



**MONASH** University  
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# **PARENTS AS ROLE MODELS IN ROAD SAFETY**

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**Abstract:**

Children represent an important, yet vulnerable, road user group: they are vehicle occupants, pedestrians, cyclists and users of small wheeled vehicles like scooters or skateboards, and constitute a substantial proportion of fatalities and serious injuries on Australia's roads. Indeed, young children's safety in traffic is of particular concern in view of their vulnerability and the special value society places on children.

Road safety education is considered an essential component of teaching children the skills to interact with traffic safely, and there is evidence that parents can play an important role as road safety role models for their children and be primary trainers in road safety skills for their children. Despite the opportunities available to parents to influence their children's behaviour, it is suggested that parents are often unaware of their role, crash and injury risk to children, and behavioural strategies to ensure safety in traffic.

A survey was conducted amongst 273 parents of young children between the ages of 3 and 10 years (primarily recruited through the RACV membership database) to provide an insight into the role parents play in protecting and teaching their young children road skills, their attitudes toward and behaviours relating to children's road safety. The findings of the survey provided a rich source of information on many aspects of safety of children on the road, particularly regarding their acquisition of road safety skills and the role that parents have played in teaching these skills. Importantly, the results have also provided some insight into parents' overall attitudes to and knowledge of road safety, their knowledge of the important role they play in the development of their child's road skills, and strategies they have adopted to teach road skills. The findings revealed a generally positive attitude to children's road safety and some understanding of the important role parents play in protecting and teaching children road safety. There were some suggestion, however, that parents lacked some awareness of age-appropriate child restraints in vehicles, the importance of teaching road crossing skills to young children, and that some parents may be less involved in their children's traffic education than they could be, despite the fact that they are in a prime position to influence their behaviours in traffic.

Recommendations therefore are made for the development of a range of resources to assist parents in their role as primary trainers of traffic skills. Such resources should aim to i) ensure parents are aware of their role as primary trainers in road safety skills, ii) provide a good understanding of the issues surrounding safety of children in traffic, and iii) provide a good understanding of evidence-based best-practice in managing the safety of their children.

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**Key Words:**

Road safety, children, occupant protection, pedestrian, cyclist, education, countermeasure

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# Preface

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## EXECUTIVE SUMMARY

Children represent an important, yet vulnerable, road user group: they are vehicle occupants, pedestrians, cyclists and users of small wheeled vehicles like scooters or skateboards. Each year, approximately 230 Australian children aged 0-14 years are killed and 55,000 hospitalised as a result of unintentional injuries, with road trauma the leading cause of death and the second most frequent cause of hospitalisation (World Health Organisation, 2008). Indeed, young children's safety in traffic is of particular concern in view of their vulnerability and the special value society places on children.

Children's vulnerability as road users is based on two issues including their physical vulnerability (they are small and still developing physically), and functional vulnerability. Functional vulnerability refers to their stages of cognitive and perceptual development: many skills essential for safe road behaviour are not fully developed until young adulthood. Road safety education therefore offers an important means by which children can acquire skills to interact with traffic safely.

The broad aim of this study was to investigate parents' attitudes and behaviours regarding road safety (and education) for their children, to gain a clear understanding about current attitudes, behaviours and subsequent transfer to their children, and to develop a set of recommendations which may be used to guide the development of targeted and effective road safety education resources for parents.

In order to achieve the above aims, two discrete project tasks were undertaken, including a review of the literature, development and implementation of a survey of Victorian parents. These two sources of information were then integrated to develop a set of recommendations to progress our efforts to develop appropriate and targeted resources for parents of young children.

The literature review focuses on behavioural aspects and identifies parents as playing an influential role in managing children's road safety through appropriate modelling, supervision and education. Despite the great potential for parents as educators of road safety, there is limited available scientific research regarding parents' attitudes and behaviours towards road safety (and education) for their children in Victoria. Moreover, there is evidence that many parents are unaware of their influence on their child's road behaviour, and lack appropriate resources and knowledge to enhance their role in their children's adoption of road skills.

The survey of 273 Victorian parents provide an insight into the role parents play in protecting and teaching their young children road skills, their attitudes toward and behaviours relating to children's road safety. The findings of the survey provided some expected and interesting findings, and a rich source of information on many aspects of safety of children on the road, particularly regarding their acquisition of road safety skills and the role that parents have played in teaching these skills. Importantly, the results have also provided some insight into parents' overall attitudes to and knowledge of road safety, their knowledge of the important role they play in the development of their child's road skills, and strategies they have adopted to teach road skills.

The main findings were:

- Attitudes to road safety in general were fairly positive, most parents reported restricting their drinking while driving, and generally positive attitudes to speeding. Behaviours while driving were also fairly positive with most reporting wearing seatbelts and not engaging in risky driving. Importantly, most parents believed that children should be supervised while walking up to about 9 years of age, and most thought it was important to teach children road crossing at any age. Despite this, there was a substantial proportion of parents that believed that it was not important at all to each road crossing skills (approximately 15% at each age level)
- The majority of parents reported an awareness of their role in teaching their children road safety skills and thought their behaviour would influence their children's behaviour.
- Overall parenting styles were positive, with more parents indicating a high level of involvement and monitoring, consistent discipline and low corporal style. A positive association was found between attitudes to teaching skills and highly involved parenting styles. Few associations were found between other parenting styles and teaching road safety skills.
- Regarding children as car occupants there were some concerning results, particularly a low awareness of age-appropriate restraint use and sitting positions. For child pedestrians, parents were generally aware of potentially dangerous situations, provided supervision frequently (although children did not walk frequently) and promoted good crossing behaviours. Likewise, for child cyclists, attitudes and behaviours to safety were positive, with high levels of helmet wearing and supervised cycling

There are major advantages of involving parents/carers in road safety education and parents are in an ideal position to foster an environment where road safety can be taught well. Indeed, some areas where parents may be less involved in their children's traffic education than they could be were identified, despite the fact that they are in a prime position to influence their children's behaviours in traffic. It is therefore argued that parents in general could benefit from resources aimed to provide accurate information and 'best-practice' strategies to enhance their role as teachers and modellers of good road behaviour. It is recommended that an appropriate and targeted range of resources be developed, based on the current findings, to assist parents in their role as primary trainers for their young children in road safety skills.

These resources should aim to:

- ensure parents are aware of their role as primary trainers in road safety skills;
- provide a good understanding of the issues surrounding safety of children in traffic, and;
- provide a good understanding of evidence-based best-practice in managing the safety of their children.

Recommendations for the contents of educational resources are also made and include general important topic areas addressing the following:

- **Role of parents:** Components addressing the role of parents should aim to raise the awareness of the important role they play in teaching road safety behaviours, highlighting their responsibility for road safety training, their motivation to keep their children safe, the fact that their children naturally imitate them and the need to model good behaviour, and the opportunities they have to train using practical experience, etc.
- **Risk Factors:** Components addressing crash and injury risk should contain statistics on crash and injury risks and detailed information on the known factors that heighten the risk of collision and sustaining a severe injury for young children. The emphasis should be for all modes of travel including children in cars, walking and cycling.
- **Safe Practices:** Components addressing safe practices should contain information on safe traffic practices, recognition of evidence-based risk factors including proper age-appropriate restraint, age-appropriate supervision, use of safety devices such as helmets, etc.
- **Tips and strategies:** Components including tips and strategies should contain teaching strategies for parents. For example, teaching through discovery and self-reflection is effective, practical training at the roadside is effective, and an understanding of children's developmental milestones and reinforcement of age-appropriate behaviours is essential.
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Recommendations for further research were also made, particularly an expansion of the survey to a wider segment of the Australian population, and following up on some issues of concern, such as knowledge of age-appropriate restraint use, importance of teaching road crossing skills, and use of cycling helmets.

## CONCLUSIONS

It is argued that parents are ideally placed to teach children about road safety, and it is imperative to provide parents with a range of appropriate information that will not only persuade them to model consistent road safety behaviours, but will educate them with respect to when, where and how they train their young children road safety skills. This study demonstrates that despite a high level of awareness of the impact of parental role modelling behaviour on their children, parents do not necessarily have the road safety knowledge or skills to properly educate their children on road safety. Furthermore, despite awareness of educational resources for road safety, very few parents reported participation in these courses. Therefore, it is recommended that a range of practical and targeted resources be developed that can guide parents in their role as primary trainers in road safety skills for their young children. The most effective resources would incorporate a range of communication styles to reinforce the key messages.



# 1 INTRODUCTION

Children represent an important, yet vulnerable, road user group: they are vehicle occupants, pedestrians, cyclists and users of small wheeled vehicles like scooters or skateboards. Each year, approximately 230 Australian children aged 0-14 years are killed and 55,000 hospitalised as a result of unintentional injuries, with road trauma the leading cause of death and the second most frequent cause of hospitalisation (World Health Organisation, 2008). Between January 2005 and June 2010, a total of 365 children aged between 0-14 years were killed on Australian roads, equating to an average 66 children per year (ATSB, 2010).

Children's vulnerability as road users is based on two issues including their physical vulnerability (they are small and still developing physically), and functional vulnerability. Functional vulnerability refers to their stages of cognitive and perceptual development: many skills essential for safe road behaviour are not fully developed until young adulthood. Road safety education offers an important means by which children can acquire skills to interact with traffic safely. In 1999, VicRoads conducted a review of world's 'best-practice' in the traffic safety education of young children (Elliott, 1999). This review was one of the first to establish the importance of parents/carers as road safety role models for their children and also emphasised the opportunities and potential for parents/carers to be primary trainers in road safety skills for their children.

In the initial months following birth, children learn by observation through the environment in which they find themselves and the behaviour of those they see most frequently. Imitation of what is observed, so far as the infant is able, occurs even before 6 months. Consequently, Levelt (1996) suggests "whenever parents in the car for example put on a seat belt, this shall have an influence on the child." As children grow, their learning continues largely through experience and discovery influenced through reward and punishment, trial and error and from demonstration and instruction by parents. Consequently, as Elliott (1999) notes, most young children have learned a great deal by observation – both safe and unsafe behaviours – before their parents consider them to be ready for instruction.

Adams (2001) further pointed out that parents and carers often lack an understanding of how influential their own modelling behaviour is during the first three years of a child's life and how they could go about training their very young children in the skills needed to scan for traffic and judge gaps. Further, she argued that parents are often unaware of 'best-practice' approaches in child education strategies (e.g., that: children learn best through discovery and self-reflection rather than rules; roadside training should be frequent, consistent and ongoing in line with the child's developmental readiness; and, roadside training should focus primarily on visual search skills). Adams (2001) suggested that it is imperative to provide parents/carers with a range of appropriate information that will not only persuade them to model consistent road safety behaviours, but also educate them with respect to when, where and how they train their young children in specific road safety skills.

Therefore, in order to develop recommendations regarding appropriate educational resources for parents regarding road safety skills, it is important to gain a clear understanding of current behaviours and needs in the local context. This will better inform optimal development of resources, and appropriate targeting to groups in need of such resources.

## **1.1 AIMS**

The overall aim of this research was to gain a good understanding of parents' current knowledge and attitudes towards children's road safety. Specific objectives of this research were to:

- investigate Victorian parents' attitudes and behaviours regarding road safety (and education) for their children,
- investigate whether parents understand the importance of their role in their children's road safety education; and,
- develop a set of recommendations which may be used to guide the development of a road safety education resource for parents.

## **1.2 PROJECT TASKS AND STRUCTURE OF THE REPORT**

In order to achieve the above aims, two discrete project tasks were undertaken, including a review of the literature, development and implementation of a survey of Victorian parents. These two sources of information were then integrated to develop a set of recommendations to progress our efforts to develop appropriate and targeted resources for parents of young children.

While the methods undertaken for each project task are described in detail in the following sections, a brief overview of the methods and the structure of the report are provided here.

Section Two presents the findings of the literature review. The review was conducted to understand the issues surrounding the safety of children as road users. It identifies the key factors associated with crash and injury risk, with particular foci on individual and behavioural factors. The review also reports on and discusses strategies and initiatives aimed at managing the safety of young children. Again, the focus is on behavioural programs, relative to the focal point of our research, rather than vehicle design and road engineering solutions. Next, a theoretical base for road safety of children is discussed, as well as current research, initiatives and communication strategies for parents of young children aimed at increasing the beneficial effects of appropriate and targeted parental modelling and teaching of road safety skills. Last, a discussion of current research on the issues of parents as role models in traffic safety is provided, with a focus on communication strategies for educating parents about transfer of knowledge to children.

Section Three presents the findings of the survey. First, a discussion of the study design is provided, including the development of the survey and recruitment methods. Second, the results of the survey are reported.

Section Four brings together the findings of the study components including the literature review and the survey responses to provide a set of detailed recommendations and approaches for the development of an educational resource for parents to teach children age-appropriate road safety behaviours.

## **2 LITERATURE REVIEW**

### **2.1 THE BACKGROUND**

Children represent an important, yet vulnerable, road user group as vehicle occupants, pedestrians, cyclists and users of small wheeled vehicles like scooters or skateboards. Furthermore, road trauma the leading cause of death and the second most frequent cause of hospitalisation among children in Australia (WHO, 2008). Thus considerable effort has been spent devising methods and programs to improve the safety of our children. Motor vehicle crashes are the most common cause of injury and death for Australian children aged 1 to 14 years (Australian Transport Safety Bureau, 2009). Crashes involving child passengers account for a significant proportion of road user injuries and death; and crashes involving pedestrians and cyclists, although less common, are severe in nature. Child occupant, pedestrian and cyclist safety is therefore a serious community concern.

Child road trauma is a significant concern globally. For example, in the United States, motor vehicle crashes were the leading cause of unintentional death for children aged 1 to 14 between 2000 and 2006 (Centre for Disease Control and Prevention, 2009). In Australia in 2008, 63 children aged 16 years and younger were killed as motor vehicle passengers, accounting for over 70% of all road user deaths in this age group (Australian Transport Safety Bureau, 2009). On average, an additional 850 children are seriously injured annually on Australian roads (yearly average, 2000 – 2003) (Australian Transport Safety Bureau, 2004). In Victoria, approximately 10 children aged 15 years and younger were killed in 2008 and 184 seriously injured as car passengers (Transport Accident Commission, 2009). These data represent annual figures for the period 1 January 2008 to 31 December 2008. Research also suggests that children, the elderly and the intoxicated are at highest risk of death and injury as pedestrians. Among the child pedestrian group, young children between the ages of 6 to 10 years are at highest risk of death and injury, with an estimated minimum four times the risk of collision compared to adult pedestrians (Congiu et al., 2008). Similarly, 5% of all road user deaths for the age group 0 to 15 years die as a result of cycling (Australian Transport Safety Bureau, 2009). These statistics are reflected the world over, and are most likely due to the beginning of independent unsupervised travel to and from school, and increases in exposure at a time when their road strategies, skills and understanding are not yet fully developed.

In order to adequately frame the fatality and injury rates, researchers require an understanding of the level of exposure that children engage in these activities. Once exposure is taken into account, a more meaningful comparison of risk across different age groups is possible. Unfortunately, this is an area of research which is lacking detailed information. As such, it is difficult to elucidate the magnitude of the issue. Intuitively, it can be assumed that relatively large proportions of children are transported via motor vehicles, thus partly explaining the high fatality and injury rates as vehicle occupants. Further, the proportion of child pedestrians is likely to be higher than that of child cyclists, given the likelihood that children engage in walking more frequently than cycling (walking naturally forms a part of most trips). Where possible, exposure data for each of the three road user areas are discussed below.

Unfortunately, there have been no recent Australian studies that have used any exposure methods (e.g., distances walked, type of walking, number of roads crossed, time spent walking, etc.) for pedestrians. A New Zealand study utilising a travel survey conducted in 1997/98 found that children experienced a higher risk of death or injury than adults for each hour spent walking (Land Transport Safety Authority, 2000). It was also reported that boys, especially those in the 5 to 9 age group, were at higher risk than girls. There may

also be socio-economic differentials in child pedestrian casualty rates. Some argue that, in the UK, children from lower socio-economic status backgrounds are at up to five times increased risk of pedestrian injury compared with children from higher socio-economic status backgrounds (Hewson, 2004; Thomson, Tolmie, & Mamoon, 2001). Similar findings are reported in Sweden (Hasselberg & Laflamme, 2004). Whether this is due to behavioural factors on the part of the pedestrian or driver, or other environmental factors, has yet to be determined.

Recent studies concerning cyclists in Australia have also failed to include any exposure methods. In the United States, more than 70 to 75% of children under 14 years ride bicycles (Forjuoh, Fiesinger, Schuchmann, & Mason, 2002; Klein et al., 2005). In 1991, Cohen and Miller (2005) reported that bicycle crashes in the United States involving children aged between 4 and 15 years resulted in 52,000 nonfatal head injuries and 93,000 nonfatal face scalp injuries. They found that 2,200 of the children who sustained these head injuries suffered permanent disabilities that affected their ability to study and work. A study by Finoff and colleagues (2001) reported that bicycle accidents in the United States resulted in 544,561 emergency department visits and 793 deaths annually. A majority of these accidents are believed to occur in people younger than 21 years as 30% of paediatric bicycle accidents occurred while children were riding to and from school.

## **2.2 CHILDREN'S VULNERABILITY AS ROAD USERS**

Injury statistics have demonstrated for a long time that children are particularly vulnerable as road user. While much of their vulnerability to injury can be attributed to physical factors, their vulnerability to crash involvement can also be attributed to their individual, cognitive and perceptual development, skills which are not fully developed until young adulthood. Therefore it is necessary to understand the factors associated with child road user crashes in order to address their fatality and injury rates. The review of the literature revealed a large number of papers addressing factors associated with child pedestrians; however there is a notable lack of literature considering contributory factors associated with injury and fatality rates of child motor vehicle occupants and cyclists. Where available, data from these studies are discussed.

Analyses of adult and adolescent groups confirm that, for these age groups, and in contrast to children, more sophisticated representations of the nature of road user responsibilities, and greater acceptance of personal responsibility for safety, are associated with less risky behaviour on the roads.

### **2.2.1 Individual factors**

There are a number of characteristics of children which make them more likely to be injured whilst utilising a road environment. As noted previously, the bulk of the literature reviewed reflects studies predominantly undertaken to understand child pedestrian behaviour. Despite this narrow focus, the literature reviewed holds implications and interpretations that may be applied in a broader context.

One contributory risk factor to road user deaths is age. The research has consistently found that the highest 'at risk' age group in almost every western country is young children aged between 5 and 9 years old (Assailly, 1997). Children appear to be especially vulnerable when they are beginning to attend primary school and are gradually being given a little

more independence. The commencement of schooling combined with the critical risky age group increases children's exposure to road injury or death.

Gender differences are also a notable risk factor. There are well documented gender differences in terms of adult risk taking, adults' compliance with traffic rules and impulsivity. Likewise, gender differences are noted amongst children, with suggestions that boys are almost twice as likely to be involved in pedestrian and cyclist crashes as girls (Assailly, 1997; Gaskell, Harrison, & Goodwyn, 1989). Two main factors are considered to explain this gender imbalance. First, risk exposure is generally believed to be greater for male children. Boys spend more time outdoors unaccompanied by adults, and parental attitudes and practices relating to male independence may act to sanction this. However, gender differences in exposure to traffic may not fully account for sex differences in accident rates (Demetre et al., 1992). It is also possible that the behavioural characteristics of boys make them more likely to be crash-involved. Boys are often characterised as being more impulsive, perhaps inducing them to be less attentive in traffic situations and more likely to dash out into the street (Assailly, 1997).

Building on this understanding, Granie (2007) found that there were significant differences in terms of rule following by children. Granie found that girls were more likely to have greater rule knowledge and demonstrate rule compliance and internalisation than boys. Boys were found to exercise less control, concentrate less, and be less likely to behave in accordance with their declared compliance. Even at this very early stage of life, these behavioural differences may be due to the gender roles and socialisation experienced by each of the sexes. Further empirical research on gender differences in children are required to understand its effects on road-user behaviour.

Another consistent contributory factor to increase risk of road user crashes in children is the external environment, namely low socioeconomic status (SES). Assailly (1997) found that children of low SES parents and recent immigrants were more likely to be involved in pedestrian crashes than the general population. There were a number of environmental factors attributed to these children's vulnerabilities. These include: increased residential population and increased traffic density; children were more likely to play in the streets close to their home as a result of limited access to safe, secure and well maintained public spaces; children were unable to participate in leisure venues due to the costs involved; and insufficient parental monitoring practices (Assailly, 1997; Christie, Ward, Kimberlee, Towner, & Slaney, 2007; Stevenson, Jamrozik, & Spittle, 1995). Key sources of risk identified by low SES parents included illegal driving and riding, the speed and volume of traffic, illegal parking practices and children's own risk taking behaviours (Christie, et al., 2007). Common child road user scenarios have also been depicted in the literature providing an initial understanding of the challenges facing the protagonists of the interaction (Assailly, 1997; Stevenson, et al., 1995). Further to this, an interesting relationship has been identified delineating a complicated interplay between traffic volume, speed limit adherence, footpaths and injury. Stevenson and colleagues (1995) found that the volume of traffic, in combination with the number of vehicles exceeding the speed limit, and the presence of footpaths were associated with significant increases in the risk of injury. In line with the research, the statistics indicate that the safest countries for child pedestrians are those that provide extensive traffic calming in residential areas, particularly around schools and have accessible outdoor play provisions available.

## 2.2.2 Developmental characteristics

In addition to individual characteristics, developmental characteristics are thought to contribute to high crash involvement rates of children. The research indicates that children's over involvement may be a consequence of children being given greater freedom to use roads alone at a time when their beliefs, perceptual and cognitive abilities required for adapting to traffic environments are insufficiently developed. Pedestrians and cyclists often encounter a number of complex problem solving situations that need to be executed in order to interact with the road environment safely. A task analysis of general pedestrian crossing behaviour concluded that the following abilities are required to interact with traffic safely (Thomson, Tolmie, Foot, & McLaren, 1996):

1. Make judgments about whether crossing places are 'safe' or 'dangerous' (this process involves coordinating past experience with current information and making predictions about future outcomes);
2. Detect the presence of potential sources of danger (i.e., traffic). This process involves interaction between three key skills: selective attention, systematic visual search and judgments about speed and time;
3. Coordinate information from different aspects of the traffic environment, including different directions. This process involves simultaneously holding and processing a number of pieces of information.

The first developmental characteristic to be addressed is the ability to make judgments about the safety of a given road environment. A landmark research paper set up an experiment in the real world where children had to choose between two possible positions from which they could cross a road (Demetre & Gaffin, 1994). The first scenario was open and provided an unobstructed view of approaching vehicles and the second scenario had two parked cars which occluded view of oncoming vehicles. Children who participated were between the ages of 6 to 10 years, separated according to age, with equal numbers of boys and girls in each group. The results clearly demonstrated that there was a development-related learning curve which informed children's choices. The researchers found that 6 year olds chose the position from which they would cross the road randomly, children over the age of eight showed more of an inclination to cross from the clear view point. However, 30% of the eight year olds who did not have experience crossing the road alone chose to cross at the point occluded by parked vehicles. By age ten, almost 92% chose the clear view crossing point. Interestingly, the results also indicated that children who were always supervised when crossing the street did not choose the safest route. It is suggested that this may be due to the required competencies not being activated until required. Parents may need to be encouraged to give children a **controlled** independence when cognitively ready; by providing children with the information and tools required to cross the road safely. Thus, when the need arises, they are prepared to do so.

This idea can be developed further when it is acknowledged that young children do not view traffic crashes as eminent, probable dangers (Demetre & Gaffin, 1994). This inevitably contributes a lack of concern or the adoption of any pre-emptive measures to avoid injury. Thus another area of consideration is children's perceptions regarding unintentional injuries. These perceptions of vulnerability were found to affect children's behaviour – making them less likely to perceive themselves as vulnerable to injury and demonstrated increased risky behaviour (Boles, Roberts, Brown, & Mayes, 2005; Demetre,

1997). Even after removing gender effects, risky behaviours were predicted from children's perceptions of vulnerability. Similarly another developmental characteristic which informs children's interaction with traffic is road user responsibility. Analyses of children's conceptions identified two developmental changes. At five years old, the typical child believes that their responsibility as a road user is to avoid damaging things. For an older child, their responsibility lies with avoiding errors which may cause a collision. For adults, road user responsibilities involve anticipating and circumventing dangerous situations (Thornton, 1999; Thornton, Andree, Rodgers, & Pearson, 1998). Unfortunately, Thornton and colleagues do not delineate at what age this cognitive transition takes place, however these developmental effects underpinning personal responsibility for maintaining safety have important implications for roadside behaviour. The (more aware) older child is better equipped to use roads safely than the (damage avoidant) younger child. The error avoidant child is somewhat conscious of how crashes are caused, whereas the younger child is not. This means the older child can interpret events on the road and can apply safety skills as needed. The younger child however requires rote learned road safety skills to be applied consistently, without understanding their function or significance. Again, these findings hold important implications for road safety education.

Thompson and colleagues (1996) suggested that in order to detect the presence of potential sources of danger the following developmental skills were required: selective attention, systematic visual search, and the ability to make judgments about speed and time. Research into the role of selective attention has proved to be a difficult task. Demetre and colleagues (1992) reported finding it challenging to replicate real world observations in a contrived experimental setting. Roadside simulations of a pretend road were vulnerable to potentially distorting characteristics that could affect children's decision making. However, even when these characteristics were controlled, Demetre et al. found that children had a demonstrable trend toward overcautious decision making, in direct contrast to the real world studies which indicate that children make highly risky decisions when crossing. The researchers argued that rather than timing deficits, the risky decision making demonstrated by children in real world studies may be a result of inattention. This was further demonstrated by Dunbar, Hill and Lewis (2001) who considered two apparently related attention skills: switching attention and concentration. Their sample consisted of 160 children aged between 4 and 10 years. They found that the attentional skills were distinct from one another, with only a moderate, non-significant relationship between them and related to different aspects of road behaviour. Both were found to be related to age related variation, with younger children much less effective than older children. Children who were able to switch attention more rapidly were more likely to look at traffic prior to crossing a road. Children who were less able to concentrate when attentional load was challenged by a distracting event tended to be more impulsive. More impulsive children demonstrated a tendency to cross the road in a less controlled manner. Further, concentration was found to correlate with impulsivity, whereas attention switching was not. The younger and less 'attentionally-skilled' children involved in the study were less able to deal with the road environment, indicating that these are skills which need to be developed in order to cross roads safely.

Similarly, research into systematic visual search strategies lend support to the argument that a number of these skills and abilities improve with development. Whitebread and Neilson (2000) found that poor visual search strategies were associated with slower processing speeds, characteristic of young children. They found that significant differences emerged in strategic visual search strategies between children of different age groups, and those who had high and low levels of pedestrian skills. Their results indicated that an important strategic shift appeared to occur in children between the ages of 7 and 8 years.

This shift is reflected in the improvement of road user behaviour of children at that age and older.

Last, Thomson et al. (1996) listed the ability to co-ordinate information from different aspects of the traffic environment as an important contributor to pedestrian safety. Namely, this ability involves simultaneously holding and processing a number of pieces of information. An important scenario which embodies these skills is the judgment of distance and speed of oncoming traffic prior to crossing the street. A real world observation study of this scenario found that again, age (measured through three distinct age groups) was associated with the development of this important skill (Connelly, Conaglen, Parsonson, & Isler, 1998). Almost two thirds of the children reported using distance to guide gap selection – the least adequate strategy in terms of safe decision making. Further, analysis of the thresholds for distance gap judgments indicated that 5-6 and 8-9 year olds could not make safe decisions when vehicle approach speeds exceeded 60 km/h. However, the older children, aged 11-12 years, could be expected to make safe decisions.

The literature demonstrates that a child's ability to execute each of the outlined tasks improves upon increasing familiarity and the development of cognitive processing speed. Thus, the cognitive faculties required to negotiate road use safely become more systematic, more exhaustive, more strategically focused as children grow older.

### **2.2.3 Use and misuse of safety devices (child restraint systems, helmet)**

For child occupants, the risk is rarely attributed to behaviour or skills of the children themselves, rather it is the behaviour of the driver and other adult passengers, and the child has little control over these factors. The most important action that can be taken to reduce child occupant death or injury is use of a properly fitted child restraint system (CRS). For children aged between 4 and 7 years, the use of a belt positioning booster seat can reduce injury risk by 59% compared with seatbelts alone (Durbin, Kallan, & Winston, 2001). Encouragingly, national usage rates of child restraints in Australia are estimated to be relatively high. An observational study conducted in Australia in 1994 estimated that usage rates exceeded 95 percent (Henderson, Brown, & Paine, 1994). However, these estimates do not provide an understanding of correct installation and appropriateness of restraint for the child's height and weight. Thus, although usage is high, the figures belie error rates in CRS use. The error rates are concerning, given that incorrect and inappropriate fitment and use of restraints may reduce or nullify safety benefits (Henderson, 1994; Paine & Vertsonis, 2001). When the seatbelt or CRS is misused or does not fit, there is an increased risk of abdominal, spinal cord and head injuries (O'Neil, Daniels, Talty, & Bull, 2009).

Studies show that inappropriate use and misuse of the fitment of CRS is widespread (Glanvill, 2000; Paine, 1998; Paine & Vertsonis, 2001; Wren, Simpson, Chalmers, & Stephenson, 2001). Glanvill (2000) reported that 69% of the 4,600 child restraints checked during site inspections carried out by the Royal Automobile Club of Victoria between 1996 and 1999 were faulty and a disturbing proportion of these (25%) were judged to be major faults. Paine and Vertsonis (2001) confirmed similar figures for serious, safety-related errors. They reported that approximately 20% of infant capsules and 19% of child seats had safety-related installation problems. In addition to the above reported issues with CRS misuse, children do not sit perfectly still and upright while travelling in vehicles. For example, children can squirm, slide down, fall asleep, play and attempt to remove their restraints while travelling in their CRS, and therefore will be seated away from the preferred design location or out-of-position (OOP). Common misuses of booster seats

include the sash portion of the belt being placed over the booster armrest, the sash belt not being positioned at the mid-shoulder, loose seat belts and the sash belt travelling behind the child's back or under their arm (O'Neil, et al., 2009). Given that recent research has demonstrated that CRS offer a good level of crash protection in the event of a crash, the effectiveness of CRS is critically dependent on correct installation of the restraint in the vehicle, correct harnessing of the child in the restraint, and use of the appropriate restraint for the child's size and weight.

Head injuries resulting from bicycle related crashes are a serious problem. In Australia, two thirds of bicycle casualties involve school children (McDermott, 1984). Further, almost 25% of all brain injuries in children are bicycle-related, and two thirds of bicycle injuries involve the head (Berg & Westerling, 2001). A systematic review has shown that the use of a bicycle helmet can reduce the risk of head injury by between 65 to 88% (Thompson, Rivara, & Thompson, 2000). Yet, children aged between 10 to 14 years are those least likely to wear helmets (Thompson, Rivara, & Thompson, 1989). While 97% of parents are cognizant of the safety benefits of wearing helmets, studies have shown that there is no correlation between a parent's perception of the need of their child to wear a bicycle helmet and whether the child actually does wear a helmet (Ehrlich, Helmkamp, Williams, Haque, & Furbee, 2004). Again, as in the case of CRS, given that helmets have been demonstrated to offer a good level of crash protection in the event of a crash, it is imperative that concerted efforts are made to encourage helmet use by children.

### **2.2.5 Protective factors**

As well as identifying characteristics and factors which render children vulnerable to road user injury and death, the literature has also identified a number of protective factors. In addition, behavioural and circumstantial factors have been identified to separate fatalities from injuries (Gaskell, et al., 1989). The most important protective factor for children identified in the research appears to be parental involvement. Appropriate parental involvement is positively associated with utilization of safety devices (Finoff, et al., 2001; Klein, et al., 2005) and with the protective facility of supervision. Children who are accompanied by adults have fewer collisions; conversely, a lack of supervision greatly increases a child's risk of collision. Assailly (1997) reported that, despite accompaniment protecting children from fatality and injury, one quarter to a third of road crashes occurred when a child is travelling with a parent or guardian. This suggests that quality supervision and of monitoring is another important factor. It could also suggest that children may be under a false sense of security and less likely to be personally vigilant with regards to their own safety. This idea is supported by an earlier referenced study by Demetre and Gaffin (1994). Their research indicated that children who were always supervised when crossing the road did not have the requisite knowledge to select the safest route from one of two options. They argued that their results may be resultant of the required competencies and knowledge not being activated until required. There is a need for parents to be encouraged to give children a controlled independence when cognitively ready; by providing children with the information and tools required to cross the road safely. Thus, when the need arises, their children are equipped to do so.

A recent summary of the aspects of children by the Office of Road Safety (2008) clearly highlights the issues that need to be addressed to reduce the risk of children on the roads. Children:

- require specially fitted restraints which must be altered as they grow;
- are small, can't see over parked cars and drivers can't see them easily;
- are energetic and have trouble stopping at corners;
- have difficulty telling where sounds are coming from and may expect traffic to come from the wrong direction;
- have trouble judging the speed of cars reliably;
- tend to focus on what is in front of them;
- may behave differently when they are out with other children, forgetting about traffic; and,
- may freeze if they find themselves in the path of a car, rather than jump out of the way.

Thus, given their vulnerability, road safety education is considered essential to teach children to interact with traffic safely. It is imperative that the road safety message is transferred accurately and effectively. The next section of this literature review will consider how children's safety has been managed in the past.

## **2.3 MANAGING CHILDREN'S SAFETY IN THE PAST**

The vulnerability of children to road crashes and the difficulties associated with safe navigation of traffic have motivated a concerted effort by parents, teachers, and government to teach children to interact with road safely. Typically, educational programs with a road safety focus have been the vehicle of choice to impart these safety messages to children. These programs can vary in terms of their target populations and the techniques that they employ. Some programs involve only school-aged children, while others involve the community or parents and guardians. Some focus on teaching children through simulations, role playing and field training (Rosenbloom, Haviv, Peleg, & Nemrodov, 2008). The goal of traffic education is to teach children to select situations that offer them the maximal amount of safety, and to teach them to behave as safely as possible in those in those situations (Michon, 1981; van der Molen, Rothengatter, & Vinjé, 1981). The effectiveness of such interventions and their retention are still contentious issues. Regardless, there is a range of road safety education programs that are delivered to children between the ages of six and ten.

### **2.3.1 Classroom training**

Generally, to be effective, education should be geared to the maturation level of children, be socio-culturally relevant and increase awareness of potential dangers (Gaskell, et al., 1989). Traditionally, road user education programmes for children have been conducted in

the classroom. However, reviews of the effectiveness of training established that road safety education was not considered to be profitable for young children if it is limited classroom activities (Rothengatter, 1981). Classroom-based interventions generally increase children's level of awareness and knowledge about the target behaviour (Rivara, Booth, Bergman, Rogers, & Weiss, 1991). However, there is little evidence that such education programs are effective at increasing the frequency of the target behaviour (Ampofo-Boateng & Thomson, 1991; Barton, 2007; Dumbaugh & Frank, 2007; Rothengatter, 1981). For example, an evaluation of one of these programs, the Lifeskills program, showed that children of both genders were taught to accurately perform safety skills. Knowledge retention three months later, however, was less successful; only one safety message of five was retained at follow up (Lamb, Joshi, Carter, Cowburn, & Matthews, 2006).

### **2.3.2 Skills training**

Other road safety knowledge programs include skills training with a classroom component. In this type of training children are taught through experiential exercises. In these programs, children are encouraged to spot hazards and discuss ways of eliminating or avoiding them – facilitating learning by doing. These types of programs include the Walking School Bus (Collins & Kearns, 2005) and Walk Safe (Hotz, Kennedy, Lutfi, & Cohn, 2009). Class room activities have also been combined with home visits to encourage helmet use (Britt, Silver, & Rivara, 1998). The effectiveness of these types of programs is debatable. Children are more likely to perform better (demonstrate the target behaviour) than the control group (Rivara, et al., 1991), but not at statistically significant levels (Thomson, et al., 1996). Other types of activities included in road safety education interventions include demonstrations, distribution of pamphlets, posters etc, mass media campaigns, incentive programs and changes to institutional policies (Grossman & Garcia, 1999). Overall the results of these studies are inconclusive with regard to effectiveness; further, a number of shortcomings in the experimental procedures of these studies were noted: only one of the studies reviewed considered whether programs had any effect on the incidence of crashes and injury, few considered the relative effects on retained knowledge and there was a notable lack of concealment between experimental and control groups. Although children's knowledge of concepts and rules can be increased, skills training programs in isolation from other initiatives (such as road improvements and reductions of vehicle speeds) are generally ineffective at increasing overall safety of child pedestrians.

### **2.3.3 Behavioural training**

Behavioural training involving behaviour modification techniques using the principles of modelling have also been used as a technique to promote children's road safety. The training programs dissect the steps that are required for road users to interact safely with traffic. This dissection is typically based on the expert's cognisance and is not based upon a theoretical foundation. A training program using behavioural group training sought to improve children's skills in this area, comparing both roadside training against the use of models in the classroom (Thompson et al., 1992). Testing immediately after training indicated that effect of training was significant for both roadside and table-top model training and no significant differences were found between the two training packages. The results of testing conducted two months post-training was not reported. One of the major criticisms of road safety education programs is the lack of a coherent theoretical base (Cullen, 1998) in the development of child road safety countermeasures. It has been argued

that many educational objectives have been developed as a result of researcher's personal experience, general consensus amongst experts and common sense. At the same time, crash statistics are also an insufficient basis for determining the nature and direction of countermeasures. For example, one frequently communicated road rule through road education programs instructs children crossing near parked cars. This can be best characterised by the frequently occurring situation of a child unexpectedly moving onto the road from between parked vehicles, leaving little opportunity for evasive action by the driver.

Analysis of crash data shows that children have a higher proportion of collisions when crossing near parked cars compared to adults (Grayson, 1981). However, there is insufficient evidence to indict the action of running across roads with a higher risk of crashes. These statistics may be explained by the fact that children simply use areas where parked cars occur more frequently. The lack of exposure data restricts the development of empirically based countermeasures to minimise child road user injury and fatality. Conversely, crossing the road from wherever they're standing might actually reduce the amount of time children spend on the road itself, minimising their exposure to vehicle traffic. The development of road education objectives should be based upon a theoretical learning framework, and advanced through consideration of expert knowledge, experience, in-depth understanding of the contributing factors to crash and injury risk, and use of exposure data and road crash statistics.

However, while learning programs can improve children's knowledge of relevant concepts and rules, they are generally not effective at changing children's behaviour. The effectiveness of behaviour training can be improved if it occurs within the real (or simulated) traffic environment and is consistently and frequently reinforced during training (Van Schagen & Rothengatter, 1997). For example, a targeted and practical training program using a simulated road environment was found to be successful in improving road-crossing skills (Oxley, Congiu, Whelan, D'Elio & Charlton, 2007). This was particularly evident for selecting safe and appropriate gaps in the traffic and improved appreciation of risk perception. Significant reductions in proportion of critically incorrect road-crossing responses were found immediately after training (56%) and one-month post-training (47%) by the case group compared with pre-training responses, and relative to any changes in responses of the control group. The beneficial effects were greater for younger children, females, children with less well developed perceptual, attentional and cognitive skills, and those with little traffic exposure. The authors suggested that improvements can be made to child pedestrian education by providing tailored and practical programs that target the component skills of road-crossing decisions and improve essential skills through intensive training and feedback on known risk factors (Oxley, Congiu, Whelan, D'Elio & Charlton, 2007).

The above findings have led to the development of road safety programs that encourage the role of parents in carrying out roadside training (Limbourg & Gerber, 1981). Parents are most often perceived to bear primary responsibility for training their children in safety, a view that is supported by parents themselves (Thomson, 1997). Parents are also ideally placed opportunistically to train their children, obviously spending far more time and holding greater influence than any other adult their child may associate with. Parents are also uniquely placed to understand the developmental level of their children, facilitating age-appropriate training. For example, for young children who are rarely without parental supervision, it may be enough that they are taught rudimentary rules of road-traffic interaction, i.e. how to cross a road safely when traffic lights are present. Further, parents are uniquely placed to set and enforce rules about safety for their children, i.e. wearing a helmet whilst cycling and wearing seatbelts whilst travelling in motor vehicles.

The effectiveness of parents at training road safety skills has also been examined. The results are encouraging; a study by Thomson and colleagues (1998) found that children trained by parents were better able to construct safe pedestrian routes than the control group. Encouragingly, these gains had persisted to follow up two months later.

However, there are limitations associated with this approach. Parents may have little idea about what to teach or how to teach it. This could be alleviated by equipping parents with the tools to teach more complex road interactions. Their efforts could be further also supported through simultaneous road safety education in the classroom. Parental efforts should be regarded as an addition to, rather than a substitute for road safety education (Van Schagen & Rothengatter, 1997).

## **2.4 A THEORETICAL BASE FOR CHILDREN'S ROAD SAFETY**

Given children's vulnerability on the roads it is imperative that the road safety message is transferred accurately and effectively. In order to effectively communicate this information to children, an understanding of how children acquire and implement new knowledge and skills is required. Essentially, we need to better understand how children learn in order to teach them effectively, taking the focus back to human learning and development.

Following from the information available on road safety programs and their shortcomings, it seems that this is an area that has been undervalued in the road safety instruction sphere. Bandura (1963, 1965a) proposed a Social Learning Theory which underscores his assertion that humans are cognitive beings – active information processors – who, unlike animals, are likely to think about the relationships between their behaviour and its consequences. Thus they are more often affected by what they believe will happen. Bandura's cognitive emphasis is clear in his decision to highlight observational learning as a central developmental process. Observational learning is simply learning that results from observing the behaviour of other people (called models). Observational learning simply could not occur unless cognitive processes were at work; it is necessary to attend carefully to a model's behaviour, actively digest (or encode) what we observe and then store this information in memory (as an image or a verbal label) in order to imitate what was observed at a later time (Bandura, 1965b). In the initial months following birth, children learn by observation of the environment in which they find themselves and the behaviour of those they see most frequently. Imitation of what is observed, so far as the infant is able, occurs even before 6 months. Unlike the models of learning discussed earlier, this form of learning suggests that children need not be reinforced in order to learn this way.

This theoretical construct has been applied to a number of child health behaviour areas, notably in the treatment of mental health (Adams, 2001) and childhood obesity. Parental involvement is seen to be crucial for the implementation and maintenance of new health behaviours in children (Perry et al., 1988) as parents play a central role in the development of proper eating habits of young children. The parents' food preferences, the quantities and variety of foods in the home, the parents' eating behaviour and the parents' physical activity patterns work to establish an environment in which obesity may or may not be discouraged (Golan, Weizman, Apter, & Fainaru, 1998). As such, it is easy to see how important and influential parents can be in such a specific segment of acquired health behaviour. Further, this approach has also been previously noted in the road safety field, linking parenting styles to young driver crash risk. No other adults are more motivated than parents to keep their children safe, and this period is a great opportunity for parents to assist in the development of safe road practices (Mulvihill, Senserrick, & Haworth, 2005). A similar approach may be used to teach road safety to children.

Social Learning Theory gives us a framework from which some important information on how to reinforce road safety messages for children. There are three key messages from the theoretical frameworks which may help parents to teach and encourage safe road user behaviour. The first is to use positive and negative reinforcement to help children associate safe behaviour with a positive consequence and unsafe behaviour with a negative consequence. For example, parents may choose to reward, praise or punish their children to elicit the desired behaviour. Second, children are more likely to repeat behaviours which are associated with positive outcomes. Safe road user behaviour that is positively reinforced may recur more frequently, eventually turning into habit. Last, from a very young age, children imitate the behaviour of adult role models. Parents who engage in consistent safe road user behaviour are more likely to transfer this knowledge to their children through observational learning. Consequently, Levelt (1996) suggests “whenever parents in the car for example put on a seat belt, this shall have an influence on the child.” As children grow, their learning continues largely through experience and discovery influenced through reward and punishment, trial and error and from demonstration and instruction by parents. Consequently, as Elliott (1999) notes, most young children have learned a great deal by observation – both safe and unsafe behaviours – before their parents consider them to be ready for instruction. These results have also been borne out in a review conducted by VicRoads. Elliott (1999) established the importance of parents/carers as road safety role models for their children and also their potential to be their primary trainers in road safety skills.

Adams (2001) expanded this and listed the advantages of involving parents/carers in road safety education based on how, when and where children develop their road safety skills, and noted the following:

- parents care about the well-being of their children and are motivated to keep them safe;
- they accept and are sensitive to their children’s idiosyncrasies and respond to the issues their children initiate;
- they are the models (whether they realise it or not) as pedestrians, passengers and drivers their children are going to imitate from their first year of life;
- they are with their children in the traffic environment frequently and thus have the greatest opportunity to assist the development of their skills;
- there is the potential for the parents and carers themselves to modify and improve their own behaviour when they take responsibility for the road safety training of their offspring;
- they are in the right place at the time their children are most ready to learn;
- early childhood centres and schools are not able to take children outside to the road frequently (but can provide the opportunity for reflection and reinforcement of understandings gained from practical experience); and
- it is very difficult, time consuming and expensive, to change adult behaviour. If we wish to improve this situation, we should work with parents to establish good habits in their children from the outset.

Parents have many more opportunities to train their children than anyone else and securing their participation would greatly expand the experiences available to the child. However, Adams (2001) also pointed out that parents and carers often lack an understanding of how influential their own modelling behaviour is during the first three years of a child's life and how they should go about training their very young children in the skills needed to scan for traffic and judge gaps.

Further, she argued that parents are often unaware of best-practice approaches in child education strategies (e.g., that children learn best through discovery and self-reflection rather than rules; that roadside training should be frequent, consistent and ongoing in line with the child's developmental readiness; and that roadside training should focus primarily on visual search skills). Parents and accompanying adults could be educated about methods of using street-crossing situations to review and reinforce proper search behaviour in their children.

Consequently, Adams (2001) suggests that it is imperative to provide parents/carers with a range of appropriate information that will not only persuade them to model consistent road safety behaviours, but also educate them with respect to when, where and how they train their young children in road safety skills.

## **2.5 CURRENT RESEARCH ON PARENTS AS ROLE MODELS**

Despite the potentially influential role that parents can play in their children's road safety education, there is limited available scientific research regarding parents' attitudes and behaviours towards road safety (and education) for their children. In the following section, we consider the role of parental involvement in child road safety in greater detail.

The research currently looking at the role of parents in road safety is focused predominantly in the United States, and has typically concentrated on the use of safety devices.

A study by (Ehrlich, et al., 2004) attempted to evaluate the impact of parental practices on the use of child safety devices (particularly use of helmets and seatbelts). They matched parents' responses to using a bicycle helmet to their child's response. Among the 329 children involved in the study, 50 reported 'never' using a bicycle helmet. In this high-risk group, 88% were children of adults who also reported 'never' using a helmet. Matched analysis also demonstrated that a significant proportion of parents who always wore a seatbelt were more likely to have children who sat in the back seat and wore a seatbelt. In contrast, parents who seldom wore a seatbelt were more likely to have children who sat in the front seat unbelted. Similarly, a study examined whether the helmet status of riding companions influenced children aged between 5-14 years and found that children were more likely to wear a helmet when riding with helmeted adults (RR: 9.18; 95% CI: 7.04-11.98) compared with children who rode with non-helmeted child companions (Khambalia, MacArthur, & Parkin, 2005).

Miller, Binns and Christoffel (1996) investigated the use of parental rule setting in promoting bicycle helmet use. One hundred and sixty-nine parents and children aged 5 to 14 years were surveyed, with an additional small subset undergoing in-depth interview. Helmet use was disappointingly low: 48 children reported helmet ownership but only 21 reported helmet use, giving an overall percentage of helmet use of 12%. Indeed, these results indicate that owning a helmet does not necessarily assume a child will wear and use a helmet consistently. Children who had strict rules about using their helmet reported using

it most or all of the time compared to children with no rules. A previously reported relationship between helmet and seatbelt use has also been identified (Bernstein, Harper, Pardi, & Christopher, 2003). These findings further support the idea that parental rules about the use of safety devices whilst children are road users promotes the use of said devices.

## **2.6 SUMMARY**

Young children's safety as pedestrians, cyclists and car occupants is of particular concern in view of their vulnerability in traffic situations and the special value society places on children.

There are a number of ways to improve child road user safety including training children in skills for interacting safely with traffic, adapting the environment to be more forgiving, and vehicle design improvements. The current literature review focuses on behavioural aspects and identifies parents as playing an influential role in managing children's road safety through appropriate modelling, supervision and education. Despite the great potential for parents as educators of road safety, there is limited available scientific research regarding parents' attitudes and behaviours towards road safety (and education) for their children in Victoria. Moreover, there is evidence that many parents are unaware of their influence on their child's road behaviour, and lack appropriate resources and knowledge to enhance their role in their children's adoption of road skills.

Parents from all communities are capable of making a fundamental contribution to children's road safety education, provided they themselves have been properly trained for the job and fully understand what they are trying to achieve. Therefore, in order to develop recommendations regarding appropriate educational resources for parents regarding road safety skills, it is important to gain a clear understanding of current behaviours and needs in the local context. This will better inform optimal development of resources, and appropriate targeting to groups in need of such resources.

### **3 SURVEY OF PARENTS AND ROAD SAFETY**

To gain a clear understanding about parents' attitudes, knowledge and behaviours with respect to road safety and their practice with respect to teaching road safety to their children, a survey was developed and conducted among a sample of Victorian parents. Two key elements were considered: current behaviours with respect to road safety; and knowledge about the impact that the parent's behaviour influences the behaviours of their children.

This Section provides a description of the development of the questionnaire and the recruitment phase. Following this, the results of the survey are presented describing the characteristics of the sample population and key aspects of the findings including attitudes and behaviour towards children's road safety, children's current activities as road users, current practices in teaching road skills, and parenting styles.

#### **3.1 METHOD**

Information on road safety attitudes and behaviour, current practices and knowledge was sought from parents of young children in Victoria using a self-administered questionnaire.

##### **3.1.1 Questionnaire Development**

The research was conducted using a survey methodology, incorporating both a mail-out and an online version. While there are several different ways of administering a survey (e.g. telephone, mail, face-to-face interviews) and there are strengths and limitations of each method, mail-out and internet methods were selected as they offered an excellent means of accessing data anonymously and confidentially. These approaches also afforded a cost-effective means of gaining the in-depth information required for this project.

The survey was developed with five discrete sections:

1. Demographics: For example, parents were asked to answer questions relating to age, gender, socio-economic status, number of children, ages of children, infringement and crash history etc
2. Children as car occupants: Parents were asked to answer this section of the survey if they drive their children in a vehicle. Questions in this section of the survey pertained to: type of vehicle driven, frequency and length of typical journeys, frequency of restraint use, type of restraint use (i.e., child restraints or seatbelts), and parents' attitudes to and knowledge of their role in their children's safety as car occupants
3. Children as pedestrians: Parents were asked to answer this section of the survey if they walk with their children. Questions in this section of the survey related to: frequency and length of typical journeys and parents' attitudes to and knowledge of their role in their children's safety as pedestrians
4. Children as cyclists: Parents were asked to answer this section of the survey if they ride their bike with their children. Questions in this section of the survey related to: type of bicycle ridden, frequency and length of typical journeys, frequency of

helmet use and parents' attitudes to and knowledge of their role in their children's safety as cyclists.

5. Parenting style: The short version of the Alabama Parenting Questionnaire (APQ) was used in this study (Frick, 1991). The APQ consists of items that assess five parenting constructs: parental involvement, positive parenting, poor monitoring/supervision, inconsistent discipline and corporal punishment. The instrument consists of x items, and the typical frequency of each parenting behaviour is rated on a 5-point scale. The instrument has been shown to be a reliable and valid instrument for assessing parenting style, however it is designed for children aged 6-13 years. Therefore, in this study, an additional column was added where items were not applicable (i.e. the child was under 6 years of age).

All parents were asked to complete section one (demographics) and any other sections that were relevant for their child. Once participants had completed the survey, they were asked to return it to the MUARC researchers using a provided reply-paid envelope.

The survey was approved for distribution by Monash University Human Research Ethics Committee.

### **3.1.2 Recruitment**

Recruitment was conducted in three phases. The first phase of recruitment included a mail-out survey distributed to RACV members. The RACV membership database was accessed by the RACV to select a random sample of 2,000 members was selected. As the RACV database has no information about number or age of children in families, it was not possible to distribute the survey specifically to adults with children. Therefore, ABS data were accessed to gain an estimate of ages of the current population of Victorian adults with children aged between 3 years and 10 years (ABS, 1999). Given this information, RACV members aged between 25 and 45 years of age were selected for recruitment. In addition, to ensure a representative group of the Victorian population, the sample was stratified by Local Government Area (LGA). Eight metropolitan local government areas were selected to receive 74% of the surveys, and the remainder were sent to six rural LGAs. An equal number of males and females were selected for recruitment.

Selected members were then sent a questionnaire package through the RACV. The package included an invitation letter, the questionnaire and a reply-paid envelope for participants to mail back the completed questionnaire direct to the MUARC researchers. Respondents were advised that if they were not eligible, they were welcome to pass the survey to a friend or family member that did have children in the target age group.

As a consequence of a low response rate to the initial mail out, the process was repeated, using a second-wave random sample of RACV members. Of the 4,000 surveys distributed, only 273 were returned to the researchers at Monash University Accident Research Centre (6.8% response rate).

In addition, in an attempt to increase recruitment rates further, the survey was then formatted for online use through Survey Monkey. Several techniques were employed for increasing response rates, including advertising in newsletters and on websites (MUARC and RACV), snowballing and contacting the local media. Unfortunately, this also yielded a

small response rate, with 40 completed questionnaires. In total, 313 responses were received, of which 273 were complete and eligible for analysis.

## 3.2 RESULTS

This section presents the results of the survey. Responses to each of the ten sections will be described separately:

- responses to the demographic questions, including family composition;
- traffic exposure;
- collisions, including crashes and infringement history;
- general road safety behaviour;
- road safety skills;
- parenting style;
- children as car occupants;
- children as pedestrians;
- children as cyclists; and
- and awareness of, and participation in, relevant road safety resources and programmes.

The data were analysed using a number of techniques. Preliminary descriptive statistics summarising responses were conducted. Subsequent statistical analyses were conducted to compare attitudes and behaviours across characteristics and variables of interest to ascertain associations between these factors and identifying predictors of overall attitudes to the various road user behaviour of interest.

### 3.2.1 Participant Information and Demographics

In total, 233 completed mail out surveys and 40 online surveys were considered eligible for analysis. All subsequent results and analyses are based on 273 completed surveys (272 from Victoria and one from NSW).

Demographic information was collected, including some information about their family composition. All parents who participated in this study completed this section of the survey.

First, participants were asked to indicate their age, gender and marital status. Participants ranged in age from 25 years to 49 years, with the majority of respondents aged between 35-39 years (**Table 1**). The majority of participants (74%) were female and were either married or in a de facto relationship (92%).

Table 1: Age distribution of participants

Age Group	Frequency	Percent
25-29 years	8	3
30-34 years	70	26
35-39 years	113	41
40-44 years	78	29
45-49 years	2	1
Total	273	99

Participants were also asked about their place of residence. The responses indicated that the majority lived in a metropolitan area (62%), a further 22% lived in a regional city, while a small proportion lived in a country town (9%) or a rural town (6%).

Participants were then asked about their highest level of education completed and annual household income (before tax). Close to 40% of the respondents reported an education level of a University degree. A further 40% reported having completed secondary school or a TAFE qualification, and the remainder completed partial secondary education (7%) or a higher degree (13%). The household income in the sample ranged from less than \$20,000 per year (2%) to more than \$150,000 per year (14%). The majority of the sample earned between \$41,001 and \$150,000, with a breakdown as follows: 23% with an income of \$41,000 - \$75,000; 26% reported an income of \$76,000 to \$100,000; and 22% reported \$101,000 to \$150,000. Five percent did not disclose household income.

Participants were asked about their family composition. The total number of children ranged from 1 to 8, with an average number of 2.34. Of the children included in the study, (i.e. those aged between 3 and 10 years), the average age was 6 years 10 months and the majority of the children were female (74%).

The demographic characteristics of the participants were compared to the demographic characteristics of parents with at least one child under the age of 15 years reported in the 2006 Australian Census (ABS, 2010) shown in Table 2. Almost one-third (31%) of people aged 15-64 years reported their level of highest educational attainment as Year 11 or below and 21% reported Year 12. Additionally, almost one in four (23%) had a highest level of attainment of Bachelor Degree or above and 16% had a Certificate III or IV.

The comparison with census data showed that the sample was more predominantly female (76%) compared with the Victorian average of 51% females. This was not unexpected given the higher proportion of primary carers that are female. The household incomes closely reflected those of household income for families in Victoria, although this sample did have a somewhat higher proportion of those in the \$100,000 plus income bracket compared with the Victorian data, and less in the \$41-\$75,000 bracket.

**Table 2: Demographic characteristics of sample compared with Victorian census data**

Demographic Characteristics		Current sample %	ABS* %
Gender	Female	74	51
	Male	26	49
Age group <sup>1</sup>	25-29 years	3	7 (18)
	30-34 years	26	7 (20)
	35-39 years	41	8 (21)
	40-44 years	29	7 (21)
	45-49 years	1	7 (20)
Marital status	Married / defacto	92	50
	Single (never married)	2	33
	Divorced / separated	6	11
Place of residence	Metropolitan	62	18 <sup>3</sup>
	Regional city/Country or rural town	38	20
Household income <sup>2</sup>	<\$20,000	2	2
	\$20,000-\$40,000	8	6
	\$41,000-\$75,000	23	31
	\$76,000-\$100,00	26	20
	>\$100,000	36	26
	Income not stated	5	n/a
Highest level of education	Finished intermediate education	26	
	Finished secondary education	19	
	University degree or higher	54	
	Other	1	

\*Source: ABS Census data 2006

<sup>1</sup>The ABS figures represent the total proportion of the Victorian population in each group, and in brackets represent the proportion of the target population

<sup>2</sup>Given more than 90% of the sample were married/defacto, the Victorian data represents the annual income for a family with children

<sup>3</sup>The ABS figures represent the proportion of children aged 0 – 14 years in Victoria

### 3.2.2 Exposure and Travel Behaviour

First, participants were asked how often their children used different modes of transport, including a car driven by parent/guardian, a car driven by another person, a school bus, public transport, walking and cycling. Not surprisingly, the most frequently used mode of transport was the car (94%), followed by walking (45%).

Participants were asked to indicate the type of vehicle typically driven while travelling with their children. The four door sedan was the most popular vehicle (37%), followed by the station wagon (22%).

The next question considered how many kilometres parents drove with their child/children per week. More than half (62%) of participants reported driving less than 100km per week. The average distance of the trips for the majority of participants (40%) was between five and ten kilometres and an overwhelming proportion of the sample (74%) drove daily or almost daily with their children in the car. It is not a surprise then that 69% of the sample stated that the purpose of the majority of their trips was to either school or day care. The person completing the questionnaire was most likely to be the driver, followed by their partner.

### **3.2.3 Collisions**

Section C of the survey was designed to investigate the driving history of the participants, including crashes and driving infringements. Participants were asked whether they had been involved in any crashes over the previous two years where they were the driver and if so, how many. Approximately 14% of the sample reported being involved in a crash in the past two years. While the majority of these were only involved in one crash, four people reported being involved in two crashes and one in three crashes.

For those participants who had been involved in crashes, some additional and specific questions were completed to provide some details about the crashes. For example, whether the collisions involved other vehicles or pedestrians, whether their children were present in the vehicle, and whether anyone was injured in the collision. For the majority of respondents involved in crashes the car was moving straight ahead and the collision involved a moving car. Nine people reported being involved in a collision while their car was stationary and for four people the collision involved a tree. For 63% of the sample involved in collisions there was more than one passenger in the car at the time of collision.

Respondents were asked to indicate whether they had received any traffic infringements (excluding parking infringements) over the previous two years. Very few people (6%) reported receiving a traffic infringement in the past two years.

### **3.2.4 General road safety behaviour**

This section was designed to investigate the respondents' attitudes to general road safety behaviours such as drink driving and speeding.

The first question asked participants whether they thought that a blood alcohol (BAC) reading of .05 would affect their ability to act as a driver, pedestrian or cyclist (yes/no/don't know). The results showed that 86.1% believed it would affect their ability as a driver, 74% believed it would affect their ability to act as a pedestrian and 84% said it would affect their ability to act as a cyclist. It was interesting to note that approximately 17% stated that it would not affect their ability to act as a pedestrian.

Respondents were then asked which of the following statements best describes their attitudes to drinking and driving:

- I don't drink at any time
- If I am driving, I don't drink
- If I am driving, I restrict what I drink

- If I am driving, I do not restrict what I drink
- Don't know

The results showed that 40% of the sample reported to not drink at all when driving, while 45% of the sample reported that they restrict what they drink when driving. It is reassuring that no one selected the option of if I am driving I do not restrict what I drink.

Participants were then asked a series of questions relating to their attitudes to speed and speeding, and some interesting and mixed responses were found. First, participants were asked to report the extent to which they agreed with a range of statements about speeding (responses ranged through agree strongly, agree somewhat, disagree somewhat, disagree strongly and don't know). Forty percent of the sample *agreed somewhat* with speeding in certain circumstances and 30% *disagreed somewhat*. There were a number of scenarios in which respondents believed that speeding was acceptable, including on open country roads, on a freeways or highways and during overtaking manoeuvres. When asked about fines for speeding, close to half the sample (47%) believed that fines for speeding are mainly intended to raise revenue, and a similar figure (46%) disagreed with this statement.

The next sets of questions also addressed attitudes to and knowledge of the effects of speed and speeding and had a response structure of never, almost never, sometimes, often, or always. Over half the sample (55%) disagreed with the statement "It is OK to exceed the speed limit if you drive safely". The majority of the participants either strongly agreed (34%) or agreed somewhat (35%) with the statement: "If you increase driving speed by 10km/h you are significantly more likely to be involved in a crash". An overwhelming majority (73%) agreed with the statement: "A crash at 70km/h will be a lot more severe than a crash at 60km/h". Participants were asked whether they always drive at or below the speed limit. Forty-eight percent agreed somewhat with this statement. However, 13% of respondents disagreed somewhat with this statement, and almost 2% disagreed strongly with the statement. When asked if speed limits are generally set at reasonable levels, 52% somewhat agreed.

The next set of questions focussed on driving behaviours. Participants were asked to report how often they engaged in a range of behaviours while driving, including using a mobile phone (hands free), engaging in 'distracting behaviour' such as eating or applying make-up, driving aggressively, and the use of seatbelts. The results are presented in Table 3 below. It was reassuring to find that approximately 95% of respondents reported wearing a seatbelt when driving and the same number always restrain their children when driving. However, it was concerning to note that 2% of the sample did not restrain their children during every driving trip.

**Table 3: How often do you participate in the following while driving?**

<b>Behaviour</b>	<b>Never %</b>	<b>Almost never %</b>	<b>Some- times %</b>	<b>Often %</b>	<b>Always %</b>	<b>No response or N/A</b>
Using a mobile hands-free	37	17	31	8	3	4
Distracting behaviour (e.g. eating)	11	33	47	4	0	5
Aggressive driving	47	35	14	0	1	3
Wearing a seatbelt	0	0	0	2	94	4
Restraining your child	0	0	0	2	95	3

It was also reassuring to note that the majority of respondents reported either never or almost never engaging in risky driving behaviours such as using a mobile hands free and aggressive driving. Interestingly, however, approximately half of respondents reported engaging in distracting behaviours sometimes or often.

Respondents were asked at what age they thought it was appropriate for their child to graduate from a booster seat to an adult seat belt. The mean age was 7.5 yrs, SD = 1.5 yrs, with a range of 4 to 12 years. Respondents were also asked at what age they think it is safe for their children to travel in the front seat. The mean age was 9.3 yrs, SD = 2.0 yrs with a range of 5 to 16 years.

When asked whether there are laws in Victoria against travelling with unrestrained passengers, 91% of respondents answered 'yes', 2% answered 'no', 3% were unsure and 4% did not answer the question. It was of some concern that at least 5% of the sample were not aware of current legislation in Victoria regarding travelling with unrestrained passengers.

### **3.2.5 Road crossing behaviours**

The next few questions were concerned with knowledge of and attitudes towards road crossing behaviour in children. First, the participants were asked at what age they think a child can cross a road unsupervised. The mean age was 9.9 years old (SD = 1.8). The minimum response was five years old and the maximum response was 15 years.

Participants were then asked about how important they think it is to teach their child how to safely cross the road at their current age. The responses are presented in regards to proportion per age group in Table 4 below.

**Table 4: Level of importance regarding road crossing per age group**

Rating	Child Age Group (years)			
	3-4yrs	5-6yrs	7-8yrs	9-10yrs
Very unimportant	16%	16%	30%	15%
Somewhat unimportant	0%	2%	0%	0%
Somewhat important	3%	2%	0%	0%
Very important	82%	80%	70%	85%
Total	100%	100%	100%	100%

The majority of participants reported that it was very important to teach children how to cross roads safely in most age groups from 3 years to 10 years. Interestingly, 30% of the sample reported that teaching road safety skills in the 7-8 year age group was ‘very unimportant’. Almost all of the respondents had strong views one way or the other on teaching road safety skills to their children (i.e., either very important or very unimportant) in each age group – there were very few responses that fell in the ‘somewhat’ categories.

They were then asked how they would rate their child’s ability to safely cross the road compared to other children of the same age. The results showed that 7% thought their children were significantly better than average and 1.5% thought their children were significantly worse than average. The majority of responses (58%) stated that their child was about average.

Parents were also asked at what age they think a child can ride unsupervised. The mean age was reported as 10 years, SD = 1.7 years. They were also asked if they wear a helmet when riding a bicycle. Approximately 90% of those who ride a bicycle stated that they always wear a helmet and 1% (3 people) stated that they never wear a helmet when riding. Participants were also asked to report on circumstances during which they *would not* wear a helmet. Eight participants (3%) reported that there were specific circumstances during which they would not wear a helmet while riding, and the responses included: ‘helmet was not available’, ‘a new helmet was required’, ‘helmet not worn for short trips’, ‘when riding on a paved bush track’, ‘when riding down to the creek’, and ‘when riding around the home or farm’.

When considering their child’s riding behaviours, the factors that participants reported as important for their child to ride safely included: maturity, common sense, awareness, knowing the road rules, obeying the road rules, acting responsibly and wearing a helmet.

### 3.2.5 Road safety skills

The following section asked parents a series of questions about how they think their children learn road safety skills. First, parents were asked through which medium they thought children learnt the most about road safety skills. The majority indicated that the chief learning source was parents (77%), followed by school (14%), friends (8%) and television (1%). Ninety-six percent of respondents indicated that they thought their own driving behaviour would influence their childrens’ behaviour on the road in the context of:

role modelling, leading by example, observation and imitation. A common comment in response to this question was “monkey see, monkey do!”

Parents were then asked what they do when the child starts to cry or misbehave while they are driving. The typical response was talk to them (58%), followed by stop the car (14%). Parents were also asked how they teach their children about safe car travel. Some of the answers included: talking to them about safety, reminding them about safety and leading by example. In response to the question “how does your child learn about crossing the road safely”, typical responses included: via the parents, crossing at designated crossings, crossing with supervision and with practice. In response to the question “how does your child learn to ride a bicycle” an overwhelming majority reported that it was through the parents. Ninety-four percent stated that they *did* have rules regarding road safety for their children, while 6% stated they *did not*.

### 3.2.6 Family dynamics and parenting style

This section of the survey was designed to elicit information regarding the parenting style of the respondents. A modified version of the Alabama Parenting Questionnaire (Frick, 1991) was used to understand more about the parenting behaviours. Respondents were asked to what extent they agreed with a range of statements about parenting (‘never, almost never, sometimes, often, always, not applicable). Parents of children as young as three years of age were included in this survey, a category for not applicable was added to reflect questions regarding parenting choices not relevant to that age group.

The questionnaire is scored according to the following subscales: parental monitoring and supervision, inconsistent punishment, corporal punishment, positive parenting and involvement. The Parent Global form was used. The distribution of each of the parenting styles is presented in the following figures. The median score for each parenting style was used as the cut off score.

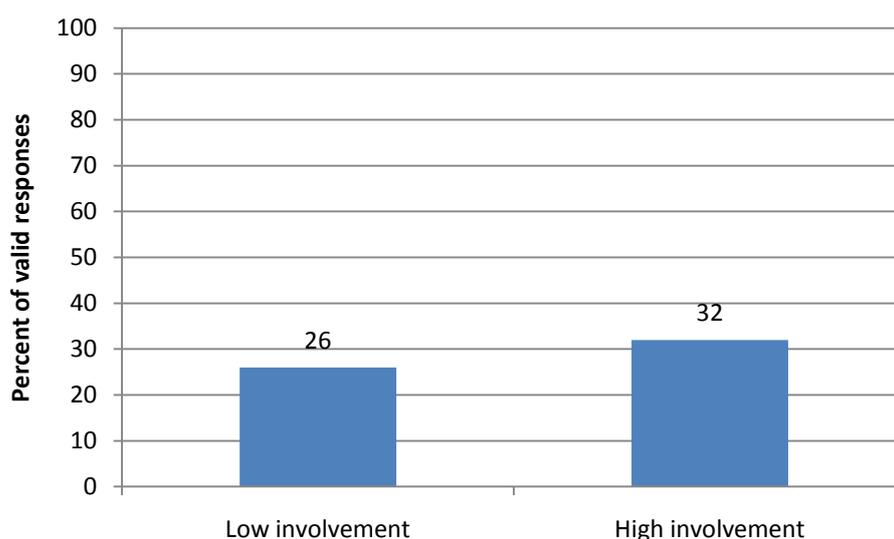
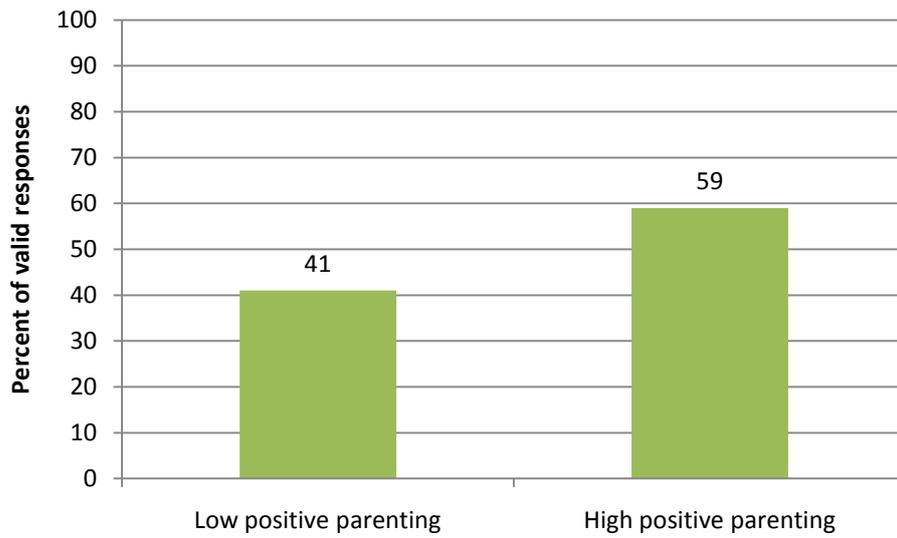
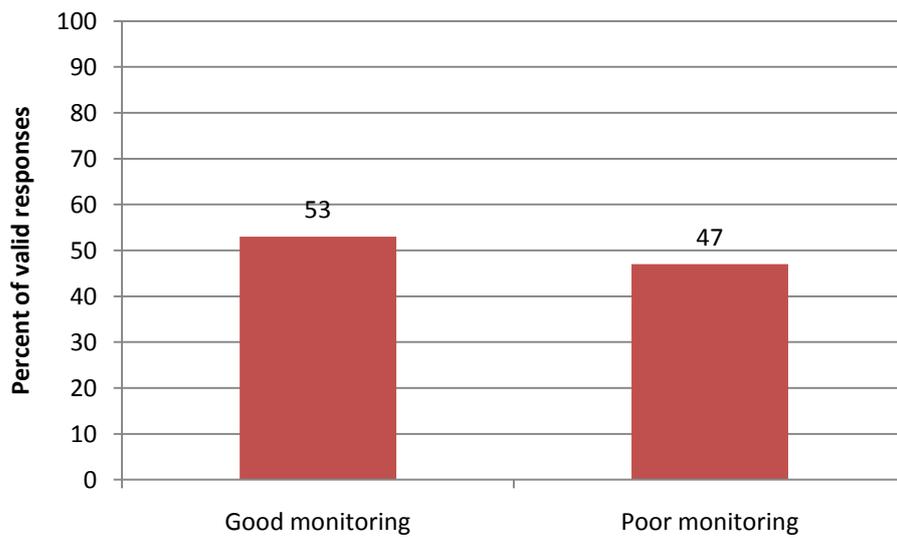


Figure 1 - Proportion of participants who indicated low/high involvement in their child's life.



*Figure 2 - Proportion of participants who displayed low/high positive parenting in their child's life*



*Figure 3 - Proportion of participants who display good/ poor monitoring of their children.*

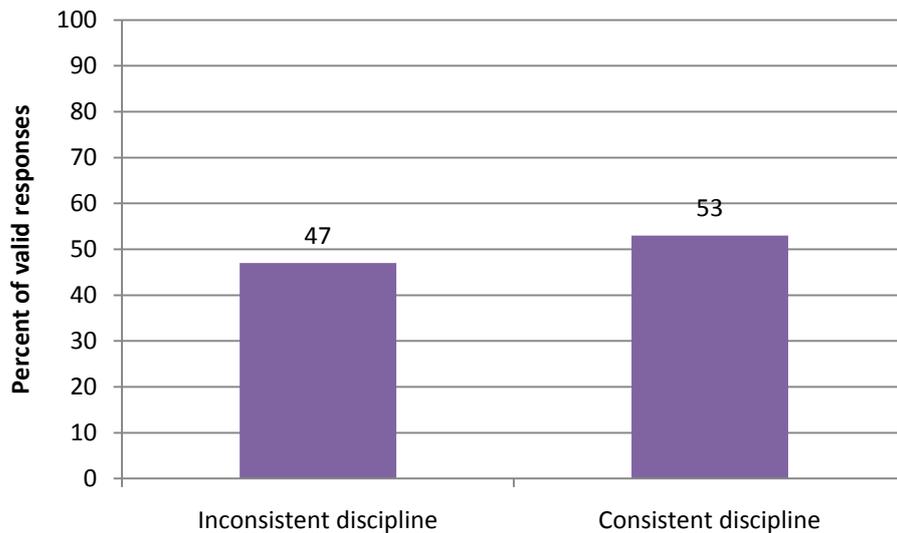


Figure 4 - Proportion of participants who indicate that they use consistent and inconsistent disciplinary techniques when parenting their child.

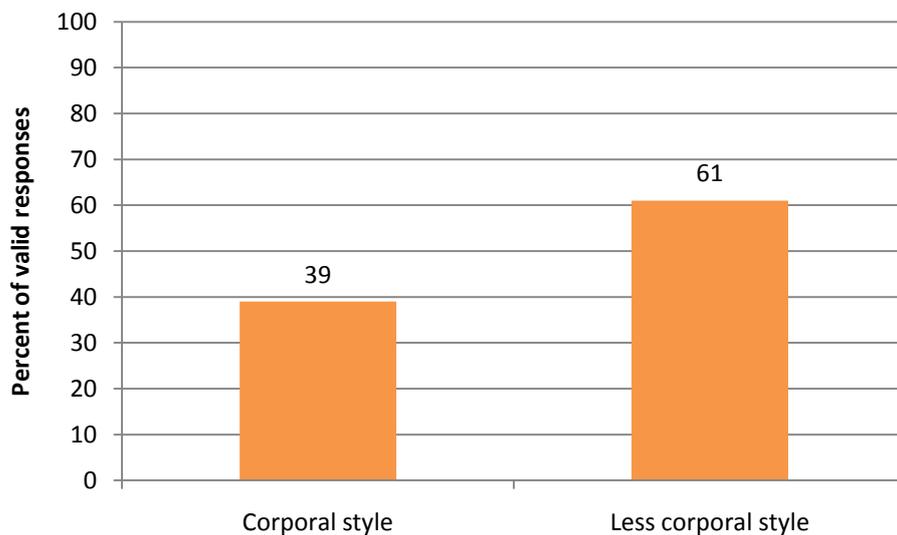


Figure 5 - Proportion of parents who indicated that they use a corporal style of parenting when parenting their child.

Overall, the sample of parents showed high levels of involvement, monitoring, positive parenting, more consistent disciplining and less corporal style on the parenting style assessment scale.

***Relationship between parenting style and value placed on teaching children road safety skills***

Of particular interest in this study was the relationship between parenting style and attitudes and behaviour towards road safety and their perceptions of the role they play in teaching road behaviours and practices. This question was addressed by exploring the association between individual ratings of importance of teaching children how to safely cross the road and various parenting styles.

Ratings of importance of teaching safe road crossing were categorised into either high or low ('very unimportant' and 'somewhat unimportant' were re-classified as 'low': 'somewhat important' and 'very important' were re-classified as 'high').

By using the median score (M=41) as a cut-off for low and high *involvement* groups, analyses were conducted to determine the association between this aspect of parenting style and the value placed on road safety education. The analysis revealed a significant relationship between parents who rated their children's road safety skills as important and the parents who were highly involved in their child's life was found,  $X^2(1, N = 154) = 8.46, p < .01$ .

Using the median score (M=27) for *positive parenting*, analysis revealed no significant relationship between high and low positive parenting and ratings of importance of their children's road safety skills  $X^2(1, N = 93) = .254, p = .614$ .

Parents' styles with respect to *monitoring* were also classified as high and low based on the median score (M=12). There was no significant relationship between parents rating of importance of children's road safety skills and level of supervision/monitoring.  $X^2(1, N = 75) = .107, p = .744$ .

Parents' use of *inconsistent discipline* (M= 13) was not associated with their rating of importance of children's road safety skills and consistency level of discipline,  $X^2(1, N = 207) = .094, p = .759$ .

When grouped by *corporal style* (M= 4) no significant relationship was found with parents rating of importance of children's road safety skills  $X^2(1, N = 252) = 1.256, p = .262$ .

### ***Knowledge rating of road safety versus parental rating of importance of children's road safety skills***

In addition, to associations between parenting style and ratings of the importance of teaching children how to safely cross the road, it is also important to understand the associations between this rating and overall knowledge and attitudes to road safety. The questions pertaining to speed and speeding were selected as a proxy measure for overall knowledge and attitudes to road safety. The sum of 'correct' responses was calculated for this series of questions and those who scored below the average (6.5) were categorized as having poor road safety knowledge, and having good road safety knowledge if they scored above the average.

No significant relationship between road safety knowledge and parents rating of importance of their children's road safety skills was found,  $X^2(1, N = 251) = 1.186, p = 0.276$ .

### ***Relationship between driver behaviour and the value placed on teaching children road safety skills***

Likewise, it was considered important to understand associations between parents' values about their road safety education and general driver behaviour. The questions pertaining to driving behaviour (e.g., 'How often do you use your hands free mobile phone while driving', 'How often do you wear a seatbelt while travelling in a vehicle', etc.) were recoded in to a dichotomous variable of 1 = Safe, 2 = Less Safe and correlated with ratings of the importance of teaching children how to safely cross the road.

There was no significant relationship between the extent to which parents engage in risky driving behaviours and the self rated level of importance placed on teaching children road safety skills,  $X^2(1, N = 263) = 0.038, p = .845$ .

### 3.2.7 Children as car occupants

This section considered a range of statements regarding children as car occupants, and was designed to assess parent's knowledge about current road safety regulations in Victoria. All statements and responses are presented in Table 5. The response choices were true, false and don't know. Some interesting results were found here. For example, only 62% of parents reported being aware that there were different standards of safety for different child restraints. A small proportion of respondents reported that they were not aware that babies must travel in a specially fitted capsule (2% disagreed and 1% did not know). Furthermore, more than 10% of the sample were not aware that children under 7 years of age should not sit in the front seat of a car. These results indicate mixed knowledge regarding appropriate restraint use in this sample.

**Table 5: Children as car occupants**

<b>Statement</b>	<b>True %</b>	<b>False %</b>	<b>Don't know %</b>
Legally, children of any age can travel in the car if they are wearing a seatbelt	37	52	7
Children under the age of 7 years should not sit in the front seat of a car	89	3	4
Babies must travel in a specially fitted capsule	94	2	1
If the car is in a major collision, the child restraint should be replaced and the old ones thrown away	85	2	10
Children can sit in the back of a car with only a seat belt once their eyes are level with the head rest of the seat in front of them	18	37	41
If I am giving someone else's child a lift, their parents are responsible for restraining them in my car	2	91	5
Crash tests show that some types and makes of child restraints are safer than others even if they meet the Australian Standard	62	10	24
The main benefit of boosters is to lift children to a sitting height so that the adult seatbelt is positioned properly	78	8	10

### 3.2.8 Children as pedestrians

This section considered a range of statements regarding children as pedestrians. The statements considered specific behaviours (for example crossing streets with and without pedestrian crossings) and whether parents felt these activities were unsafe, somewhat safe, safe or very safe. The results can be presented in Table 6.

Table 6: Parents' safety ratings of pedestrian behaviours for their children

Statement	Unsafe %	Some-what safe %	Safe %	Very safe %
Crossing a local street with no pedestrian crossing	59	30	6	1
Crossing at a pedestrian crossing on a main road	46	32	14	2
Walking across a neighbour's driveway	27	48	18	2
Walking on to a road from behind parked cars	85	8	1	1
Walking along the edge of the road near the footpath	75	17	2	1
Crossing at pedestrian lights	30	29	28	9

The majority of listed pedestrian behaviours were considered unsafe or somewhat unsafe for children. Not surprisingly, the majority considered walking onto a road from behind parked cars and walking along the edge of the road was a dangerous activity for their children. Almost 60% of parents also considered crossing a street with no pedestrian crossing was unsafe for their children. Interestingly, the majority of parents also reported crossing at a pedestrian crossing on a main road as unsafe (46%) or somewhat safe (32%). Also, a third of parents felt that crossing at a pedestrian crossing (not on a main road) was also unsafe. Sixty percent of respondents also reported that crossing a local street with no pedestrian crossing was unsafe.

Participants were then asked about their child's exposure as a pedestrian, and how often they engaged in particular activities. Overall, the frequency of walking behaviours of children, whether walking to school or other destinations was low. Parents were asked whether their child walked to school (ever), and the results showed that the majority did not walk to school (67%). Parents were also asked whether their child ever played in their front yard, or a neighbour's front yard, and just over half of the sample reported that they did (52%). Of these respondents, the front yard was fenced in 30% of cases.

Parents were then asked how often their children engaged in different walking behaviours; walking to school with and without adult supervision (of those that did walk to school), walking to other destinations (for example milk bars, sporting venues or friend's houses) with and without adult supervision, and playing in the front yard or street. The results are shown in Table 7. The results show that the most common daily behaviours that children engaged in were walking to school with adult supervision (12%) and playing in a front yard (12%).

**Table 7: Frequency of walking behaviours**

<b>Behaviour</b>	<b>Daily %</b>	<b>3-4 times a week %</b>	<b>Weekly %</b>	<b>Fortnightly %</b>	<b>Monthly %</b>	<b>Less than monthly %</b>	<b>Total</b>
Walks to school with adult supervision	12	9	3	3	3	4	34
Walks to school without adult supervision	2	1	3	1	2	1	10
Walks to another destination with adult supervision	5	7	22	6	8	6	54
Walks to another destination without adult supervision	1	1	4	2	3	6	17
Plays in a front yard	12	13	15	4	4	6	54
Plays in the street	4	4	8	2	4	5	27

It was also of interest to find out what the parents' pedestrian safety strategies were like when they were walking with their child, and whether they allowed their child to engage in pedestrian activities alone.

Table 8 shows that the majority of parents (69%) did not allow their child to walk without adult supervision, even when with a friend or sibling. It was reassuring to note that when crossing a road with their child, 75% of parents reported 'often' or 'always' using a pedestrian crossing. Also, 92% of respondents reported that when they were crossing the road with their child, they 'never' or 'almost never' crossed without waiting for the green light. Further, 91% of parents reported that they 'always' or 'often' held their child's hand when crossing a main road without the use of a pedestrian crossing. However, only 49% of parents reported that they always told/showed their child how to cross the road safely while crossing, and 10% of respondents noted that they sometimes crossed quickly between on-coming cars with their children.

**Table 8: Road crossing behaviours**

<b>Behaviour</b>	<b>Never %</b>	<b>Almost never %</b>	<b>Some- times %</b>	<b>Often %</b>	<b>Always %</b>
When crossing a road with your child, how often do you use a pedestrian crossing?	1	2	18	45	30
When crossing at pedestrian crossings with your child, how often do you walk without waiting for the green light?	76	16	3	1	1
When crossing a main road NOT at a pedestrian crossing with your child, how often do you hold their hand?	1	1	2	11	80
When crossing a main road NOT at a pedestrian crossing with your child, how often do you cross quickly between oncoming cars?	57	27	10	1	1
When crossing the road with your child, how often do you show or tell your child how to cross safely?	0	0	9	38	49
How often do you walk your child home from school, or from the place you drop them off?	13	10	24	24	22
How often does your child walk without adult supervision?	69	16	5	3	3
How often does your child walk without adult supervision but with a friend or sibling?	55	16	13	6	1
Crosses the road at a zebra crossing	22	7	24	18	16

### 3.2.9 Children as cyclists

This section considered a range of statements regarding children as cyclists. First, respondents were asked about the purpose of their child's cycling. In this sample, 62% reported that their child owned a bicycle, and of those, 41% allowed their child to ride on the road. When asked about helmet wearing, almost 90% of the parents reported that they always wear a helmet when cycling, and only 1% of the sample reported never wearing a helmet. When asked about situations where helmets would not be worn, the most common responses included short trips around the home, farm or bush tracks. When asked about their child's helmet wearing, again 90% reported that their child always wore a helmet when cycling, however the remaining 10% reported that their children wore a helmet sometimes or never when riding.

Most of the adult cyclists reported that they rode on the roads (81%). The main purpose of the *adult's* cycling trips most often reported was recreational (82%), with a further 8% riding as a work commute, and 7% for fitness reasons. The main purpose of the *child's* cycling was most commonly reported as riding for recreation (86%) or riding to school (9%). The majority of the respondents (69%) reported that their child never rode alone. Parents were then asked about their child's exposure to different riding scenarios, such as riding on the road or footpath, or riding at dusk. The results can be seen in Table 9, and show that the majority of parents do not allow their child to ride at dusk (74%) and the children were more likely to ride on the footpath (42% always) than the road (4% always).

**Table 9: Child's riding behaviours**

<b>Riding behaviours</b>	<b>Always %</b>	<b>Some- times %</b>	<b>Never %</b>
Does your child ride alone?	2	30	69
Does your child ride on the road?	4	41	56
Does your child ride on the footpath?	42	48	10
Does your child ride at dusk?	0	26	74

### **3.2.10 Resources**

The final section of the questionnaire considered respondents awareness of, and participation in, a range of road safety resources and programs. Table 10 summarises the proportions of parents in the sample who were aware of a range of commonly used road children's safety resources or programs in Victoria. The results showed highest awareness levels for the *Walking School Bus* (67%) and *Bike Ed (years 4-6)* (54%) programs.

**Table 10: Parents' awareness of road safety resources for children**

<b>Information resource</b>	<b>Aware of resource</b>
A Child's World of Traffic DVD	1%
Bike Ed (years 4-6)	54%
Don't Risk it CD-Rom	2%
Kids on the move	13%
Metlink Adventures	3%
RACV Street Scene (prep to year 6)	3%
Ride2School	31%
VicRoads Starting Out Safely (inc. Thingle Toodle at kindergarten)	13%
Travel Smart	17%
Walking school bus	67%
Kew Traffic School	32%
Other: e.g. Traffic Schools.	20%

It was also of interest to note which programs children had actually participated in. Table 11 provides a breakdown of the proportions of children who had participated in the full range of programs. Interestingly, despite a reasonable proportion of parents being aware of the road safety resources available in Victoria, there were low levels of participation in the programs. For example, 67% of the participants were aware of the *Walking School Bus* program, but only 4% actually participated in the program, and 54% of the sample were aware of the *Bike Ed* program, but only 14% reported participation.

**Table 11: Road safety programmes in which children have participated**

<b>Information resource</b>	<b>Participated in program</b>
A Child's World of Traffic DVD	1%
Bike Ed (years 4-6)	14%
Don't Risk it CD-Rom	0%
Kids on the move	2%
Metlink Adventures	0%
RACV Street Scene (prep to year 6)	2%
Ride2School	10%
VicRoads Starting Out Safely (inc. Thingle Toodle at Kindergarten)	6%
Travel Smart	1%
Walking school bus	4%
Kew Traffic School	10%
Other: e.g. Traffic Schools.	3%

Last, it was also of interest to consider where the parents learned about the different road safety resources. Table 12 lists where parents learned about the different road safety programs. The majority of participants heard about the above road safety programs via a school newsletter (47%). A quarter of the sample learned about road safety resources through a friend, and a further quarter through the internet or their child.

**Table 12: Information sources for road safety programs.**

<b>Information resource</b>	<b>Participants</b>
School Newsletter	47%
Internet/Website	11%
Your Child	16%
Brochure	14%
Friend	26%
Work (e.g teacher, police officer etc)	6%
Local council	1%
Advertising (outside venue, television etc)	7%
Other	14%

### **3.3 SUMMARY**

A total of 273 parents of young children aged between 3 and 10 years of age in Victoria took part in this survey. The majority of respondents were aged between 30 and 44 years, were female, married, with relatively good levels of education and income, living in metropolitan areas, and, on average had 2-3 children between the age of 3 and 10 years. The group was fairly representative of the Victorian population, however, did report somewhat higher education and income levels than the general Victorian population.

The results from this survey have provided a rich source of information on many aspects of safety of children on the road, particularly regarding their acquisition of road safety skills and the role that parents have played in teaching these skills. Importantly, the results have also provided some insight into parents' overall attitudes to and knowledge of road safety, their knowledge of the important role they play in the development of their child's road skills, and strategies they have adopted to teach road skills. Of particular interest were the following findings:

- Most children were driven to school or activities by their parents and many trips (40%) were short (under 10 km).
- Attitudes to road safety in general were fairly positive, most parents reported restricting their drinking while driving, and generally positive attitudes to speeding. Behaviours while driving were also fairly positive with most reporting wearing seatbelts and not engaging in risky driving. Importantly, most parents believed that children should be supervised while walking up to about 9 years of age, and most thought it was important to teach children road crossing at any age. Despite this, there was a substantial proportion of parents that believed that it was not important at all to each road crossing skills (approximately 15% at each age level).

- The majority of parents reported an awareness of their role in teaching their children road safety skills and thought their behaviour would influence their children's behaviour.
- Overall parenting styles were positive, with more parents indicating a high level of involvement and monitoring, consistent discipline and low corporal style. A positive association was found between attitudes to teaching skills and highly involved parenting styles. Few associations were found between other parenting styles and teaching road safety skills
- Regarding children as car occupants there were some concerning results, particularly a low awareness of age-appropriate restraint use and sitting positions. For child pedestrians, parents were generally aware of potentially dangerous situations, provided supervision frequently (although children did not walk frequently) and promoted good crossing behaviours. Likewise, for child cyclists, attitudes and behaviours to safety were positive, with high levels of helmet wearing and supervised cycling.

## **4 DISCUSSION AND RECOMMENDATIONS**

The broad aim of this study was to investigate Victorian parents' attitudes and behaviours regarding road safety (and education) for their children, to gain a clear understanding about current attitudes, behaviours and subsequent transfer to their children, and to develop a set of recommendations which may be used to guide the development of a targeted and effective road safety education resource for parents.

The survey of Victorian parents provided some expected and interesting findings and these are discussed in the following sections. The main findings of the report were grouped according to general road safety behaviour of parents, children as car occupants, children as pedestrians and children as cyclists.

The sample of parents were, on the whole, representative of the Victorian population of adults aged between 30 and 44 years, although there were some noted differences, including a higher likelihood of being female, being married, and more likely to have completed a University degree or higher. The potential response bias associated with the level of education observed in this sample is discussed under further research. It was not surprising to find that the majority of respondents were female, as they tend to be the main caregiver for young children.

### **4.1 TRAVEL PATTERNS**

The majority of parents lived in metropolitan areas and were a fairly mobile group. They travelled daily, but generally drove less than 100km per week with their children and reported making short daily trips (only 5-10km). Parents also reported that they generally drove their children to school and activities. This was not a surprising finding, given the widespread use of the car for transport. Increasingly, the trend is for parents to drive their children to school or leisure outings, even though they could walk or cycle. For example, Morris, Wang and Lilja (2001) reported that 81% of all trips made by children aged 5-9 years and 62% of those made by children aged 10-14 years in Perth, Australia, were by car. In contrast, only 26% walked to or from school, including only 42% of those who lived within a 10 minute walk from school. It is reported that children are increasingly being driven to school and outings for security reasons and lack of time. It is certainly understandable that parents wish to protect their children from perceived risks associated with walking and cycling.

Not surprisingly, pedestrian travel amongst children was fairly low in this sample, with only 14% reporting that their child walked to school daily and 12% played in a front yard daily. The most often reported pedestrian behaviour was walking to a non-school destination with adult supervision on a weekly basis (22%)

In addition, travel on a bicycle was somewhat low in this sample. Only 62% of this sample reported that their child owned a bike, and of those, 41% allowed their child to ride on the road. This is likely to reflect the age range in the sample (from 3-10 years). Most parents (69%) did not allow their child to ride alone, and most children rode on the footpath always or sometimes (90%).

## 4.2 GENERAL ROAD SAFETY ATTITUDES AND BEHAVIOUR

Parents were asked several questions regarding their attitudes towards and behaviours surrounding general road safety issues as well as road safety of children. Generally, the group reported positive attitudes to road safety, particularly in terms of issues such as drinking and driving, and speeding. While these responses were not surprising, particularly given that the majority of respondents were women (who are generally more cautious and less likely to take risks while driving, compared with men), there were some interesting findings. With regard to drinking and driving, most reported either refraining from drinking or limiting the amount they drank if they were driving, believing that alcohol affected their ability to drive safely. Interestingly, a substantial proportion of respondents believed that alcohol would not affect their ability to walk safely, despite good evidence to the contrary (Oxley, Lenné & Corben, 2006).

Some interesting findings regarding attitudes to speed and speeding were also found. While a generally positive attitude to speeding was found, with over half of respondents disagreeing with the statement 'It is OK to exceed the speed limit if you drive safely', about 40% also felt that it was acceptable to speed in certain circumstances, such as on country roads, freeways and when overtaking. Encouragingly, there was a high awareness of the injury consequences of speed and speeding, and general acceptance of speed limit setting and fines for speeding.

In terms of actual behaviours, the group generally adopted safe behaviours. For example, the great majority always wore a seatbelt while driving, and this is representative of the Australian community (Oxley, Langford, Palamara, Muir, Koppel, Bohensky & Williamson, 2009). Most respondents also reported wearing a bicycle helmet when riding. There were, however, some respondents who reported 'sometimes' engaging in risky behaviours such as use of hands-free mobile phones, distracting activities, and some aggressive behaviour.

These findings were of particular importance because children learn a great deal about road safety behaviours, both safe and unsafe, through observation of the parent's behaviour before the parents even consider the children ready for instruction (Elliott, 1999). It is therefore critical that parents engage in safe behaviours as a driver, cyclist and pedestrian at all times.

Of concern were the findings regarding general knowledge on restraint use, particularly the current Victorian legislation for restraining children. The results showed a wide variation in knowledge regarding child restraints. Only half of the parents surveyed were aware that the statement 'legally, children of any age can travel in the car if they are wearing a seatbelt' is false. This is a particularly concerning finding in light of the fact that it suggests that not all parents are aware of the importance of appropriately restraining their children during each and every trip in the car.

Some other concerning results were found. Almost 35% of respondents were not aware that some types and makes of child restraints are safer than others even if they meet the Australian Standard, more than 10% of parents were not aware that children under the age of 7 years should not sit in the front seat of a car, 12% were not aware that if a car is in a major collision the child restraint should be replaced and the old ones thrown away, and 7% of parents were not aware that they are responsible for restraining other people's children when they are driving them.

A substantial proportion of parents in this sample lack knowledge or awareness about appropriate child restraint use. Previous research has shown that there is some confusion among parents regarding the appropriate thresholds for transition from a forward facing child restraint to a booster seat as well as the transition from a booster seat to a seatbelt (Rivara et al, 2001). These results suggest that this confusion may extend to the safety principles behind the use of restraints, and the legislative framework regarding restraining children in cars.

Reassuringly, however, actual reports of child restraint use were high and support early research; an observational study in Australia indicated that 95% of parents restrained their child when driving (Henderson, Brown & Paine, 1994), and in this sample 95% reported always restraining their child while driving. However, these statistics do not take into account mis-use or problems with fitment of a child restraint, and given that incorrect and inappropriate fitment and use of child restraints may reduce or nullify safety benefits (O'Neil et al, 1999) it is important that parents have a sound knowledge of appropriate child restraint use. The findings of this study suggest that it is important to educate parents about the both the process for appropriate child restraint use, and the principles driving these recommendations.

### **4.3 ATTITUDES TO CHILD SAFETY**

A key aim of this study was to gain an understanding of parent's attitudes to child safety and behaviours they engage in to ensure the safety of their children while in the car, walking and cycling. Like for general road safety awareness, attitudes and behaviour, this group were generally safety-conscious with respect to their children, and believed they have a role to play in protecting their children, but also in teaching them road skills.

Most parents protected their children while driving and used child restraints, however, there was some suggestion that some parents' knowledge of appropriate restraint use was limited, as discussed previously. Parents also reported on their behaviours in response to children misbehaving while driving, and strategies they used to teach general safety while driving. Positive responses were found, with parents reporting talking with their children, leading by example, or stopping the car when children were misbehaving.

Some important and encouraging findings were noted regarding parent's behaviours towards their children as pedestrians and cyclists. Parents generally reported that pedestrian travel was unsafe for their children, in most environments from crossing local streets with no pedestrian facility, to crossing main roads with pedestrian facilities. It was not surprising, then, that less than a third of the parents reported that their children walked to school, and the most common walking behaviours that children engaged in were walking to a non-school destination on a weekly basis (22%).

The majority of participants reported that it was very important to teach children how to cross roads safely in most age groups from 3 years to 10 years. Almost all of the respondents had strong views one way or the other on teaching road safety skills to their children and it was of concern that some (approximately 15%) parents of children in most age groups believed that it was not important to teach children to cross roads. It was especially surprising to find that a substantial proportion of parents (30%) reported that teaching road safety skills in the 7-8 year age group was 'very unimportant'. This was an unexpected finding and one that should be explored further.

The most encouraging finding was that the majority of parents supervised their children while walking and cycling and were aware that children should be supervised up to ages around 9-10 years old. Most parents did not allow their child to walk without adult supervision, even when they were with a friend or sibling. Previous research has suggested that parents are not generally aware of the developmental milestones of children, acquisition of the skills necessary to cross roads safely, and are mis-informed regarding ages at which children are competent at crossing roads safely and unsupervised (Oxley, 2006). The current findings suggest that there is greater understanding of appropriate ages for unsupervised walking, although there were some parents who still believed that children could walk unsupervised at earlier ages (the minimum response to this question was five years of age).

However, despite accompaniment protecting children from fatality and injury, between one quarter and one third of road incidents occur while the child is supervised by a parent or guardian (Assaily, 1997). Therefore, the quality of monitoring is another important factor; it is reassuring to note that the majority of parents (75%) reported often or always using a pedestrian crossing, and there was an overwhelming trend to cross when the light was green and to hold their children's hand when crossing without a designated pedestrian crossing.

It is also possible that having a parent present reduces the child's vigilance with regards to their own safety. For example, research has shown that children who were always supervised when crossing the road did not have the requisite knowledge to select the safest route from one of two options (Demetre & Gaffin, 1994). The authors attributed this to the required competencies and knowledge not being activated until required. In this context it would appear important to encourage parents to give children controlled independence when cognitively ready, by providing children with the information and tools required to cross the road safely. The parents surveyed also reported that 39% on occasion (or often) crossed a road with their child quickly between on-coming cars, and when preparing to cross a road, only half the parents always show or tell their children how to cross the road safely. Therefore, it appears important for the parent to engage in this instructional behaviour on a consistent basis, particularly given the low levels of reported pedestrian exposure, and very low levels of unsupervised pedestrian exposure.

Attitudes towards cycling amongst children was similar to that of pedestrians, with over two-thirds of parents reporting that their child never rode alone. Likewise, parents believed that children should be supervised while riding up to about 10 years of age. While a high proportion of parents reported that their children wore helmets while riding, a concerning 10% only wore a helmet sometimes or never. Helmets offer significant protection in the case of a bicycle incident, with a systematic review demonstrating that the risk of head injury can be reduced by between 65 and 88% (Thompson, Rivara & Thompson, 2000). Clearly, the importance of helmet-wearing should be stressed during educational campaigns.

#### **4.4 RELATIONSHIP BETWEEN PARENTING STYLE AND ROAD SAFETY BEHAVIOURS**

Intuitively, the way parents manage their young children's adoption of safe practices on the road may largely depend on their beliefs on how a child should be brought up, and how a family should be run. Indeed, there is evidence of an association between parenting style

and crash and injury risk amongst novice drivers (Ferguson, Williams, Chapline, Reinfurt & De Leonardis, 2001; Simons-Morton, Ouimet & Catalano, 2008). It was therefore considered important to understand the relationship between parenting style and parental attitudes and behaviours surrounding road safety.

The majority of parents in the study reported that they employed high levels of involvement in their child's life, high levels of positive parenting, lower levels of monitoring/supervision, consistent disciplinary techniques and a less corporal punishment style.

Parenting styles and parental attitudes towards road safety were analysed by correlating the responses of the Alabama Parenting Questionnaire with the response of the level of importance parents placed on teaching their children road safety skills. Only one parenting style – Involvement, was significantly associated with parents' level of importance of their children's road safety skills. This finding was not surprising as the research shows that parental involvement is the most protective factor for children when it comes to road safety; parental involvement is positively associated with the use of safety devices (Finoff et al, 2001; Klein et al, 2005) and the safety mechanism of supervision. It is also possible that the high level of education in the sample affected the parenting styles observed in this study.

However, parenting style was not found to be significantly associated with parental knowledge of road safety. In addition, there was no significant relationship between parental risky driving behaviour and parents' level of importance placed on their children's road safety skills. Parenting style is likely to be related to children's road safety behaviour, however, this aspect was not investigated in this study and could be explored in the future.

#### **4.5 STRATEGIES TO TEACH ROAD SAFETY SKILLS**

Last, we were interested in understanding the strategies and practices parents utilise to teach road safety skills, and whether children engaged in any formal road safety training. Parents were asked if they had any formal rules regarding road safety for their children; 94% stated that they had formal rules and only 6% reported that they did not. Parents were also asked how children learn road safety skills. The findings suggest that this group of parents felt that they had a major role to play in teaching these skills. Seventy-seven percent of parents felt that children learned the most about road safety through parents, followed by school (14%), then friends (8%) and television (1%).

In addition, the majority of respondents (96%) indicated that they thought their own driving behaviour would influence their children's behaviour on the road in the context of role-modelling, leading by example, observation and imitation. This is interesting in light of the responses from the parents' road safety behaviour questions; 40% reported that speeding was acceptable under some circumstances, almost 50% sometimes engaged in distracting behaviour while driving (such as eating or applying make-up), more than 30% reported sometimes using a mobile phone with hands-free device, and close to 15% reported sometimes engaging in aggressive behaviour while driving. Although this result appears contradictory, it may not actually be that unusual; for example, research has shown that while 97% of parents are aware of the safety benefits of using a helmet while cycling, there is no correlation between a parent's perception of the need for their child to wear a helmet and whether the child actually does wear a helmet (Ehrlich et al, 2004). Perhaps a

more important aspect is to extrapolate the parent's understanding of how their specific driving behaviours relate to their children's safety.

Given their vulnerability in the road setting, formal road safety education is considered essential to teach children to interact with traffic safely. In terms of available educational resources to teach road safety skills in Victoria, the most well-known programs among the participants in this study are the *Walking School Bus* (with 67% of parents aware of the program), and *Bike Ed (years 4-6)* (with 54% of parents aware of this resource). However, despite fairly high proportions of parents reporting awareness of the programs, far fewer reported that their children had actually participated in the programs; 4% for the *Walking School Bus* and 14% for *Bike Ed (years 4-6)*. This could of course reflect the age of the children in the sample; some were too young to have participated in the various programs. It could also reflect the uptake of such programs by the schools children were attending. In any case, participation rates in these programs were quite low and suggests that more effort could be made to promote implementation of safety programs in schools.

## **4.6 CONCLUSIONS AND RECOMMENDATIONS**

Three broad strategies are available for managing children's safety on the road – education/supervision/training, improvements to road design and operation and improvements in vehicle design. It is important to note that neither education/training programs, environmental modification nor improvements to vehicle design are sufficient solutions by themselves, and gains in children's safety in traffic require innovative combinations of improvements in all three areas. Nevertheless, the focus of this research has been on educational and behavioural aspects of road safety, and the recommendations that follow primarily address educational programs.

This research has provided valuable information on which effective countermeasure programs can be built, particularly how to utilise more effectively parents' potential to be the primary trainers in road safety skills. There are major advantages of involving parents/carers in road safety education and parents are in an ideal position to foster an environment where road safety can be taught well.

General positive attitudes towards road safety and safety of children in cars and while walking and cycling were found in this study. Parents of young children reported a good understanding of the role they can play in protecting their children, modelling good behaviour and fostering adoption of safe road practices. However, there was suggestion that some parents may be less involved in their children's traffic education than they could be, despite the fact that they are in a prime position to influence their behaviours in traffic. Indeed, it is argued that parents in general could benefit from more resources to provide accurate information and 'best-practice' strategies to enhance their role as teachers and modellers of good road behaviour.

### **4.6.1 Development of resources for parents of young children**

The findings from this report indicate that parents are a heterogeneous group that require a range of communication approaches to facilitate knowledge and understanding regarding road safety behaviour for their children. Thus, the findings from this research can be utilised in the development of appropriate and targeted resources to assist parents in their role as primary trainers for their young children in road safety skills.

These resources should aim to:

- ensure parents are aware of their role as primary trainers in road safety skills,
- provide a good understanding of the issues surrounding safety of children in traffic,
- provide a good understanding of evidence-based best-practice in managing the safety of their children, and
- provide practical tips and strategies on teaching road skills.

The recommendations for the contents of educational resources are therefore as follows:

- **Role of parents:** Components addressing the role of parents should aim to raise the awareness of the important role they play in teaching road safety behaviours, highlighting their responsibility for road safety training, their motivation to keep their children safe, the fact that their children naturally imitate them and the need to model good behaviour, and the opportunities they have to train using practical experience, etc.
- **Risk Factors:** Components addressing crash and injury risk should contain statistics on crash and injury risks and detailed information on the known factors that heighten the risk of collision and sustaining a severe injury for young children. The emphasis should be for all modes of travel including children in cars, walking and cycling.
- **Safe Practices:** Components addressing safe practices should contain information on safe traffic practices, recognition of evidence-based risk factors including proper age-appropriate restraint, age-appropriate supervision, use of safety devices such as helmets, etc.
- **Tips and strategies:** Resources containing tips and strategies should include teaching strategies for parents. For example, teaching through discovery and self-reflection is effective, practical training at the roadside is effective, and an understanding of children's developmental milestones and reinforcement of age-appropriate behaviours is essential.

#### 4.6.2 Further Research

While this research has identified many issues regarding the safety of children in traffic and the important role parents can play as trainers and modellers of good road safety behaviour, it has also highlighted some areas requiring further research and issues that require confirmation among a larger sample of parents.

One of the main difficulties experienced in conducting this survey was a low response rate and therefore relatively small sample size. In addition, the survey was conducted in Victoria only. For these reasons, there may be a lack of generalisability of the findings. For example, it may be that some of the findings from this survey are unique to the sample group of parents and unique to the experiences of this group in Victoria. Moreover, as the majority of respondents were female and relatively well-educated, it would be beneficial to expand the survey to a wider segment of the population (especially investigating the issues

in a range of SES groups, as previous research has shown a link between lower SES and pedestrian injury).

#### **4.7 CONCLUSIONS**

It is argued that parents are ideally placed to teach children about road safety, and it is imperative to provide parents with a range of appropriate information that will not only persuade them to model consistent road safety behaviours, but will educate them with respect to when, where and how they train their young children road safety skills. This study demonstrates that despite a high level of awareness of the impact of parental role modelling behaviour on their children, parents do not necessarily have the road safety knowledge or skills to properly educate their children on road safety. Furthermore, despite awareness of educational resources for road safety, very few parents reported participation in these courses. Therefore, it is recommended that practical and targeted resources be developed that can guide parents in their role as primary trainers in road safety skills for their young children.

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## Parents as Role Models in Road Safety

Thank you for agreeing to participate in this survey. Please fill out this survey if you have a child (or children) aged between 3 and 10 years. If you do not have any children, please pass this survey on to another family member or friend with a child aged between 3 and 10 years.

There are 10 sections to complete

The sections consist of the following:

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## SECTION A: DEMOGRAPHICS

**1. What is your age group? (Tick one)**

- 25-29 years     30-34 years     35-39 years  
 40-44 years     Other (please state): \_\_\_\_\_

**2. What is your gender? (Tick one)**

- Female     Male

**3. What is your current marital status? (Tick one)**

- Married/de facto     Divorced/separated     Widowed  
 Never married     Other (please specify) \_\_\_\_\_

**4. What is your current employment status? (Tick one)**

- Not working     Working part time     Volunteer  
 Working full time     Full time student  
 Other (please specify) \_\_\_\_\_

**5. Is English your first language? (Tick one)**

- Yes     No

**6. How many children do you have? Number \_\_\_\_\_**

Child 1: Age \_\_\_\_ (yrs) \_\_\_\_ (months) Gender \_\_\_\_  
 Child 2: Age \_\_\_\_ (yrs) \_\_\_\_ (months) Gender \_\_\_\_  
 Child 3: Age \_\_\_\_ (yrs) \_\_\_\_ (months) Gender \_\_\_\_  
 Child 4: Age \_\_\_\_ (yrs) \_\_\_\_ (months) Gender \_\_\_\_  
 Child 5: Age \_\_\_\_ (yrs) \_\_\_\_ (months) Gender \_\_\_\_  
 Child 6: Age \_\_\_\_ (yrs) \_\_\_\_ (months) Gender \_\_\_\_

**7. What is your place of residence? (Tick one)**

- Metropolitan area     Regional city     Country town  
 Rural area (not in a country town)

**8. What is the highest level of formal education you have completed? (Tick one)**

- Primary school     Partial secondary (finished yr 10)  
 Technical school or TAFE     University degree  
 Higher degree (Masters or PhD)     Secondary  
 Other (please specify) \_\_\_\_\_

**9. What is your household income before tax? (Tick one)**

- Less than \$20,000     \$20,000 - \$40,000     \$41,000 - \$75,000  
 \$76,000 - \$100,000     \$101,000 - \$150,000     Over \$151,000

## Section B: Exposure

For each of the statements below, please indicate your response using the tick boxes on the right. How often do your children use the following modes of transport?

	Never	Occasionally	Sometimes	Frequently
1. Car driven by parent/guardian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Car driven by other person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. School bus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Public transport (Public bus/Train)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Cycling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. What type of car do you mostly drive with your children/child? *(Tick one)*

- 2 door sedan       4 door sedan       2 door hatchback  
 4 door hatchback       Station wagon       People mover/van  
 4 wheel drive       Other \_\_\_\_\_

8. How many kilometres do you drive with your children/child per week? *(Tick one)*

- Less than 100km       101-200km       210-500km       More than 501km

9. What is the distance of most of your trips? *(Tick one)*

- More than 10 km       Between 5 and 10km  
 Between 3 and 5 km       Less than 3 km

10. How often do you drive with your children/child? *(Tick one)*

- Daily or almost daily       Two or three times a week  
 Once a week       Once a month or less

11. What is the purpose of the majority of your trips with your children/child? *(Tick one)*

- School/day care       Friends house  
 Shopping  
 Other *(please describe)*  
 \_\_\_\_\_

12. Who drives your children/child most frequently? *(Tick One)*

- Yourself       Your partner/husband/wife  
 Grandparent/s  
 Other (please specify)  
 \_\_\_\_\_

The next section asks you questions about collisions you have experienced while driving.

Section C: Collisions	
1.	Thinking back over the last two years, have you been involved in any collisions where you were the driver? <input type="checkbox"/> Yes How many? _____ <input type="checkbox"/> No (Go to SECTION D)
If YES, think about the most recent collision when answering the following questions:	
2.	Did the collision involve any of the following? (Please tick all that apply)
	<input type="checkbox"/> Moving car/truck/motorcycle <input type="checkbox"/> Pedestrian <input type="checkbox"/> Bus or Tram <input type="checkbox"/> Cyclist <input type="checkbox"/> Stationary car/truck/motorcycle <input type="checkbox"/> Tree or fixed object <input type="checkbox"/> Other (please specify) _____
3.	Were any of your children passengers in the car at the time of the collision? <input type="checkbox"/> Yes <input type="checkbox"/> No
4.	Which way were you driving?
	<input type="checkbox"/> Straight ahead <input type="checkbox"/> Turning right <input type="checkbox"/> Turning left <input type="checkbox"/> Manoeuvring/u-turning/parking <input type="checkbox"/> Reversing
5.	Did the collision result in:
	<input type="checkbox"/> No injuries to any occupants in your motor vehicle <input type="checkbox"/> Minor injuries (i.e., not hospitalised) to you or someone else in the car <input type="checkbox"/> Serious injuries (i.e., hospitalised) to you or someone else in the car
6.	Have you had any traffic infringements, other than parking infringements, in the past two years? <input type="checkbox"/> Yes <input type="checkbox"/> No

The next section asks some questions about general road safety behaviour.

Section D: General Road Safety Behaviour				
1.	Do you think that a blood alcohol reading of .05 would affect your ability to act as a:	Yes, would affect	No, would not affect	Don't know
a	DRIVER?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b	PEDESTRIAN?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c	CYCLIST?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Which of the following statements best describes your attitudes to drinking and driving? Would it be:	<input type="checkbox"/> I don't drink at any time <input type="checkbox"/> If I am driving, I don't drink <input type="checkbox"/> If I am driving, I restrict what I drink <input type="checkbox"/> If I am driving, I do not restrict what I drink <input type="checkbox"/> Don't know		

## Section D: General Road Safety Behaviour

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	Don't know
3. Fines for speeding are mainly intended to raise revenue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I think it is OK to exceed the speed limit if you are driving safely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. If you increase driving speed by 10km/hr you are significantly more likely to be involved in a crash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. A crash at 70km/hr will be a lot more severe than a crash at 60km/hr	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I always drive at or below the speed limit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Speed limits are generally set at reasonable levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. a It is OK to drive at 10km/h above the speed limit in some circumstances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. b	If so, in what circumstances _____				

### 10. How often do you use your mobile phone hands free while driving?

Never    Almost never    Sometimes    Often    Always

### 11. How often do you engage in distracting behaviour (i.e. eating/drinking/using a GPS/reading a map) while driving?

Never    Almost never    Sometimes    Often    Always

### 12. How often do you engage in aggressive driving (i.e. tail gaiting/criticize other road users)?

Never    Almost never    Sometimes    Often    Always

### 13. How often do you wear a seatbelt while travelling in a vehicle?

Always    Mostly    Sometimes    Never

### 14. How often are your children restrained while travelling in a vehicle?

Always    Mostly    Sometimes    Never

### 15. At what age do you think that it is safe for your child to ride in the front seat? \_\_\_\_\_ years

<b>16. At what age do you think it is appropriate for your child to graduate from a booster seat to an adult seat belt?</b>	_____ years
<b>17. Are there laws in Victoria against travelling with unrestrained passengers?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure
<b>18. At what age do you think a child can cross roads unsupervised?</b>	_____ years
<b>19. How important do you think it is to teach your child how to safely cross the road at his/her current age?</b>	
<input type="checkbox"/> Very unimportant <input type="checkbox"/> Somewhat unimportant <input type="checkbox"/> Somewhat important <input type="checkbox"/> Very important	

<b>Section D: General Road Safety Behaviour</b>	
<b>20. How would you rate your child's ability to safely cross the road compared to other children the same age?</b>	
<input type="checkbox"/> Significantly better than average <input type="checkbox"/> Better than average <input type="checkbox"/> About average <input type="checkbox"/> Worse than average <input type="checkbox"/> Significantly worse than average	
<b>21. If you ride a bicycle how often do you wear a helmet?</b>	
<input type="checkbox"/> Always <input type="checkbox"/> Mostly <input type="checkbox"/> Sometimes <input type="checkbox"/> Never	
If you answered sometimes, please explain when you do not _____	
<b>At what age do you think a child can ride unsupervised?</b>	_____ years
<b>What behaviours do you think are important for riding safely?</b>	

The next section asks some questions about road safety skills.

Section E: Road Safety Skills	
1.	Where do you think your child learns the most about road safety skills? ( <i>tick one</i> )
	<input type="checkbox"/> School <input type="checkbox"/> Parents <input type="checkbox"/> Friends <input type="checkbox"/> Internet <input type="checkbox"/> Siblings <input type="checkbox"/> Television programs <input type="checkbox"/> Grandparents <input type="checkbox"/> Other (please describe) _____
2.	Do you think your driving behaviour will influence your child's behaviour on the road? <input type="checkbox"/> Yes <input type="checkbox"/> No
a	<i>If yes please describe,</i>
3.	What do you do when your child starts to cry or misbehave while you are driving?
4.	How do you teach your child about safe car travel (e.g., putting their seat belt on, sitting properly in their booster seat, not distracting the driver, etc)?

Section E: Road Safety Skills	
5.	How do you teach your child about crossing the road safely?
6.	How do you teach your child about riding a bicycle? (if n/a skip to Qu 7 )
7.	Do you have any rules for your child regarding road safety? <input type="checkbox"/> Yes <input type="checkbox"/> No
	<i>If yes, please describe,</i>

*The following table contains a list of statements about child restraints. Please read each of the statements and indicate whether you think that they are true or false. If you are not sure, please tick the “don’t know” column.*

<b>Section F: Children as Car Occupants</b>				
		<b>True</b>	<b>False</b>	<b>Don’t Know</b>
1.	Legally, children of any age can travel in the car if they are wearing a seatbelt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Children under the age of 7 years should not sit in the front seat of a car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Babies must travel in a specially fitted capsule	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	If the car is in a major collision, the child restraint should be replaced and the old ones thrown away	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	If the car is in a minor collision, the child restraint should be replaced and the old ones thrown away	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Children can sit in the back of a car with only a seat belt once their eyes are level with the head rest of the seat in front of them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	If I am giving someone else’s child a lift, their parents are responsible for restraining them in my car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Crash tests show that some types and makes of child restraints are safer than others even if they meet the Australian Standard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	The main benefit of boosters is to lift children to a sitting height so that the adult seatbelt is positioned properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Thinking about your eldest child under 10, how safe do you think the following situations are for your eldest child when he/she is without an adult?*

<b>Section G: Children as Pedestrians</b>					
		<b>Unsafe</b>	<b>Somewh at safe</b>	<b>Safe</b>	<b>Very safe</b>
1.	Crossing a local street with no pedestrian crossing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Crossing at a pedestrian crossing on a main road?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Walking across a neighbour’s driveway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Walking on to a road from behind parked cars?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Walking along the edge of the road near the footpath?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Crossing at pedestrian lights?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please indicate how often you and your child perform the following behaviours.

<b>Section G: Children as Pedestrians</b>	
<b>7. When crossing a road with your child how often do you use a pedestrian crossing?</b>	<input type="checkbox"/> Never <input type="checkbox"/> Almost never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
<b>8. When crossing a road at the pedestrian lights with your child how often do you walk without waiting for the green light?</b>	<input type="checkbox"/> Never <input type="checkbox"/> Almost never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
<b>9. When crossing a main road NOT at a pedestrian crossing with your child, how often do you hold their hand?</b>	<input type="checkbox"/> Never <input type="checkbox"/> Almost never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
<b>10. When crossing a main road NOT at a pedestrian crossing with your child, how often do you quickly cross the road moving between on-coming cars?</b>	<input type="checkbox"/> Never <input type="checkbox"/> Almost never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
<b>11. When crossing a road with your child how often do you show or tell him/her how to cross safely?</b>	<input type="checkbox"/> Never <input type="checkbox"/> Almost never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
<b>12. How often do you walk your child to school from home, or from the place you drop him/her off?</b>	<input type="checkbox"/> Never <input type="checkbox"/> Almost never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always

	Never	Almost never	Someti mes	Often	Alway s	N/A
<b>13. My child walks supervised by parent/guardian</b>	<input type="checkbox"/>					
<b>14. Walks supervised by other adult</b>	<input type="checkbox"/>					
<b>15. Walks unsupervised by adult, but with friend or sibling</b>	<input type="checkbox"/>					
<b>16. Walks unsupervised</b>	<input type="checkbox"/>					
<b>17. Crosses the road at a zebra crossing</b>	<input type="checkbox"/>					

<b>Section G: Children as Pedestrians</b>	
<b>18. How often does your child walk supervised by an adult to school?</b>	
<input type="checkbox"/> Daily	<input type="checkbox"/> Fortnightly
<input type="checkbox"/> Weekly	<input type="checkbox"/> Less than monthly
<input type="checkbox"/> 3-4 times a week	<input type="checkbox"/> Monthly
<input type="checkbox"/> N/A	
<b>19. How often does your child walk unsupervised to school?</b>	
<input type="checkbox"/> Daily	<input type="checkbox"/> Fortnightly
<input type="checkbox"/> Weekly	<input type="checkbox"/> Less than monthly
<input type="checkbox"/> 3-4 times a week	<input type="checkbox"/> Monthly
<input type="checkbox"/> N/A	
<b>20. How often does your child walk supervised by an adult to a destination other than school (e.g. milk bar, sporting activity, friend's house)?</b>	
<input type="checkbox"/> Daily	<input type="checkbox"/> Fortnightly
<input type="checkbox"/> Weekly	<input type="checkbox"/> Less than monthly
<input type="checkbox"/> 3-4 times a week	<input type="checkbox"/> Monthly
<input type="checkbox"/> N/A	
<b>21. How often does your child walk unsupervised to a destination other than school (e.g. milk bar, sporting activity, friend's house)?</b>	
<input type="checkbox"/> Daily	<input type="checkbox"/> Fortnightly
<input type="checkbox"/> Weekly	<input type="checkbox"/> Less than monthly
<input type="checkbox"/> 3-4 times a week	<input type="checkbox"/> Monthly
<input type="checkbox"/> N/A	
<b>22. How often in the last month has your child played in your front yard, or a neighbour's front yard?</b>	
<input type="checkbox"/> Daily	<input type="checkbox"/> Fortnightly
<input type="checkbox"/> Weekly	<input type="checkbox"/> Less than monthly
<input type="checkbox"/> 3-4 times a week	<input type="checkbox"/> Monthly
<b>23. How often in the last month has your child played in your street?</b>	
<input type="checkbox"/> Daily	<input type="checkbox"/> Fortnightly
<input type="checkbox"/> Weekly	<input type="checkbox"/> Less than monthly
<input type="checkbox"/> 3-4 times a week	<input type="checkbox"/> Monthly
<b>24 How much traffic is there on your street?</b>	
<input type="checkbox"/> A lot of traffic	<input type="checkbox"/> Some traffic
<input type="checkbox"/> A little traffic	<input type="checkbox"/> Hardly any traffic

The following section asks you about you and your eldest child under 10 behaviour as a cyclist.

<b>Section H: Children as Cyclists</b>	
<b>1) Does you child ride a bicycle?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No
If NO please state why and go to SEC .J:“Resources” If YES, please go to I.2	
<b>2) What is the main purpose of most of your child's cycling trips?</b>	
<input type="checkbox"/> Riding to school	<input type="checkbox"/> Riding for recreation
<input type="checkbox"/> Other (please specify) _____	<input type="checkbox"/> Riding to friends house
<b>3) When your child rides, does he/she wear a helmet?</b>	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always

4) At what age did your child first learn to ride a bicycle?	_____ years
5) Does your child ride alone?	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always
6) Does your child ride on the road?	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always
7) Does your child ride on the footpath?	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always
8) Does your child ride at dusk?	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always
9) Do you own a bicycle?	<input type="checkbox"/> Yes <input type="checkbox"/> No ( <i>Go to SECTION J</i> )
10) When you ride a bicycle, do you ride on the road?	<input type="checkbox"/> Yes <input type="checkbox"/> No
11) What is the main purpose of most of your cycling trips?	
<input type="checkbox"/> Work commuting <input type="checkbox"/> Recreational <input type="checkbox"/> Fitness <input type="checkbox"/> Training <input type="checkbox"/> Other ( <i>please specify</i> ) _____	
12) When you ride do you wear a helmet?	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always

*The next section asks you questions about road safety resources/programs.*

Section I: Resources	
<b>1. Which of the following resources have you heard of? (please tick)</b>	
<input type="checkbox"/> A Child's World of Traffic DVD <input type="checkbox"/> Bike Ed <input type="checkbox"/> Don't risk it CD-ROM <input type="checkbox"/> Kids on the move <input type="checkbox"/> Metlink Adventures <input type="checkbox"/> RACV Street Science <input type="checkbox"/> Ride2School <input type="checkbox"/> Starting Out Safely <input type="checkbox"/> Travel Smart <input type="checkbox"/> Walking School Bus <input type="checkbox"/> Other ( <i>Please specify</i> ) _____	
<b>2. How did you hear about the programs listed above (please tick all that apply)?</b>	
<input type="checkbox"/> School newsletter <input type="checkbox"/> Brochure <input type="checkbox"/> Internet/website <input type="checkbox"/> Friend <input type="checkbox"/> Your child <input type="checkbox"/> Other ( <i>Please specify</i> ) _____	
<b>3. Which of the following programs has your child participated in (please tick all that apply)?</b>	
<input type="checkbox"/> A Child's World of Traffic DVD <input type="checkbox"/> Bike Ed <input type="checkbox"/> Don't risk it CD-ROM <input type="checkbox"/> Kids on the move <input type="checkbox"/> Metlink Adventures <input type="checkbox"/> RACV Street Science <input type="checkbox"/> Ride2School <input type="checkbox"/> Starting Out Safely <input type="checkbox"/> Travel Smart <input type="checkbox"/> Other ( <i>Please specify</i> ) _____	

*The next section asks you to rate a number of statements about your family. Please rate each item as to how often it typically occurs in your home. Possible answers are Never, Almost Never, Sometimes, Often, Always and Not applicable. Please answer all items.*

<b>Section J: Your Family</b>						
	<b>Never</b>	<b>Almost Never</b>	<b>Someti mes</b>	<b>Often</b>	<b>Always</b>	<b>N/A</b>
<b>1. You have a friendly talk with your child.</b>	<input type="checkbox"/>					
<b>2. You let your child know when he/she is doing a good job with something.</b>	<input type="checkbox"/>					
<b>3. You threatened to punish your child and then do not actually punish him/her.</b>	<input type="checkbox"/>					
<b>4. You volunteer to help with special activities that your child is involved in (e.g., sports, Boy/Girl Scouts, church youth groups).</b>	<input type="checkbox"/>					
<b>5. You reward or give something extra to your child for obeying you or behaving well.</b>	<input type="checkbox"/>					
<b>6. Your child fails to leave a note or to let you know where he/she is going.</b>	<input type="checkbox"/>					
<b>7. You play games or do other fun things with your child.</b>	<input type="checkbox"/>					
<b>8. Your child talks you out of being punished after he/she has done something wrong.</b>	<input type="checkbox"/>					
<b>9. You ask your child about his/her day in school.</b>	<input type="checkbox"/>					
<b>10. Your child stays out in the evening past the time he/she is supposed to be home.</b>	<input type="checkbox"/>					
<b>11. You help your child with his/her homework.</b>	<input type="checkbox"/>					
<b>12. You feel that getting your child to obey you is more trouble than it's worth.</b>	<input type="checkbox"/>					

## Section J: Your Family

	Never	Almost Never	Someti mes	Often	Always	N/A
13. You compliment your child when he/she does something well	<input type="checkbox"/>					
14. You ask your child what his/her plans are for the coming day.	<input type="checkbox"/>					
15. You drive your child to a special activity.	<input type="checkbox"/>					
16. You praise your child if he/she behaves well.	<input type="checkbox"/>					
17. Your child is out with friends you do not know.	<input type="checkbox"/>					
18. You hug or kiss your child when he/she has done something well.	<input type="checkbox"/>					
19. Your child goes out without a set time to be home.	<input type="checkbox"/>					
20. You talk to your child about his/her friends.	<input type="checkbox"/>					
21. Your child is out after dark without an adult with him/her.	<input type="checkbox"/>					
22. You let your child out of a punishment early (e.g., lift restrictions earlier than you originally said).	<input type="checkbox"/>					
23. Your child helps plan family activities.	<input type="checkbox"/>					
24. You get so busy that you forget where your child is and what he/she is doing.	<input type="checkbox"/>					
25. Your child is not punished when he/she has done something wrong.	<input type="checkbox"/>					
26. You attend PTA meetings parent/teacher conferences, or other meetings at your child's school.	<input type="checkbox"/>					
27. You tell your child that you like it when he/she helps around the house.	<input type="checkbox"/>					

## Section J: Your Family

	Never	Almost Never	Someti mes	Often	Always	N/A
28. You don't check that your child comes home from school when he/she is supposed to.	<input type="checkbox"/>					
29. You don't tell your child where you are going.	<input type="checkbox"/>					
30. Your child comes home from school more than an hour past the time you expect him/her.	<input type="checkbox"/>					
31. The punishment you give your child depends on your mood	<input type="checkbox"/>					
32. Your child is at home without adult supervision.	<input type="checkbox"/>					
33. You spank your child with your hand when he/she has done something wrong.	<input type="checkbox"/>					
34. You ignore your child when he/she is misbehaving.	<input type="checkbox"/>					
35. You slap your child when he/she has done something wrong.	<input type="checkbox"/>					
36. You take away privileges or money from your child as a punishment.	<input type="checkbox"/>					
37. You send your child to his/her room as a punishment.	<input type="checkbox"/>					
38. You hit your child with a belt, switch, or other object when he/she has done something wrong.	<input type="checkbox"/>					
39. You yell or scream at your child when he/she has done something wrong.	<input type="checkbox"/>					
40. You calmly explain to your child why his/her behaviour was wrong when he/she misbehaves.	<input type="checkbox"/>					
41. You use time out (make him/her sit or stand in comer) as a punishment.	<input type="checkbox"/>					
42. You give your child extra chores as a punishment.	<input type="checkbox"/>					

## Thank you for your participation

Please return the completed survey to Monash University Accident Research Centre using the provided reply-paid envelope.