FINAL REPORT

AN EVALUATION OF PARENTS' UNDERSTANDING OF THE CAPABILITIES OF TEENAGE DRIVERS

Prepared for:

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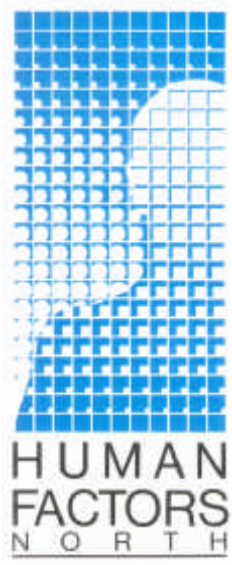

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EXECUTIVE SUMMARY

1.0 INTRODUCTION

Young drivers are greatly over-represented in crashes. More knowledge of the circumstances in which young drivers drive, and should be allowed to drive, can contribute to improved supervision by parents during the learning process. The purpose of this study was to investigate parents' knowledge and assessments of their teenage children in relation to driving, and compare that to what we were told by the young drivers. Our aim was to identify gaps in parental knowledge. In particular we examined parental and young driver perceptions of the driver training that they had received, parental knowledge of the circumstances in which the young drivers said that they drove, parental assessment of the situations in which the young drivers would feel uncomfortable and comfortable, as compared to the perceptions of the young drivers, and parental knowledge of the circumstances of any traffic violations or accidents reported by the young drivers.

2.0 EXPERIMENTAL DESIGN AND PROCEDURE

Data were collected by means of 30-minute structured telephone interviews with young drivers (54) and with the parent (54) that had given the most instruction. Our sample was stratified to reflect three levels of young driver experience (i.e. beginner, intermediate, advanced). Beginners hold a G1 Ontario licence and must be accompanied by a licensed driver. Intermediate and advanced drivers were those who had passed the first road test and no longer required licensed driver accompaniment. Intermediate drivers had held a G2 licence for less than 6 months; advanced drivers had held a G2 licence for more than 12 months. None of the drivers had yet passed the second road test granting them a full licence.

Parents and young drivers were interviewed about the following topics:

- Driving experience
- Education received from parents/guardians
- Education received from a formal driving education course
- Perceived skill level
- Risk taking
- Driving record

3.0 STUDY FINDINGS

Some of the most interesting findings of the study were:

- Parents were unaware of the situations that were uncomfortable for their young drivers. On average, young drivers were twice as likely as their parents to report such situations. In only a few cases were parents able to identify the specific situations reported by their young driver. The most common situations in which young drivers were not comfortable were driving during bad weather, late at night and during rush hour.

- According to the young drivers, parents did not always know how many passengers they carried. This is of particular concern for intermediate drivers who are allowed to carry passengers without an adult licensed driver, but have little experience. In their most recent accident, 6 of the 11 young drivers had passengers in the vehicle. In two cases there were 6 or more passengers. Parents may not be aware of the substantial increase in risk when young drivers have passengers in the vehicle.

- Parents understated the importance of their role as driving instructor. Over 90% of all young drivers stated that the instruction they received from a parent was more important or much more important in comparison to that received from their driving instructor. Conversely, approximately one-third of all parents said that their instruction was less important or much less important than licensed driving instructors. Parents may assume that their young driver is paying more attention to the instructions given by formal driver educators than may be the case. Thus, the parents may believe that their instructional role is not critical to the skill development of the young driver. In fact the reverse may be true, given the short instruction period (average 12 hours) available in many driving education courses, the fact that about one-third of those who had completed the formal driver training course, and one-third of the advanced drivers, felt that more instruction was needed, and the fact that 75% of beginner drivers indicate that it was a parent or step-parent that had provided most of the instruction. Some sources (ICBC, 1998) suggest that at least 30 hours of instruction is required before a new driver should be permitted to drive on their own. Therefore the instruction time spent with the parent or other licensed adult should actually exceed that provided in the standard driver training course.

- Least frequently practised driving tasks, with either instructors or parents, included controlling a vehicle in a skid and overtaking on rural highways. Since these tasks require a high level of skill, and since they can lead to a loss of control, a common factor in young driver accidents, they should be practised.

- Parents may not be sufficiently involved in assisting with formal driving instruction. One in three parents did not know or could not remember if the driving instructor had practised any of a series of twelve tasks with their child. This finding conflicts with 80% of parents rating their knowledge of the driving education program as “medium” or “high”.

- Ratings of overall skill level for young drivers, both by the young drivers and by their parents were, on average, above “average” as compared to drivers 25 years or older. Given the much higher crash rates of drivers under the age of 20, as in our sample, as compared to 25 year olds and up, these high ratings suggest overconfidence by both young drivers and their parents.

- Advanced drivers are the most likely of the three experience groups to accept many risky driving situations, receive infractions, and be involved in an accident. The majority of advanced drivers have talked on a cell phone while driving, 40% report having driven more than 30 km/h over the speed limit and almost 80% report having driven while tired. Nearly half the advanced group was cited for driving infractions, and nearly half were

involved in an accident. Parents of this group were only aware of half of the accidents in which their child was involved.

4.0 RECOMMENDATIONS

4.1 Education for Parents

It is apparent from the results of this study that parents are unaware of the importance of their role in driver training and unaware of important aspects of their children's experience as novice drivers. Parents need to receive education about their contribution to the process of driver training on the following topics.

4.1.1 Importance of Parental Role

Despite the fact they rate the importance of their instruction as less or much less important than the driving instructor's, their young drivers rate it as more important or much more important. Given the short period of driver instruction, typically on the order of 12 hours, compared to the recommended total amount of 30 hours, the parent spends much more time with the young driver. Consequently, it is important for parents to be aware that they play a critical role, and they cannot simply trust their child receives adequate training from a formal driving course.

4.1.2 Need for Practice of Demanding Driving Tasks

Only a minority of parents practised the following demanding driving tasks with their young drivers: how to control skids, how to pass slower vehicles on a 2-lane highway, how to merge into high-speed traffic and how to brake or slow in slippery conditions. With the exception of how to merge into high-speed traffic (60% had practised with their instructor) these tasks also received little attention from driving instructors.

4.1.3 Young Driver Discomfort in Particular Driving Situations

Parents were half as likely to report that there were situations in which the young driver felt uncomfortable as the young drivers were to report this, and were unable to identify specific situations. The situation identified by young drivers as uncomfortable was bad weather (almost 2/3 of all situations). The next most common situations were "rush hour" and "after dark". None of the parents identified "after dark" driving as an issue. Either the young drivers do not communicate their discomfort or the parents do not ask, or some combination of the two. Raising parental awareness of common "stress-invoking" driving situations for young drivers may serve as a starting point for dialog between parents and their young drivers.

4.1.4 Communicating Situations of Concern to Young Drivers

Young drivers were somewhat better at predicting the situations that their parents would report as being uncomfortable for young drivers, with 38% of the particular situations identified by the parents also identified by their young drivers. However, parents did not manage to convey their concerns about young drivers driving in "heavy traffic" or "highway driving" to their children. Although 19 parents identified these as a concern, none of the young drivers did.

4.1.5 Young Driver Risky Driving Habits

Parents need to be aware that their young drivers are likely to engage in risky driving habits and have a high risk of being involved in an accident. The majority of drivers in the most experienced group reported having talked on a cell phone while driving, 40% reported having driven more than 30 km/h over the speed limit and almost 80% have driven while tired. Nearly half the advanced group were involved in an accident, and parents were only aware of half of these accidents. Due to the confidential nature of the responses, young drivers were not queried as to how it was that the parent could be unaware of accident involvement. It is possible that the accidents created minimal property damage to the vehicle such that the parent was unaware of a collision having occurred. The more disconcerting case would be if the vehicle had sustained noticeable damage and the parent was still unaware.

4.1.6 Effect of Passengers on Crash Risk

About one-quarter of the young intermediate drivers reported that their parents were never, or less than half the time, aware of how many passengers they carried, with as many as 7 passengers being transported unsupervised. Although intermediate drivers are not required to drive with a licensed adult, they have little experience and a high risk of a crash, which is even higher in the presence of passengers, and increases with the number of passengers. In their most recent accident, half of the young drivers had passengers in the vehicle. Parents may not be aware of the substantial increase in risk when young drivers have passengers in the vehicle. Awareness of the relationship between passenger presence and accidents involving young drivers needs to be communicated to parents and their young drivers.

4.2 Future Research

The most telling gap in parental knowledge is the one between the parent's interpretation of his or her instructional role for the young driver and the young driver's perception of the parent's role. Young drivers value the role of their parents as informal driving instructors more than parents think the young drivers do. If parents downplay their instructional role they may also downplay their need to more carefully control the opportunities for their young driver to drive unsupervised. Parents may also downplay the need for continued instruction and supervision as their young driver works towards gaining the skills to be a fully licensed driver.

Future work must look at ways of bridging this gap and helping parents to better fill the role of informal driving instructor. This is not to say that the parent should fully replace the formal driving instructor, but that better guidance for parents may be warranted – especially in how to best train young drivers to deal with high-risk driving situations.

More than 80% of parents discussed how to anticipate hazards and avoid accidents with their child. Future research might explore what parents and young drivers perceive to be the most common reasons for young driver accidents. Future research might also more fully explore the young driver's interpretation of the parent's instructional role during the three levels of young driver experience. Such information would assist in developing appropriate educational materials for parents of young drivers.

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1.0 INTRODUCTION

Young drivers are greatly over-represented in crashes. More knowledge of the circumstances in which young drivers drive, and should be allowed to drive, can contribute to improved supervision by parents during the learning process. The purpose of this study was to investigate parents' knowledge and assessments of their teenage children in relation to driving, and compare that to what we were told by the young drivers. Our aim was to identify gaps in parental knowledge. In particular we examined parental and young driver perceptions of the driver training that they had received, parental knowledge of the circumstances in which the young drivers said that they drove, parental assessment of the situations in which the young drivers would feel uncomfortable and comfortable, as compared to the perceptions of the young drivers, and parental knowledge of the circumstances of any traffic violations or accidents reported by the young drivers.

2.0 BACKGROUND

The high accident rate of young drivers is a well-known problem. A study carried out in the United States by Williams reports a steep decline in crash rate per kilometre as teenagers gain driving experience (Williams, 1996). As can be seen from Table 1 below, the first two years are especially dangerous, with rates for 16 year olds being almost three times that for 19 year olds. Williams also reports that, on a per mile basis, the non-fatal accident rate for 16-year-old novices is more than 10 times that of adults. (For 16 year olds, the higher per mile crash rate, in combination with the lower rate of crashes per capita, indicates this group drives less, but has a higher per mile driven crash rate than older teenagers.)

Table 1: Crash Involvement Rates by Driver Age, 1990 (from Williams, 1996)

Age	All Crashes per Million Miles	All Crashes per 1,000 Population
16	43	84
17	30	101
18	16	103
19	14	95

Because of this elevated crash risk, many countries have introduced graduated licensing programs, which attempt to protect young drivers from risky circumstances while they are learning to drive.

It is reasonable to assume that in most households with young drivers, the parents are the primary owners of the vehicles. In effect, it is the role of the parent to grant permission to the young driver to drive the vehicle at any given time. Thus the parent has some control over the young driver's frequency of driving, and, to a certain extent, the types of driving likely to be encountered (e.g. at night, in poor weather, on the highway). Of course, some young drivers will ignore parental and licensing restrictions. For example, a young driver may be given permission to drive the family vehicle provided he does not have more than one friend in the car. Away from the parent's direct observation, the young driver may choose to drive a group of friends home from school or a party.

Given the over-representation of young drivers in motor-vehicle crashes, it is important for parents and for road safety professionals to understand the gaps that may exist in parental

knowledge and understanding of the type/kinds of driving that are reasonable for young drivers. An earlier study has shown that parents may overestimate the capabilities of their very young children, and will grant them permission to cross roadways on their own despite the child's lack of readiness (Smiley, MacGregor, & Dunk, 1999). Based on these findings, it is reasonable to assume that parents of young drivers may also grant permission for their child to drive in traffic situations for which they are not well prepared.

Several studies have examined the types of accidents in which young drivers are involved. Lonero et al. reviewed these in an outline of a model curriculum for novice driver education (Lonero, Clinton, Brock, Wilde, Laurie, & Black, 1995). They cite work by Streff and AAA Michigan who analyzed police reports from Michigan, U.S.A. for pre-crash hazardous actions by drivers aged 15 to 18 years (Streff, 1991; AAA Michigan, 1994). The most prevalent were: following too closely, failure to yield and speed too fast. The prevalence of these actions declined with increasing age, and the prevalence of "no fault", as the pre-crash action, increased.

Lonero et al. (1995) also cite Harrington who, in a longitudinal study of California drivers found that right-of-way violations (i.e. failure to yield) were more common for females and were especially prevalent in fatal crashes (Harrington, 1972). A review mainly of European research, found that young drivers were over-represented in only a few types of crashes: speed-related, loss of control and nighttime. Inappropriate speed in curves and cutting curves were frequent factors (Trankle, Gelau, & Metker, 1990) cited in Lonero et al. (1995)).

A Finnish study used a sample of all fatal car accidents of young (18 – 21 years old) drivers in Finland during 1978 – 1991 (Laapotti & Keskinen, 1998). The study targeted the 413 fatal car accidents (338 male, 75 female) where the driver was at fault, and found that male and female drivers experienced equal proportions of loss-of-control accidents (approximately 65%). However, the primary cause of the accidents differed for males and females. Male drivers were more likely to be involved in single-vehicle accidents, during the evening or nighttime with the primary cause attributed to excessive speed or influence of alcohol. Females were more likely to lose control under slippery road conditions and were more likely to involve another vehicle in the crash. Thus, many of the loss-of-control accidents involving young male drivers revolve around risky behaviour, while vehicle-handling issues seem to play a larger role for young female drivers.

More recently, McKnight and McKnight looked at narrative descriptions of more than 2000 accidents involving 16 – 19 year old drivers (McKnight & McKnight, 2003). They concluded, “the great majority of non-fatal accidents resulted from errors in attention, visual search, speed relative to conditions, hazard recognition, and emergency manoeuvres, with high speeds and patently risky behaviour accounting for all but a small minority”. They found few differences between the patterns of behavioural antecedents for first year novices as compared to more experienced teenagers, suggesting that the major factor contributing to the decline in accident rates is the benefit of increased experience. The authors did not, however, compare young driver accident patterns to those of adults, as was done in the studies reported above.

In summary, studies in various countries show a consistent pattern in young driver accidents, with typical contributing factors being: speed too high, loss of control, and nighttime. One study which compared young driver crashes to those of adults found that the prevalence of these

actions declined with increasing age, while the likelihood that the driver would be considered not at fault increased. However, another study found little difference in crash patterns between 16 year olds and older teenagers, suggesting that within this short time period, more driving experience, that is, more skilful driving rather than more cautious driving, is likely the major contributor to the reduction in crashes. Male drivers are more implicated in risky driving (e.g. speed too fast, alcohol) and female drivers in skill issues (e.g. right of way violations, loss of control on slippery roads).

The presence of passengers has different impacts on the young as compared to older drivers. In an analysis of U.S. Fatal Accident Reporting System data on young driver accidents reported by Preusser et al., it was determined that the presence of passengers significantly increased the risk of an at-fault fatal accident for drivers under 25 years (Preusser, Williams, Ferguson, Ulmer, & Weinstein, 1998). When compared to that for drivers aged 30 – 59 years old traveling alone, relative risk of fatal crash involvement was particularly high for teenage drivers traveling with two or more teenage passengers.

With respect to the accident causes discussed above, parents have some control over the time of day and the weather conditions in which they allow their young drivers to use the car. They can advise their young drivers about passenger presence. They are less likely to be able to control risk-taking behaviour such as alcohol use or driving fast, and not at all likely to be able to control errors such as failure to yield, except through more extensive periods of supervised driving. Studies examining contributing factors related to accidents of young drivers have not considered the role parental understanding of the skill level of the young driver may play in granting permission to drive the family vehicle in the first place. Is the case for young drivers similar to that for young pedestrians: do parents assume that the young driver is more skilled and ready to drive unsupervised before the young driver is actually ready to face such situations alone?

The remainder of this report is organized to address the issue of parental knowledge of young driver skills and behaviour. Section 3 describes the experimental design and data collection protocol. Section 4 summarizes the results from the structured interviews (full results are shown in Appendices A to F). The findings reported highlight areas in which parents lack knowledge of actual training received by their young drivers as well as the actual driving circumstances experienced by their young drivers. The degree to which parents' estimates of their young drivers' comfort level in various driving situations matches that of the young drivers is also presented. Section 5 provides a Discussion; Section 6, Conclusions; and Section 7, Recommendations.

3.0 EXPERIMENTAL DESIGN AND PROCEDURE

Structured telephone interviews were used for data collection. Because previous research has shown a difference in accident rates between the youngest drivers (e.g. 16 year olds) and young drivers with 2 – 3 years of experience (e.g. 19 year olds), the data collection was stratified to reflect three levels of driving experience (i.e. beginner, intermediate, advanced). These three levels of driving experience are in line with the graduated licensing system used in Ontario (more details are presented in the section below). Since contributing factors of accidents are generally different for male and female drivers, data collection was further stratified by the gender of the young driver. Our goal was to complete 10 interviews in each of

the target cells: parent/child X driver experience X driver gender (2X3X2 = 12 x 10 interviews each).

3.1 Participants

Young drivers and their parents were categorized by driving experience groups based on the young driver's classification with respect to Ontario's graduated licensing program. In Ontario all new drivers applying for their first driver's licence enter a two-step graduated licensing process before becoming a fully licensed driver. To reach the first stage, a Class G1 licence, applicants must pass a vision test and a written test regarding the rules of the road and traffic signs. After passing these tests, the G1-licensed driver will be permitted to drive a car with the following five restrictions:

1. Must be accompanied by a fully licensed driver who has at least four years of driving experience
2. Prohibited from driving on freeways (i.e. limited access roadways)
3. Prohibited from driving between midnight and 5:00 a.m.
4. Must maintain a zero blood alcohol level while driving
5. Maximum number of passengers limited to the number of working seatbelts

The new driver must hold a G1 licence for a minimum of 12 months before attempting the G1 road test. This time can be reduced to 8 months if the new driver successfully completes an approved driving education course.

After passing the G1 road test, the new driver obtains a G2 licence. This licence bears fewer restrictions as G2 drivers are allowed to drive by themselves, on freeways, and at nighttime. They still must maintain a zero blood alcohol level while driving, and cannot carry more passengers than there are working seatbelts in the vehicle. Drivers must hold a G2 licence for a minimum of 12 months before attempting the G2 road test. If successful, the driver will obtain a G class licence with full licensed driving privileges. This graduated licensing process takes a minimum of 20 months and a maximum of 5 years to complete. If the program is not completed in five years, the applicant must start in the G1 category once again.

The categories used to classify young driver participants were as follows:

1. Beginner – holds a G1 class licence, and must be accompanied by a licensed driver
2. Intermediate – has achieved a G2 class licence by passing a road test in the past 6 months, and no longer requires accompaniment
3. Advanced – has achieved a G2 class licence by passing a road test more than 12 months ago, but does not yet hold a G class licence

In each case the parent interviewed was the one who had given the most instruction to the young driver.

Participants interviewed represent, to some extent, a sample of convenience recruited by means of newspaper advertisements, which were regularly placed in Toronto's biggest newspaper, and flyers which were distributed near driving schools in the downtown Toronto

area. The recruiting process lasted from April 2002 to December 2003. Despite this lengthy and wide-reaching recruiting process, we experienced considerable difficulty in obtaining the cooperation of parent-child pairs who were equally enthusiastic about participating, and in scheduling half-hour telephone interviews. While we were able to reach our desired quota in the beginner driver categories, the intermediate and advanced groups were marginally smaller than our original goal. The intermediate female driver category was the most difficult in which to find willing participant pairs with only 6 pairs interviewed. All other categories had 9 or 10 pairs participate. A total of 108 interviews were conducted as shown in Table 2.

Table 2: Participants Interviewed by driving experience and gender

Driver Experience	Male Driver	Parent	Female Driver	Parent	Totals
Beginner	10	10	10	10	40
Intermediate	9	9	6	6	30
Advanced	9	9	10	10	38
Totals	28	28	26	26	108

3.2 Interview Questions

Parents and young drivers were interviewed about the following topics:

- Driving experience
- Education received from parents/guardians
- Education received from a formal driving education course
- Perceived skill level
- Risk taking
- Driving record

The interview forms are shown in Appendices G through J.

3.3 Procedure

Interviews were conducted over the telephone, each lasting approximately 20 – 30 minutes. The interviewer used software developed by Human Factors North Inc., which displayed questions sequentially. The interviewer entered responses as the interview progressed. Responses were collectively stored in a data file and a spreadsheet was used to sort responses by question for the purpose of analysis.

Pilot testing was used to establish that the interview required no more than 30 minutes to complete, and that the questions were clear.

Separate appointment times were made for the parent and the young driver with the parent being interviewed before the young driver. Interviews were scheduled in this order to encourage young drivers to be open and honest with their responses, without fearing that their answers would be shared with their parent. The surveys were completely confidential – the answers of the young drivers were not revealed to the parent and vice versa. The parent and child were each paid $10.00 (Cdn.) for their participation in the study.

3.4 Analysis

Data for each interview question for parents and young drivers were analyzed according to the licensing stage and experience of the young driver (beginner (G1), intermediate (G2 less than 6 months), advanced (G2 more than 12 months). Chi-square tests were used to determine statistical significance in the comparisons of the three groups of parents with each other or the three groups of young drivers with each other, or in the comparisons of the young drivers with their parents, within each experience group. Three-way analysis of variance (ANOVA) tests were used to compare child-parent pairs across the three experience groups. Chi-square tests were used to examine discrete (frequency) data; ANOVA was used to examine continuous data.

4.0 RESULTS

Full study results for each interview question are shown in Appendices A – F. The highlights from the findings are reported below with respect to:

- Demographics (Appendix A)
- Driving experience (Appendix B)
- Education received from parents/guardians (Appendix C)
- Education received from a formal driving education course (Appendix D)
- Perceived skill level and risk taking (Appendix E)
- Driving violations and accidents (Appendix F)

4.1 Demographics

Complete results concerning demographics are shown in Appendix A. A total of 54 young drivers, and their parents, participated in the study. The average age of the young drivers was 17.0, 17.6 and 18.7 years for the beginner, intermediate and advanced groups respectively. The most frequent grade level for the beginner, intermediate and advanced experience groups was grade 11 (45%), grade 12 (60%), and post-high school (47%) respectively. Approximately 80% of all young drivers surveyed lived in suburban Toronto; and about 20% lived in the downtown core. Distribution of residence was similar across experience groups.

Approximately 40% of young drivers said that they had some experience driving motorized vehicles before they obtained their G1 licence (35%, 40%, 42%). The most frequent types of vehicle they had driven before they obtained their licences were cars (n = 7) and motorboats (n = 6) (see Table A4 for more detail). The most common vehicle driven by all drivers once they obtained their licence was a sedan (55%, 53%, 63%) followed by a minivan (30%, 33%, 16%) (see Table A5 for more detail). Automatic transmission was used by 96% of all young drivers.

4.2 Driving Experience

Complete results concerning driving experience are shown in Appendix B.

4.2.1 Exposure

The average length of licensed driving experience for current G1 drivers (beginners) was 8.5 months, for intermediate drivers, 15.1 months (10.6 months of G1 and 4.5 months of G2) and for

advanced young drivers, 31.7 months (11.1 months of G1 and 20.6 months of G2). See Table 3 for full results.

Female subjects in the beginner category had, on average, two and a half more months of experience in comparison to male subjects (9.8 vs. 7.2 months). Conversely, on average, male subjects in the intermediate category had over 2 months more driving experience than the female group (16.0 vs. 13.8 months).

Only one of the 20 G1 drivers said that they had failed an attempt to obtain their G2 licence. None of the G2 drivers said that they had tried and failed to obtain their full licence (G).

Table 3: Licensed Driving Experience (months)

	G1 driving experience		G2 driving experience		Total licensed experience	
	Male	Female	Male	Female	Male	Female
Beginner (G1)	7.2 (sd=6.1)	9.8 (sd=7.0)	N/A	N/A	7.2	9.8
Intermediate (G2-)	11.8 (sd=5.9)	8.8 (sd=1.8)	4.2 (sd=1.1)	5.0 (sd=1.5)	16.0	13.8
Advanced (G2+)	11.0 (sd=4.3)	11.2 (sd=3.9)	20.3 (sd=9.4)	20.8 (sd=8.4)	31.3	32.0

As the young drivers gain more experience they drive more frequently [$F(2)=11.36$, $p<0.0001$]. In addition, there was a corresponding, but not significant, trend towards spending less time driving with an adult in the vehicle as level of driving experience increased [$F(2)=2.32$, $p<0.1$] (see Table 4).

Table 4: Frequency of Driving

	Days/week driving (N = 54)	Hours/month driving with an adult (N = 54)
Beginner (G1)	2.7 (std dev=2.0)	8.1 (std dev=7.1)
Intermediate (G2-)	4.0 (std dev=1.9)	5.5 (std dev=5.7)
Advanced (G2+)	5.6 (std dev=1.8)	4.1 (std dev=4.4)

4.2.2 Young Drivers' Comfort in Driving Situations

Young drivers were asked if there were driving situations in which they did not feel comfortable; likewise, parents were asked if, to their knowledge, there were situations in which their child did not feel comfortable driving. These were open-ended questions. Where possible, answers were grouped into categories (e.g. "late at night", "after dark", "after curfew" and "nighttime" were considered "at night").

The results show that the parents overestimated the perceived comfort of young drivers. On average, young drivers were twice as likely as their parents to state that there were driving

situations in which they (the young drivers) felt uncomfortable, the most common ones being driving in bad weather, late at night and during rush hour (see Table 5).

For each driver category, chi square analyses were carried out to compare the responses of groups of parents and young drivers, by category. There were no significant differences in the reports of intermediate drivers and their parents [X^2(1) = 2.22, ns]. However, parents of beginning or advanced young drivers were significantly less likely to report that their young driver was uncomfortable [X^2(1) = 4.91, $p < 0.05$, X^2(1)= 6.76, $p < 0.01$, respectively] when compared to the reports by the parents of intermediate drivers.

Besides overall comparisons between groups, comparisons were made between the response of the parent and that of their own young driver. In 37% of parent-child pairs, both the parent and the young driver reported that there was a situation that concerned the young driver. However, in only 9% (4) of 43 situations reported did the parent and the young driver report the same situations.

Table 5: Driving Situations that Young Driver was not Comfortable Driving In

	Beginner N = 20	N = 20	Intermediate N = 15	N = 15	Advanced N = 19	N = 19	Total N = 54	N = 54
	Child	**Parent**	**Child**	**Parent**	**Child**	**Parent**	**Child**	**Parent**
No	30%	65%	47%	73%	26%	68%	33%	68%
Yes	70%	35%	53%	27%	74%	32%	67%	32%
Bad weather	9	2	6	1	12	4	27	7
Highway	1	9	1	2	1		3	11
Rush hour	2	5	1	1	2		5	6
After dark/late at night	5		1				6	0
In-car distractions	1						1	0
Everything	1						1	0
Downtown						1	0	1
Merging						1	0	1
Totals	19	16	9	4	15	6	43	26

Among the young drivers, the intermediate experience group was the most confident in their abilities – only 53% said there were driving conditions they preferred to avoid. By contrast, 74% of the advanced experience group, with about twice as much total driving experience (31.7 vs. 15.1 months), identified conditions under which that they did not feel comfortable driving, and 70% of the beginners identified driving situations they wished to avoid. These differences were not statistically significant, however.

Bad weather was the driving situation cited most frequently by the young drivers themselves as one in which they did not feel comfortable, in each experience group.

4.2.3 Parents' Discomfort in Driving Situations

Parents were also asked to specify whether there were situations in which they did not want their child to drive, and their young drivers were asked to identify these. Overall, when group comparisons were made, no significant differences were found between the reports of the young drivers and their parents, or across the young driver groups, concerning whether there

were any situations that the parents wished their young drivers to avoid. The results are shown in Table 6.

Table 6: Driving Situations that Parents Do Not Want Young Driver to Drive In

	Beginner N = 20	N = 20	Intermediate N = 15	N = 15	Advanced N = 19	N = 19	Total N = 54	N = 54
	Child	**Parent**	**Child**	**Parent**	**Child**	**Parent**	**Child**	**Parent**
No	30%	30%	20%	7%	16%	21%	22%	20%
Yes	70%	70%	80%	93%	84%	79%	78%	80%
Bad weather	12	9	9	9	12	10	33	28
After dark/late at night	5		2		2	2	9	2
Heavy traffic		8		3			0	11
Highway		6		2		2	0	10
Long distances	1				2	2	3	2
Rush hour	1		1		1		3	0
After drinking	1				1		2	0
Downtown				2			0	2
When tired	1						1	0
Totals	21	23	12	16	18	16	51	55

Besides overall comparisons between groups, comparisons were made between the response of the parent and that of their own young driver. In 60% of parent-child pairs, both the parent and their young driver reported that there was a situation that concerned the parent. In 38% (21) of 55 situations reported, the parent and the young driver reported the same situations. No young driver reported “heavy traffic” or “highway driving” although there were 19 reports of these situations by parents.

4.2.4 Seatbelts

All young drivers said they always wear a seatbelt when driving. Likewise, their parents also said they always wear a seatbelt when driving.

4.2.5 Passengers

Drivers holding a G1 licence are required to have a licensed driver in the front passenger seat at all times. When asked if they had driven without an accompanying licensed driver while they had their G1 licence, four (7%) of young drivers said they had, and their parents were unaware of this 100% of the time. To confirm this, parents of G1 drivers were asked if their child ever drove without a licensed adult in the car and all of them said no.

Once young drivers obtain their G2 licence they are no longer required to have parental supervision in the vehicle at all times and may carry as many passengers as there are seatbelts in the vehicle. More than half of drivers with an intermediate level experience, who had recently received their G2 licence, stated that their parents always knew how many passengers were in the vehicle with them and nearly 75% of this group said their parents were aware at least half of the time. In comparison, only 20% of the advanced group said that their parents always know how many passengers are with them, and just over half said their parents knew more than half of the time (see Table 7). Results from a chi square analysis showed that there was no

significant difference between the responses of the intermediate and advanced groups [$X^2(3) = 4.52$, ns].

Table 7: Frequency with which Young Drivers Reported that Their Parents Know How Many Passengers are in the Vehicle

D2(c)	Intermediate N = 15	Advanced N = 19
Never	13%	11%
Less than ½ the time	13%	32%
More than ½ the time	20%	37%
Always	53%	21%

Despite the fact that, according to young drivers, for at least half of the driving occasions, parents of intermediate and advanced drivers are unaware of how many passengers their young driver is transporting, parents were aware of the *most number* of passengers their child transported in one trip. In answer to a question about the most number of passengers the intermediate and advanced group ever carried, the median was 3 and 4 passengers respectively (see Table 8). These numbers would be in keeping with the number of seatbelts available in sedans. Three of the 15 intermediate drivers (20%) had never had a passenger without an adult licensed driver in the vehicle.

Table 8: Most Passengers Without an Adult Licensed Driver

D2(b)	Intermediate N =15	Intermediate N = 15	Advanced N = 19	Advanced N = 19
	Child	Parent	Child	Parent
Median	3	3	4	4
Max	7	7	8	6
Min	0 (3)	0 (4)	1	2

4.2.6 Types of Driving Experience

As developing drivers gain more experience they continue to explore more types of driving and drive more often. Young drivers were asked how frequently they drove in various situations, and in all cases the groups with more experience did more of that type of driving (see Table 9). Overall, parents' responses followed a similar pattern. For the beginner, intermediate and advanced groups, there was a strong (82%, 84%, and 84% respectively) correspondence in the likelihood that the parent-child pair both responded that the young driver experienced that type of driving either more or less than once per week.

Table 9: Percentage Reporting that Young Driver Experienced Type of Driving Once or More per Week

	Beginner		Intermediate		Advanced	
	N = 20	N = 20	N = 15	N = 15	N = 19	N = 19
	Child	Parent	Child	Parent	Child	Parent
To/from school	20%	10%	27%	34%	59%	53%
For shopping/social events	80%	60%	87%	80%	100%	95%
Casual driving - "for fun"	15%	25%	27%	7%	37%	27%
During rush hours	35%	30%	47%	27%	74%	69%
On highways/freeways	0%	5%	34%	20%	68%	63%

Young drivers were asked if they had *ever* experienced other more specific types of risky driving, and, as would be expected, in most cases young drivers with more driving exposure were more likely to have gained those experiences (see Table 10). Overall, parents were somewhat less likely to report that their young drivers had been exposed to these situations as compared to the reports of the young drivers. For the beginner, intermediate and advanced groups there was a strong (76%, 80%, and 89% respectively) correspondence in the likelihood that the parent-child pair both responded that the young driver experienced that type of driving. The largest discrepancies in the reporting of young drivers and their parents concerned overtaking another vehicle on a rural highway (beginners 30% vs. their parents 5%) and driving during heavy rain, snow or fog (intermediate 87% vs. their parents 53%).

Table 10: Percentage Reporting that Young Driver Experienced Type of Driving Ever

C7(a-e), D4(a-e)	Beginner		Intermediate		Advanced	
	N = 20	N = 20	N = 15	N = 15	N = 19	N = 19
	Child	Parent	Child	Parent	Child	Parent
On busy street with traffic signals and made left turns	90%	85%	100%	100%	100%	100%
On rural two-lane highway and overtaken another vehicle	30%	5%	80%	75%	68%	58%
On a freeway during rush hour	15%	5%	40%	33%	84%	74%
During heavy rain, snow or fog	50%	45%	87%	53%	100%	90%
After dark	80%	70%	100%	93%	100%	100%

According to the young intermediate and advanced drivers, in about one-third of cases, their parents were not aware the first time they experienced particular risky or difficult driving situations (see Table 11). This may have been because they experienced it with another adult driver, or on their own. The correspondence between the parent and young driver responses was 82%, 59% and 65% for the beginner, intermediate, and advanced groups respectively.

Table 11: Percentage Reporting that Parent was Aware the First Time Young Driver Experienced This Type of Driving

	Beginner N = 20	Beginner N = 20	Intermediate N = 15	Intermediate N = 15	Advanced N = 19	Advanced N = 19
	Child	**Parent**	**Child**	**Parent**	**Child**	**Parent**
On busy street with traffic signals and made left turns	89%	100%	67%	100%	68%	90%
On rural two-lane highway and overtaken another vehicle	83%	100%	67%	100%	43%	64%
On a freeway during rush hour	100%	100%	67%	83%	56%	86%
During heavy rain, snow or fog	100%	100%	69%	100%	72%	89%
After dark	100%	100%	67%	100%	58%	95%

4.3 Education Received from Parents/Guardians

Complete results concerning driving education received from parents/guardians are shown in Appendix C. One-quarter of beginner drivers said that their driving instructor gave them the most driving instruction (these drivers had received 10 – 12 hours of instruction) and the remainder was evenly split in identifying their mothers or fathers.

4.3.1 Frequency of Parental Instruction

As young drivers gain more experience, their parents are less likely to give them verbal instructions while driving [$X^2(2) = 8.8$, $p < 0.02$], and the time between instructions lengthened. In the last drive with their parents, 80% of the beginner group were given verbal instructions on average every 14 minutes, whereas 73% of the intermediate group received instructions on average every 20 minutes. Only 37% of the advanced group received advice on their last trip with their parents, but this subset received instructions the most frequently of all the groups, on average once every 10 minutes.

4.3.2 Relative Importance of Parental Instruction

Young drivers value the importance of the instruction they receive from their parents very highly (see Table 12). On average, 92% of the young drivers rated their parents' instruction as much more important or more important than that of the driving instructor. Conversely, parents downplayed the importance of their instruction. Only 11% of the parents rated their instruction as much more important or more important than that of the driving instructor.

Table 12: Relative Importance of Parental Instruction

	Beginner N = 17	Beginner N = 15	Intermediate N = 13	Intermediate N = 13	Advanced N = 18	Advanced N = 18	Average N = 48	Average N = 46
	Child	**Parent**	**Child**	**Parent**	**Child**	**Parent**	**Child**	**Parent**
Much more important	29%	7%	8%		28%	6%	23%	4%
More important	59%	13%	84%	8%	67%		69%	7%
As important	6%	53%		54%	6%	61%	4%	57%
Less important	6%	20%	8%	38%		28%	4%	28%
Much less important		7%				6%	0%	4%

Chi square analyses indicate that this discrepancy between parent and young driver views was a statistically significant difference for each category (beginner: $X^2(1) = 17.3$, $p < 0.001$; intermediate $X^2(1) = 22.5$, $p < 0.001$; advanced: $X^2(1) = 27.0$, $p < 0.001$).

4.3.3 Instructional Content

Parents gave instructions on a variety of issues. The most common instructions were to slow down (25%), brake evenly (10%), and perform shoulder checks (10%) (for further detail see Appendix Table C2).

For the beginner experience group, the types of driving tasks that the young drivers said they were most likely to practice with their parents were what to do at a four-way stop and how to make left turns (95%). Conversely, young drivers said they were not likely to practice controlling skids (10%), passing slower moving vehicles on a two-lane highway (10%) or merging into high-speed traffic (20%) with their parents. Less than half of the advanced young drivers reported that their parents had practised these tasks with them (see Table 13).

Table 13: Percentage Reporting that Parent Practised Task with Young Driver

	Beginner N = 20	N = 20	Intermediate N = 15	N = 15	Advanced N = 19	N = 19
	Child	**Parent**	**Child**	**Parent**	**Child**	**Parent**
What to do at a 4-way stop	95%	80%	47%	40%	84%	21%
What to do at a pedestrian crosswalk	80%	70%	53%	27%	84%	42%
What to do at a flashing red or amber traffic signal light	55%	50%	47%	33%	68%	32%
What to do at an advance green light for left turns	65%	35%	53%	33%	68%	47%
How to make left turns	95%	95%	47%	40%	68%	37%
How to merge into high-speed traffic	25%	20%	47%	40%	42%	47%
How to control vehicle in tight curves	65%	45%	40%	27%	68%	37%
How to control skids	10%	15%	27%	13%	47%	27%
How to brake or slow in slippery conditions	35%	50%	33%	43%	79%	37%
How to pass slower moving vehicles on a 2-lane hwy	10%	10%	40%	0%	26%	11%
How to back up out of a parking space	85%	80%	67%	47%	78%	53%
How to make lane changes on freeways	85%	95%	53%	27%	42%	53%

Generally parents and young beginner drivers agreed on which tasks had been practised together. Discrepancies between parental and young driver reports increased the more experience the young driver had.

According to the young drivers in all three experience groups, at least four out of five parents discussed how to anticipate hazards and avoid accidents – 80%, 93% and 89% for the beginner, intermediate and advanced groups, respectively. The parents of beginner and intermediate drivers responded similarly, 89% and 93% respectively, but only 68% of parents of advanced drivers said they had discussed accident avoidance with their child (see Table 14).

Table 14: Percentage Reporting Parents Discussed How to Anticipate Hazards and Avoid Accidents

Beginner		Intermediate		Advanced	
N = 20	N = 20	N = 15	N = 15	N = 19	N = 19
Child	**Parent**	**Child**	**Parent**	**Child**	**Parent**
80%	89%	93%	93%	89%	68%

4.4 Education Received from a Formal Driving Education Course

Complete results concerning driving education received from a formal driving education course are shown in Appendix D. The majority of young drivers were currently enrolled in or had already completed a driving education course (see Table 15). The remainder of the results concerning formal driving education are reported only for those drivers who were in or had completed a course (17, 13 and 18 of the beginner, intermediate and advanced young drivers, respectively). Although the members of the beginner group were most likely to be currently enrolled in a driving education course (10 out of 17), some drivers in the intermediate (1 out of 13) and advanced (1 out of 18) experienced groups were also actively taking driving lessons (see Table 16).

Table 15: Young Driver Took or was Taking a Formal Driving Education Course

F1(a)	Beginner		Intermediate		Advanced	
	N = 20	N = 20	N = 15	N = 15	N = 19	N = 19
	Child	**Parent**	**Child**	**Parent**	**Child**	**Parent**
No	20%	20%	13%	13%	5%	5%
Yes	80%	80%	87%	87%	95%	95%

Table 16: Status of Driving Education Course

F1(b)	Beginner		Intermediate		Advanced	
	N = 16	N = 16	N = 13	N = 13	N = 18	N = 18
	Child	**Parent**	**Child**	**Parent**	**Child**	**Parent**
In progress	58%	56%	8%	8%	6%	
Complete	42%	44%	92%	92%	94%	100%

Parents and young drivers were asked to choose, from a list, their primary reason for taking driving lessons (see Table 17). The most important reason for young drivers was to reduce insurance (34%) and the least important reason was the insistence of their parents (16%). However, parents felt the most important reason was for their child to learn to drive better (36%), and the least important reason was the early eligibility for the next stage of licensing (15%).

Table 17: Purpose of Taking Driving Education Course (Multiple Responses Allowed)

	Totals N = 95	N = 101
	Child	Parent
Learn to drive better	27%	36%
Obtain G2 faster	23%	15%
Parents insisted	16%	20%
Insurance reduction	34%	30%

In all three experience groups, the parents were most likely to report having a medium level of knowledge of the material covered in the driving education program attended by their child (see Table 18).

Table 18: Rating of Knowledge of Driving Education Program Attended by Child

F1(f)	Beginner N = 16	Intermediate N = 13	Advanced N = 18
	Parent	Parent	Parent
High	19%		11%
Medium	62%	85%	78%
Low	19%	15%	11%

Young drivers and parents were asked whether the driving instructor practised 12 different driving tasks. For each task type, on average one in three parents did not know or could not remember if their child had been instructed on these tasks (see Table 19).

Table 19: Percentage of Young Drivers Reporting that Driving Instructor or Parent Practised Task with Them

	Beginner N = 16	N = 16	Intermediate N = 14	N = 14	Advanced N = 18	N = 18
	Instructor	Parent	Instructor	Parent	Instructor	Parent
What to do at a 4-way stop	93%	80%	92%	40%	94%	21%
What to do at a pedestrian crosswalk	87%	70%	92%	27%	88%	42%
What to do at a flashing red or amber traffic signal light	53%	50%	85%	33%	88%	32%
What to do at an advance green light for left turns	80%	35%	92%	33%	88%	47%
How to make left turns	93%	95%	100%	40%	100%	37%
How to merge into high-speed traffic	60%	20%	85%	40%	83%	47%
How to control vehicle in tight curves	93%	45%	85%	27%	83%	37%
How to control skids	20%	15%	46%	13%	56%	27%
How to brake or slow in slippery conditions	53%	50%	62%	43%	50%	37%

	Beginner		Intermediate		Advanced	
	N = 16	N = 16	N = 14	N = 14	N = 18	N = 18
How to pass slower moving vehicles on a 2-lane hwy	33%	10%	62%	0%	50%	11%
How to back up out of a parking space	93%	80%	100%	47%	100%	53%
How to make lane changes on freeways	40%	95%	77%	27%	67%	53%

According to the young driver and their parents, the average amount of in-car driving instruction provided by the formal course was 12 hours. The young drivers estimated a range between 7.5 and 35 hours, and the range of parents' responses was from 4.5 to 25 hours. A majority of parents and young drivers in each experience group felt that this amount of instruction was "just right". However, half of the young drivers in the beginner group estimated that more instruction was required. Interestingly, one-quarter of the advanced group also believed more instruction was necessary (see Table 20).

Table 20: Adequacy of the Amount of In-Car Instruction by Driving Instructor

F1(d)	Beginner		Intermediate		Advanced	
	N = 16	N = 16	N = 13	N = 13	N = 18	N = 18
	Child	Parent	Child	Parent	Child	Parent
More required	50%	25%	31%	38%	28%	39%
Just right	50%	62%	61%	62%	67%	56%
Less required			8%		6%	
Not sure		13%				5%

Of the young drivers and their parents that believed that formal driving courses should offer more in-car instruction, young drivers (15) wanted nearly 6 more hours, on average, and parents (15) wanted almost 12 more hours of instruction, on average – nearly double the amount which the average young driver currently receives. Having completed, or not, the driving education course, was not a factor in determining whether young drivers believed that more instruction was necessary. Among the 36 young drivers who had completed the course, over one-third felt more was necessary – only 2 of the 36 young drivers felt that less was required.

4.5 Perceived Skill Level

Complete results concerning perceived skill level are shown in Appendix E. Young drivers were asked to estimate their skill level in comparison with drivers aged 25 and over for a number of driving scenarios. Subjects were asked if their skill level was "well below average", "below average", "average", "above average", or "well above average". A weighted average was computed for each of the three groups of drivers on a scale of 1 to 5 where 1 corresponded to "well below average" and 5 corresponded to "well above average" (see Tables 21 and 22).

Table 21: Mean Estimate of Skill Level

	(1 = well below average, 5 = well above average)					
	Beginner (20,20)		Intermediate (15,15)		Advanced (19,19)	
	Child	Parent	Child	Parent	Child	Parent
Anticipating hazards	2.85	2.63	3.27	2.87	3.24	3.39
Smooth lane changes in heavy traffic	3.10	3.00	3.67	3.33	3.68	3.58
Making fast reactions	2.89	2.50	3.13	3.07	3.63	3.78
Passing on a 2-lane road	3.13	3.00	3.38	3.20	3.15	3.33
Driving around sharp curves	2.74	2.89	3.27	3.13	3.26	3.39
Driving on slippery roads	2.59	2.42	2.77	2.69	3.08	3.22
Overall skill level	2.85	2.74	3.33	3.07	3.58	3.86

Table 22: Combined Mean Estimate of Skill

	Child (54)	Parent (54)	Correspondence within 1 scale point
Anticipating hazards	3.10	2.96	79%
Smooth lane changes in heavy traffic	3.46	3.31	90%
Making fast reactions	3.23	3.12	76%
Passing on a 2-lane road	3.23	3.25	84%
Driving around sharp curves	3.07	3.14	88%
Driving on slippery roads	2.83	2.84	85%
Overall skill level	3.24	3.22	94%

Table 21 shows that the confidence of young drivers and of their parents increased with level of experience. A three-way ANOVA test yielded a significant difference between driving tasks ($F(2) = 3.6$, $p < 0.002$) and experience level ($F(2) = 10.3$, $p < 0.0001$). The differences between child and parent estimates of skill were not significant ($F(2) = 0.67$, $p < 0.41$).

Table 22 shows that ratings of overall skill level for young drivers and their parents were, on average, above “average” as compared to drivers 25 years or older, and that the highest skill ratings were given for smooth lane changes in heavy traffic and the lowest for driving on slippery roads. Table 22 also shows a high correspondence between parents and their young driver in estimates of skill on various tasks.

4.6 Risk Taking

Complete results concerning risk taking are shown in Appendix E. Young drivers were presented with a variety of risky driving situations and asked how likely they are to expose themselves to those risks. In all but one case the beginner group, on average, was the least likely to have taken these risks (see Table 23). For all experience groups, there was a strong correspondence between the responses of the young driver and their parent – 83%, 79% and 78% for the beginner, intermediate and advanced groups respectively. In most cases the advanced group of drivers had the highest likelihood of experiencing risky driving situations; however, in some cases (i.e. following another car too closely at high speeds, making lane

changes without checking blind spots), the intermediate drivers had a higher likelihood of taking these risks. Some situations were equally shared by all experience groups.

With respect to cell phone use while driving, 52% of the advanced drivers reported this as compared to only 14% of intermediate drivers. Based on self-reports, the advanced group is significantly more likely to talk on a cell phone while driving than the less experienced groups [$X^2(2) = 10.94$, $p < 0.01$].

With respect to speeding, the majority of drivers in all experience groups reported that they are somewhat or very likely to drive more than 30 km/h over the speed limit. The advanced group is significantly more likely to report this than the less experienced groups [$X^2(2) = 8.9$, $p < 0.025$].

Half of each of the intermediate and advanced groups reported having driven when tired. Significant differences between these two groups were not found. However, the advanced group was much more likely to report driving while tired than the beginner group [$X^2(1) = 7.6$, $p < 0.01$]. This may have to do with the fact that the beginner group must still be accompanied by an adult driver and so is less likely to be allowed behind the wheel when tired.

Table 23: Percentage Reporting Young Driver Exposed to Risky Situations

	Somewhat or very likely								
	Beginner (20,20)			Intermediate (15,15)			Advanced (19,19)		
	Child	Parent	Corr.*	Child	Parent	Corr.	Child	Parent	Corr.
Talking on a cell phone while driving	10%	20%	80%	14%	27%	86%	52%	47%	63%
Driving when tired	35%	15%	75%	50%	20%	70%	79%	52%	68%
Driving after drinking	10%	0%	90%	0%	7%	93%	5%	0%	95%
Driving more than 10 km/h over the speed limit	70%	25%	55%	86%	47%	57%	89%	89%	89%
Driving more than 30 km/h over the speed limit	5%	0%	95%	14%	14%	86%	42%	5%	68%
Following another car closely at high speeds	0%	10%	90%	21%	21%	86%	11%	26%	74%
Making a lane change without checking blind spots	0%	5%	95%	21%	14%	86%	5%	0%	95%
Making a left turn by accepting a very small gap in oncoming traffic	10%	5%	85%	21%	7%	71%	21%	21%	68%
Average	18%	10%	83%	28%	20%	79%	38%	30%	78%

* e.g. 50% correspondence would indicate that 50% of the child-parent pairs gave answers within 15% of one another

The responses of the parents were compared to the young drivers, and in all but two situations, the parents in each experience group, on average, responded very similarly to their child (i.e.

difference of 15% or less). The exceptions concerned the likelihood that the young driver exceeds the speed limit when driving. The parents of young drivers in the beginner and intermediate groups were not aware how often their young drivers drove more than 10km/h over the speed limit (25% vs. 70% for beginners [$X^2(1) = 30.7$, $p < 0.0001$], 47% vs. 86% for intermediates [$X^2(1) = 11.2$, $p < 0.004$]). Parents of young drivers in the advanced group were unaware of their child's tendency to drive more than 30 km/h over the speed limit (5% vs. 42% [$X^2(1) = 14.3$, $p < 0.001$]).

4.7 Driving Record

Complete results concerning driving violations and accidents are shown in Appendix F.

4.7.1 Infractions and Convictions

Nine young drivers received a total of 24 infractions in the three young driver groups combined. Two of the advanced drivers received the majority of these (17), all of which were for parking. Only one out of the 35 young drivers in the beginner or intermediate group had been stopped by police (a beginner driver) for speeding. The parent was aware of this infraction. On the other hand, 42% (i.e. 8 drivers) in the advanced group were stopped and/or ticketed by police, 2 drivers for parking violations, and the others for improper turns, speeding and careless driving (see Appendix Table F1.) Only one of the eight parents of advanced drivers, whose child had been ticketed by police, was aware of any infractions.

4.7.2 Accidents

A total of 19 accidents were recorded for the three young driver groups combined. None of the accidents were serious enough to cause injuries, but half of the accidents had serious damage to the vehicle, and the other half only caused a small amount of damage.

The more experienced the young driver, the more likely they were to get into an accident while driving. None of the beginner drivers reported having been in an accident, 13% (n = 2) of the intermediate drivers had, and nearly half (47%, n = 9) of the advanced young drivers had been in an accident. One parent of an intermediate driver reported two accidents, whereas the child reported only one. Parents of the advanced drivers were only aware of just over one-half of the accidents to which their children admitted (young drivers reported 16, parents reported 9 accidents).

Approximately two-thirds of young drivers and their parents estimated that the young driver's most recent accident was "mostly" or "all" their fault (see Table 24).

Table 24: In Most Recent Accident, Who Was at Fault?

H4	N = 11	N = 9
	Child	Parent
All mine	45%	44%
Mostly mine	18%	22%
50-50	27%	22%
All the other driver	9%	11%

In almost half of the accidents there were other passengers in the car, a maximum of 7 passengers in one case. Parents overestimated the number of times passengers were in the car when their child was involved in an accident (see Table 25).

Table 25: In Most Recent Accident, Number of Passengers

H5	N = 19	N = 19
	Child	Parent
None	45%	22%
>0	55%	78%
Mean	3.3	2.6
Std Dev	2.5	2.1
Max	7	6

5.0 DISCUSSION

5.1 Driving Experience

5.1.1 Exposure

The beginner group (G1) had just over half as much licensed experience (8.5 months) as the intermediate group (15.1 months). The intermediate group had approximately half as much licensed experience as the advanced group (31.7 months). As young drivers progress through the graduated licensing program they drive more days per week (2.7, 4.0, 5.6 days/week) and spend fewer hours per month with supervising adults in the car (8.1, 5.5, 4.1 hours/month).

5.1.2 Confidence

Parents were more confident in their young drivers' abilities than were the young drivers themselves, and were generally unaware of the specific situations of concern to their young driver. On average, young drivers were twice as likely as their parents to state that there were driving situations in which they (the young drivers) felt uncomfortable. The most common ones were driving in bad weather, late at night and during rush hour. While beginner drivers were most likely to cite bad weather as uncomfortable, their parents were most likely to cite highway driving as uncomfortable for their young drivers. In contrast to their parents' awareness of situations in which young drivers were uncomfortable, young drivers were better able to identify situations that their parents wished them to avoid.

Overall, intermediate young drivers reported fewer driving situations in which they were uncomfortable, as compared to either beginner or advanced drivers. Among the parents, it was the reverse – parents of intermediate drivers reported more driving situations of concern than parents in the other two groups. A difference in interpretation of driver freedom may help explain these seemingly opposing views. When the young driver reaches the second phase of a graduated licensing program (i.e. intermediate drivers), they are permitted to drive with fewer restrictions, including not having a licensed driver in the vehicle. At this point they have the same freedom but less experience than the advanced drivers. This may be the reason that the greatest parental concern is at the intermediate stage. In contrast, the young drivers may see attainment of the G2 licence as a validation of their driving performance and so feel confident at this stage. With increased experience, they may realize better the limits of their skill, thereby reducing their confidence by the time they are at the advanced stage. It would be of interest to

determine if accidents are more prevalent among intermediate, unsupervised, but perhaps overly confident drivers, as compared to supervised beginners.

5.1.3 Seatbelts

Both parents and their young drivers reported that the young drivers always wore their seatbelts. Although this may seem suspiciously high, seatbelt wearing rates in Ontario, especially in urban areas where the majority of this sample lived, are very high. In a 2001 Transport Canada survey of drivers of passenger cars, 93.2% of drivers under the age of 25 complied (Transport Canada, 2001).

5.1.4 Passengers

Passengers can often be a distraction for young drivers and the presence has been shown to be associated with a significant increase in crash risk (Preusser et al. 1998). Intermediate young drivers are of the greatest concern, given that they are allowed to drive without an adult licensed driver even though they have little experience. According to this group of young drivers, about one-quarter of their parents were unaware or knew less than one-half of the time how many passengers they had in the car. One intermediate driver reported driving 7 passengers without an adult licensed driver. This suggests that parents may not be aware of young driver risks associated with the presence of passengers. All of the accidents reported occurred when the young driver was holding a G2 licence and was not required to have a licensed driver in the vehicle with them. In their most recent accident, 6 of the 11 young drivers had passengers with them.

5.1.5 Types of Driving Experience

As young drivers gain more experience they continue to explore more types of driving and drive more often. In particular, drivers were more likely to experience more difficult driving conditions (e.g. on a freeway during rush hour or driving in heavy rain, snow or fog) as they gained experience. The biggest change from the beginner to most experienced category, in whether drivers had ever experienced a particular type of driving, was in driving on a freeway during rush hour. This may reflect not only driving experience, but also the fact that the most experienced drivers are older, and more likely to be out of school and working, and so commute during rush hour or in poor weather. A study by Andrey et al. used electronic trip diaries to survey 40 G1 (beginner) and 40 G2 (intermediate and advanced) drivers about their driving patterns and risk perceptions (Andrey, Rilett, & Vandermolen, 2004). These authors also found increased exposure to a range of situational risk including “driving while tired, driving when the car is noisy, driving with other young passengers, and driving during inclement weather and at night”, as drivers progressed from beginner to more experienced categories. These findings indicate that the graduated licensing program is working as intended, in that it promotes learning to drive in less risky environments. Comparison of parents’ answers with those of their young drivers indicated that parents were well aware of the types of driving that their young drivers did.

5.2 Education Received from Parents/Guardians

On average, 92% of all young drivers stated that the instruction they received from a parent was more important or much more important than that received from their driving instructor. By contrast, only 11% of parents said their instruction was more or much more important than the licensed driving instructors ($p < 0.00001$). Parental underestimation of their role is a concern given

the fact that 75% of beginner drivers indicate that it was a parent or step-parent that had provided most of the instruction. Parents may assume that their young driver is paying closer attention and giving more weight to the instructions given by formal driving educators than may be the case.

It is interesting to note which driving tasks were most likely to be practised with the parent in the car; and which ones were not. The majority of young drivers and their parents report practising what to do at a 4-way stop, what to do at a crosswalk, how to make left turns, how to back out of a parking space, and how to make lane changes on freeways. Less than a quarter of the child/parent pairs report that the young driver received practice with the parent on how to merge into high-speed traffic, how to control skids, and how to pass slower moving vehicles on a two-lane highway. Young drivers are more likely than older drivers to be involved in loss-of-control accidents, both on wet roads and in overtaking situations (Trankle et al. 1990) cited in (Lonero et al. 1995; Clarke, Ward, & Jones, 1998). Yet the driving tasks that can lead to these problems appear to be left up to the young driver to learn on their own.

5.3 Education Received from a Formal Driving Education Course

The majority (87%) of the young drivers in our sample had taken or were currently taking a driving education course. This is certainly typical of Ontario drivers. A study of driving exposure in 1994 showed that the younger the driver the more likely they were to take driver education. Even ten years ago, three quarters of 16 – 19 year old drivers had taken formal driver education (Smiley, MacGregor, Chipman, Taylor, & Kawaja, 1997).

The most important reason listed by young drivers for taking formal driver education was to reduce insurance, whereas the most important reason listed by parents was for their child to learn to drive well. By taking a formal driving education course drivers can shorten the length of the beginner period from 12 to 8 months. A recent study found that drivers who took formal education had approximately 50% more crashes than those who did not, suggesting a time discount is a poor policy (Boase & Tasca, 1998). However, almost one-quarter of the young drivers in our study gave the time discount as a reason for taking formal driving education, suggesting that revoking this poor policy might provoke considerable protest. (In Ontario, graduated licensing applies to all new drivers, regardless of age. The time discount for taking a driving education course may be even more important for older new drivers). Jurisdictions that have not yet adopted graduated licensing would do well not to reduce time requirements for those drivers who take formal driving education courses.

When parents were asked to rate their knowledge of the driving education program attended by their child, four out of five said “medium” or “high”. However, one in three parents did not know or could not remember if the driving instructor had practised any of a series of twelve tasks with their child.

As was the case for parental instruction, passing slower moving vehicles and controlling skids received very little attention in formal driving courses. As noted earlier, this is a concern, given that these tasks are very demanding and that loss of control is an over-represented cause of young driver accidents.

While the majority of young drivers and parents felt that the amount of in-car driving instruction received was “just right”, substantial numbers felt more was required. About one-third of advanced drivers and about one-third of drivers who had completed the course thought more instruction was required.

The average number of hours of instruction reported was 12. At least 30 hours has been recommended for learning to drive by the Insurance Corporation of British Columbia as part of their Graduated Licensing Program, which was developed based on considerable research (ICBC 1998). Thus, parents need to play a major role to make up the additional hours of recommended instruction. However, some parents may be insufficiently involved, believing that the driving school instruction is sufficient. This is supported by the finding that parents downplayed the importance of their role as instructors, with a substantial proportion, about one-third (30%), saying that their instruction was less or much less important than that of licensed driving instructors, while only 4% of the young drivers shared this opinion. It is also supported by the lack of knowledge parents had of what tasks their young drivers had practised, and the fact that they had not practised with their young drivers a number of highly demanding driving tasks.

5.4 Perceived Skill Level

Overall, as would be expected, the confidence of young drivers increased significantly with level of experience. There were no significant differences between parents and their young drivers in estimates of the young drivers’ skills as compared to those of a more experienced driver. Lowest estimates of skill, for both parents and young drivers, were for driving in slippery conditions. It was interesting that both the advanced young drivers and their parents gave a rating of above average (> 3) when comparing the young drivers’ skill to that of drivers age 25 or over. Since the average age of the advanced driver group was 18.7 years, and crashes in this group are still elevated compared to those of drivers 25 years and older, the ratings indicate over-confidence on the part of parents and young drivers.

5.5 Risk Taking

As developing drivers gain experience they drive with increased confidence and are more likely to accept risky situations. A typical issue in young driver accidents is speed (Trankle et al. 1990 as cited by Lonero et al. 1995). The majority of drivers, in all experience groups, had driven more than 10 km/h over the speed limit. Of even greater concern is the 42% of advanced drivers who said they have driven more than 30 km/h over the speed limit; 14% of intermediate drivers said they had done so. The young drivers’ parents did not seem to be fully aware of this. Parents significantly underestimated how often beginner ($p < 0.001$) and intermediate ($p < 0.004$) drivers drove more than 10km/h over the speed limit, and significantly underestimated how often advanced ($p < 0.001$) drivers drive more than 30 km/h over the speed limit. It is interesting to note however, that the most common instruction given by parents to their young driver was reported to be “slow down”.

More than one-third of beginner and four out of five advanced drivers said they have driven when tired. While the public in general is aware of the dangers of drinking and driving, fatigue has received little attention. Young drivers and their parents may not be aware that inexperience and fatigue are a dangerous combination.

Although beginner and intermediate drivers were not very likely to do so, half of advanced drivers said they have talked on a cell phone while driving. The fact that substantial numbers of young drivers talk on the cell phone while driving is a concern given that cell phone use increases crash risk by a factor of 4 – 5 according to a study based on cell phone records of crash-involved drivers (Redelmeier & Tibshirani, 1997). Restricting the use of cell phones during the graduated licensing program should be considered.

5.6 Driving Record

The developing drivers with the least experience were not likely to have received any driving infractions – only 1 of the 35 beginner and intermediate drivers had been stopped or ticketed by police. In contrast, nearly half (47%) of the advanced group had been stopped or ticketed by police. Parking infractions by two advanced young drivers accounted for 70% of all infractions. The other infractions were for speeding, improper turns and careless driving. Only two of the nine parents whose children had been ticketed by police were aware of any infractions.

Similar to driving infractions, only 2 out of the 35 beginner and intermediate drivers had been in an accident compared to nearly half (47%, n = 9) of the advanced group. In the majority of accidents (54%), there were passengers in the car. In one accident, there were 7 passengers. Less than half (45%) of the drivers who had been in an accident said there were driving situations in which they did not feel comfortable. In comparison, more than two-thirds (70%) of the remaining drivers said there were situations in which they were uncomfortable driving. This suggests that over-confidence may have been a factor in determining which drivers had accidents. Of the young drivers who had been in an accident, over half (54%) also received other infractions.

Parents of drivers in the advanced group were aware of only half of their young drivers' accidents. This suggests that either the young drivers had the vehicles repaired without telling the parents, or they were driving their own vehicles.

6.0 CONCLUSIONS

This study surveyed 54 parent/child pairs to investigate the types of experiences that young drivers are exposed to and driving habits they develop at three stages of Ontario's graduated licensing program. Some of the most interesting findings were:

- Parents were unaware of the situations that were uncomfortable for their young drivers. On average, young drivers were twice as likely as their parents to report such situations. In only a few cases were parents able to identify the specific situations reported by their young driver. The most common situations in which young drivers were not comfortable were driving during bad weather, late at night and during rush hour.

- According to the young drivers, parents did not always know how many passengers they carried. This is of particular concern for intermediate drivers who are allowed to carry passengers without an adult licensed driver, but have little experience. In their most recent accident, 6 of the 11 young drivers had passengers in the vehicle. In two cases there were 6 or more passengers. Parents may not be aware of the substantial increase in risk when young drivers have passengers in the vehicle.

- Seven percent (4 out of 54) of young drivers reported driving without a licensed adult when they had only their beginner's (G1) licence. None of the parents were aware of their child having done so. This raises concerns regarding risk taking on the part of the young driver, and lack of awareness of the use of the vehicle on the part of the parent.

- Parents understated the importance of their role as driving instructor. Over 90% of all young drivers stated that the instruction they received from a parent was more important or much more important than that received from their driving instructor. Conversely, approximately one-third of all parents said that their instruction was less important or much less important than that of licensed driving instructors. Parents may assume that their young driver is paying more attention to the instructions given by formal driver educators than may be the case. Thus the parents may believe their instructional role is not critical to the skill development of the young driver. In fact the reverse may be true, given the short instruction period (average 12 hours) available in many driving education courses, the fact that about one-third of those who had completed the formal driving education course, and one-third of the advanced drivers, felt that more instruction was needed, and the fact that 75% of beginner drivers indicate that it was a parent or step-parent who had provided most of the instruction. Some sources (ICBC 1998) suggest that at least 30 hours of instruction is required before a new driver should be permitted to drive on their own. Therefore the instruction time spent with the parent or other licensed adult should actually exceed that provided in the standard driving education course.

- Least frequently practised driving tasks, with either instructors or parents, included controlling a vehicle in a skid and overtaking on rural highways. Since these tasks require a high level of skill, and since they can lead to a loss of control, a common factor in young driver accidents, they should be practised.

- The most important reason reported by young drivers to enrol in a driving education course was to reduce insurance rates, whereas for parents, it was for their young driver to learn to drive better.

- Parents may not be sufficiently involved in assisting with formal driving instruction. One in three parents did not know or could not remember if the driving instructor had practised any of a series of twelve tasks with their child. This finding conflicts with 80% of parents rating their knowledge of the drivers' education program as "medium" or "high".

- It is important for parents to continue to provide input even after young drivers obtain their G2 licence and are permitted to drive on their own. Approximately 30% of G2 licensed drivers and nearly 40% of their parents said that additional in-car driving instruction was needed.

- Ratings of overall skill level for young drivers, both by the young drivers and by their parents were, on average, above "average" as compared to drivers 25 years or older. Given the much higher crash rates of drivers under the age of 20, as in our sample, as compared to 25 year olds and up, these high ratings suggest overconfidence by both young drivers and their parents.

- Advanced drivers are the most likely of the three experience groups to accept many risky driving situations, receive infractions, and be involved in an accident. The majority of advanced drivers have talked on a cell phone while driving, 40% report having driven more than 30 km/h over the speed limit and almost 80% report having driven while tired. Nearly half the advanced group was cited for driving infractions, and nearly half were involved in an accident. Parents of this group were only aware of half of the accidents in which their child was involved.

7.0 RECOMMENDATIONS

It is apparent from the results of this study that parents are unaware of the importance of their role in driver training and unaware of important aspects of their children's experience as novice drivers. Parents need to receive education about their contribution to the process of driver training. Recommendations made below address specific educational content needed for parents as well as future research in this area.

7.1 Education for Parents

Education that would be beneficial to the parents of young drivers is described below.

7.1.1 Importance of Parental Role

Despite the fact they rate the importance of their instruction as less or much less important than the driving instructor's, their young drivers rate it as more important or much more important. Given the short period of driver instruction, typically on the order of 12 hours, compared to the recommended total amount of 30 hours, the parent spends much more time with the young driver. Consequently it is important for parents to be aware that they play a critical role, and they cannot simply trust their child receives adequate training from a formal driving course.

7.1.2 Need for Practice of Demanding Driving Tasks

Only a minority of parents practised the following demanding driving tasks with their young drivers: how to control skids, how to pass slower vehicles on a 2-lane highway, how to merge into high-speed traffic and how to brake or slow in slippery conditions. With the exception of how to merge into high-speed traffic (60% had practised with their instructor) these tasks also received little attention from driving instructors.

7.1.3 Young Driver Discomfort in Particular Driving Situations

Parents were half as likely to report that there were situations in which the young driver felt uncomfortable as the young drivers were to report this, and were unable to identify specific situations. The situation identified by young drivers as most uncomfortable was bad weather (almost 2/3 of all situations). The next most common situations were "rush hour" and "after dark". None of the parents identified "after dark" driving as an issue. Either the young drivers do not communicate their discomfort or the parents do not ask, or some combination of the two. Raising parental awareness of common "stress-invoking" driving situations for young drivers may serve as a starting point for dialogue between parents and their young drivers.

7.1.4 Communicating Situations of Concern to Young Drivers

Young drivers were somewhat better at predicting the situations that their parents would report as being uncomfortable for young drivers, with 38% of the particular situations identified by the parents also identified by their young drivers. However, parents did not manage to convey their concerns about young drivers driving in “heavy traffic” or “highway driving” to their children. Although 19 parents identified these as a concern, none of the young drivers did.

7.1.5 Young Driver Risky Driving Habits

Parents need to be aware that their young drivers are likely to engage in risky driving habits and have a high risk of being involved in an accident. The majority of drivers in the most experienced group reported having talked on a cell phone while driving, 40% reported having driven more than 30 km/h over the speed limit and almost 80% have driven while tired. Nearly half the advanced group were involved in an accident, and parents were only aware of half of these accidents. Due to the confidential nature of the responses, young drivers were not queried as to how it was that the parent could be unaware of accident involvement. It is possible that the accidents created minimal property damage to the vehicle such that the parent was unaware of a collision having occurred. The more disconcerting case would be if the vehicle had sustained noticeable damage and the parent was still unaware.

7.1.6 Effect of Passengers on Crash Risk

About one-quarter of the young intermediate drivers reported that their parents were never, or less than half the time, aware of how many passengers they carried, with as many as 7 passengers being transported unsupervised. Although intermediate drivers are not required to drive with a licensed adult, they have little experience and a high risk of a crash, which is even higher in the presence of passengers, and increases with the number of passengers. In their most recent accident, half of the young drivers had passengers in the vehicle. Parents may not be aware of the substantial increase in risk when young drivers have passengers in the vehicle. Awareness of the relationship between passenger presence and accidents involving young drivers needs to be communicated to parents and their young drivers.

7.2 Future Research

The most telling gap in parental knowledge is the one between the parent’s interpretation of his or her instructional role for the young driver and the young driver’s perception of the parent’s role. Young drivers value the role of their parents as informal driving instructors more than parents think the young drivers do. If parents downplay their instructional role they may also downplay their need to more carefully control the opportunities for their young driver to drive unsupervised. Parents may also downplay the need for continued instruction and supervision as their young driver works towards gaining the skills to be a fully licensed driver.

Future work must look at ways of bridging this gap and helping parents to better fill the role of informal driving instructor. This is not to say that the parent should fully replace the formal driving instructor, but that better guidance for parents may be warranted – especially in how to best train young drivers to deal with high-risk driving situations.

More than 80% of parents discussed how to anticipate hazards and avoid accidents with their child. Future research might explore what parents and young drivers perceive to be the most common reasons for young driver accidents. Future research might also more fully explore the young driver's interpretation of the parent's instructional role during the three levels of young driver experience. Such information would assist in developing appropriate educational materials for parents of young drivers.

8.0 REFERENCES

AAA Michigan . *Portrait of a young driver*. Dearborn, Michigan: AAA Michigan. 1994.

Andrey, J., Rilett, J., and Vandermolen, J. *Young drivers' exposure to risk: G1 versus G2 drivers in Southwestern Ontario*. Proceedings of the Canadian Multidisciplinary Road Safety Conference XIV, June 27 - 30, Ottawa, Ontario. 2004.

Boase, P. and Tasca, L. *Graduated licensing system evaluation*. Rep. No. Interim Report 98, Ministry of Transportation, Ontario - Safety Policy Branch, Toronto, Ontario. 1998.

Clarke, D., Ward, P., and Jones, J. Overtaking road accidents: Differences in manoeuvre as a function of driver age. *Accident Analysis & Prevention*, *30*, 455-467. 1998.

Harrington, D.M. The young driver follow-up study: An evaluation of the role of human factors in the first four years of driving. *Accident Analysis & Prevention*, *4*, 191-240. 1972.

ICBC . *Insurance Corporation of British Columbia, Mapping a Safe Course: The graduated licensing program curriculum for driver training schools in British Columbia*. 1998.

Laapotti, S. and Keskinen, E. Differences in fatal loss-of-control accidents between young male and female drivers. *Accident Analysis & Prevention*, *30*(4), 435-442. 1998.

Lonero, L.P., Clinton, K.M., Brock, J., Wilde, G., Laurie, I., and Black, D. *Novice driver education model curriculum outline*. AAA Foundation for Traffic Safety, Washington, D.C. 1995.

McKnight, A.J. and McKnight, A.S. Young novice drivers: Careless or clueless? *Accident Analysis & Prevention*, *35*(6), 921-925. 2003.

Preusser, D.F., Williams, A.F., Ferguson, S.A., Ulmer, R.G., and Weinstein, H.B. Fatal crash risk for older drivers at intersections. *Accident Analysis & Prevention*, *30*(2), 151-159. 1998.

Redelmeier, D.A. and Tibshirani, R.J. Association between cellular telephone calls and motor vehicle accidents. *New England Journal of Medicine*, *336*(7), 453-458. 1997.

Smiley, A., MacGregor, C., Chipman, M., Taylor, G., and Kawaja, K.M. *Exposure to the risk of crashes: Phase II.* Ministry of Transportation, Ontario, Toronto, Ontario. 1997.

Smiley, A., MacGregor, C., and Dunk, W. Identifying gaps in child pedestrian safety: Comparing what children do with what parents teach. *Transportation Research Record*, *1674*, 32-40. 1999.

Streff, F.M. Crash avoidance: New opportunities for behaviour analysis. *Journal of Applied Behavior Analysis*, *24*(1), 77-79. 1991.

Trankle, U., Gelau, C., and Metker, T. Risk perception and age-specific accidents of young drivers. *Accident Analysis & Prevention*, *22*(2), 119-125. 1990.

Transport Canada . *Transport Canada Seatbelt Report*. http://www.tc.gc.ca/roadsafety/tp2436/rs200107/pdf/rs200107e.pdf. 2001.

Williams, A.F. Overview of the young driver problem in the United States. *Transportation Research Circular*, *458*, 6-8. 1996.