr>
<td>OK to have one or two drinks</td>
<td>22%</td>
<td>24%</td>
</tr>
<tr>
<td>Should stop at legal limit</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>OK over limit if careful</td>
<td>2%</td>
<td>0</td>
</tr>
</tbody>
</table>

The item concerning how many drinks were consumed at the last party and the strategies they used for getting home were cross tabulated. Table 6 shows the strategies used for getting home by subjects who indicated that they had consumed one or more drinks at the last party they had attended.

In total, 86-91% of males and 79-85% of females (depending on what strategies were used for those who chose "other") reported using "safe" strategies for getting home. No females reported driving themselves after drinking, whereas 5% of the males did so. A chi-square test showed that this difference was significant: $\chi^2 (1, n = 393) = 7.936, p < .005$. In contrast, only 4% of males reported going home with a drinking friend as opposed to 15% of females. A chi-square test showed that this difference was
also significant: $\chi^2 (1, n = 393) = 14.470, p < .0005$. It would seem therefore, that whereas the males and females were involved in a similar number of drinking and driving incidents when getting home from parties, the males were doing so as drivers and females were doing so as passengers.

Table 6  
*Strategies For Getting Home After Drinking*  

<table>
<thead>
<tr>
<th></th>
<th>male</th>
<th>female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n = 231$</td>
<td>$n = 162$</td>
<td></td>
</tr>
<tr>
<td>stayed the night</td>
<td>36%</td>
<td>27%</td>
<td></td>
</tr>
<tr>
<td>non-drinking friend</td>
<td>16%</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>walked</td>
<td>14%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>parents or friends parents</td>
<td>14%</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>drove self</td>
<td>5%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>taxi</td>
<td>5%</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>drinking friend</td>
<td>4%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>other</td>
<td>5%</td>
<td>6%</td>
<td></td>
</tr>
</tbody>
</table>

Only a small percentage of the subjects (regardless of their driving status) indicated that they would probably drink and drive in the next month. Of the males ($n = 362$) only 4% said they would probably do so, with 12% being unsure and 84% indicating that they would not do so. Of the females ($n = 228$), only 1% indicated they would probably drink and drive, 7% were unsure and 92% indicated they would not do so. A *t*-test did indicate that males were significantly more likely to intend to drink and drive: $t (588) = 3.1280, p < .002$ (male $m = 2.81, sd = 0.53$; female $m = 2.93, sd = 0.31$; with the lower the mean the greater the intention).

In the driver only item that asked how often they had driven after a few drinks, both male drivers and female drivers indicated little past drinking and driving behaviour. Of the male drivers ($n = 236$), 76% indicated that they had never done so, 13% said they had done so once, 9% a few times and 2% many times. Of the female drivers ($n = 110$) 82% said they had never done so, 13% said they had done so once, 4% a few times with no females indicating they had done so many times. A *t*-test revealed that these differences were not significant to the $p < .01$ level (male $m = 1.38, sd = 0.75$; female
\( m = 1.21, sd = 0.49; \) with the lower the mean the less past driving and driving behaviour.

Male drivers were, however, significantly more likely to have driven after smoking marijuana: \( t (333) = 3.0057, p < .003 \) (male \( m = 1.41, sd = 0.9 \), female \( m = 1.13, sd = 0.48 \), with the lower the mean the fewer times they had smoked marijuana and then driven). Once again the numbers of both males and females who indicated they had done so were low. Of the males drivers \((n = 230)\), 80% said they had never done so, 5% said they had done so once, 8% had done so a few times and 7% had done so many times. Of the female drivers, \((n = 105)\), 92% indicated they had never done so, 5% had done so once, 3% had done so a few times and 1% had done so many times.

Both males and females were less clear about whether they would be passengers of drinking drivers, than they were about their own drinking and driving behaviour. Of the males \((n = 363)\), 15% indicated that they thought they probably would be a passenger of a drinking driver in the next month, with 33% unsure leaving 51% who indicated that it was not probable they would be the passenger of a drinking driver. Of the females \((n = 229)\), 18% thought they would probably be the passenger of a drinking driver in the next month, 37% were unsure leaving 46% who felt they would not be. A \( t \)-test indicated that the males and females were not significantly different in this regard (male \( m = 2.36, sd = 0.73 \); female \( m = 2.28, sd = 0.75 \), with the lower the mean the greater the intention).

Most subjects had been passengers of a drinking driver. Of the males \((n = 359)\), only 24% said they had never been the passenger of a drinking driver, 15% had been once, 44% had been so a few times and 17% had been so many times. Of the females \((n = 218)\), 17% said they had never been the passenger of a drinking driver, 18% had been so once, 46% had been so a few times and 19% had been so many times. A \( t \)-test indicated that there were no significant differences between the males and the females (male \( m = 2.55, sd = 1.02 \); female \( m = 2.65, sd = 0.96 \), with the lower the mean the less frequently they had been such a passenger).
Table 7 shows which drinking drivers the subjects had been driven by. As can be seen on the table, around half of both the males and females who had been driven by a drinking driver, had been driven by their fathers. Friends were the second most likely to have driven the subjects after drinking. The only strong difference between males and females was that whereas 22% of females had been driven by their drinking boyfriend, only 4% of males had been driven by their drinking girlfriend.

Table 7

*Drinking Drivers Whom the Subjects Had Been Driven By*

<table>
<thead>
<tr>
<th></th>
<th>male</th>
<th>female</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 261</td>
<td>n = 173</td>
<td></td>
</tr>
<tr>
<td>father</td>
<td>51%</td>
<td>47%</td>
</tr>
<tr>
<td>mother</td>
<td>21%</td>
<td>24%</td>
</tr>
<tr>
<td>older sibling</td>
<td>17%</td>
<td>15%</td>
</tr>
<tr>
<td>other relative</td>
<td>27%</td>
<td>22%</td>
</tr>
<tr>
<td>friend</td>
<td>46%</td>
<td>39%</td>
</tr>
<tr>
<td>friend's parent</td>
<td>9%</td>
<td>13%</td>
</tr>
<tr>
<td>boyfriend or girlfriend</td>
<td>4%</td>
<td>22%</td>
</tr>
<tr>
<td>other</td>
<td>16%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Traffic Laws

Whereas males drove significantly faster than females on the open road $t (332) = 2.8653, p < .004$; they did not drive significantly faster than females around town. As can be seen on Table 8, the mean speed for both groups was notably above the legal speed limits that are 50 kilometres per hour on urban roads and 100 kilometres per hour on highways.

Table 8

*Fastest Speeds Driven*

<table>
<thead>
<tr>
<th></th>
<th>male</th>
<th></th>
<th>female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 236</td>
<td>n = 105</td>
<td>n = 236</td>
<td>n = 105</td>
<td></td>
</tr>
<tr>
<td>mean</td>
<td>sd</td>
<td>mean</td>
<td>sd</td>
<td></td>
</tr>
<tr>
<td>Fastest speed on open road$^a$</td>
<td>2.81</td>
<td>1.11</td>
<td>2.44</td>
<td>0.97</td>
</tr>
<tr>
<td>Fastest speed around town$^b$</td>
<td>2.33</td>
<td>0.99</td>
<td>2.16</td>
<td>0.91</td>
</tr>
</tbody>
</table>

$^a$Scale: 1 = 80 kms 2 = 100 kms 3 = 110 kms 4 = 120+ kms

$^b$Scale: 1 = 50 kms 2 = 60 kms 3 = 70 kms 4 = 80+ kms
Of the males \((n = 339)\), 95% reported wearing their seat belts either always or usually, when travelling in the front. Of the females \((n = 224)\), 91% reported this. The number who regularly wore their seat belts when travelling in the back was somewhat less. Sixty-nine percent of males reported always or usually doing so, while 64% of the females reported this. When the two seat belt wearing items were combined for the purposes of a \(t\)-test, no significant gender differences were found (on a 1-4 scale where the lower the mean the greater the frequency of seat belt wearing; male \(m = 1.63\), \(sd = 0.68\); female \(m = 1.69\), \(sd = 0.75\)).

Male drivers \((n = 248)\) were significantly more likely than female drivers \((n = 109)\) to report engaging in unsafe driving behaviours on the Unsafe Driving Behaviours Scale: \(t (355) = 3.2031, p < .002\) (on a 1-6 scale where with the lower the mean the less the frequency of unsafe behaviours; male \(m = 1.89\), \(sd = 0.76\); female \(m = 1.62\), \(sd = 0.65\)). It is important to note however, as can be seen from these means, that both males and females reported only very small amounts of unsafe driving behaviour in total.

For drivers on restricted licences, it was fairly common for them to report at least some breaking of the rules associated with their licence. The most common restriction to break was that associated with not carrying passengers. Sixty-five percent of males on restricted licences reported breaking this rule at least sometimes, 70% of females on such licences reported this. A \(t\)-test revealed no significant differences between the males and females in this regard. It was less common for the subjects to break the restriction on drinking before driving. Of the males, 18% said they broke this law at least sometimes. Of the females, 12% reported this. A \(t\)-test revealed no significant differences between males and females in this regard. There was a significant difference between male and female drivers on restricted licences regarding breaking the 10 pm night curfew: \(t (269) = 2.6628, p < .008\), with 52% of males reporting breaking this law at least sometimes, compared to 45% of females who reported this. The means and standard deviations from the \(t\)-tests can be seen on Table 9.
Table 9
Breaking the Rules Associated with Restricted Licences

<table>
<thead>
<tr>
<th></th>
<th>male</th>
<th></th>
<th>female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean</td>
<td>sd</td>
<td>mean</td>
<td>sd</td>
</tr>
<tr>
<td>Restriction on passengers</td>
<td>2.22</td>
<td>1.13</td>
<td>2.11</td>
<td>1.01</td>
</tr>
<tr>
<td>Restriction on alcohol</td>
<td>1.24</td>
<td>0.58</td>
<td>1.12</td>
<td>0.43</td>
</tr>
<tr>
<td>Restriction on night driving</td>
<td>1.9</td>
<td>1.06</td>
<td>1.55</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Note. Scale: 1 = never - 4 = nearly all the time

Driver judgement and emotional driving

The Dangerous Thought Patterns Scale revealed significant differences between the male and female drivers on every sub-scale, with the males consistently showing more dangerous thought patterns. The means, standard deviations and t values can be seen on Table 10.

Table 10
The Dangerous Thought Patterns Scale

<table>
<thead>
<tr>
<th></th>
<th>male</th>
<th></th>
<th>female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean</td>
<td>sd</td>
<td>mean</td>
<td>sd</td>
</tr>
<tr>
<td>Anti-authoritarian</td>
<td>3.50</td>
<td>0.58</td>
<td>3.7</td>
<td>0.58</td>
</tr>
<tr>
<td>Invulnerable</td>
<td>3.29</td>
<td>0.51</td>
<td>3.62</td>
<td>0.47</td>
</tr>
<tr>
<td>Impulsive</td>
<td>3.37</td>
<td>0.64</td>
<td>3.58</td>
<td>0.57</td>
</tr>
<tr>
<td>Conforming</td>
<td>3.57</td>
<td>0.82</td>
<td>4.03</td>
<td>0.64</td>
</tr>
<tr>
<td>Macho</td>
<td>2.61</td>
<td>0.78</td>
<td>3.09</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Note. Scale: 1 = strongly agree - 5 = strongly disagree
* p < .005
** p < .00005

There were no significant differences revealed between the male (n = 235) and female (n = 102) drivers in the degree to which they felt angry and frustrated when they were driving, as measured in a t-test on the Emotional Driving Scale (on a 1-5 scale where the lower the score the greater the emotional driving, male m = 4, sd = 0.87; female m = 4.13, sd = 0.67).
DISCUSSION

Perhaps the clearest difference between the males and females in this study was that the males were much more likely to have entered the driving process than the females. They also tended to report driving more frequently than the females. It is important therefore to acknowledge that differences in reported unsafe driving behaviours between the two groups may partly reflect the different amounts of driving engaged in. Males’ greater reported levels of drinking and driving after the last party they attended and greater intention to drink and drive could be explained in this way. The finding that females were just as likely to expose themselves to the risks of drinking and driving as males, but as passengers, rather than as drivers, also supports the possibility that the males were not behaving more unsafely as drivers because they were more inclined to behave unsafely, but because they were more often drivers. However, there was also evidence in the survey that the males and females had different attitudes towards driving. The fact of greater male than female exposure to driving suggests in itself that the males from this survey were more interested in, or attached to, driving than the females: supporting the findings of Stoddart (1987).

The findings that male drivers were prepared to drive faster on the open road (but not around town) than female drivers and that they more frequently reported engaging in unsafe driving behaviours could be due to a number of factors. It is possible they were more confident about their driving skills (as was found by Stoddart, 1987; Rothe, 1987a; and DeJoy, 1992). It is also possible that the males were not so concerned about unsafe driving (Brown & Copeman, 1975; DeJoy, 1992) and crashes (Barjonet, 1988) as females, although this would need further exploration. The finding that male scores on all the sub-scales of the Dangerous Thought Patterns Scale indicated attitudes that were more anti-authority, more impulsive, more invulnerable, more conforming to unsafe driving norms and more macho, provides some support for the possibility that they tended to be more “overconfident” than females on a variety of levels.

As well as revealing these significant gender differences, the study also highlighted a number of areas that were of concern with regard to both genders. The large numbers
of both males and females who reported driving or learning to drive without a licence was the first of these. With over half of all learner drivers and about a third of drivers beyond the learner stage reporting not having licences, entering the driving process unlicensed seemed to be normal for this group. This raises questions about what structures were inhibiting these young people from obtaining licences. As a group who were slightly more socially disadvantaged than average, it may be that the cost of a licence and a fear of failing the test were inhibitors. It is also possible that the restrictions involved in the G.D.L.S. discourage young people from gaining a licence, as there have been suggestions that these restrictions discourage young people from driving at all (Frith & Perkins, 1992). It is possible too, that the penalties for driving without a licence are an insufficient deterrent, or that policing levels are inadequate. The frequency with which the young people reported breaking the rules associated with holding restricted licences, particularly the rules about not carrying passengers and not driving after 10 pm, also highlights a seeming disregard for licensing regulations. The frequency of such violations suggests that these rules were simply not taken seriously by this group. The findings here are consistent with those reported by Frith and Perkins (1992) who discussed a 1990 survey of 392 young drivers carried out by the Land Transport Division of the New Zealand Ministry of Transport, in which 33% of the drivers on restricted licences claimed to break the no passenger restriction and 17% the night curfew, on at least a weekly basis. A more recent survey of young drivers attitudes towards G.D.L.S. found that 68% of those on restricted licences had broken at least one restriction: most commonly the restriction concerning passengers (Begg, Langley, Reeder, & Chalmers, 1995).

Many parents may also fail to enforce the restrictions. In informal discussions with parents of students who attended the original Star Driver programme, Kirkwood discovered that many parents did not know the conditions of the G.D.L.S., or had "practical" reasons for letting their children break them (personal communication).

The prevalence with which young people violate these restrictions, may well be at least partly due to insufficient policing. Begg et al.'s (1995) study cited above found that only 18% of those who broke licence restrictions were apprehended by the police, and
of those only half were penalised. Another survey of young people aged 15-25 years, carried out by the Taskgroup on Road Safety and Young Drivers, commissioned by the New Zealand Ministry of Youth Affairs, found that young people perceived licensing restrictions to not be enforced (Mason, 1992). When interviews were carried out with a sub-sample of the drivers in the current study, it was found that a number of young drivers on restricted licences who were carrying passengers or driving after 10 pm had been pulled over by the police, some of them several times. None of them had ever received the potential penalty for breaking these rules (extension of time on a restricted licence).

Although overall rates of drinking and driving were low, the rates of being the passenger of a drinking driver were higher. Somewhat different patterns for the males and the females emerged in this area. While males may be more likely to drink and drive (at least by some measures), females are by no means protected from the dangers of drinking and driving as they are at least as prone, if not more prone, than males to be the passenger of a drinking driver. From an intervention angle, it is therefore just as essential to target females as males when dealing with drinking and driving issues. The finding that the vast majority of the students had attitudes that were consistent with not drinking and driving, and yet that over half had been passengers of drinking drivers and a similar percentage felt it was possible they may be such a passenger in the next month, suggests that they may not have believed that they were able to avoid being driven by a drinking driver. This stresses the need for a self-efficacy and social skill component in intervention programmes. Nevertheless, it must be acknowledged that if they are being driven by drinking parents, it is unreasonable to expect that any form of education directed at teenagers alone will have the desired impact.

The prevalence of breaking both urban and rural speed limits was of some concern, particularly considering that the drivers in this sample were very young and inexperienced. It is also a somewhat discouraging finding in light of the introduction of speed cameras in New Zealand.
While seat belt wearing seemed to be habitual in the front seat, it did not seem to be so prevalent in the back: despite it being a legal requirement. As studies in the past have suggested that seat belt wearing rates may be under reported by up to 20% (see for example Streff & Wagenaar, 1989) the problem may be greater than indicated by this survey. It must be acknowledged however, that this may be partly due to the frequency with which seat belts are not available, making it difficult for the behaviour to become habitual. One New Zealand study of 41 car crashes involving 14 and 15-year-olds found that in only 56% of the crashes was a seat belt available to the occupant. In 78% of these cases the young person was wearing the belt (Begg, Langley, & Chalmers, 1992).

In conclusion, it is clear that education programmes and media campaigns need to consider both areas of difference and areas of common concern with regard to the driving of adolescent males and females. Females must not be neglected as targets for campaigns and programmes in the areas of common concern. It is also recommended that the risk young women face as passengers of drinking drivers is given increased consideration in intervention efforts aimed at drinking and driving.

As young men tend to begin driving earlier than young women, there is perhaps a greater urgency with regard to the timing of programmes aimed at adolescent males. There may also be a place for targeting the attitudes of young men, who appear to present a more risky profile in this regard than do young women. It is possible that these attitudes are the precursors of a tendency towards higher levels of risky driving behaviour in the future.
Chapter 12

INTERVENTION STUDY: RESULTS AND DISCUSSION

RESULTS

Sample Characteristics

In Table 11 below, the characteristics of the subjects who completed the
questionnaires at each stage of the intervention study can be seen.

Table 11
Sample Characteristics: Intervention Study

<table>
<thead>
<tr>
<th></th>
<th>Treatment pre-test &amp; follow up</th>
<th>Treatment pre-test only</th>
<th>Treatment pre-test &amp; post-test</th>
<th>Control pre-test &amp; follow-up</th>
<th>Control pre-test only</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n = 176$</td>
<td>$n = 181$</td>
<td>$n = 92$</td>
<td>$n = 146$</td>
<td>$n = 121$</td>
</tr>
<tr>
<td>Male</td>
<td>127 (74%)</td>
<td>142 (82%)</td>
<td>34 (39%)</td>
<td>69 (48%)</td>
<td>51 (46%)</td>
</tr>
<tr>
<td>Female</td>
<td>44 (26%)</td>
<td>31 (18%)</td>
<td>54 (61%)</td>
<td>74 (52%)</td>
<td>61 (54%)</td>
</tr>
<tr>
<td>Mean age</td>
<td>15.98</td>
<td>15.95</td>
<td>15.84</td>
<td>15.78</td>
<td>15.75</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pakeha</td>
<td>90 (52%)</td>
<td>96 (60%)</td>
<td>57 (67%)</td>
<td>90 (62%)</td>
<td>60 (56%)</td>
</tr>
<tr>
<td>Maori</td>
<td>15 (9%)</td>
<td>14 (9%)</td>
<td>3 (4%)</td>
<td>10 (7%)</td>
<td>5 (5%)</td>
</tr>
<tr>
<td>Pacific Island</td>
<td>29 (17%)</td>
<td>28 (17%)</td>
<td>9 (11%)</td>
<td>18 (12%)</td>
<td>18 (17%)</td>
</tr>
<tr>
<td>Other</td>
<td>39 (23%)</td>
<td>23 (14%)</td>
<td>16 (19%)</td>
<td>28 (19%)</td>
<td>24 (22%)</td>
</tr>
<tr>
<td>Mean no of S.C.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>passes</td>
<td>2.65</td>
<td>2.66</td>
<td>2.73</td>
<td>2.61</td>
<td>2.23</td>
</tr>
<tr>
<td>Social Welfare</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>home income</td>
<td>36 (21%)</td>
<td>25 (15%)</td>
<td>16 (19%)</td>
<td>19 (13%)</td>
<td>14 (13%)</td>
</tr>
</tbody>
</table>

Note: Missing data from some subjects means that the total numbers for each characteristic do not always add up to the total at the top of each column.
The demographic similarity of the treatment and control groups was checked by comparing the subjects on the key characteristics in the table above. None of the demographic characteristics were considered to be of significance except for gender differences in the treatment group due to the girls’ school being dropped from the study. It was decided to include gender as a variable on all analyses.

It is also essential in a study of this kind to check that the groups were equivalent by looking at the ecology and culture of the school (Linney, 1989) and the relevant events that may have occurred at the school (Killen & Robinson, 1988). This was done through a questionnaire filled out by the contact teacher at each school (see Appendix G). The safety cultures of the schools with regard to driving were considered roughly equivalent by this measure, and none of the schools reported a major crash or other relevant incident during the year of the study.

**Driving Status of Sample**

Table 12 shows the driving status of the sample.

<table>
<thead>
<tr>
<th></th>
<th>Pre-test n = 322</th>
<th>Post-test n = 92</th>
<th>Follow-up n = 322</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Treatment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non drivers</td>
<td>42</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>learner drivers</td>
<td>55</td>
<td>39</td>
<td>36</td>
</tr>
<tr>
<td>drivers</td>
<td>79</td>
<td>35</td>
<td>95</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non drivers</td>
<td>44</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>learner drivers</td>
<td>47</td>
<td>not applicable</td>
<td>40</td>
</tr>
<tr>
<td>drivers</td>
<td>55</td>
<td></td>
<td>79</td>
</tr>
</tbody>
</table>

As can be seen (and as would be expected) the number of drivers beyond the learning stage in each group increased over the course of the study. The apparent increase in the number of non-drivers in the treatment group between the pre-test and the follow-up was most likely due to students who started to learn to drive, and so classified
themselves as learners for the pre-test, but who were no longer involved in the learning process for the follow-up. Clearly their "training" had ceased prior to them obtaining a licence and/or gaining access to a vehicle.

**Data Analysis**

Multivariate analyses were initially performed to compare the responses to the pre-test with those in the post-test, and to compare the responses to the pre-test with those in the follow-up. Separate MANOVAs were performed for items that pertained to all subjects and drivers only. Analysis of variance was then performed on the individual items contained within each MANOVA, and for the single scale designed for non-drivers. A final MANOVA was performed that looked at any potential differences between the schools in the treatment group. As with the descriptive study, due to the number of tests being carried out, only the ones that yielded a significance level of $p < .01$ will be reported here.

Although a total of 92 subjects completed the pre-test and the post-test and 322 subjects completed the pre-test and the follow-up, the numbers available for each analysis varied. First, some of the items were only intended for special groups (e.g. drivers, non-drivers, drinkers) and so were not completed by the entire sample. Second, some subjects did not answer all the questions that may have pertained to them. Numbers for each comparison are given on Tables 13-18.

**Pre-test, post-test comparisons**

As only a sub-sample of the treatment group completed the post-test and none of the control group, no treatment/control comparison was possible for the two MANOVAs that compared the responses on the pre-test with those on the post-test. These MANOVAs looked at pre/post comparisons, male/female comparisons and gender/time interactions.

1. **All subject items**

The first MANOVA was on the three items relevant to all subjects who had completed the pre-test and the post-test. The items included were attitudes towards drinking and
driving, the intention to be a passenger of a drinking driver in the next month, and the total score for the knowledge section. There were no significant effects for time, gender, or a gender/time interaction.

The means and standard deviations for the items yielded by the subsequent univariate analyses can be seen in Table 13.

Table 13
Univariate Analyses Results for Post-Test: All Subjects Items.

<table>
<thead>
<tr>
<th></th>
<th>pre</th>
<th></th>
<th>post</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>male (n = 33)</td>
<td>female (n = 52)</td>
<td>male (n = 34)</td>
<td>female (n = 53)</td>
</tr>
<tr>
<td>Attitudes towards drinking and driving a</td>
<td>mean 1.48</td>
<td>1.35</td>
<td>1.59</td>
<td>1.3</td>
</tr>
<tr>
<td>Intention to be a passenger of a drinking driver b</td>
<td>mean 2.3</td>
<td>2.25</td>
<td>2.38</td>
<td>2.38</td>
</tr>
<tr>
<td>Knowledge Score c</td>
<td>mean 5.73</td>
<td>6.02</td>
<td>6.62</td>
<td>6.68</td>
</tr>
</tbody>
</table>

a Scale: 1-4. The lower the score the fewer drinks believed acceptable before driving.
b Scale: 1-3. The lower the score the greater the intention.
c Highest possible score was 10.

The ANOVAs showed one significant result. This was a significant time effect for the knowledge score only: $F(1, 168) = 8.55, p < .004$, with both genders improving in their knowledge between the two tests.

2. Driver only items

The second MANOVA was on the items relevant to the drivers who had completed the pre-test and the post-test. Three individual items were included: intention to drink and drive, the fastest speed driven around town and the fastest speed driven on the open road. Each of the five sub-scales on the Dangerous Thought Patterns Scale was also included. The only significant effect was for gender: $F(8, 88) = 3.5687, p < .001$.

Table 14 shows the means and standard deviations for the items.
Table 14

**Univariate Analyses Results for Post-Test: Driver Only Items**

<table>
<thead>
<tr>
<th></th>
<th>pre male n=20</th>
<th>female n=26</th>
<th>post male n=22</th>
<th>female n=31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention to drink and drive</td>
<td>mean 2.75</td>
<td>2.92</td>
<td>2.82</td>
<td>2.84</td>
</tr>
<tr>
<td></td>
<td>sd 0.55</td>
<td>0.27</td>
<td>0.39</td>
<td>0.52</td>
</tr>
<tr>
<td>Fastest speed-open road</td>
<td>mean 3.1</td>
<td>2.46</td>
<td>3.09</td>
<td>2.52</td>
</tr>
<tr>
<td></td>
<td>sd 1.07</td>
<td>0.95</td>
<td>1.02</td>
<td>0.89</td>
</tr>
<tr>
<td>Fastest speed-around town</td>
<td>mean 2.45</td>
<td>2.12</td>
<td>2.18</td>
<td>2.29</td>
</tr>
<tr>
<td></td>
<td>sd 1.00</td>
<td>0.86</td>
<td>0.91</td>
<td>0.86</td>
</tr>
<tr>
<td>D.T. Patterns</td>
<td>mean 3.56</td>
<td>3.81</td>
<td>3.73</td>
<td>3.91</td>
</tr>
<tr>
<td>Anti-authority</td>
<td>sd 0.45</td>
<td>0.53</td>
<td>0.54</td>
<td>0.48</td>
</tr>
<tr>
<td>Invulnerable</td>
<td>mean 3.31</td>
<td>3.64</td>
<td>3.41</td>
<td>3.84</td>
</tr>
<tr>
<td></td>
<td>sd 0.38</td>
<td>0.43</td>
<td>0.5</td>
<td>0.47</td>
</tr>
<tr>
<td>Impulsive</td>
<td>mean 3.31</td>
<td>3.57</td>
<td>3.46</td>
<td>3.83</td>
</tr>
<tr>
<td></td>
<td>sd 0.59</td>
<td>0.62</td>
<td>0.5</td>
<td>0.54</td>
</tr>
<tr>
<td>Conforming</td>
<td>mean 3.58</td>
<td>4.03</td>
<td>3.89</td>
<td>4.12</td>
</tr>
<tr>
<td></td>
<td>sd 0.66</td>
<td>0.58</td>
<td>0.75</td>
<td>0.52</td>
</tr>
<tr>
<td>Macho</td>
<td>mean 2.6</td>
<td>3.9</td>
<td>2.77</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td>SD 0.61</td>
<td>0.64</td>
<td>0.79</td>
<td>0.62</td>
</tr>
</tbody>
</table>

*aScale: 1-3. The lower the score the greater the intention
*bScale: 1 = 80 kms 2 = 100 kms 3 = 110 kms 4 = 120+ kms
*cScale: 1 = 50 kms 2 = 60 kms 3 = 70 kms 4 = 80+ kms
*dScale: 1-5. The lower the score the stronger the thought pattern

The ANOVAs revealed significant gender effects on five of the items. Males indicated significantly higher speeds that they were prepared to travel around town than the females, $F (1, 95) = 9.37, p < .003$. There were also significant gender differences for four of the five sub-scales on the Dangerous Thought Patterns Scale, with males indicating more dangerous thought patterns in every case. For the invulnerable scale, $F (1, 95) = 17.09, p < .0001$; for the impulsive scale, $F (1, 95) = 7.66, p < .007$; for the conforming scale, $F (1, 95) = 7.26, p < .008$ and for the macho scale, $F (1, 95) = 16.92, p < .0001$. There were no other significant effects.
**Pre-test, follow-up comparisons**

The MANOVAs that compared the pre-test with the follow-up analysed pre/follow-up, male/female and treatment/control differences.

1. **All subject items**

This MANOVA included the intention to be a passenger of a drinking driver in the next month, the frequency of having been the passenger of a drinking driver in the past, attitudes towards drinking and driving, the combined items on wearing a seat belt in the front and back, and the knowledge score. The MANOVA revealed a significant effect for time: $F(5, 509) = 31.4985, p < .0001$. There were no significant effects for any other comparisons. This finding indicates that the subjects' responses did change from the pre-test to the follow-up, but that both the treatment and control group changed equally. Table 15 shows the means and standard deviations for each item.

Table 15
**Univariate Analyses Results for Follow-Up: All Subjects Items**

<table>
<thead>
<tr>
<th></th>
<th>treatment</th>
<th></th>
<th></th>
<th>control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>male</td>
<td>female</td>
<td>male</td>
<td>female</td>
<td>male</td>
<td>female</td>
</tr>
<tr>
<td></td>
<td>n = 104</td>
<td>n = 40</td>
<td>n = 102</td>
<td>n = 35</td>
<td>n = 56</td>
<td>n = 55</td>
</tr>
<tr>
<td>Att. towards drink driving</td>
<td>mean</td>
<td></td>
<td>mean</td>
<td></td>
<td>mean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.37</td>
<td>1.35</td>
<td>1.29</td>
<td>1.23</td>
<td>1.39</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>0.62</td>
<td>0.58</td>
<td>0.64</td>
<td>0.6</td>
<td>0.73</td>
<td>0.6</td>
</tr>
<tr>
<td>Intention to be pass. of drinking driver</td>
<td>mean</td>
<td></td>
<td>mean</td>
<td></td>
<td>mean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.33</td>
<td>2.28</td>
<td>2.48</td>
<td>2.51</td>
<td>2.43</td>
<td>2.31</td>
</tr>
<tr>
<td></td>
<td>0.72</td>
<td>0.82</td>
<td>0.69</td>
<td>0.61</td>
<td>0.74</td>
<td>0.74</td>
</tr>
<tr>
<td>Freq. of being passenger</td>
<td>mean</td>
<td></td>
<td>mean</td>
<td></td>
<td>mean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.55</td>
<td>2.68</td>
<td>1.49</td>
<td>1.71</td>
<td>2.46</td>
<td>2.62</td>
</tr>
<tr>
<td></td>
<td>0.97</td>
<td>0.92</td>
<td>0.79</td>
<td>0.86</td>
<td>1.08</td>
<td>0.97</td>
</tr>
<tr>
<td>Seat belt wearing</td>
<td>mean</td>
<td></td>
<td>mean</td>
<td></td>
<td>mean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.63</td>
<td>1.69</td>
<td>1.49</td>
<td>1.56</td>
<td>1.46</td>
<td>1.54</td>
</tr>
<tr>
<td></td>
<td>0.69</td>
<td>0.65</td>
<td>0.66</td>
<td>0.67</td>
<td>0.58</td>
<td>0.71</td>
</tr>
<tr>
<td>Knowledge score</td>
<td>mean</td>
<td></td>
<td>mean</td>
<td></td>
<td>mean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.76</td>
<td>5.78</td>
<td>6.25</td>
<td>6.31</td>
<td>5.41</td>
<td>5.31</td>
</tr>
<tr>
<td></td>
<td>1.72</td>
<td>1.64</td>
<td>1.46</td>
<td>1.69</td>
<td>2.05</td>
<td>1.56</td>
</tr>
</tbody>
</table>

*aScale: 1-4. The lower the score the fewer drinks believed acceptable before driving.

*bScale: 1-3. The lower the score the greater the intention

*cScale: 1-4. The lower the score the lesser the frequency

*dScale: 1-4. The lower the score the greater the frequency

*eHighest possible score was 10.
These ANOVAs revealed significant effects in some items for time, as expected from the MANOVA result, and also for group. The subjects showed a significant improvement in knowledge over time: $F(1, 513) = 12.56, p < .0004$. The frequency of being the passenger of a drinking driver appeared to be highly significant over time, with the frequency declining markedly: $F(1, 513) = 122.55, p < .0001$, however this is probably an artefact of the question, rather than a true product of time, as the question in the pre-test asked “How many times have you been the passenger of someone who has had a few drinks?” while the question in the follow-up asked the subjects “In the last 3 months, how many times have you been the passenger of a drinking driver?”.

Group was significant for the knowledge score, $F(1, 513) = 6.06, p < .01$, with the treatment group gaining higher knowledge scores on both the pre-test and the follow-up.

2. Driver only items

The MANOVA on the driver only items in the follow-up revealed only a significant gender effect: $F(15, 188) = 2.8421, p < .0005$.

The means and standard deviations from the univariate analyses can be seen in Table 16 on the following page.

The ANOVAs revealed a number of significant gender effects. All the gender differences showed the males to have more risky attitudes or to engage in more unsafe driving practices than the females. Males reported higher speeds than females around town: $F(1, 202) = 10.69, p < .001$. Males were also more likely than females to engage in the behaviours on the Unsafe Driving Behaviours Scale: $F(1, 202) = 10.69, p < .001$. Males scored significantly more highly than females on four out of the five sub-scales on the Dangerous Thought Patterns Scale: Invulnerable: $F(1, 202) = 6.31, p < .01$; Impulsive: $F(1, 202) = 7.24, p < .008$; Conforming: $F(1, 202) = 12.90, p < .0004$; and Macho: $F(1, 202) = 34.15, p < .0001$. 

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### Table 16

**Univariate Analyses Results for Follow-up: Driver Only Items**

<table>
<thead>
<tr>
<th></th>
<th>treatment</th>
<th>control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pre male</td>
<td>female</td>
</tr>
<tr>
<td></td>
<td>n = 40</td>
<td>n = 9</td>
</tr>
<tr>
<td>Intention to drink and drive</td>
<td>mean 2.83</td>
<td>2.89</td>
</tr>
<tr>
<td></td>
<td>sd 0.38</td>
<td>0.33</td>
</tr>
<tr>
<td>Freq. of drinking and driving</td>
<td>mean 1.3</td>
<td>1.22</td>
</tr>
<tr>
<td></td>
<td>sd 0.56</td>
<td>0.44</td>
</tr>
<tr>
<td>Freq. of marijuana and driving</td>
<td>mean 1.35</td>
<td>1.22</td>
</tr>
<tr>
<td></td>
<td>sd 0.89</td>
<td>0.44</td>
</tr>
<tr>
<td>Fastest speed-open road</td>
<td>mean 2.98</td>
<td>2.67</td>
</tr>
<tr>
<td></td>
<td>sd 1.03</td>
<td>1.22</td>
</tr>
<tr>
<td>Fastest speed-around town</td>
<td>mean 2.55</td>
<td>2.22</td>
</tr>
<tr>
<td></td>
<td>sd 0.9</td>
<td>0.83</td>
</tr>
<tr>
<td>Unsafe Driving Behaviours Scale</td>
<td>mean 1.84</td>
<td>1.56</td>
</tr>
<tr>
<td></td>
<td>sd 0.56</td>
<td>0.54</td>
</tr>
<tr>
<td>D.T. Patterns</td>
<td>mean 3.54</td>
<td>3.68</td>
</tr>
<tr>
<td>Anti-authority</td>
<td>sd 0.48</td>
<td>0.53</td>
</tr>
<tr>
<td>Invulnerable</td>
<td>mean 3.29</td>
<td>3.65</td>
</tr>
<tr>
<td></td>
<td>sd 0.44</td>
<td>0.45</td>
</tr>
<tr>
<td>Impulsive</td>
<td>mean 3.28</td>
<td>3.38</td>
</tr>
<tr>
<td></td>
<td>sd 0.51</td>
<td>0.54</td>
</tr>
<tr>
<td>Conforming</td>
<td>mean 3.55</td>
<td>4.17</td>
</tr>
<tr>
<td></td>
<td>sd 0.77</td>
<td>0.52</td>
</tr>
<tr>
<td>Macho</td>
<td>mean 2.64</td>
<td>3.58</td>
</tr>
<tr>
<td></td>
<td>sd 0.76</td>
<td>0.7</td>
</tr>
<tr>
<td>Emotional Driving Scale</td>
<td>mean 4.1</td>
<td>4.09</td>
</tr>
<tr>
<td></td>
<td>sd 0.67</td>
<td>0.78</td>
</tr>
<tr>
<td>Restrictions: Alcohol</td>
<td>mean 1.13</td>
<td>1.11</td>
</tr>
<tr>
<td></td>
<td>sd 0.33</td>
<td>0.33</td>
</tr>
<tr>
<td>Passengers</td>
<td>mean 2.23</td>
<td>2.22</td>
</tr>
<tr>
<td></td>
<td>sd 0.97</td>
<td>0.97</td>
</tr>
<tr>
<td>Night Driving</td>
<td>mean 1.75</td>
<td>1.67</td>
</tr>
<tr>
<td></td>
<td>sd 0.98</td>
<td>0.87</td>
</tr>
</tbody>
</table>

*aScale: 1-3. The lower the score the greater the intention
*bScale: 1-4. The lower the score the lesser the frequency
*cScale: 1 = 80 kms  2 = 100 kms  3 = 110 kms  4 = 120+ kms
*dScale: 1 = 50 kms  2 = 60 kms  3 = 70 kms  4 = 80+ kms
*eScale: 1-6. The lower the score the lesser amount of unsafe driving
*fScale: 1-5. The lower the score the stronger the thought pattern
*gScale: 1-5. The lower the score the higher amount of emotional driving
*hScale: 1-4. The lower the score the lesser the frequency
3. Non-drivers items

An ANOVA was performed on the single non-driver scale concerning how acceptable the subjects thought a number of unsafe driving behaviours were (the behaviours were identical to the behaviours on the drivers version of the Unsafe Driving Behaviours Scale). The means and standard deviations for this ANOVA can be seen in Table 17 below:

Table 17
Univariate Analysis Results for Follow-Up: Non-Driver Item

<table>
<thead>
<tr>
<th></th>
<th>treatment</th>
<th></th>
<th>control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pre male</td>
<td>female</td>
<td>post male</td>
<td>female</td>
</tr>
<tr>
<td>n</td>
<td>69</td>
<td>28</td>
<td>61</td>
<td>29</td>
</tr>
<tr>
<td>Acceptability*</td>
<td>mean</td>
<td>2.23</td>
<td>1.93</td>
<td>2.44</td>
</tr>
<tr>
<td></td>
<td>sd</td>
<td>0.77</td>
<td>0.52</td>
<td>1.07</td>
</tr>
</tbody>
</table>

*Scale: 1-6. The lower the score the less acceptable the behaviour is considered.

Females were significantly more likely to rate the behaviours as less acceptable than males: $F(1, 322) = 9.22, p < .003$. This is keeping with the significant gender effect found for the drivers' version of the item.

4. Comparisons between the treatment schools

A final MANOVA was performed to see if there were any differences in how the subjects responded to the pre-test and the follow-up between the schools in the treatment group. Only males were looked at, because of the boys' school. The MANOVA revealed no significant differences between the schools.

Summary of Results

These results would appear to show that the programme had no impact on the way the subjects responded to the post-test or the follow-up. The subjects did change over time in how they responded to a small number of items, but these changes appeared to be independent of the programme as they occurred in both the treatment and control groups. The change in the sub-sample of the treatment group in knowledge in the post-
test is unlikely to have resulted from the programme, because both the treatment and control groups showed equivalent improvements in knowledge in the follow-up. There were a number of gender differences revealed, however the lack of gender/group/time interaction effects indicated that the programme did not have a different impact on the male or female students. The lack of differences between the schools within the treatment group would appear to indicate that any variations in how the programme was taught also did not impact significantly on the subjects’ responses.

DISCUSSION

There are several reasons why this intervention may have failed to show a positive effect from the driver education programme. For the purposes of this discussion these will be divided into the following areas:

1. Research design and implementation
2. Programme implementation
3. The content of the programme
4. The context in which the programme was delivered
5. General limitations of health and driver education programmes as intervention strategies

Research design and implementation

Given the limitations imposed by a “real world” setting, the basic research design for the current study was adequate, and is unlikely in itself to have obscured the results. The control and treatment groups were not randomly formed. However they were carefully chosen for their demographic similarity. In addition, checks were made (in the form of questionnaires to the contact teacher at each school) that there were no significant differences in the safety cultures of the participating schools. Neither were there any reported events at any of the schools (such as a fatal crash, or a traffic safety promotion campaign) that may have affected the attitudes of the students.

There were, however, some problems with the final numbers available for comparison across some categories. Although the initial number of subjects was large, 626 in total,
attrition reduced this number to 322 after the follow-up. While this number was probably sufficient to adequately measure the questions pertaining to all subjects, the number of female drivers in the treatment group who answered all the relevant driver only questions for both the pre-test and the follow-up was only 9. This number may not have been large enough to show up any small differences between the females in the treatment and control groups. However, as there were no differences between the females in the control group and those in the treatment group in general (i.e. the drivers and non-drivers combined) it is unlikely that a larger number of female drivers in the treatment group would have produced a different result. Nevertheless, this cannot be completely ruled out.

The reduced numbers available for the final analysis were primarily due to two factors: overall attrition and missing data. As previously discussed, the high degree of attrition was mainly due to students being absent on the day of the testing, or having left school in the period between the tests. These problems are particularly likely in a sample such as this that is biased towards less academic students. There were also complications with the coding procedures. To insure confidentiality, it was necessary that the subjects be coded in a way that could not enable the results to be traced to individuals, so they were instructed to use the last four digits of a relative's phone number. The second and third times the subjects completed the questionnaire there were problems with forgetting the relative, and/or the number. This was despite slips of paper with this information on being kept for subjects who thought they might forget. Subjects who could not be matched therefore contributed to the attrition, even when they claimed to have completed all the necessary questionnaires.

Missing data further contributed to this problem. This may well have been partly due to the length of the questionnaire. Ethical boundaries may also have compromised gathering complete data from the subjects. The subjects' information sheet (see Appendix A) clearly informed them that they did not have to answer all questions. When the first questionnaires were collected, it was considered by the administrator (this author) to therefore be "unethical" to check that the questionnaires were complete. For the second questionnaire, however, the administrator did check that they
were complete and gaps were pointed out to the subjects, who for the most part were quite willing to fill in the missing questions. As pointed out by Gensheimer, Ayers, & Roosa (1993), the boundary between "coaxing and urging" and "coercion" is narrow.

For complete data in a school setting where there may be 20-50 subjects filling in the questionnaire at once, it is likely that at least some "coaxing and urging" will be needed. The need for this was significantly less in the current study when the following "ideal" conditions were met: the teachers were highly committed to the programme and were the ones teaching the programme (impossible of course in a control school); the information session in which the students were told about the research and were able to ask questions was leisurely and involved only a single class group; the questionnaire was delivered to no more than 20 students in a session; the delivery was during a normal "sit down" class; it was in the morning; and the teacher was present.

It is possible that there were some problems with construct validity. The programme involved presentations and exercises that were frequently designed to change driving attitudes and behaviours, not through direct persuasion, but through helping the students to recognise the dangers in their thought patterns and behaviours. The questionnaire measured the hoped for changes. It would seem that these changes did not occur. There may however, have been other changes in the subjects' attitudes, that were not measured by the questionnaires. In this sense the constructs in the questionnaire may not have ideally matched those in the programme.

Previous studies on health education programmes have occasionally reported that null results or even increased reported risk behaviour amongst the treatment group may have been due to more openness and honesty in the post-test on the part of the group who received an intervention (Farrow, 1989; Goodstadt, 1980). This cannot be ruled out as a possibility in the present study, particularly as the focus of the much of the programme was on self-analysis of behaviours and beliefs.

*Programme implementation*

Attempts were made to standardise the delivery of the programme, by holding a training day for the teachers involved and by giving each teacher written instructions.
for every lesson and the materials that were to be used. As previously mentioned, in a questionnaire concerning delivery of the programme (see Appendix H), the teachers’ estimates of how well they followed the programme ranged from 70-90%. They mentioned a number of problems they had that interfered with the delivery of the programme, including problems with motivation for students who were not drivers, their own absence from class at times, and “urgent” school activities that occasionally took priority over the set lesson. The programme also allowed for some individual flexibility. When a programme is taught by classroom teachers there will always be irregularities in its delivery. It is certainly possible that these were such to compromise the effectiveness of the programme. However, a programme that is designed for widespread use (such as the current one) needs to be able to survive these, and so a “purer” test of its effectiveness, if it could be arranged, would have limited value (see Bukoski, 1991).

A further problem of implementation concerns the strength of the treatment: it may have been insufficient in amount, frequency and/or duration, while still being conceptually sound (Chen, 1990). Most previous classroom driver education programmes have focussed on drinking and driving alone (see Chapter 7 for a discussion of this), and so can potentially deal thoroughly with this one issue. The current programme however looked at a wide range of driving and passenger attitudes and behaviours. It is possible that each issue was therefore too diluted to have a sufficient impact on the students.

The content of the programme
While the programme did have a strong element of skills training, which is probably the most effective form of health education, as discussed in Chapter 7 (Abraham & Sheeran, 1993; Flora & Thoresen, 1989; Hansen, 1992; Moskowitz, 1989; Twentyman & Zimering, 1979), it is possible that other aspects of the approach and content of the programme were not ideal.

The unemotional, low fear approach of the programme may have reduced its effectiveness. The current opinion on the use of fear as a motivator for change is
mixed, as previously discussed. While there are advocates of moderate to low fear approaches (e.g. Eiser & Pligt, 1988; Kinder, Pape, & Walfish, 1980) there are also advocates of high fear approaches (e.g. Griffeth & Rogers, 1976; Stainback & Rogers, 1983). As the safe driving campaign currently showing on New Zealand television uses extremely graphic, high fear material it may be that anything less is simply not powerful enough to reach young people. The discussion in Chapter 8 on fear tended to suggest that high fear methods are probably more effective than those based on reason, as long as the young people are given strategies that they believe would be effective in avoiding the negative outcome.

Goodstadt (1980) in a review of drug abuse prevention programmes pointed out some potential pitfalls in programmes based on an unemotional, and liberal approach. He cited a number of such programmes that appeared to increase self-reported drug use. Two of the suggestions he made were:

1. It is possible that “the facts”, in the absence of highly emotional content, as presented by more unbiased programmes may result in removing unjustified anxiety and therefore increasing experimentation with drugs.
2. When programmes are examining decision making and values this may have tended to shift the focus to individual responsibility in using drugs, which may have led to a more liberal attitude towards drugs and drug use.

The current programme certainly used both of these approaches, it avoided highly emotional content when presenting “the facts” and it encouraged a sense of individual choice and responsibility. Is it therefore possible that it paved the way for increased experimentation with risky driving? Goodstadt does go on to say that it may be that while such drug programmes destabilise drug use, they may still reduce extreme drug use. If the current programme operated in an analogous fashion, it is possible that it reduced extreme risky driving. Because there was so little of this type of driving reported in the pre-test, it is possible that an effect like this would be obscured.

It is also possible that there was insufficient clarity in the programme about what safe versus unsafe driving and passenger behaviours were and how to reduce them. As
noted by Harkness (1988) in a survey of New Zealand public health and safety campaigns, the need to define the target behaviour and provide the audience with a reasonable and practical alternative is paramount. On similar lines, the health belief (Kirscht, 1988) and protection motivation theories (Wurtele, & Maddux, 1987), both note that the subject of an intervention must believe that the “safe” behaviour presented would be greatly effective in reducing the risk of injury. A belief in the effectiveness of the “safe” behaviour along with a belief that the subject can perform the behaviour is essential for a sense of self-efficacy with regard to a behaviour (Bandura, 1982). The emphasis in the current programme on crashes as having many causes may have potentially decreased the subjects’ feeling of empowerment: leaving them wondering whether the small part they had to play in a potential crash scenario would be sufficient to change its outcome. The programme also tended not to direct the subjects to a specific alternative, rather it encouraged them to explore a range of options. Possibly this approach was insufficiently directive to be effective.

Finally, this programme (as is the current trend) emphasised peer resistance skills as if these are the cause of, in particular, drinking and driving. However as previously discussed there are a mounting number of studies which suggest that direct pressure is not a major cause of drinking or drinking and driving (e.g. Beck & Bargman, 1993, Fontane & Layne, 1979; Vegaga & Klitzner, 1989). As well as this therefore possibly being redundant material, it may mean that this programme was not acknowledging the “real” function of risky driving behaviour. Without this, it may not be possible to shift the behaviour (Hurrelmann, 1990). It needs to be noted here that earlier versions of the programme did incorporate material on other ways of thrill seeking (assuming that thrill seeking is a cause of unsafe driving: a possibility certainly supported by the interviews outlined in Chapter 6). This material was not included in the version of the programme used for the current study.

**The school context in which the programme was delivered**

The literature on health education has suggested two general drawbacks associated with the school context. One of these is that the school context is not the ideal place to reach young people who are at the highest risk for various problematic behaviours. The
other is that the school environment is not conducive to encouraging adolescents to change their behaviour.

Vingilis and Adlaf (1990) suggested that in primary prevention strategies “much time is spent preaching to the converted and the high risk youth are not reached” (p. 151). Forman and Linney (1991) similarly noted that most coping skills programmes based on reducing drug use and smoking have had limited success and that one of the reasons for this is that many of the adolescents at risk are frequently absent from, or have dropped out of school. The interview study that was reported in part one of this thesis clearly demonstrated this phenomena as only 6 out of an original 16 participants who were initially identified as at high risk for unsafe driving were at school on the day of the second round of interviews. Whether this happened more generally in the study is unknown. On a statistical level this problem may lead to the ceiling effect, where the intervention fails to show an change because the students who complete both the pre-test and the post-test (or indeed any test at all) are those whose behaviours and attitudes are consistent with safety anyway. It is possible that the programme if run with a group who had been identified as at high risk for unsafe driving would be demonstrated to be more effective.

Schools undoubtedly represent adult authority to adolescents (Forman & Linney, 1991). A programme such as the current one that was attempting to empower students and encourage them to take personal responsibility for their behaviours is therefore rather a paradox in the school environment, as are most health education programmes. Peer presentation methods may help to avoid this paradox, but such methods take an enormous amount of time and effort to organise, time and effort that is unlikely to be allocated to areas of learning for which schools are not essentially accountable.

Schools are also constrained by bells, classrooms and the expectations students have of what is a “real class”. To break through all this and successfully reach students about subjects that are essentially personal and emotional is not easy. It is of interest to note here that the original Star Driver programme on which the current programme was
based, gradually shifted out of the classroom environment so that even the "classroom component" was taught by driving instructors outside of school hours.

**General limitations of health and driver education programmes as intervention strategies**

"The bulk of the evidence we have on educational programmes of every sort, from advertising, propaganda, political campaigns, psychotherapy, and physical and social rehabilitation is that they convert no one. They are successful only in giving people a nudge in the direction they were already predisposed to move." (Schlesinger, 1972, p. 262)

Health education in school classrooms is essentially about changing individuals and yet health behaviour is clearly social, both in how it originates and in how it is maintained. It is rather a strange idea that a few hours in the classroom could ever hope to compete with what young people are exposed to daily in their families, on their televisions and with their peers: attitudes and behaviours that have become deeply anchored in the individual's habits and motivations (see Chapter 4 for a discussion of the social inputs to driving).

This does not mean that school-based health education is unimportant. However, it's effectiveness may be very limited if it is not part of a larger campaign to alter the target behaviours it is aimed at. As Barnes and Flanigan noted in 1958: "But just as no school may go far ahead of those standards set by the society which creates it, so may no programme of safety education run far ahead of the safety practices of the complex, sustaining cultural milieu." (Barnes & Flanigan, 1958, p. 14). More recently Mann et al. (1986) in a review of school programmes designed to prevent drinking and driving stated: "Countermeasures which focus on the person as the "site" for the intervention may be limited in effectiveness because they ignore important environmental influences. Perhaps the long-term approach which has the most promise of reducing the drinking-driving problem is one which recognises that the best way to change this complex behaviour is to implement integrated, complementary countermeasures aimed at both person and environment factors... Such perspectives might suggest that school-based
alcohol and road safety programmes are likely to be most successful when they form a part of, and are integrated with, a set of countermeasures and societal values which consistently work to decrease drinking and driving." (p. 335). Numerous other researchers in all areas of health and safety education have also pointed out that such programmes cannot be expected to be successful without backup from other social institutions (e.g. Forman & Linney, 1991; Lohrman & Fors, 1986; O'Connor & Saunders, 1992).

In a discussion on the problems faced by alcohol prevention programmes, O'Connor and Saunders (1992) commented: "As may be appreciated in terms of alcohol, the plethora of alcohol promotions, the ready availability, low cost, and extensive modelling of use by adults, ensures that attempts to educate young people against drinking are inevitably doomed." (p. 177). Smoking prevention programmes on the other hand, they said, have a much greater chance of success because of the increasing pressure not to smoke in a wide variety of social settings. There has been little work examining the extent to which safe driving is being promoted in New Zealand society. Certainly there is a constant stream of media campaigns (usually aimed at young people), and there have been moves to increase the detection of drinking and driving (through random breath testing) and speeding (through speed cameras). Recent legislation has also dramatically lowered the legal blood alcohol limit for drivers under the age of 20. It seems likely that attitudes towards drinking and driving are much more consistent with safety than previously. However, this may not be so for other unsafe driving behaviours.

Driving behaviour is social not just in the sense that it, in common with other health and safety behaviours, is learnt primarily by modelling significant others, but it also takes place in a social context. That is, driving is essentially an interactive process (Risser, 1990; Zaidel, 1990, 1992). Zaidel (1990) suggested that there may need to be a critical level of the driving public who have to be persuaded before a safety innovation is adopted. If we accept the concept of a "critical level" (Zaidel suggested it is in the region of 20-30%), then we must also accept the need for programmes that promote safety strategies to be run on a large scale. It is not difficult to imagine how
the newly educated driver, initially attempting to be conscientious is quickly corrupted by the poor safety habits of other drivers on the road.

In this sense, the failure of the current driver education programme to demonstrate positive changes seems unsurprising (although some impact on attitudes could still have been possible). It would certainly be unwise to conclude from evaluations of this and other "unsuccessful" programmes that driver education should be abandoned. Instead, it could be argued that such programmes should be retained and refined in conjunction with other safety campaigns.

The comprehensive safety campaigns run in Japan (Preston, 1990) and Harstad, Norway (Ytterstad & Wasmuth, 1995), have already been discussed as being of clear merit in Chapter 6. There have also been attempts in the drug and alcohol abuse prevention areas to run well-designed classroom-based programmes in conjunction with media campaigns and various community-based effects. One such programme, the Midwestern Prevention Project (Penz et al., 1989) included 22,500 students in the first 2 years and was shown to have positive results in reducing cigarette, alcohol, and marijuana use at a 1-year follow up. Another programme, Project Northland (Wagenaar & Perry, 1994), involved 3 years of school-based skills training curricular designed to prevent problem drinking in conjunction with parental involvement, and community-wide policy changes around the use of alcohol, strategies mostly aimed at reducing the availability of alcohol to minors. Results of the outcome evaluation have yet to be published.

It is also possible for health education programmes themselves to become part of a wider move towards health and safety. This is perhaps the ideal to which all such programmes should aim in a climate that may not always be compatible with their goals. One exemplary programme of this type, aimed at a number of health and safety issues is the Adolescent Social Action Programme, that operates in New Mexico, and was evaluated by Wallerstein and Sanchez-Merki (1994). The programme based on the work of Paulo Freire, aims not only to reduce the adolescents' involvement in problem areas such as drug and alcohol abuse, interpersonal violence, teenage
pregnancy and H.I.V. infection, but also to encourage the students to work for social change to reduce these problems for the entire community. Interviews with 20 students who participated in the programme indicated that they viewed it very positively, they seemed to develop an orientation of caring for others and a stronger sense of efficacy that it was possible for them to care for others.

This kind of approach could be readily translated to the driver education area, where it would be very possible to get students designing traffic safety campaigns (perhaps aimed at young children), investigating and making submissions concerning traffic laws, and working up assemblies and performances. It should also be possible for the students to work with the traffic safety coordinator of local councils in designing interventions aimed at their local communities.

Conclusions
The various problems associated with the implementation and evaluation of this programme are common problems faced by many programmes for driving safety. Almost all programmes too, unless they are in the unusually fortunate position of being part of a comprehensive plan to increase traffic safety, are run within a context that is in some conflict with their goals. Nevertheless, it is possible for driver education programmes to show some positive impact on attitudes and behaviours, as shown by the studies discussed in Chapter 7. The disappointing result found in the current study, is therefore likely to at least be partly due to the content and delivery of this particular programme. In particular it is probable that, in the 10 lesson context, its low fear, unemotional approach, and its process orientation, which emphasised teaching students how to think, rather than what to think, were not forceful and clear enough to lead to any significant changes in their attitudes and behaviour.
GENERAL CONCLUSIONS
AND RECOMMENDATIONS
FOR FURTHER RESEARCH
GENERAL CONCLUSIONS AND RECOMMENDATIONS
FOR FURTHER RESEARCH

The two major questions addressed in this thesis were: “Why do young people have such high rates of road injury?” and “What can be done to reduce these rates?”. What remains to be done is to draw these questions together and to examine the basis of interventions aimed at reducing young people’s road injuries in light of what is known about the causes of these injuries. Unfortunately, many interventions have been designed without a full understanding of the behaviour they are aiming to modify. This has led to anomalies such as an emphasis on peer resistance skills in education programmes despite little evidence that young people are directly pressured to drive unsafely.

One of the great difficulties in this area is that the causes of young people’s road crashes cannot be readily quantified. In Chapter 1 a number of studies were discussed that attempted to separate out the contribution of inexperience and exposure from an “age related” factor. However, in reality, a single driving choice made by a young person may involve all three of these interacting with, and increasing the power of each other. So even the inexperience of a young driver functions differently from that of an older driver, because it operates in a different psychological and social context.

Nevertheless, while quantifying the factors involved may be an exercise that is ultimately doomed, it is essential to find useful labels for these factors in order to design and assess interventions. The triad of factors put forward in Chapter 1, was exposure, inexperience and “risk taking”. These were focused on as they appeared to be the most common factors referred to in previous research. A somewhat different triad is proposed here: inexperience, the attachment of young men to driving itself and the social context in which young people operate. These labels are used not just to reflect “a truth” about young people’s tendency to be injured on the roads, but also because they may help clarify the interventions that are appropriate. Each factor is
discussed in turn, along with the intervention implications that arise from it, and the further research that is recommended. While some of the comments made may be applicable internationally, this section is written primarily with the New Zealand driving context in mind.

1. A primary contribution to young driver's crashes is likely to be inexperience. Driving is a highly complex task, and requires not only great skill in being able to control a vehicle, but also instant judgements about the behaviour of other road users. The inexperience of young drivers would suggest both that they need training in all aspects of the driving task and that they need to be sheltered, if possible, from some of the more difficult tasks of driving while they are still novices. The training of young drivers is something that is rarely recommended in the academic literature. Unfortunately, studies which have shown that readily available driving training in schools increases the number of injuries amongst participants, by getting them licences sooner, appear to have led to a general discrediting of driver training. This discrediting is quite inappropriate however. There is a great need for further research into optimal methods of driver training and into the best ways of institutionalising these methods.

Making some "ideal" form of professional driver training compulsory in order to become fully licensed (although probably not available through the schools, because of the early licensing problem) also needs to be considered. However, this must be balanced against the extent to which it deters young people from gaining licences, and so simply driving without them. More police resources may help with this latter problem, should it arise.

The Graduated Driver Licensing System would appear an excellent means of sheltering young novice drivers from some of the more difficult tasks of driving: driving with passengers, driving at night, and driving after drinking. The evidence discussed in this thesis however, suggested that it is not functioning at optimum effectiveness, with many young drivers disregarding the restrictions it entails. This is probably largely due to insufficient penalties and policing. The penalties are currently under review by the
Land Transport Safety Authority. With stronger penalties available, the police may be more inclined to impose them on young drivers who are in defiance of the restrictions.

2. The second factor is the apparent attachment of young men (there is no evidence that this is also true of young women) to driving itself. This attachment seems to manifest itself by young men tending to drive in such a way as to maximise their performance. That is they may speed, because driving is essentially about getting somewhere as fast as possible without having a crash. They may follow closely because then they are ready to pass quickly if an opportunity arises. The result of this kind of behaviour is a consistently lower margin for error, which is why it has been called “risk taking”.

“Attachment to driving” was underlying much of the material discussed in Chapters 4 and 5 of this thesis. While this may appear to be the factor over which young drivers have the most control, the origins of this phenomena appear to lie both in the individual and in the social context. From an individualistic perspective, it would seem that young males tend to feel personally immune from the risks they engage in when driving. This feeling of personal immunity not only functions to change their perception of risk, but may also function to increase the feeling of empowerment they receive when successfully negotiating risky manoeuvres.

However the reason why young males may feel empowered by this kind of driving is probably largely due to the messages about risk, driving skill and masculinity that they have been brought up with and that continue to surround them. They may also reinforce in each other, even when they were strangers on the same road, the appropriateness of driving with small margins for error, with displays of “skill” being a common part of the young male’s driving experience.

Further research is needed into this complex phenomena, which, as was argued in Chapter 2 has been obscured by the label “risk taking”. Interventions that target this factor could operate on a variety of levels. As was argued in Chapter 4, it would be desirable to design education programmes and media campaigns around common
“errors” in young drivers’ perception of risks, having researched what these are in the target population. It must also be recognised that interventions need to be wide reaching and may not work unless they impact on a substantial proportion of the whole “subculture” of adolescent drivers. The messages about risk, driving skill and masculinity that abound on our televisions and billboards, as well as in the stories and conversations we expose young people to in a huge variety of social settings need to be monitored and preferably modified. While this would seem a daunting task, the biggest impact on “the young driver problem” would almost certainly be made from a shifting of the entire culture towards a greater valuing of caution and safety.

3. The social context in which young people operate makes up the third factor. This is not the wider culture context, described above, but rather the practical considerations the young driver is faced with. Young people may drive and be passengers in conditions that are not ideal because they see little alternative. This is particularly likely to be true in relation to alcohol, where young people drink and drive because they drive to a party and so expect, and are expected, to drive home.

Interventions aimed at these practical aspects of the social context in which adolescents drive, have received little attention in the research literature. However, the evidence in this thesis has suggested that young people frequently drive, and are passengers in conditions they know are risky, because they perceive they have no choice. Drinking and driving, and being the passenger of a drinking driver could certainly be substantially reduced if other methods of transport were more readily available, such as lifts from parents, public transport or taxis at a reduced fare. Drinking itself could also be reduced in a number of ways if alcohol was less readily available and its consumption more rigorously supervised.

The young female driver has remained somewhat elusive throughout this thesis. It has frequently been difficult to determine the extent to which young women are prone to the same pressures and tendencies as young men. It is problematic to argue that young
women are “safer” drivers than young men, when they appear to drive so much less. Nevertheless, there is quite considerable observational and survey evidence, including that found in the empirical work for this thesis that young women do drive more safely than young men. With changing gender roles however, this is undoubtedly something that needs to be frequently monitored.

Female teenagers are at high risk as passengers. Passenger behaviour and how this interacts with driver behaviour does not appear to have been extensively studied. The ways in which passengers can function to increase crash risk need to be explored, particularly given the frequency with which young drivers on restricted licences break the passenger restriction. There are also few interventions aimed at discouraging young people from being passengers of unsafe drivers. This is not an area that is covered by legislation, and is very rarely the target of media campaigns. Some education encouraging avoiding being the passenger of a drinking driver probably takes place at many secondary schools within anti-alcohol abuse programmes. Nevertheless, the risks of being a passenger under unsafe conditions could well be further highlighted to young people.

While it is indeed essential that there be further research into “the young driver problem” and intervention strategies that specifically target this group, much can also be done by targeting children and teenagers throughout their developing years. This has already been argued in Chapter 7. Children who are taught to be safety conscious, not only around motor vehicles, but also in a more general sense, are much more likely to be safe drivers. Adults also are more likely to improve their safety habits when living in a cultural environment that encourages physical caution.

In summary, if the young driver is a highway warrior then this is a collective problem and needs collective solutions. At all levels of society, the shift must be made from the “ultimate” driving experience, to the “safest” driving experience. In addition, when young people do want to choose safety, there must be the right practical support for them to be able to make this choice.
## APPENDICES

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</thead>
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<td>Consent to participate in the programme evaluation</td>
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<td>Questionnaire for teachers of the programme</td>
</tr>
</tbody>
</table>
Appendix A
Information sheet for participants and their parents

You are being invited to participate in a project designed to study a driver education programme called Star Driver. I am carrying out this research as part of my PhD. I am a student in the psychology department at the University of Auckland.

This is a sheet of information about the project, for you to read and to take home to your parents or guardians. If you are under sixteen you will need a parent’s or guardian’s consent to participate in the project.

Your involvement in this research would help our understanding of driving behaviour. It would also help us learn how useful it is to have driving programmes, like Star Driver, in schools.

About eight hundred students from several Auckland secondary schools are being asked to participate by filling out three questionnaires. Some students may also volunteer to be interviewed later in the year. These interviews will be taped. The first questionnaire will be in term 1, the second in term 2 and the third in term 3. The questionnaires will ask students about their driving habits and habits as passengers.

All the information from the questionnaires will be kept strictly confidential. Your name will not appear on the questionnaire. You will use a code number each time you fill out a questionnaire.

If you agree to participate at this stage you still have the right not to participate later on. You don’t have to give a reason for this. If you do not wish to answer all the items on the questionnaire you don’t have to. You can also ask for any of the questionnaires you have completed to be withdrawn as long as it is by the end of the sixth form year, 1994. If you don’t want to participate, you don’t have to give any reason for your decision and it won’t effect your school grades or work in any way.

If you are interested in finding out the results of this study, you can contact me or either of my supervisors. You will not be able to identify yourself, your class or your school.

If you have any questions at any time you can contact at the psychology department, Ph 3737599 myself: Niki Harré ext. 8557, or either of my supervisors: Dr Barry Kirkwood ext. 8518 or Dr Jeff Field ext. 8521.

For ethical concerns you may contact the chair of the University of Auckland Human Subjects Ethics Committee: Dr Noel Dawson ext. 6204.

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN SUBJECTS ETHIC’S COMMITTEE on December 8, 1993 for a period of two years, from 8/12/93 Reference 1993/295.
UNIVERSITY OF AUCKLAND

CONSENT TO PARTICIPATION IN RESEARCH

Title of Project: Star Driver Evaluation

Researcher: Niki Harré

I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered. I understand that I may withdraw myself or any information I have provided from this project (before the end of the sixth form year, 1994), without having to give reasons and without penalty of any sort.

I agree to participate in this research.

[or if you are under sixteen, “I agree that __________________________ who is under my guardianship, may take part in this research”]

Signed:

Name: (please print clearly)

Date:

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN SUBJECTS ETHICS COMMITTEE on December 8, 1993 for a period of two years from 8 December/1993. Reference 1993/295.
UNIVERSITY OF AUCKLAND

CONSENT TO PARTICIPATION IN RESEARCH

Title of Project: Interviews with young drivers

Researcher: Niki Harré

I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered. I understand that I may withdraw myself or any information I have provided from this project (before the end of the sixth form year, 1994), without having to give reasons and without penalty of any sort.

I agree to participate in this research, and that the interviews may be taped.

[or if you are under sixteen, "I agree that ______________________ who is under my guardianship, may take part in this research"]

Signed:

Name:  
(please print clearly)

Date:

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN SUBJECTS ETHICS COMMITTEE on December 8, 1993 for a period of two years from 8 December/1993. Reference 1993/295.
Appendix D
Interviews: set 1

1. Do you mainly drive for a purpose (e.g. job, errand, appointment), for fun, or for some other reason?

2. Do you ever do any of these things? (Show list below) When?
   - travel really close to the car in front
   - run a red light
   - drink and drive
   - do drugs and drive (e.g. marijuana, pills, glue, others)
   - break the speed limit
   - pass in dangerous places - around corners, going up a hill, on a yellow line
   - “race” other drivers
   - chase after or yell at drivers who annoy you
   - drive through level crossings without slowing down and checking first

3. When you are with friends, do you think that you are more of a safe driver or less of a safe driver than when you are on your own? (Prompt explanation)

4. What do you think of the road rules? (Show list below)
   - driver must follow speed limit
   - driver and passengers must wear seat belts in the back and front seats
   - driver may be tested at any time for alcohol (random breath testing)
   - driver must have a licence
   - restricted drivers: almost no alcohol allowed, no unsupervised driving between 10 pm and 5 am, only allowed to carry certain passengers.

5. Do you think you are more or less likely to have an accident than the other drivers in your school?

6. Have you ever been a passenger and been scared of the way someone was driving? What was it that scared you?

7. Do you ever worry about being pulled over by the cops when you are driving? Why?

8. Have you ever felt out of control as a driver? (Show list below) What did you do about it?
   - been drinking or taking drugs
   - poor weather
   - driving in an unfamiliar part of town
   - friends pressuring you
   - driving at night
   - driving when tired
   - rough roads
   - heavy construction on the road
   - driving someone else’s car
   - driving when you are upset
Appendix E
Interviews: set 2

Participants who were involved in the first set of interviews were initially asked about any changes in their behaviour and attitudes since these interviews. The interviewer had an individualised list of "risky" behaviours and attitudes which had been described by the participant in the first set of interviews and she used this list to question the participant. For example, one participant was asked:

"In the last interview you said you often drove after drinking, is that still the case?"

The standard questions, which were asked of all the participants then followed:

1. What do you think people think teenagers are like as drivers? Do you think it's true?

2. How do your parents think you drive?

3. Do you have older brothers and sisters? What do they think about your driving?

4. What do your friends think about your driving?

5. How would you describe yourself as a driver?

6. Do you think you'll drive differently when you are older? Let's say you are 25, will you be a different kind of driver then?

7. If you had an accident would it be because of something you did, or something someone else did?

8. What do you think are the chances of you having an accident: 20%, 50%, 80%?

9. Do you think driving is basically pretty safe or not?
Appendix F
Participant questionnaires

The questions are given as they appeared in questionnaire I (the pre-test). Where the question did not appear in questionnaires II or III (the two post-tests) or was altered for these questionnaires, it is noted.

Instructions:

This questionnaire asks you about your habits as a driver and a passenger. Please answer honestly. As an individual you will not be identified.

(In quest. II and quest. III the first paragraph read: This questionnaire is a follow up to the one you did before. Please answer honestly about yourself as you are now. As an individual you will not be identified.)

Please circle the number of your answer and read carefully the instructions telling you which question you should answer next. Leave any questions which don't apply to you.

If you consider yourself a driver, or you ride a motorbike, please answer the "drivers only" questions, whether or not you have a licence.

**SECTION ONE**

1. How much driving do you do?

   none 1
   I am just learning to drive 2
   less than once a week 3
   only a little per week 4
   at least three or four times a week 5
   most days 6

2. If you drive at all, which of these do you drive? You may circle more than one.

   own car 1
   brother or sister's car 2
   parents' car 3
   other car 4
   own motorbike 5
   brother or sister's motorbike 6
   parents' motorbike 7
   other motorbike 8
**SECTION TWO**

1. Which of the following best describes how you feel about drinking and driving? Please circle only one:

   - You should never drink any alcohol when you are driving 1
   - It's O.K. to drink and drive as long as you only have one or two drinks 2
   - You should always aim to stop drinking when you have reached the legal limit 3
   - It's O.K. to drive occasionally when you are over the limit as long as you drive carefully 4

2. How often do you drink alcohol?

   - Everyday 1
   - 5 or 6 days a week 2
   - 3 or 4 days a week 3
   - 1 or 2 days a week 4
   - about once a fortnight 5
   - about once a month 6
   - less than once a month 7
   - never drink alcohol of any kind 8

3. How many alcoholic drinks did you consume last time you went to a party? Circle the number of each kind of drink:

   **small glasses, wine**
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5+
   - If 5+ write how many here:

   **cans (or the amount of a can) beer**
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5+
   - If 5+ write how many here:

   **nips of spirits (a nip is about a cm in a glass)**
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5+
   - If 5+ write how many here:
4. How did you get home from that party?

- drove self 1
- non-drinking friend 2
- friend who had been drinking a little 3
- friend who had been drinking a lot 4
- walked 5
- taxi 6
- parents or friend's parents 7
- stayed the night 8
- other 9

5. Please indicate what you believe for each of these statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>yes</th>
<th>unsure</th>
<th>no</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the next month I will probably drive after a few drinks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>In the next month I will probably be the passenger of someone who has had a few drinks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>If a friend was going to drive when they were drunk, I would try and talk them out of it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>If necessary I would take the keys off a friend who was going to drive drunk.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

(The remaining questions in section three: questions 5-11, did not appear in quest. II.)

6. Have you ever tried to stop someone driving drunk?

- yes 1
- no 2
7. Drivers only, non-drivers please go to question 9. Have you ever driven after a few drinks? (In quest. III this read: In the last three months, have you ever driven after a few drinks?)

- no 1
- once 2
- a few times 3
- many times 4

8. Have you ever been found by the police to be over the limit? (In quest. III this read: In the last three months have you ever been found by the police to be over the limit?)

- no 1
- once 2
- more than once 3

(Question 9 did not appear in quest. III)

9. If you have ever been the passenger of someone who has had a few drinks, who were they?
You can circle more than one answer if you need to:

- mother 1
- father 2
- older brother or sister 3
- other relative 4
- friend 5
- friend’s parent 6
- boyfriend or girlfriend 7
- other 8

10. How many times have you been the passenger of someone who has had a few drinks? (In quest. III this read: In the last three months, how many times have you been the passenger of someone who has had a few drinks?)

- never 1
- once 2
- a few times 3
- many times 4

11. Drivers only. Non-drivers please go to section three. Have you ever driven after smoking marijuana? (In quest. III this read: In the last three months have you ever driven after smoking marijuana?)

- no 1
- once 2
- a few times 3
- many times 4
12. **Drivers only. Non-drivers please go to section three.** Please indicate if you have **ever** had convictions or been in trouble with the police for any of the following:

<table>
<thead>
<tr>
<th>Offence</th>
<th>never</th>
<th>once</th>
<th>two times</th>
<th>more than two times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving without a licence</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3+</td>
</tr>
<tr>
<td>Speeding</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3+</td>
</tr>
<tr>
<td>Drink-driving</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3+</td>
</tr>
<tr>
<td>Reckless driving</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3+</td>
</tr>
<tr>
<td>Breaking the rules which go with your licence</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3+</td>
</tr>
</tbody>
</table>

Other, please write here: ____________________________

*Question 13 appeared in quest. III only.*

13. If you have **ever** had any convictions or been in trouble with the police were any of them in **the last three months:**

- I have never been in any trouble 1
- yes, one or more was in the last three months 2
- no, none of them were in the last three months 3

If yes, (you circled 2) please write here which ones:

____________________________________________________

**SECTION THREE**

1. Which of the following do you think is the most true: Circle one only.

- Traffic laws are there to ensure safety on the roads 1
- Traffic laws are there so that the government can get money from fines 2

2. **Drivers only, non-drivers please go to question five.** What is the fastest speed you would drive at on the open road:

- 80km 1
- 100km 2
- 110km 3
- 120+km 4
3. What is the fastest speed you would drive at around town:

- 50km 1
- 60km 2
- 70km 3
- 80+km 4

(The remaining questions in this section: 4, 5, 6 and 7, did not appear in quest. II.)

4. How often do you do each of these things? (In quest. III this read: In the past three months, how often have you done each of these things?)

<table>
<thead>
<tr>
<th>Behavior</th>
<th>never</th>
<th>very occasionally</th>
<th>fairly often</th>
<th>very often</th>
<th>nearly all the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Become impatient with the driver on the outside lane and so pass on the inside</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drive really close to the car in front to try and get them to drive faster or get out of your way</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Ignore red lights when driving late at night along open roads.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>When stuck behind a slow moving vehicle try to pass even if it's a bit risky</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Ignore the speed limit late at night.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drive through a traffic light after it has turned to red.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drive through a traffic light after it has turned to orange.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Chase after another driver to give him or her a piece of your mind.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drive even though you know you may be over the alcohol limit.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Get involved in unofficial races with other drivers.  

Fail to give way to a pedestrian who is waiting at a crossing.  

Drive without a warrant of fitness.  

Pass on a double yellow line.  

5. Non-drivers only. Drivers please go to question six.

How acceptable or unacceptable do you think each of these driving practices are? Please rate each practice on the scale below. Number 1 means you think it is acceptable all of the time, through to number 6 which means you think it is never acceptable. The other numbers are somewhere in between.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Never</th>
<th>Very occasionally</th>
<th>Fairly often</th>
<th>Often</th>
<th>Very often</th>
<th>Nearly all the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passing on the inside lane.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Driving really close to the car in front to try and get them to drive faster or get out of the way.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Ignoring red traffic lights when driving late at night along empty roads</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Trying to pass a slow moving vehicle even if it's a bit risky.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Driving over the speed limit late at night.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Driving through a traffic light after it has turned to red.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Driving through a traffic light after it has turned to orange.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Always Acceptable</td>
<td>Never Acceptable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chasing after another driver to give him or her a piece of your mind.</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving even though you know you may be over the alcohol limit.</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Getting involved in unofficial races with other drivers.</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failing to give way to a pedestrian who is waiting at a crossing.</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving without a warrant of fitness.</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passing on a double yellow line.</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. How often do you wear a seat belt when driving or a passenger in the front seat?
   - always 1
   - usually 2
   - sometimes 3
   - never 4

7. How often do you wear a seat belt, if there is one when travelling in the back?
   - always 1
   - usually 2
   - sometimes 3
   - never 4
**SECTION FOUR**

*The next three sections are for drivers only. Non-drivers please go to section seven.*

Please indicate how much you agree or disagree with each of these statements:
Number 1 means you strongly agree and number 5 means you strongly disagree. The other numbers are somewhere in between

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am usually pretty calm and patient when I am driving.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It's not always necessary to follow the road rules, sometimes it's just as safe to break them.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I quite often think about what it would be like to have a road accident.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes I do something a bit risky when I am driving, but it never really worries me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I see the opportunity to get somewhere a bit quicker, I take it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somehow I know I won't have a traffic accident.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What teachers, my parents etc say about driving is O.K. for them, but they don't really understand what it is like to be a teenager.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I always think through what I am going to do when driving.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other cars sometimes toot their horns at me for taking a risk.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I never think about having an accident on the road.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic police generally do a good job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sometimes I drive fast because my friends seem to expect it.

I am always careful to obey road signs like stop and give way even if there is no traffic.

When stuck in traffic, I like to do something quickly to get out.

It's important not to take risks when you are driving as you don't know when you might have an accident.

I enjoy breaking some of the road rules when I am with my friends.

Driving very fast can be fun.

Traffic officers give tickets more to keep their count up than for safety reasons.

If all the other drivers around me seem to be taking a risk, like driving fast through road works, then I do it too.

I don't like to refuse a drink because I am driving.

It is important to always stick to the road rules.

I'm skilled enough as a driver to get out of most tricky situations.

If I ever do something risky when I am driving, I feel really nervous about it.

It is important to learn from older, experienced drivers about how to manage different situations when you are driving.
It is exciting to drive a powerful car or motorbike.

Sometimes I do something a bit dangerous when driving, just to see if I can handle it.

I'm not really the sort of person to get injured on the road.

(Sections five and six did not appear in quest. II)

SECTION FIVE

1. Do you mostly drive with the radio or cassette:
   - on loudly 1
   - on softly 2
   - not on 3
   - there isn't one in the vehicle I drive 4

2. Do you ever carry passengers when you drive?
   - yes 1
   - no 2

3. If you do carry passengers sometimes when you drive, who are they? You may circle more than one answer.
   - brothers and sisters younger than 10 years 1
   - brothers and sisters older than 10 years 2
   - friends 3
   - parents 4
   - other 5
4. How often do each of these things apply to you when you are carrying passengers:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Nearly Always</th>
<th>Often</th>
<th>Sometimes</th>
<th>Occasionally</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>I talk to my passengers when I am driving.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I always try and finish what I am saying to a passenger, even if I really need to concentrate on the road.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I have made a mistake when I am driving because I have been talking to or mucking around with a passenger.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I have nearly had an accident because I have been talking to or mucking around with a passenger.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

5. Would you say that you lose full concentration on your driving for any reason at all:

- Often 1
- Sometimes 2
- Occasionally 3
- Never 4
SECTION SIX

Please circle how often you do these things:

<table>
<thead>
<tr>
<th>Item</th>
<th>nearly always</th>
<th>often</th>
<th>sometimes</th>
<th>occasionally</th>
<th>never</th>
</tr>
</thead>
<tbody>
<tr>
<td>I drive when I am angry to make myself feel better</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I drive thinking about the things which have happened recently that really annoy me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I find it difficult to control my temper when driving.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>It annoys me to drive behind a slow moving vehicle.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>When stuck in traffic I usually try to cut in front of other cars or toot the horn.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>When stuck in traffic I usually just switch off and wait until it starts moving again.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

SECTION SEVEN

This section is designed to see how much you know about road accidents.

1. Approximately how many people are killed on the roads each year in New Zealand?
   - 250 1
   - 650 2
   - 950 3
   - 1250 4

2. What percentage of road crashes do you think are due to human error?
   - 2% 1
   - 33% 2
   - 75% 3
   - 98% 4
3. The people most likely to be killed on the road are aged between:

15-24 1
25-34 2
65-74 3
75-84 4

4. Circle the right answers:

Most fatal accidents occur on city / country roads
Most injury accidents occur on city / country roads

5. True or false:

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some fresh air will sober you up if you have been drinking.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>A cup of coffee will sober you up if you have been drinking.</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

6. Write here how many glasses of alcohol the average person would have to drink for it to have an effect on their driving:

_________________________ glasses

7. Circle whether each of these statements is true or false:

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>You don't need to have passed any tests to learn to drive a car, as long as someone is with you.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>It is legal for anyone over the age of 18 to teach you to drive.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>You may not drink any alcohol at all before driving on a restricted licence.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>You can drive by yourself up until midnight when you are on a restricted licence.</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
SECTION EIGHT

(Section eight did not appear in quest. II)

1. **In the last three years** have you ever been involved in any serious accidents as a passenger or a driver in which someone was injured (that is at least one person needed some sort of medical attention)? (In quest. III this read: **In the last three months** have you ever been involved in any serious accidents as a passenger or a driver in which someone was injured (that is at least one person needed some sort of medical attention)?)

   yes 1
   no 2

If you have answered **no**, please go to the next section (section nine) if you have answered **yes**, please answer these questions:

2. How many of these accidents have you been involved in during the last three years? (In quest. III this read: How many of these accidents have you been involved in during the last three months?)

   accidents

3. If you have been involved in one or more of these accidents in the last three years as a passenger or a driver please answer these questions: (In quest. III this read: If you have been involved in one of these accidents in the last three months as a passenger or a driver please answer these questions:)

   ACCIDENT DESCRIPTION

   (In quest. I there were two sets of questions on accident description, labelled "Accident One" and "Accident Two". In quest. III there was a single set of questions)

   a. Who was driving?

      mother or father  1
      older brother or sister  2
      friend  3
      myself  4
      other  5

      If other, please say who

   b. Was the accident reported to the police?

      yes  1
      no  2
      don't know  3
c. *If the accident was reported to the police* who did they find to be in the wrong over the accident?

<table>
<thead>
<tr>
<th>Choice</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>both drivers</td>
<td>1</td>
</tr>
<tr>
<td>myself</td>
<td>2</td>
</tr>
<tr>
<td>the driver of the car I was in</td>
<td>3</td>
</tr>
<tr>
<td>the other driver</td>
<td>4</td>
</tr>
<tr>
<td>don't know</td>
<td>5</td>
</tr>
</tbody>
</table>

d. What kind of injuries were there in the accident? If you are not sure, please give your best guess from what happened at the accident.

<table>
<thead>
<tr>
<th>Injury Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>someone, or more than one person was killed</td>
<td>1</td>
</tr>
<tr>
<td>someone, or more than one person was admitted to hospital</td>
<td>2</td>
</tr>
<tr>
<td>someone, or more than one person was given treatment</td>
<td>3</td>
</tr>
<tr>
<td>at an accident and emergency centre or by a doctor</td>
<td></td>
</tr>
</tbody>
</table>

**SECTION NINE**

(In quest. II and quest. III, the following instruction appeared: Please answer these questions about yourself now, even if they are the same answers as last time.)

1. Do you have a driver's licence? *If you have answered no, please go to question 6.*

<table>
<thead>
<tr>
<th>Choice</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>1</td>
</tr>
<tr>
<td>no</td>
<td>2</td>
</tr>
</tbody>
</table>

2. What kind of licence do you have:

<table>
<thead>
<tr>
<th>Licence</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>learners</td>
<td>1</td>
</tr>
<tr>
<td>restricted</td>
<td>2</td>
</tr>
<tr>
<td>full</td>
<td>3</td>
</tr>
</tbody>
</table>

3. Please write here the year you passed each kind of licence, if you have it:

<table>
<thead>
<tr>
<th>Licence</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>learners</td>
<td>19</td>
</tr>
<tr>
<td>restricted</td>
<td>19</td>
</tr>
<tr>
<td>full</td>
<td>19</td>
</tr>
</tbody>
</table>
(Question 4 did not appear in quest. II)

4. If you are on a learners or a restricted licence, do you ever break the rules which go with your type of licence:

<table>
<thead>
<tr>
<th>never</th>
<th>sometimes</th>
<th>often</th>
<th>nearly</th>
<th>don’t all the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>The alcohol restriction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>The restriction on passengers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>The restriction on driving at night</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

5. Have you done a defensive driving course? (In quest. II and quest. III this read: Have you done a defensive driving course since the last time you filled in this questionnaire?)

yes 1
no 2

6. Drivers only, non-drivers please go to question seven. Who mainly taught you to drive:(In quest. II and quest. III this read: If you have learnt to drive since you last filled in a questionnaire, who mainly taught you to drive:)

- parent 1
- driving instructor 2
- myself 3
- older brother or sister 4
- teenage friend 5
- other 6

If other, please say who__________________

(The remaining questions: 7-12 did not appear in quest. II)

7. Please circle here how many school certificate passes you have achieved so far:

- none 1
- one school certificate 2
- two s.c. 3
- three s.c. 4
- four s.c. 5
- five s.c. 6
- six s.c. 7

8. Are you male or female?

male 1
female 2
9. What is the year and month (please write it as a number) of your birth?

year 19____
month _____

10. What is your ethnic group?

Pakeha / European 1
Maori 2
Pacific Island 3
Asian 4
Pacific Island and European 5
Pacific Island and Maori 6
Pakeha and Maori 7
Other 8

11. What is the main source of income in your household?

social welfare benefit(s) 1
mother's and father's jobs together 2
mother's job 3
father's job 4
other person's job 5
12. Please circle here the qualifications your parents have, you may circle as many as you need:

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Mother</th>
<th>Father</th>
</tr>
</thead>
<tbody>
<tr>
<td>No school qualifications</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>School certificate</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sixth form certificate</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Have a diploma from a tech</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Are a qualified tradesperson</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Teachers college</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Have part of a university degree</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Have a university degree</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Don't know</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

THE END

THANK YOU VERY MUCH FOR YOUR HELP
Appendix G
Questionnaire for contact teachers

Code __

1. Does your school have anything which you are aware of in place to encourage safety on the roads? In particular there might be: Please circle ones that apply.

Posters: where are these? About how many are there? ________________

SADD or other peer lead activities. Please comment: __________________________

Any education programmes run by teachers at any levels? (excluding Star Driver). Please say which levels and the type of programme. __________________________

Any driver training, if so how does this run? __________________________

Anything else you can think of? __________________________

2. Have there been any major road injuries in the past year amongst the students or teachers or anyone else associated with the school which might have had an impact on the students? __________________________

3. Is there anything you can think of at the school which might discourage safety on the roads? __________________________

4. Overall how seriously do you think the staff at the school take road safety for the students, please think of examples to back this up. __________________________

5. Do you think the staff see it as their job to teach road safety (in the same sense as for example they see it as their job to teach sex education)? __________________________
Appendix H
Questionnaire for teachers of the programme

Code __ __

1. How well did you stick to the programme? Please give a % estimate: ______

Please describe any factors which may have prevented you from following the programme exactly.

Factors related to the programme itself:

_____________________________________________________________________________________

_____________________________________________________________________________________

External factors:

_____________________________________________________________________________________

_____________________________________________________________________________________

2. How many lessons did you run? __________

3. Did you finish on schedule? ____________

_____________________________________________________________________________________

_____________________________________________________________________________________

4. Please describe what you perceive to be the programme’s strengths: __________

_____________________________________________________________________________________

_____________________________________________________________________________________

and weaknesses: __________

_____________________________________________________________________________________

_____________________________________________________________________________________

5. How well was the programme received by the students? Firstly please say how well it rated compared to other things you’ve covered this year:

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

6. Any other comments? (Especially hassles!) _______________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

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REFERENCES


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