THE UNIVERSITY OF ADELAIDE

ROAD ACCIDENT RESEARCH UNIT

EVALUATION OF A ROAD SAFETY PROGRAM FOR AUTOMOTIVE APPRENTICES

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The staff of the three Colleges: Croydon Park and O'Halloran Hill Colleges of Further Education and Elizabeth Community College assisted us in the administration of the questionnaires, notably by allowing the questionnaires to be administered during a scheduled class period.

The Victorian Road Safety and Traffic Authority kindly allowed us to make free use of a questionnaire that had been developed by the Authority.

The method of statistical analysis was selected on the advice of Professor John Darroch of the School of Mathematical Sciences of Flinders University.

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The comments and conclusions in this report are those of the authors and are not necessarily shared by the Road Safety Council of South Australia.

ABSTRACT

A road safety course for automotive apprentices was evaluated by comparing the changes in rates of accidents and moving violations and in attitudes to and knowledge of road safety practices of a group that was required to take the course with the corresponding changes in a group that was not offered the course. Participation in the course was associated with a reduction in the frequency of moving violations compared to the experience of the control group but with a reduction in accident rate that was less than that of the controls. Apart from one item there was no relative change in attitudes to, or knowledge of, road safety practices that could be attributed to the course.

INTRODUCTION

The Road Safety Council of South Australia approached the Road Accident Research Unit of the University of Adelaide in 1977 with a request for an evaluation of the effectiveness of a road safety course for automotive apprentices. This report describes the way in which the evaluation was performed together with a presentation of the results and a discussion of their implications.

METHOD OF EVALUATION

Selection of Subjects

Three Colleges in the Adelaide area have training courses for automotive apprentices. All second year apprentices (students) at one of these Colleges (Croydon Park College of Further Education) were required to take the two-day road safety course. Apprentices at O'Halloran Hill College of Further Education and at Elizabeth Community College were not offered the course. The Croydon students are also referred to in the remainder of this report as the "cases" or as the "case group" and the students at the other Colleges as the "controls" or "control group".

There were 282 second-year students in the Croydon group. Two hundred of them were motor mechanics, 76 panel beaters and six were body makers. In the second year of the evaluation this total had diminished to 250, with the loss of 23 mechanics and nine panel beaters.

The control group consisted of 126 second-year apprentice motor mechanics (86 from O'Halloran Hill and 40 from Elizabeth). Eight of these students did not re-enrol in the third year and so the total number became 118.

The cases were almost all in the 16 to 21 age range (one was 22 years old and one 24). Their average age was 17.8. The controls ages ranged from 16 to 20 with an average of 17.6. All but one, at Croydon, of the students were males.

The Road Safety Course

The two-day course was developed jointly by the staff of the Road Safety Centre and by lecturers at the Croydon Park College of Further Education, where some apprentices are trained. The first day of the course was conducted by the lecturers at the College. It consisted of four hours of lectures and films on road law and a further four hours of lectures on the effects of drugs and alcohol on driving ability and on the safety aspects of vehicle modifications.

The second day involved practical driving instruction conducted by staff of the Road Safety Centre both at the Centre and on the open road.

Tests and Procedures

A twelve page questionnaire (Appendix A) formulated by the Road Accident Research Unit was used to obtain the information for this study. The introductory section of the questionnaire covered biographical details as well as ownership of motor vehicles, driving patterns, vehicle defects and licence loss. This section was followed by four further sections as described below:

(1) Moving Violations
Each student was asked for the number and type of moving violations for which he had been convicted in the previous twelve months, as well as the penalty associated with each conviction. He was also asked to report his total number of demerit points to date.

(2) Accident Involvement
The student was asked to describe each accident within the previous twelve months in which he had been involved as a vehicle operator, including details of the nature and seriousness of the accident, whether there was any associated charge of a traffic violation and whether it was reported to the police.

(3) Attitudes to Road Safety Practices
These questions covered attitudes to alcohol and driving, to the use of safety equipment, to rules of the road and to road safety education and training.

(4) Knowledge of Road Safety Practices
A knowledge questionnaire developed by the Victorian Road Safety and Traffic Authority (ROSTA) was used, in a modified form, in this questionnaire. It included questions on road safety practices and road law, alcohol and driving, and on vehicle modifications. A multiple choice answering system was used.

The questionnaire was administered in 1978 to each second year automotive apprentice at all three Colleges during his first two weeks

at the College. The senior author supervised the administration of the questionnaire to groups of approximately twelve students, each student completing one questionnaire. Later in 1978 the Croydon students took part in the road safety course whereas the Elizabeth and O'Halloran Hill students did not.

Approximately twelve months after the first contact with the apprentices all those still in attendance at the Colleges were again asked to complete the questionnaire (Figure 1). The format and method of administration of this second questionnaire was identical to that of the first.

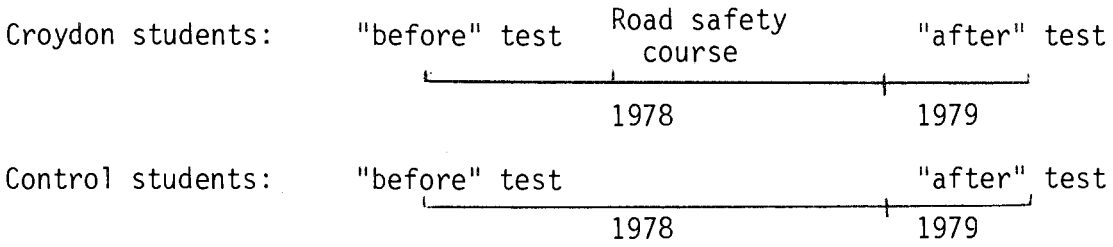


FIGURE 1: Questionnaire administration

Some items of self-reported information were later supplemented by corresponding information that is routinely recorded.

The information collected in this way was coded in a format suitable for computer processing and statistical analysis using the Statistical Package for the Social Sciences (SPSS).

RESULTS

The evaluation was based on three factors related to the students' driving experience: rates of moving violations, licence loss and accidents, and on changes in their knowledge of and attitudes to road safety practices. A summary of the changes in these factors, other than in attitudes which are presented separately, is shown in Table 1.

The magnitudes of these changes were tested (see Appendix B) for statistical significance. This was done to determine which of the differences between the cases and the control students probably arose by chance and which differences could reasonably be attributed to the fact that the Croydon students (the "cases") had participated in the road safety course.

Licence Suspensions

There was no statistically significant difference between the Croydon students and the control students in the change in the number of licence suspensions experienced. This finding applied both to the self-reported information supplied by the student in the questionnaire and to the recorded information.

Tables 2 and 3 list the number of licence suspensions incurred by the students (Appendix C gives the total periods of suspensions incurred).

It can be seen that both the Croydon and control students had deteriorated in the "after" condition, i.e. more reported licence suspensions during the "after" period than during the "before" period. However, from this information it cannot be concluded that the increase in suspensions in the "after" period is due solely to the deterioration in driving behaviour throughout that period. South Australian law provides for a mandatory licence suspension after the accumulation of twelve demerit points for violations. Therefore it could be assumed that the increase in licence suspensions during this period resulted at least in part, from demerit points accumulated over the previous three years.

TABLE 1: Changes in students' behaviour from the "before" to the "after" periods.

		PERCENTAGES OF STUDENTS			NUMBER OF STUDENTS	STATISTICAL SIGNIFICANCE
		IMPROVED	NO CHANGE	DETERIORATED		
Self Reported Licence Suspensions	Croydon students	12.45	73.44	14.11	241	
	Control students	13.56	70.34	16.10	118	n.s.
Recorded Licence Suspensions	Croydon students	7.49	79.30	13.21	227	
	Control students	8.04	75.00	16.96	112	n.s.[2]
Self Reported Violations	Croydon students	28.81	48.73	22.46	236	
	Control students	25.96	41.35	32.69	104	*
Recorded Violations	Croydon students	24.67	55.51	19.82	227	
	Control students	19.64	48.22	32.14	112	*[1]
Accidents	Croydon students	33.06	48.39	18.55	248	
	Control students	40.17	46.15	13.68	117	*
Knowledge	Croydon students	56.28	21.05	22.67	247	
	Control students	52.17	23.48	24.35	115	n.s.

Notes: [1] * ($p < 0.10$), difference between cases and controls unlikely to have been due to chance.

[2] n.s. ($p \geq 0.10$), difference more likely to have been due to chance variation.

TABLE 2: Frequency of licence suspensions from self-reported data.

		Number of licence suspensions					
		0	1	2	3	unknown	Total
Croydon students[1]:	before	82%	12	3	1	2	100%
	after	80	17	0	1	1	100
Control students[2]:	before	80	14	4	2		100
	after	79	16	2	2		100

TABLE 3: Frequency of recorded licence suspensions.

		Number of licence suspensions					
		0	1	2	3	unknown	Total
Croydon students[1]:	before	86%	8	1	1	4	100%
	after	78	14	1		7	100
Control students[2]:	before	86	8	3		2	100
	after	76	17	3		3	100

Notes: [1] N = 250
[2] N = 118

N.B.: Row totals may not add up to 100, because of rounding of each percentage to the nearest whole number.

Moving Violations

From Table 1 it can be seen that there was a statistically significant difference between the Croydon and the control students in the change in the number of self-reported and officially-recorded violations from the "before" to the "after" period.

The percentages of students convicted for a specific number of violations in the Croydon and the control "before" and "after" groups are tabulated in Tables 4 and 5.

TABLE 4: Frequency of violations from self-reported data.

		Number of violations									
		0	1	2	3	4	5	6	7	unknown	Total
Croydon:	before	56%	27	7	6	2	2	-	-	1	100%
	after	62	26	8	2	-	-	-	-	1	100
Control:	before	55	19	13	2	2	2	2	1	2	100
	after	51	27	12	8	1	1	1	-	-	100

TABLE 5: Frequency of recorded violations.

		Number of violations					
		0	1	2	3	unknown	Total
Croydon:	before	64%	23	7	2	4	100%
	after	64	22	5	2	7	100
Control:	before	67	23	7	1	2	100
	after	53	30	14	-	3	100

Table 4 clearly indicates that the Croydon group showed a decrease in the number of students convicted for a moving violation during the twelve month period following their attendance at the road safety course, when compared to those convicted during the twelve month period preceding the course. In contrast however, the control group showed an increase in the percentage of students with one or more violations during the corresponding "after" period. When considering the actual percentages in Table 4 it

can be seen that 62% of the Croydon students and only 51% of the controls had no such convictions during the latter period.

Table 5 presents the violation frequencies obtained from recorded information. It can be seen that the statistically significant difference between the Croydon students and the controls in the change in the number of reported violations between the two periods is due primarily to the deterioration of the performance of the control group, rather than to any improvement of the Croydon students. The percentage of the Croydon students with no violations remained at approximately 64% during the two periods, whereas in the control group it decreased from 67% to 53%.

By far the most common type of offence reported by both groups during both periods was exceeding the speed limit. (The types of violations are given in Appendix D)

Accident Involvement

The results in Table 1 indicate that the reduction ("improvement") in the number of accidents in which the apprentices in the control group were involved was significantly greater than that for the Croydon students.

However Table 6 shows that in both groups fewer students were involved in accidents during the "after" period than in the "before" period, and that approximately the same percentage in both groups was involved in accidents during the latter twelve months (35% of the cases, 34% of the controls). (For accident types see Appendix D). The superior rate of improvement amongst the controls may be partly due to the higher percentage of these students involved in accidents during the "before" period (57% of the controls compared to 49% of the Croydon students having had at least one accident during that time).

TABLE 6: Frequency of self-reported accidents

		Number of accidents						
		0	1	2	3	4	unknown	Total
Croydon students:	before	51%	39	8	2	-	-	100%
	after	65	30	5	-	-	-	100
Control students:	before	43	36	13	8	1	-	100
	after	66	26	5	2	-	-	100

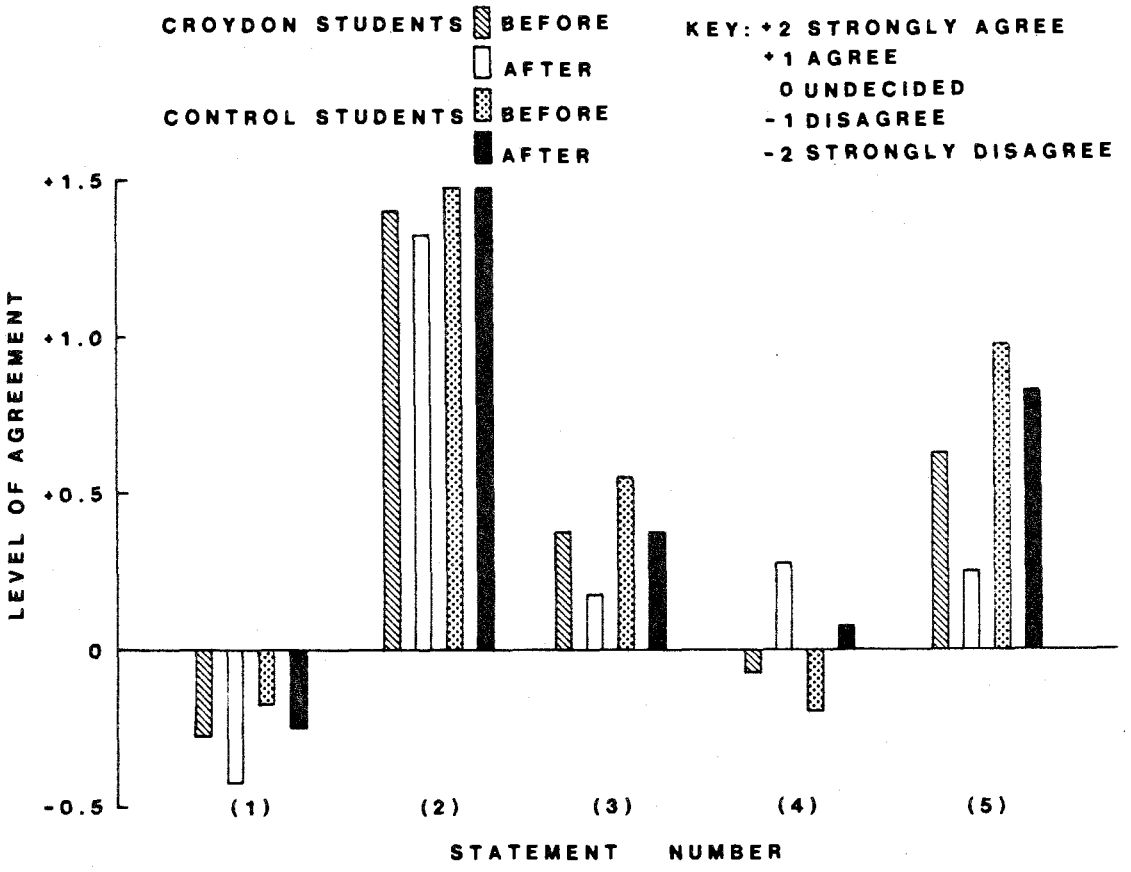
Attitudes to Road Safety Practices

The attitudes of the two groups in the "before" and "after" periods changed in the manner shown in Figure 2.

TABLE 7: Attitudes towards the wearing of seat-belts

		Would you still wear a seatbelt even if you didn't have to wear one by law?			
		Yes	No	Unknown	Total
Croydon students:	before	67%	30	3	100%
	after	65	33	2	100
Control students:	before	82	17	1	100
	after	71	27	2	100

Figure 2 illustrates that in four of the six statements (BAC, speed limit, driving course, car modifications), attitudes within both the Croydon and control groups became more appropriate (ie: more in accordance with generally accepted safety practices) during the period evaluated by the "after" test. In the "after" test the Croydon students exhibit the more appropriate attitude in each of these four statements. For the statement concerning crash helmets, the Croydon group's responses in the "after" test became slightly less appropriate, whereas the control group showed no change. Both groups gave less appropriate answers in the "after" period with regard to the wearing of seat-belts, the control



(1) The legal limit of the blood alcohol concentration (0.08) should be raised to 0.15 to allow for more social drinking.

(2) The law that says that motorbike riders must wear crash helmets is a sensible one.

(3) The 60 kph speed limit on Adelaide's main arterial roads is too low.

(4) People should not be able to get their driver's licence unless they do a practical driving course with qualified instructors (apart from the practical driving test), and attend a driving theory lecture course (apart from the test for the learner's permit).

(5) What you do to modify your car should be up to you alone.

FIGURE 2: Changes in attitudes to road safety practices

group however favouring belt wearing more than the Croydon students in both the "before" and "after" conditions.

When the difference in the magnitude of the change between the Croydon and control students is considered, the only statistically significant change towards a more appropriate attitude is in the attitudes towards vehicle modifications, where the Croydon students showed a significantly greater improvement in the "after" period than did the controls.

It is interesting to note that the road safety course presented to the Croydon students did in fact include a segment specifically on vehicle modifications, and this segment may have influenced the students to alter their attitudes towards the modification of vehicles.

Knowledge of Road Safety Practices

Table 1 shows that the magnitude of the change between the "before" and "after" periods in the number of correct responses given in the knowledge quiz is not significantly different statistically between the Croydon and the control groups. Figure 3 depicts the percentage of students with a given number of correct responses. The absence of any meaningful difference between the two groups can again be observed.

Table 8 below gives a breakdown of the percentage of correct responses to each question in the knowledge section.

Of the nineteen questions, four (questions 1, 8, 10, 12) were answered correctly by at least 90% of the students in each group on both occasions.

Questions 7, 9, 13, 15, 16, 18 appeared difficult as less than 65% of both the Croydon students and the control group answered them correctly in the "before" period.

Examining the responses given in the "after" period there was a higher percentage of Croydon students answering questions

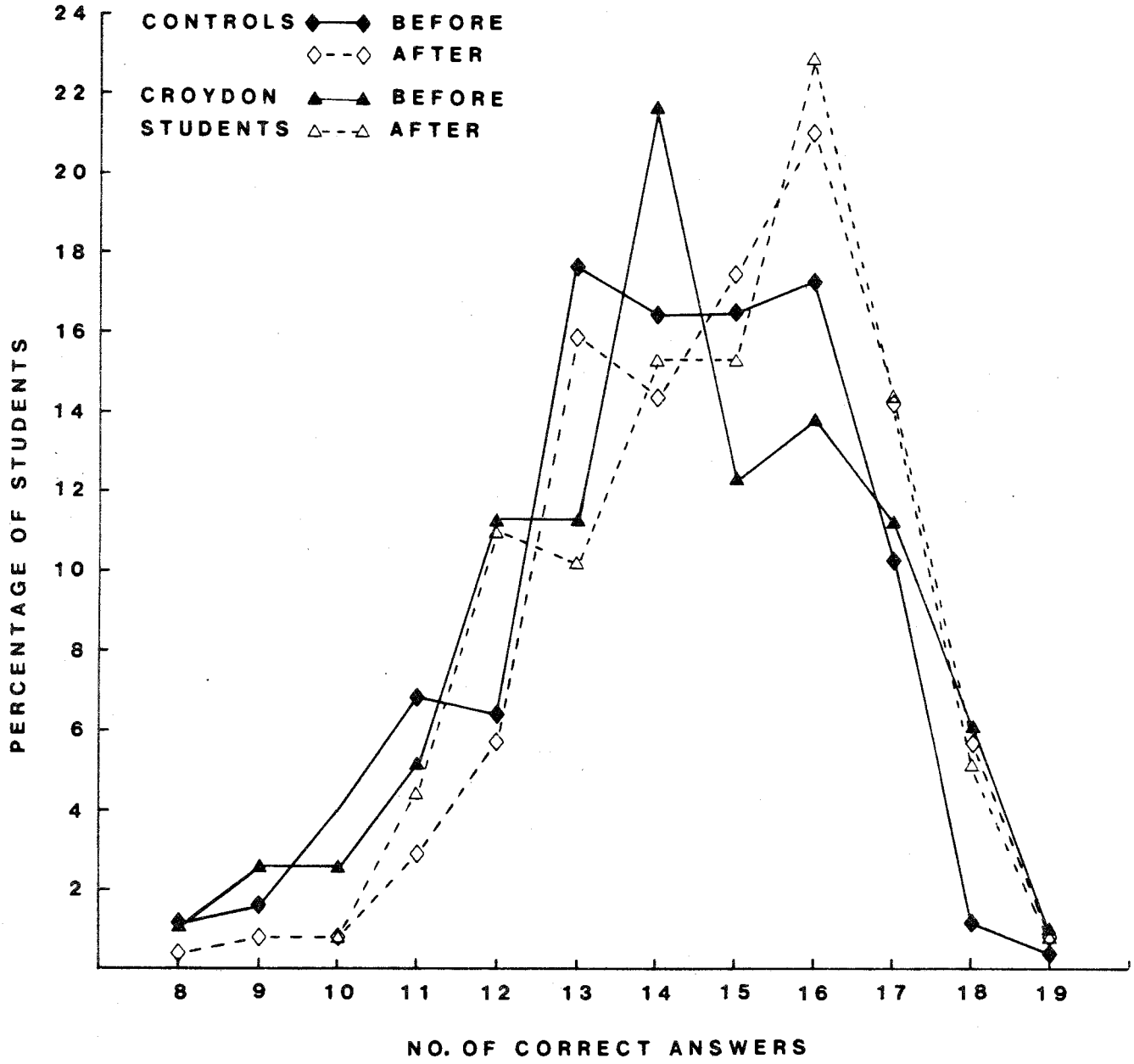


FIGURE 3: Changes in number of correct answers to test of knowledge of road safety practices.

1, 3, 6, 15, 16, 17, 18 and 19 correctly, but questions 4, 5, 7, 10, 11, 12, 14 were answered correctly more often by the control students.

For no question was the magnitude of the difference between the answers of the Croydon and control students in the "after" period large enough to warrant any specific comment.

Questions 7, 9, 13, 15, 16 and 18 were answered poorly (less than 70% correct in both groups) in the "after" period.

TABLE 8: Percentage of correct answers to each question in the knowledge quiz.

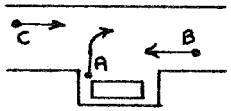
		% Correct			
		Croydon Group		Control Group	
		"before"	"after"	"before"	"after"
1.	If you approach a bend too fast, it's best to brake: before you start to turn.	97	98	97	97
2.	If there is a NO RIGHT TURN sign at the traffic lights, this means: you can't turn right at any time.	90	92	87	92
3.	 Car A is leaving the service station, and: must wait until both B & C have passed.	75	86	80	84
4.	When backing a car you should: twist around and look over your shoulder.	90	88	91	92
5.	To follow a good line around a bend you should: watch the road some distance ahead of your car.	80	85	84	87
6.	If you keep a very tight grip on the steering wheel all the time you will: drive no better than if you relax your grip a bit.	84	88	83	85
7.	Advisory safe speed signs on bends indicate the safe speed for: cars when the road is dry.	58	54	63	55
8.	A GIVE WAY sign: means you have to give way to all cars on the other road.	94	96	94	96
9.	If you increase your speed from 50 kph to 100 kph your stopping distance: is about four times longer.	59	67	59	67

TABLE 8: (cont'd)

10. If a tyre blows out it's best to: slow down gently.	94	90	98	97
11. In a curve to the right, the back of your car slides out to the left. You should: steer to the left.	78	82	77	86
12. If a vehicle you are driving is ever involved in an accident and someone is injured, you have to report the accident to the police: every time.	95	96	97	97
13. You are coming to a traffic light which has just changed from green to yellow. You should: stop if it is safe to do so.	59	69	64	69
14. A driver can find himself in three types of skid - front wheel skids, rear wheel skids and four wheel skids. Sudden braking can cause: any of the three types - front, rear or four wheel skid.	72	79	74	84
15. What does "overdriving your headlights" mean? not being able to stop within the distance lit up by your headlights.	40	48	38	44
16. How many schooners of beer, drunk over a two hour period, are likely to just bring a person's BAC above the legal limit (0.08) for driving? eight.	21	24	21	23
17. Which one of the following statements applies to the person who has spent an hour at the pub, has had a number of beers, and has a BAC of 0.07? even if he doesn't look as though he is affected by alcohol, his driving will definitely be worse.	73	80	73	76
18. Your 1969 Holden is fitted with standard cross ply tyres. You buy a pair of radial tyres from a friend. When you fit the tyres to your car you should: fit the cross ply tyres to the front and the radials to the back.	52	57	61	56
19. You drive a 1974 Ford and have been given a stick-on windscreen sun strip. After you have put it on, you notice that the wiper blades ride over the bottom edge of the strip. You should: cut enough off the bottom edge of the strip to allow the wiper blades to sweep their full arc without touching the strip.	86	92	82	88

DISCUSSION

The results have shown that the course produced no meaningful improvement in the knowledge of road safety practices and road law. Similarly, the attitudes of the students who participated in the course did not improve significantly when compared to those of the controls, with the exception of their attitudes towards vehicle modifications. The incidence of self-reported violations by the Croydon students decreased to a significantly greater extent in the "after" period than it did for the controls. The course may therefore have had a positive effect on the incidence of moving violations. However, the Croydon students showed a smaller reduction in the number of accidents in which they were involved, when compared to the control students.

The above evaluation of the course is based on objective data that are amenable to statistical analysis. However, the students' subjective assessment of the course and their comments about it are another useful means of assessing the course's effectiveness. Seventy-three per cent of the Croydon students felt that the course had something positive to offer, and only five per cent commented negatively. Many students commented on the potential usefulness of practising in the skid pan at the Road Safety Centre. In particular, they praised the opportunity to practise the correction of skids in a safe and controlled environment. Another specific aspect of the course that was felt to be particularly useful was the opportunity to be observed by a driving instructor while driving on the open road. The students felt that the constructive criticism given by the instructors helped to improve their driving ability. Most of the positive comments centred around the practical aspects of this road safety course.

In the interpretation of results one must be aware of the methodological difficulties inherent in research of this nature, and the extent to which such difficulties have been overcome in this study.

Methodological difficulties appear in association with either the characteristics of the course participants, or with the performance measures employed in the study. Literature within this field has described many studies where performance measures of volunteer students doing a driver education course have been compared with those of control students who have not volunteered for such a course. Analyses of the characteristics of students volunteering to participate, or not participate, in driver education have indicated that the students differ, as groups, on many factors besides their driving performance. These factors are often associated with personality characteristics, academic status and socio-economic status. Therefore it has been necessary to question whether the differences in driving performance have resulted from the road safety course per se, or whether these additional factors have confounded the results. In this study, however, the students at Croydon Park had no option but to participate, whereas the Elizabeth and O'Halloran Hill students were unable to undertake this particular course even if they had so desired. Therefore the potentially confounding variable of differing characteristics associated with groups either volunteering or not volunteering to do such a course has been avoided within the present study. Both the experimental and the control groups in this study are made up of automotive apprentices, with similar interests and similar academic backgrounds.

At this point it must also be emphasized that although both groups were similar to each other with respect to their interests, automotive apprentices, by virtue of their job choice, have a greater interest in, and presumably knowledge of, vehicles, and one could assume that their exposure to driving may be significantly greater than that of the general population. Consequently the results of this study should not be generalized beyond these specific groups of young automotive apprentices.

Written tests examining knowledge and attitudes, and rates of violations and accidents are measures of effectiveness that are commonly used in evaluation studies of driver education. The present study employed written tests and violation and accident rates to evaluate the course. A common criticism directed at written tests of knowledge and attitudes centres around their

validity (whether they do in fact measure what they claim to measure) and reliability (whether the results of the test can be repeated at some later point in time). Unfortunately the time that would have been necessary to devise tests proven to be reliable and valid was unavailable within the present study, and therefore the measures of attitudes and knowledge used must be accepted with a recognition of their potential limitations as accurate measuring instruments. It must also be acknowledged that answering in accordance with social desirability may produce "good" driving attitudes that may not be a true representation of the students' real attitudes. Nevertheless the Croydon and the control students in both the "before" and "after" conditions could be assumed to be subject to answering in a socially desirable manner to a similar extent and any effects this may have had on the results would therefore be evenly distributed.

The final criteria used in the study were examinations of the incidence of violations and accidents. The incidence of both violations and accidents is likely to be related to the amount of exposure to driving. As mentioned previously, both groups of students can be assumed to have similar levels of interest in cars and to be similarly exposed to driving situations. Consequently it is difficult to argue within the present study that the differing incidence of violations and accidents experienced by the two groups was a result of differing levels of exposure. Similarly there is no reason to believe that official records of violations are in some way biased towards one or the other group, as methods of reporting and recording violations are uniform throughout the geographic area encompassed by this study.

CONCLUSIONS

The road safety course had no effect on the knowledge of road safety practices and road law. No significant changes occurred in the attitudes of drivers following exposure to the course, except with respect to attitudes towards vehicle modifications. Participation in the course appeared to be related to a reduction in the incidence of self-reported violations. However the course did not appear to have a positive effect on the accident rate, as the Croydon students showed a smaller reduction in their accident rate than did the control students.

APPENDIX A QUESTIONNAIRE

Contents

BIOGRAPHICAL DATA: A1

Surname: ..... Initials: .....

Age: .....

Which town or suburb do you live in? .....

What firm are you apprenticed to? .....

What course are you doing at the college? .....

Do you own one or more vehicles? (cars, motorbikes etc.) ☐ Yes ☐ No

If YES: Make (eg Chrysler; Kawasaki) ....

Model (eg Centura; Z900) ....

Type (eg sedan; road bike) ....

Year (eg 1976) ....

If NO, are you able to use a vehicle most times you need one? ☐ Yes ☐ No

Have you ever had your vehicle defected? ☐ Yes ☐ No

If YES, what was the defect? .....

.....

Where do you do most of your driving?

☐ in the country

☐ in the suburbs and/or the inner-city area

About how far do you drive each week?

☐ less than 160km (less than 100 mil

☐ 160 - 400km (100 - 250 miles)

☐ more than 400km (more than 250 mil

How long does it take you to drive to work?

☐ less than 15 minutes

☐ 15 - 30 minutes

☐ more than 30 minutes

Have you ever lost your licence? ☐ Yes ☐ No

If YES: When? .....

Why? .....

For how long? .....

MOVING VIOLATIONS:

In the last 12 months have you been convicted of, or received a summons for, any driving offences?

☐ Yes
☐ No If NO, go to the ACCIDENT section, p. 4

If YES:

Tick the box by the offence or offences for which you have been booked in the list below and on page 3. and: Write down the penalty (eg. 2 demerit points, 6 months licence suspension etc.) for each time you have been charged for the offence. If you have a summons for an offence that hasn't been heard yet, write "not yet heard".

☐ speeding .....
.....

☐ fail to obey traffic control .....
signal or sign .....

☐ fail to give way to right .....
.....

☐ overtake when unsafe .....
.....

☐ cross double lines .....
.....

☐ fail to give signals (turning, ...
stopping etc.) .....

☐ headlight unlit .....
.....

☐ dangerous or reckless driving .....
.....

☐ driving without due care .....
.....

☐ fail to stop after accident .....
.....

☐ refuse breath test .....
.....

☐ driving under the influence .....
of alcohol .....

☐ blood alcohol concentration .....

greater than 0.08 .....

☐ stealing or trying to steal a .....

motor vehicle .....

☐ unregistered car .....

.....

☐ unlicensed driver .....

.....

☐ driving while licence suspended .....

or cancelled .....

☐ any other offences: (specify)

....

....

Do you have any demerit points? ☐ Yes ☐ No

If YES, how many? .....

ACCIDENT INVOLVEMENT:

As a driver in the last 12 months, did you have any accidents at all? ☐ Yes ☐ No

If YES, how many? ..... If NO, go to p.8.

For each accident, please answer the following:

What type of vehicle were you driving?
Type .....
Make .....
Model .....
Year .....

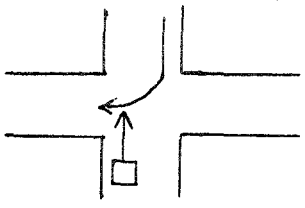
Did you own this vehicle? ☐ Yes ☐ No

Where was this accident?
☐ at an intersection with traffic lights or stop or give-way signs
☐ at an intersection without lights or signs
☐ on a single road
☐ somewhere else (where? ....)

What was the other vehicle or object involved?
☐ no other
☐ moving car, truck etc.
☐ stationary car etc.
☐ bicycle, motorbike
☐ pedestrian
☐ animal or object

Now briefly describe the accident, and draw a diagram of it (mark the vehicle you were driving as: ☐→)

eg.



I was going through an intersection and the car coming towards me turned right just in front of me and we collided.

In this accident, was anyone hurt? ☐ Yes ☐ No

Was your vehicle driven or towed away from the accident scene? ☐ driven away ☐ towed away

If your vehicle was damaged, was it repaired? ☐ Yes ☐ No ☐ Written-off

Did either you or the other driver report this accident to the police? ☐ Yes ☐ No

As a result of this accident, were you charged with any traffic violation?
eg. not stopping at lights or signs etc. ☐ Yes ☐ No

If YES, with what traffic violation were you booked?

.....

.....

ACCIDENT INVOLVEMENT: (accident record continued for 2nd, 3rd etc. accidents)

For each other accident you've had in the last 12 months, fill in one column:

What type of vehicle were you driving?

Type:	Type: .....
Make:	Make: .....
Model:	Model: .....
Year:	Year: .....

Did you own this vehicle?

☐ Yes ☐ No	☐ Yes ☐ No

Where was this accident?

☐ at an intersection with traffic lights or stop or give-way signs	☐ at an intersection with traffic lights or stop or give-way signs
☐ at an intersection without lights or signs	☐ at an intersection without lights or signs
☐ on a single road	☐ on a single road
☐ somewhere else (where?	☐ somewhere else (where? ....

What was the other vehicle or object involved?

☐ no other	☐ no other
☐ moving car, truck etc.	☐ moving car, truck etc.
☐ stationary car etc.	☐ stationary car etc.
☐ bicycle, motorbike	☐ bicycle, motorbike
☐ pedestrian	☐ pedestrian
☐ animal or object	☐ animal or object

Now briefly describe the accident, and draw a diagram of it (mark the vehicle you were driving as: ☐→). Use the back of the page if you need more writing space.

In this accident, was anyone hurt?

☐ Yes ☐ No	☐ Yes ☐ No

Was your vehicle driven or towed away from the accident scene?

☐ driven away	☐ driven away
☐ towed away	☐ towed away

If your vehicle was damaged, was it repaired?

☐ Yes	☐ Yes
☐ No	☐ No
☐ Written-off	☐ Written-off

Did either you or the other driver report this accident to the police?

☐ Yes ☐ No	☐ Yes ☐ No

As a result of this accident, were you charged with any traffic violation?

eg. not stopping at lights or signs etc.

☐ Yes ☐ No	☐ Yes ☐ No

If YES, with what traffic violation were you booked?

.....	.....
.....	.....
.....	.....
.....	.....

If you have had more than 3 accidents in the last 12 months, please ask for another copy of pages 6 and 7.

1. The legal limit of the blood alcohol concentration (0.08) should be raised to 0.15 to allow for more social drinking.

☐ Strongly agree ☐ Agree ☐ Undecided ☐ Disagree ☐ Strongly disagree

2. How much alcohol (schooners of beer) do you think you can drink and still be able to drive safely?

.....

3. Would you still wear a seatbelt even if you didn't have to wear one by law?

☐ Yes ☐ No

If NO, why not? .....

.....

.....

4. The law that says that motorbike riders must wear crash helmets is a sensible one.

☐ Strongly agree ☐ Agree ☐ Undecided ☐ Disagree ☐ Strongly disagree

5. Are there any road rules with which you disagree? ☐ Yes ☐ No

If YES, with which ones, and how would you like them changed?

.....

.....

.....

.....

6. The 60kph speed limit on Adelaide's main arterial roads is too low.

☐ Strongly agree ☐ Agree ☐ Undecided ☐ Disagree ☐ Strongly disagree

7. People should not be able to get their driver's licence unless they do a practical driving course with qualified instructors (apart from the practical driving test), and attend a driving theory lecture course (apart from the test for the learner's permit).

☐ Strongly agree ☐ Agree ☐ Undecided ☐ Disagree ☐ Strongly disagree

8. What you do to modify your car should be up to you alone.

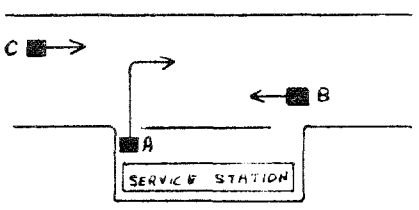
☐ Strongly agree ☐ Agree ☐ Undecided ☐ Disagree ☐ Strongly disagree

KNOWLEDGE TEST:

In this section, alternative answers are given for each statement. On your answer sheet, page 12, tick the box by the letter of the alternative that you think is right. For each statement tick only one answer.

1. If you approach a bend too fast, it's best to brake:
   a. in the corner
   b. before you start to turn.

2. If there is a NO RIGHT TURN sign at the traffic lights, this means:
   a. you can turn right only when no cars are coming the other way
   b. the cars coming the other way can't turn right across your path
   c. you can't turn right at any time.

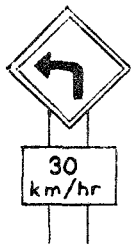
3. 

   Car A is leaving the service station, and:
   a. must wait until both B and C have passed
   b. has right of way over both car B and car C
   c. has right of way over car C but not car B.

4. When backing a car you should:
   a. face the front of the car and rely on what you see in the rear vision mirrors
   b. twist around and look over your shoulder.

5. To follow a good line around a bend you should:
   a. try not to notice the bend
   b. watch the road just in front of your car
   c. watch the road some distance ahead of your car.

6. If you keep a very tight grip on the steering wheel all the time you will:
   a. be better able to respond to an emergency
   b. reduce wear on the steering linkage
   c. drive no better than if you relax your grip a bit.

7. 

   Advisory safe speed signs on bends indicate the safe speed for:
   a. cars when the road is dry
   b. cars when the road is wet
   c. drivers on "L" plates only.

8. A GIVE WAY sign:
   a. is just a reminder to give way to cars on your right
   b. means you have to give way to all cars on the other road
   c. means you should try to avoid the cars on the other road if they don't give way to you.

9. If you increase your speed from 50kph to 100kph your stopping distance:
   a. doubles
   b. doesn't change much at all, it just seems longer
   c. is about four times longer.

10. If a tyre blows out it's best to:
   a. brake hard
   b. slow down gently
   c. accelerate until you feel its safe to start slowing down.

11. In a curve to the right, the back of your car slides out to the left. You should:
   a. steer to the left
   b. steer more to the right
   c. ignore it.

12. If a vehicle you are driving is ever involved in an accident and someone is injured, you have to report the accident to the police:
   a. only if the injured person asks you to report it
   b. only if the injured person is taken to hospital
   c. every time.

13. You are coming to a traffic light which has just changed from green to yellow. You should:
   a. go through if you can make it because you are not legally required to stop until the light turns red
   b. go through if it is safe to do so
   c. stop if it is safe to do so
   d. stop.

14. A driver can find himself in three types of skid - front wheel skids, rear wheel skids and four wheel skids. Sudden braking can cause:
   a. only a rear wheel skid
   b. only a four wheel skid
   c. only a front wheel skid
   d. any of the three types - front, rear or four wheel skid.

15. What does "overdriving your headlights" mean?
   a. having your headlights aimed too high
   b. using high-beam unnecessarily
   c. not being able to stop within the distance lit up by your headlights
   d. not being able to see clearly within the visibility range of your headlights.

16. How many schooners of beer, drunk over a 2 hour period, are likely to just bring a person's blood alcohol concentration above the legal limit (0.08) for driving?
    a. 4
    b. 6
    c. 8
    d. 10
    e. 12
    f. 14

17. Which one of the following statements applies to the person who has spent an hour at the pub, has had a number of beers, and has a BAC (blood alcohol concentration) of 0.07?
    a. even if he doesn't look as though he is affected by alcohol, his driving will definitely be worse
    b. he should drink a cup of coffee before driving
    c. because his BAC is below the legal limit (0.08) his driving can't be affected.

18. Your 1969 Holden is fitted with standard cross ply tyres. You buy a pair of radial tyres from a friend. When you fit the tyres to your car you should:
    a. fit the radial tyres to the front and the cross plys at the back
    b. replace the most worn out cross plys with the radials
    c. fit the cross ply tyres to the front and the radials to the back.

19. You drive a 1974 Ford and have been given a stick-on windscreen sun strip. After you have put it on, you notice that the wiper blades ride over the bottom edge of the strip. You should:
    a. do nothing about it
    b. cut enough off the bottom edge of the strip to allow the wiper blades to sweep their full arc without touching the strip
    c. shorten the wiper blades so that they do not touch the bottom edge of the strip.

KNOWLEDGE TEST ANSWER SHEET: (Correct answers are indicated)

Question number:	Answer:
1.	☐ a ☑ b
2.	☐ a ☐ b ☑ c
3.	☑ a ☐ b ☐ c
4.	☐ a ☑ b
5.	☐ a ☐ b ☑ c
6.	☐ a ☐ b ☑ c
7.	☑ a ☐ b ☐ c
8.	☐ a ☑ b ☐ c
9.	☐ a ☐ b ☑ c
10.	☐ a ☑ b ☐ c
11.	☑ a ☐ b ☐ c
12.	☐ a ☐ b ☑ c
13.	☐ a ☐ b ☑ c ☐ d
14.	☐ a ☐ b ☐ c ☑ d
15.	☐ a ☐ b ☑ c ☐ d
16.	☐ a ☐ b ☑ c ☐ d ☐ e ☐ f
17.	☑ a ☐ b ☐ c
18.	☐ a ☐ b ☑ c
19.	☐ a ☑ b ☐ c

APPENDIX B TEST OF STATISTICAL SIGNIFICANCE

Example: Data on self-reported licence suspensions.

	Change in number of suspensions (after period-before period)							
	-3	-2	-1	0	+1	+2	+3	Total
Croydon group (A)	0	7	23	177	31	2	1	241
Control group (B)	3	3	10	83	15	3	1	118

Let X = change in number of suspensions

f = number of students

then for the Croydon group the average (mean) change is $\frac{\Sigma fX}{\Sigma f}$

$$\overline{X}_A = \frac{0(-3)+7(-2)+23(-1)+177(0)+31(1)+2(2)+1(3)}{0+7+23+177+31+2+1}$$

$$= 0.004149$$

and the variance of the mean is: $\frac{\Sigma fX^2}{(\Sigma f)^2} - \frac{(\Sigma fX)^2}{(\Sigma f)^3}$

$$V_{\overline{X}_A} = \frac{1}{241^2}[0(9)+7(4)+23(1)+177(0)+31(1)+2(4)+1(9)] - \frac{(0.004149)^2}{241}$$

$$= 0.001704$$

Similarly, for the control group the mean change is

$$\overline{X}_B = -0.008475$$

and the variance of the mean is

$$V_{\overline{X}_B} = 0.006104$$

Then Chi square $= \frac{(\overline{X}_A - \overline{X}_B)^2}{V_{\overline{X}_A} + V_{\overline{X}_B}}$

$$= \frac{(0.004149 + 0.008475)^2}{0.001704 + 0.006104}$$

Chi square (1d.f.)= 0.0204 (not significant).

APPENDIX C LICENCE SUSPENSIONS

1. Total periods of licence suspensions in the "before" period as reported by the students.

Total period of suspension incurred:	Group Croydon	Control
no suspension	83.6%	80.5%
1-7 days inc.	5.6	8.5
8-89 days inc.	6.4	4.2
⩾ 90 days	3.2	6.8
unknown	1.2	-
	100.0	100.0

Average period of suspension:	Croydon	Control
all students	6.7 days	9.5 days
students with one or more suspensions	43.7 days	48.8 days

2. Total recorded periods of licence suspensions in the "before" period.

Total period of suspension incurred:	Croydon	Control
no suspension	86.4%	84.7%
1-7 days inc.	3.6	5.1
8-89 days inc.	4.4	6.0
⩾ 90 days	1.6	1.7
unknown	4.0	2.5
	100.0	100.0

Average period of suspension:	Croydon	Control
all students	3.3 days	3.5 days
students with one or more suspensions	32.7 days	26.5 days

3. Total periods of licence suspensions in the "after" period as reported by the students.

Total period of suspension incurred:	Croydon	Control
no suspension	81.2%	79.7%
1-7 days inc.	9.2	7.6
8-89 days inc.	4.0	8.5
⩾ 90 days	4.8	4.2
unknown	0.8	
	100.0	100.0

APPENDIX C (con't)

Average Period of Suspension:	Croydon	Control
all students	9.4 days	9.0 days
students with one or more suspensions	52.0 days	44.5 days

4. Total recorded periods of licence suspensions in the "after" period.

Total period of suspension incurred:	Croydon	Control
no suspension	77.6%	76.3%
1-7 days inc.	6.8	9.3
8-89 days inc.	3.6	5.9
⩾ 90 days	4.8	5.1
unknown	7.2	3.4
	100.0	100.0

Average period of suspension:	Croydon	Control
all students	9.4 days	8.2 days
students with one or more suspensions	57.4 days	38.7 days

APPENDIX D MOVING VIOLATIONS

Types of violations reported by students during the "before" period

	No. of violations of specific type	
	Croydon	Controls
speeding	103	68
failure to obey traffic signal or sign	10	7
failure to give way to right	3	1
overtake when unsafe	-	-
cross double lines	-	1
failure to give signals	-	-
headlight unlit	3	5
dangerous or reckless driving	9	6
driving without due care	12	6
failure to stop after accident	1	-
refuse breath test	1	-
driving under the influence of alcohol	3	-
BAC greater than 0.08	2	1
stealing or trying to steal a motor vehicle	1	-
unregistered car	5	1
unlicensed driver	6	1
driving while licence suspended or cancelled	1	-
other	21	11
Total number of self-reported violations	181	108
Total number of students	248	115

Note: Some students had more than one violation of the same type, and/or more than one type of violation.

APPENDIX D (con't)

Types of officially recorded violations during the "before" period

	No. of violations of specific type	
	Croydon	Controls
speeding	92	41
failure to obey traffic signal or sign	5	2
failure to give way to right	2	1
overtake when unsafe	-	-
cross double lines	-	-
failure to give signals	-	-
headlight unlit	-	-
dangerous or reckless driving	2	-
driving without due care	8	1
failure to stop after accident	1	-
refuse breath test	-	-
driving under the influence of alcohol	-	-
BAC greater than 0.08	1	1
stealing or trying to steal a motor vehicle	-	-
unregistered car	-	-
unlicensed driver	-	-
driving while licence suspended or cancelled	-	-
other	-	-
Total number of recorded violations	111	46
Total number of students	240	115

APPENDIX D (con't)

Types of violations reported by students during the "after" period

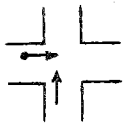
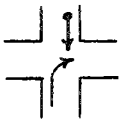
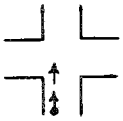
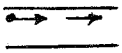
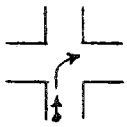
	No. of violations of specific type	
	Croydon	Controls
speeding	83	64
failure to obey traffic signal or sign	9	7
failure to give way to right	4	3
overtake when unsafe	1	-
cross double lines	1	-
failure to give signals	2	1
headlight unlit	-	-
dangerous or reckless driving	6	4
driving without due care	12	5
failure to stop after accident	-	2
refuse breath test	-	-
driving under the influence of alcohol	2	1
BAC greater than 0.08	1	1
stealing or trying to steal a motor vehicle	-	-
unregistered car	3	4
unlicensed driver	1	1
driving while licence suspended or cancelled	2	1
other	16	8
Total number of self-reported violations	143	102
Total number of students	249	118

APPENDIX D (con't)

Types of officially recorded violations during the "after" period

	No. of violations of specific type	
	Croydon	Controls
speeding	74	52
failure to obey traffic signal or sign	4	7
failure to give way to right	3	1
overtake when unsafe	-	-
cross double lines	-	-
failure to give signals	-	-
headlight unlit	-	-
dangerous or reckless driving	6	2
driving without due care	3	4
failure to stop after accident	-	-
refuse breath test	-	-
driving under the influence of alcohol	2	1
BAC greater than 0.08	1	-
stealing or trying to steal a motor vehicle	-	-
unregistered car	1	-
unlicensed driver	-	-
driving while licence suspended or cancelled	1	-
other	1	-
Total number of recorded violations	96	67
Total number of students	232	114

APPENDIX E ACCIDENT TYPES

TYPE OF ACCIDENT	% OF ALL ACCIDENTS			
	Croydon group		Control group	
	"before"	"after"	"before"	"after"
single vehicle accident (roll, spin and run-off accidents)	17	15	20	22
	13	9	9	12
	7	9	3	4
	6	10	7	8
	6	9	13	4
	7	5	1	6
other	44	43	47	44
TOTAL	100	100	100	100