



Accident rates and behavioural characteristics of novice drivers in the TRL Cohort study

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Executive Summary

Data from a study of novice drivers were analysed to determine:

- the prevalence of accidents of different types involving these drivers
- changes in rates of different types of accident over time, and
- associations between these accidents and driver characteristics.

Brief accident descriptions provided by novice drivers over a three year period after passing the driving test (Forsyth *et al.*, 1995) were classified using a modified version of the system developed by West (1997). The proportions of accidents in each category were as follows:

<i>Accident type</i>	<i>Percentage</i>
Active shunts (reporting driver's vehicle hits another from behind)	15.4
Passive shunts (reporting driver's vehicle is hit from behind by another)	13.3
Active right-of-way violations (reporting driver's vehicle pulls out into or across path of vehicle that has right of way)	7.5
Passive right-of-way violations (reporting driver's vehicle collides with a vehicle that has violated its right of way)	11.6
Active loss of control (reporting driver's vehicle goes out of control and hits objects or another vehicle)	9.6
Active reversing accident (reporting driver's vehicle collides with an object or another vehicle while reversing)	6.9
Miscellaneous (all other accidents).	30.4

A further 5.5% could not be coded because of insufficient information.

Over the first three years of driving there was a significant reduction in active loss of control accidents, active shunts, active reversing accidents and miscellaneous accidents, but not active or passive right-of-way violations or passive shunts.

In the first two years after passing their test a sub-sample of drivers was asked about several aspects of their driving style. For the purposes of this study, these have been termed: 'inattentiveness', 'impatience', speed, willingness to commit driving violations, 'confidence' and hesitancy. Associations were examined between these reports and accident rates per year over the three years following the test (controlling for miles driven). Accidents as a whole and active shunts in particular were associated with 'inattentiveness', 'impatience', tendency to commit violations and fast driving, but not hesitancy and 'confidence'. These driving

characteristics were found to reflect a single underlying dimension which was termed 'motivated bad driving'. This was shown to be related to active shunts and active loss of control accidents but not other accident types.

The associations of active shunts with 'inattentiveness', 'impatience', violations and speed were greatest in the first year of driving. The associations of motivated bad driving with active shunts and active loss of control accidents were also greatest in the first year of driving. These findings imply that motivated bad driving interacts with inexperience in increasing risk of causing shunts or losing control of the vehicle.

The results provide a potentially useful basis for a training package aimed at learner drivers pointing out the risks of particular kinds of accident, the causal mechanisms of such accidents and a system for working out their own individual level of risk. A logical next step would be to develop a package of this type and evaluate its effectiveness.

1 Introduction

Traffic accidents are an important cause of death and injury, particularly among young adults. Understanding the role of behavioural factors in these accidents may help direct training and other interventions aimed at reducing them. Novice drivers are at greater risk of traffic accidents than those with more experience (Maycock *et al.*, 1991). This implies that drivers who have recently passed the driving test still have to acquire driving skills or practices that will help to protect them in the traffic environment. It is not clear yet what these skills or practices are. If they could be identified, they could be targeted in driver training. Examining the kinds of accident in which novice drivers are involved could help to identify these skills or practices, as could examining associations between driving characteristics of novice drivers and accident rates. This report describes an attempt to do this. Forsyth *et al.* (1995) describe in detail an analysis of involvement of the cohort of drivers in accidents in general.

West (1997) developed a system for classifying accidents based on drivers' self reports and showed that age, sex and driving experience in a sample of adult drivers were associated with risks of some kinds of accident but not others. In particular, young, male drivers were at greater risk of hitting other vehicles from behind and losing control of their own vehicle. They were not at greater risk of causing an accident by pulling out in front of other vehicles.

The present study applied a variant of West's accident classification system to accidents reported by drivers taking part in a study of a cohort of drivers who passed their driving test on two days in November 1988 and two days in July 1989 (Forsyth, 1992a; 1992b). The system was developed to possess the following characteristics: coders should be able to use it to classify accidents with a high level of consistency, it should not depend on explicit recognition by the drivers of their own level of culpability, and different accident categories should potentially reflect different types of driver error. The system arrived at involved classifying accidents on the basis of simple physical characteristics (see below). The present study examined changes in rates of each type of accident over the first three years since passing the driving test. It was assumed that over that short time period any changes in accident rates would be likely to reflect experience more than age. This assumption is supported by the findings of Maycock *et al.* (1991).

Data were also available on drivers' assessments of their own driving characteristics. Studies on adult drivers with a broad range of driving experience indicate that self-reported willingness to commit violations (e.g. driving through lights on red) is associated with increased risk of accident (Reason *et al.*, 1991). There is also clear evidence that fast driving is associated with increased accident risk (e.g. West *et al.*, 1992). Common sense would suggest that lack of attentiveness, impatience and hesitancy might also be linked with accident risk although to date no published study has reported such associations after controlling for age, sex and miles driven. It is also possible that confidence in one's own driving ability might place a

novice driver at risk of accident, because it might lead to an underestimate of the risks being run. However, as yet there is no evidence to support such a view. For the present study, data were available on drivers' self-reports of these characteristics. Therefore it is possible to examine associations between them and risk of particular kinds of accident. Although drivers' reports of their driving characteristics would be expected to suffer from inaccuracy and bias, there is evidence to indicate that they correspond quite well with actual driving behaviour (Rolls *et al.*, 1991; West *et al.*, 1992).

It should be noted that in looking at changes in accident rates over time and at associations between accidents and other variables, the purpose of the present study was not to arrive at a statistical model that would fit the accident data, but as far as possible to identify the existence of relationships that might help in understanding accident causation in novice drivers. Therefore, details are not given of individual regression parameters and neither are any attempts made to explore different functional forms of relationships between predictor variables and accident rates.

2 Aims

The aims of the present study were to determine:

- 1 the proportions of accidents of different types involving novice drivers
- 2 changes in risk of particular kinds of accident as a function of driving experience in the first three years since passing the test
- 3 whether behavioural characteristics were associated with risk of involvement in particular types of accident in novice drivers
- 4 whether there were interactions between behavioural characteristics and changes in risk of particular types of accident with experience.

3 Methods

3.1 Overview

A sample of drivers who had passed their test in 1988 and another of drivers who passed their test in 1989 were followed up annually by postal questionnaire for three years. At each follow-up, drivers provided brief written descriptions of accidents in which they had been involved in the preceding year. They also indicated how many miles they had driven that year. During the course of the second year a separate postal questionnaire was completed by a sub-sample of drivers including questions concerning their driving characteristics. The accident descriptions were used to identify the numbers of accidents falling into each of several pre-defined categories and to examine associations between rate of involvement in different categories of accident and driving characteristics.

3.2 Sample

Of 12,416 drivers who had been identified as having passed their driving test, 7060 responded and provided sufficient data in the accident survey at the end of the first year, 6525 at the end of the second year and 6111 at the end of the third. A total of 3956 drivers provided data in all three years. Table 1 shows the characteristics of these samples. It also shows characteristics of a sub-sample that provided data on driving characteristics at some point in the second year of driving and who responded to the accident surveys in all three years. A total of 5000 driving characteristics questionnaires had been mailed out in waves so that each respondent received a questionnaire at either 12, 18 or 24 months after the test.

Table 1 Sample characteristics

	Responded in ...				
	Year 1	Year 2	Year 3	Year 1, 2, 3	Years 1, 2, 3 and to the attitudes and opinions question -naire
% Males	41	42	41	39	43
Mean Age (SEM) ¹	24 (0.1)	24 (0.1)	24 (0.1)	24 (0.2)	24 (0.3)
N	7060	6525	6111	3956	1357
Miles driven ² (SEM)	5534 (66.6)	6411 (73.1)	6884 (80.1)	6010 (77.9)	5873 (127.7)

¹At the time of taking the driving test

²Mileage per year for the period given at the top of each column in the table SEM= Standard Error of Mean

4 Measures

Drivers in the Cohort study who passed their driving test were sent a postal questionnaire one, two and three years later. The questionnaire asked for brief written descriptions of any traffic accidents in which they had been involved during the preceding year. It also asked drivers to estimate how many miles they had driven during that year. A total of 3,221 accidents involving cars or vans were identified as occurring within three years of passing the driving test. The accidents were classified using a variant of the system developed by West (1997) as follows:

- 1 active shunts (reporting driver's vehicle hits another from behind)
- 2 passive shunts (reporting driver's vehicle is hit from behind by another)
- 3 active right-of-way violations (reporting driver's vehicle pulls out into or across path of vehicle that has right of way)
- 4 passive right-of-way violations (reporting driver's vehicle collides with a vehicle that has violated its right of way)
- 5 active loss of control (reporting driver's vehicle goes out of control and hits objects or another vehicle)

6 active reversing accident (reporting driver's vehicle collides with an object or another vehicle while reversing)

7 miscellaneous (all other accidents).

Self-reported inattentiveness, impatience, hesitancy, tendency to commit driving violations, confidence and driving speed were measured in the sub-sample receiving the driving characteristics questionnaire as follows:

'Inattentiveness' was measured by asking drivers to rate themselves in the following terms: careful to careless, attentive to inattentive, responsible to irresponsible, and safe to risky. The ratings were on 7-point scales with high scores representing poorer driving. The individual ratings were added together to produce a single score.

'Impatience' was measured in a similar way using ratings of: placid to irritable, patient to impatient, tolerant to intolerant, considerate to inconsiderate.

'Confidence' was measured in a similar way using ratings of: inexperienced to experienced, indecisive to decisive, unconfident to confident.

Speed was measured with a single 7-point rating of slow to fast.

These scales were derived from a questionnaire developed by Guppy *et al.* (1990). Guppy would normally treat speed and confidence as one scale because they correlate with each other. However, other research (e.g. West *et al.*, 1992) has shown that speed in itself is an important correlate of accident risk and so it was treated separately in the present study.

Willingness to commit violations was measured by adding together drivers' ratings of how frequently they committed 14 infringements: chasing other vehicles, knowingly exceeding 30 mph limit, mistakenly exceeding 30mph limit, speeding late at night, driving when they might be over the legal alcohol limit, cutting corners, racing with other drivers, failing to give way at pedestrian crossings, overtaking on the inside lane, flashing cars to get out of the way, disregarding red lights at night, driving through lights that have turned red, driving through amber lights, and risky overtaking. This scale was developed as part of the Driver Behaviour Questionnaire (Reason *et al.*, 1991).

Hesitancy was measured by a single rating of the frequency of the driver changing his or her mind after beginning a manoeuvre (1=very infrequently to 6=very frequently).

Of these scales, 'inattentiveness', 'impatience', and tendency to commit violations consist of a number of items, and can be regarded as reasonably reliable scales. The 'confidence' and hesitancy scales consisting of single items only may be less reliable.

5 Analyses

Percentages of accidents falling into each category were calculated. The significance of changes in accident rates over time were evaluated using repeated measures analyses of variance, with reported mileage in each of the three years being controlled for. Relationships between

behavioural measures and accident rates were assessed using partial correlation coefficients with mileage controlled for, and by multiple regression. Given the large sample size and the presence of multiple significance tests, the alpha level was set at $p < .001$, two-tailed.

6 Results

Figure 1 shows the percentages of each category of accident in each of the three years of follow-up. The figures are relatively consistent, although there was some evidence of a decrease in loss of control accidents after the first year.

Figure 2 shows the changes in rates of different types of accident over time. Analysis of variance using annual mileage in each year as a covariate revealed that there were significant changes in active loss of control accidents ($F=12.73$, $p < .001$), active reversing accidents ($F=10.86$, $p < .001$), active shunts ($F=7.89$, $p < .001$) and miscellaneous accidents ($F=11.72$, $p < .0001$). In most cases, accident rates had fallen over time.

The changes in passive shunts, or right-of-way violations, whether active or passive, were not statistically significant.

There was a possibility that decline in some types of accidents may have been due to maturation rather than experience. However, age effects over a three year time span were found to be minimal, even in younger age groups. Figure 3 shows the mean rates of total accidents, active shunts and active loss of control accidents in the three years of follow-up for respondents who were 17, 18 or 19 at the time of their test. Analyses of variance with time as one factor and age as another controlling for miles driven showed a clear effect of time for total accidents - $F=26.6$, $p < .001$, active shunts - $F=6.8$, $p < .001$, and active loss of control accidents - $F=8.6$, $p < .001$. There was no significant effect of age although with active loss of control accidents

the mean rate decreased with increasing age.

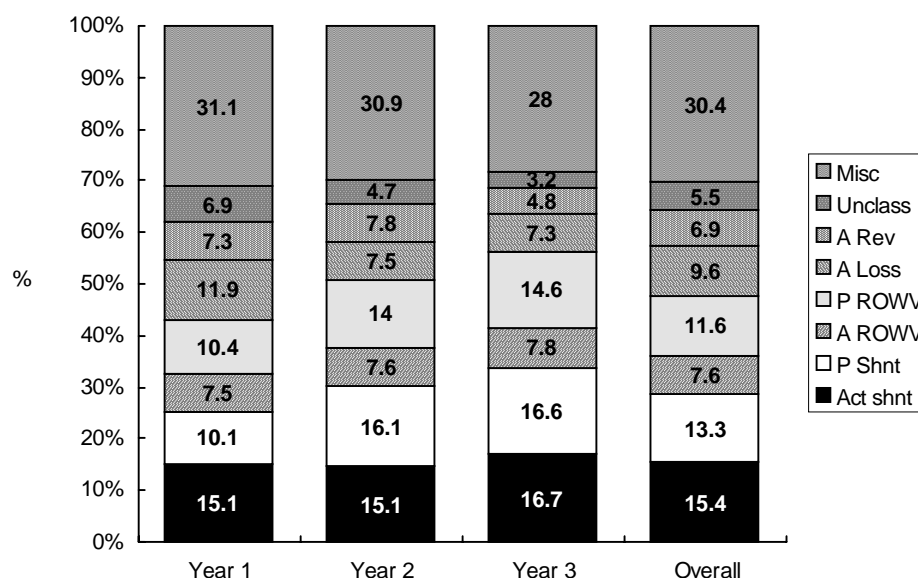
Thus it seems likely that the decline in accidents over the three year follow-up period was related to experience rather than maturation. However, there was still an issue concerning whether experience should be considered in terms of time spent with a full driving licence or miles driven. Common sense would suggest that it should be miles driven. In that case one would expect drivers with high mileage in the first year of driving to have a reduced accident rate in the second year controlling for mileage in that year. In fact the partial correlation between accidents in the second year and miles driven in the first year, controlling for miles driven in the second year was small and positive ($r=.03$) rather than negative. Similarly, the corresponding partial correlations for active shunts and active loss of control accident were both .03.

Table 2 shows correlations between behavioural measures and involvement in each type of accident taking account of miles driven. A similar pattern of results is obtained when mileage, age and sex are all controlled for.

Table 2 Partial correlations between behavioural variables and involvement in different types of accidents in three years after passing the driving test taking account of miles driven

	<i>Inattentive</i>	<i>Impatient</i>	<i>Violation</i>	<i>Fast</i>	<i>Confident</i>	<i>Hesitant</i>
All	.16*	.17*	.19*	.12*	-.01	.05
Act Shnt	.09*	.11*	.13*	.11*	.02	.04
Act ROWV	.04	.01	.05	.00	-.04	.06
Act Loss	.07	.06	.10*	.05	.06	-.01
Act Rev	.07	.10*	.06	.04	-.05	.04
Pas Shnt	.03	.10*	.01	.02	-.03	-.03
Pas ROWV	.03	.04	.07	.06	-.01	.01

* significant $p < .001$



A=Active, P=Passive; Rev=Reversing; Loss=Loss of control; ROWV=Right-of-way violation; Shnt=Shunt; Misc=Miscellaneous; Unclass=Unclassifiable

Figure 1 Percentages of accidents in each category over the three years of follow up

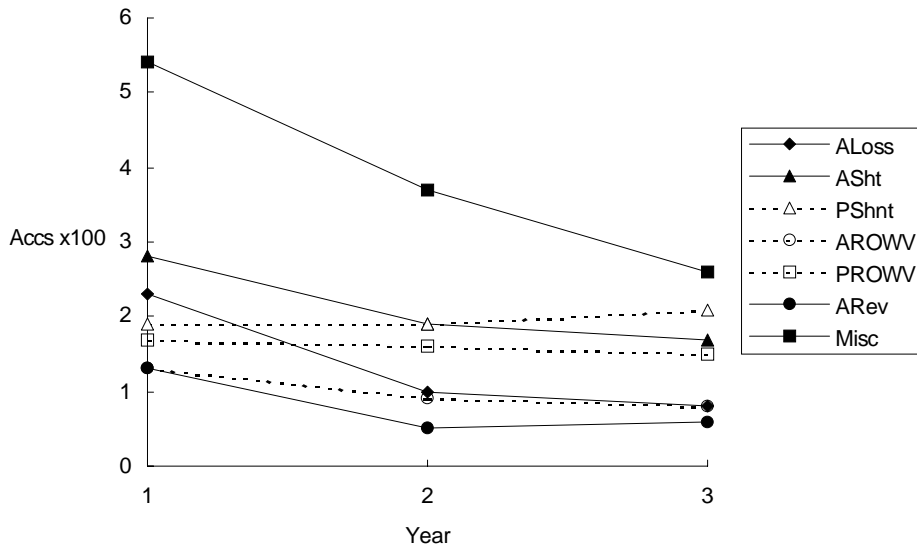
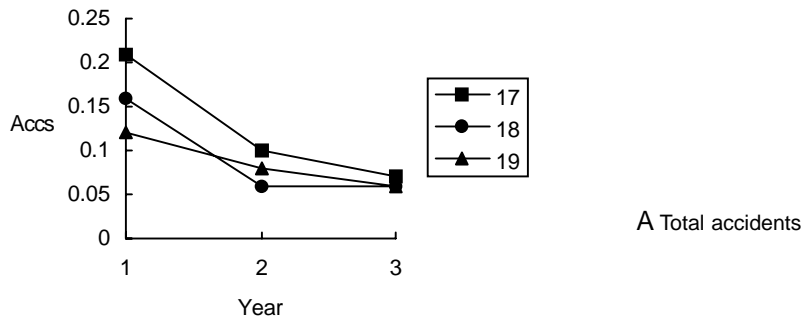
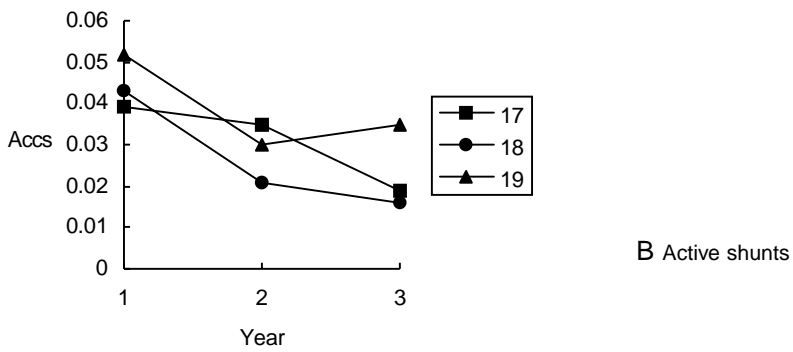


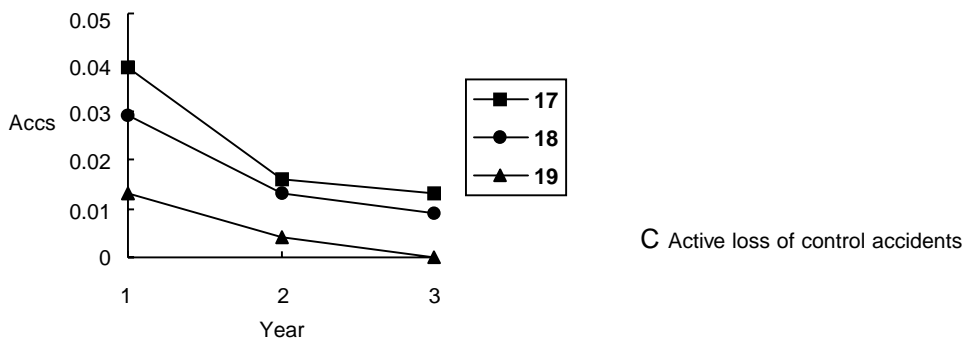
Figure 2 Accident rates (x100) for each year of follow-up in drivers who responded in all three years (N=3967) adjusted for mileage (solid lines indicate variables for which there was a significant change over time)



A Total accidents



B Active shunts



C Active loss of control accidents

Figure 3 Mean accident rates in 17, 18 and 19 year olds over three years since passing the test controlling for miles driven

The results show that neither hesitancy nor ‘confidence’ were significantly related to accident risk - though it should be remembered that these scales were not regarded as particularly robust. Fast driving, tendency to commit driving violations, and the scales termed ‘impatience’ and ‘inattentiveness’ on the other hand, were all associated with an increased risk of being involved in an accident. Risk of active shunts was significantly linked to all these motivational variables, in contrast to active right-of-way violations for which there were no significant correlations. Active loss of control accidents were significantly linked only with tendency to commit violations, active reversing accidents were related only to lack of patience, and passive shunts were linked with lack of patience. It is noteworthy that all the correlation coefficients in the first four columns of Table 2 are positive, suggesting that there is a general tendency for positive relations between these four behavioural characteristics and accidents of all types to exist, even if the size and statistical significance of the individual relationships will differ from one to the other.

Table 3 shows that the driving characteristics of ‘inattentiveness’, ‘impatience’, tendency towards violations, and fast driving speed were all correlated.

Table 3 Pearson correlations between measures of driving characteristics

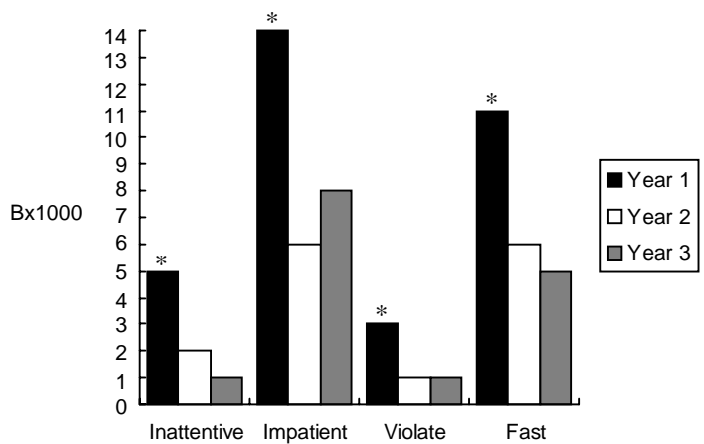
	<i>Inattentive</i>	<i>Impatient</i>	<i>Violation</i>	<i>Fast</i>	<i>Confident</i>	<i>Hesitant</i>
Inattentive		.49	.44	.25	.29	-.21
Impatient			.48	.32	.09	-.18
Violation				.49	.12	.24
Fast					.34	.09
Confident						-.10
Hesitant						

All correlations are significant at $p < .001$.

The correlation between violations and speed can in principle be partly accounted for by the fact that the violations measure included items relating to speed (knowingly exceeding the 30 mph speed limit, mistakenly exceeding the 30 mph speed limit and exceeding the speed limit at night). However, it was undiminished when those items were excluded from the violations measure ($r = 0.50$). In fact a principal components analysis carried out on the four measures of ‘inattentiveness’, ‘impatience’, violations (excluding speed items) and speed revealed just one factor accounting for 56% of the variance.

Computing a single score from the sum of violations, ‘inattentiveness’, ‘impatience’ and speed allowed a test of associations between this general factor of ‘motivated bad driving’ with accidents of different types after controlling for miles driven. This variable was correlated with total accident frequency in three years ($r = 0.21$, $p < .001$), active shunts ($r = 0.14$, $p < .001$), active loss of control accidents ($r = 0.10$, $p < .001$) and miscellaneous accidents ($r = 0.09$, $p < .001$). It was not clearly associated with active right-of-way violations ($r = 0.04$), passive shunts ($r = 0.03$), and marginally associated with passive right of way violations ($r = 0.07$, $p < .05$), and active reversing accidents ($r = 0.08$, $p < .05$).

Figure 4 shows that the association between active shunts and ‘inattentiveness’, ‘impatience’, violations and speed was strongest in the first year of driving.

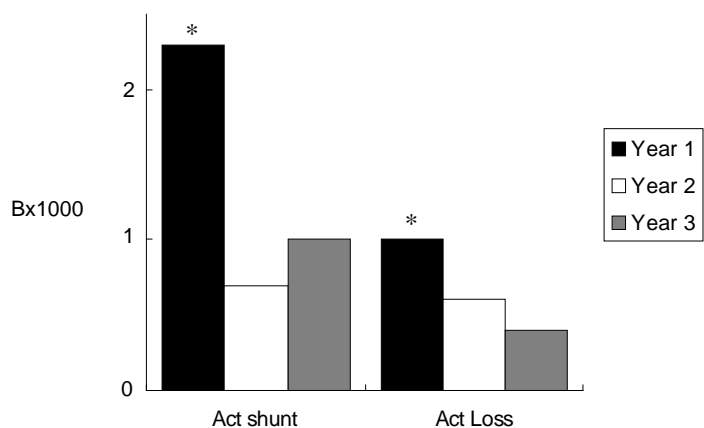


*Marks coefficients significantly different from 0 at $p < .001$

¹Because the regression coefficients are unstandardised the height of the bar reflects the number of scale points on the predictor variable, the violations score has many scale points and so the change in accident rate per scale point given by the height of the bar is correspondingly lower even though the relationship is as strong as for other predictor variables.

Figure 4 Unstandardised regression coefficients¹ between behavioural variables and active shunts in each of the three years of follow up

Figure 5 shows that the relationship between the motivated bad driving score (a composite of ‘inattentiveness’, ‘impatience’, violations and speed) and both active shunts and active loss of control accidents was greatest in the first year of driving.



*Indicates statistically significant associations, $p < .001$

Figure 5 Unstandardised partial regression coefficients relating motivated bad driving score and active shunts and active loss of control accidents in first three years of driving

7 Discussion

The results indicated that the most common accident types reported by novice drivers were: hitting other vehicles from behind, being hit from behind, colliding with vehicles that pulled across their path, and losing control of the vehicle. There was evidence for a reduction in active shunts, active loss of control accidents, active reversing accidents and miscellaneous accidents over the first three years of driving. The changes in the rate of other specific accident types were not statistically significant. Self-reports of 'inattentiveness', 'impatience', willingness to commit driving violations and fast driving reflected a single dimension that was termed 'motivated bad driving'. High scores on this dimension were clearly related to accidents in general, active shunts and active loss of control accidents, more so in the first year of driving. Self-reported hesitancy and 'confidence' were not related to accident risk, though these scales were not particularly robust. Motivated bad driving was not significantly related to active right-of-way violations.

7.1 Methodological issues

There are several factors that might in principle limit the generalisability of the results.

First of all, only a small proportion of the original cohort sample completed all the questionnaires. This makes it unlikely that the sample was representative of the population of novice drivers. Common sense suggests that the most deviant drivers may be least likely to complete the questionnaires. Therefore the fact that factors associated with deviant driving were still clearly related to accidents of particular types in this study highlight the importance of this dimension in accident risk. It also implies that active loss of control accidents and active shunts may be under-represented in this sample.

A second limitation concerns the validity of the measures. Considering first of all the accident classification system. Issues concerning its reliability and validity have been considered elsewhere (West, 1997). No direct validation study has yet been carried out but the fact that different accident types derived using the system show consistently different patterns of results indicates that distinctions between them are not arbitrary. In addition West (1997) found that there was a high level of agreement between judges in the categories to which accidents were assigned using the system. As regards the driving behaviour measures, there is evidence that the measures of violations and of driving speed do relate well to actual driving behaviour (Rolls *et al.*, 1991; West *et al.*, 1992).

7.2 Interpretation of findings

The proportions of accidents falling into different categories were broadly similar to those found in drivers with less than 10 years of experience in the large national driver survey on which the classification system was developed (Table 4). The proportion of shunts was slightly lower and the proportion of right-of-way violations slightly higher.

The decline in accident rates over the first three years of

Table 4 Comparison of accident proportions with those found among relatively inexperienced drivers from West (1997)

Accident type	This study (%) ¹	West (1997) sub-sample with <10 years driving (%)
Shunts	30.4	35.3
Right-of-way violations	20.2	17.2
Active loss of control	10.2	10.8
Active reversing	7.3	5.8
Miscellaneous	32.2	30.9

¹Figures are slightly higher than those given in the results section because percentages are of codable accidents to enable comparison with the previous study

driving was limited to certain accident types. Of these, active shunts and active loss of control accidents were the most important single categories. This suggests that accidents of this type were a least partly a function of inexperience.

It may be that both excessive speed and inadequate hazard perception/response are important in the case of active shunts. Self-reported lack of attentiveness and driving speed were both related to this kind of accident. However, the fact that these driving characteristics were related to a single underlying factor, together with 'impatience' and tendency to commit violations, makes it impossible to say whether in fact there were separate influences arising from poor hazard perception, excessive speed or indeed a more general tendency towards risk taking.

Hesitancy, which might be thought to be a particular problem for novice drivers, was not shown to be related to accidents of any type. Similarly 'confidence' per se was not related to accident risk. This suggests that these factors are not in themselves important. A great deal has been made in the past of the fact that drivers in general believe themselves to be more skilful and safer than their fellows (e.g. Groeger and Brown, 1989). The present results suggests that this does not play an important role in accident causation. However, it remains possible that these factors were not adequately measured in this study.

Approximately 30% of accidents could not be classified into one of the simple types identified. Some of these would consist of accidents covered by the more detailed accident script analysis system described by West (1997), such as accidents caused by drivers changing lanes or hitting parked cars, open car doors, pedestrians or objects on the carriageway. It is noteworthy that such accidents did decrease over time and thus that there is probably a broad effect of experience in increasing safety across a wide range of relatively uncommon accidents. This supports the view that experience may impart a generally improved 'road sense' or ability to operate safely in the traffic environment.

A peculiar feature of the findings was that drivers with higher mileage in the first year did not have a lower accident rate in the second year controlling for mileage in that year. This goes against the idea that the beneficial effect of experience is a simple function of miles driven. It suggests instead that time spent driving is the key factor. This would make sense given that a great deal of driving in

an urban traffic environment would not lead to coverage of a great many miles but the experience gained from the complex traffic situations encountered could be more beneficial than covering a large number of miles on motorways. In principle this issue could be addressed by examining relationships between accident rates and prior miles covered in urban and non-urban settings.

Unfortunately, there is little evidence to suggest that drivers are able to recall their mileage on different road types accurately (West *et al.*, 1992). More detailed studies involving drivers keeping diaries would be required to investigate this further.

7.3 Implications

One implication of the findings is that basic driver training is not providing drivers with adequate skills, knowledge or attitudes to prevent a relatively high risk of accident of particular types such as hitting other vehicles from behind and losing control of the vehicle. Experience in the first year or two of driving goes some way to reducing this risk. This raises the question of whether it might be possible to change the way that driver training is implemented to accelerate the process of gaining experience. Improved understanding of the risks of particular kinds of accident and the relationships between particular driving characteristics and accident risks could serve this purpose. The interaction between motivated bad driving and inexperience in increasing accident risk supports the view that many accidents arise from willingness to violate rules placing drivers in a position in which errors arising from inexperience are punished by a collision.

A logical next step would be to develop and evaluate a package that could be delivered during driver training that would focus on reducing the risks of particular kinds of accidents.

8 Conclusions

Novice drivers are at particular risk of causing accidents by driving into the rear of other vehicles and losing control of their own vehicle. There is evidence of a reduction in rates of these active shunts and loss of control accidents over the first three years. Inexperience appears to raise the risk of these kinds of accident. Active shunts and loss of control accidents were clearly related to a general characteristic that may be termed 'motivated bad driving' which involved 'impatience', 'inattentiveness', and tendency to commit violations and to drive fast.

The results provide potentially valuable material for educational interventions aimed at reducing the accident rates of novice drivers by highlighting areas of greatest risk, and providing information on possible causal mechanisms relating to accidents of different types. They point to the value of an experimental trial of an instructional package delivered in the course of driver training, identifying high risk drivers and focusing on common accident types, their causes and how they may be avoided.

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Abstract

Data from a large study of novice drivers were analysed to determine the prevalence of accidents of different types, changes in rates of different types of accident over time and associations between accidents and driver characteristics. Brief accident descriptions provided by novice drivers over a three year period after passing the driving test were classified using a modified version of the system developed by West (1997). Shunts (rear end collisions) were the most common type of accident, followed by right-of-way violations, loss-of-control accidents, then reversing accidents. Over the first three years there was a significant reduction in loss of control accidents, 'active' shunts (the reporting driver's vehicle hitting another from behind) and 'active' reversing accidents (the reporting driver's vehicle doing the reversing), but not right-of-way violations or passive shunts. Accidents as a whole and active shunts in particular were associated with 'inattentiveness', 'impatience', tendency to commit violations and fast driving, but not hesitancy and 'confidence'. The results provide a potentially useful basis for a training package aimed at learner drivers pointing out the risks of particular kinds of accident, the causal mechanisms involved, and a system for working out their own individual level of risk.

Related publications

- TRL274 *Accident script analysis* by R West. 1997 (price code E, £20)
- PR111 *Cohort study of learner and novice drivers: Part 3 Accidents, offences and driving experience in the first three years of driving* by E Forsyth, G Maycock and B Sexton. 1995 (price code J, £35)
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- RR315 *The accident liability of car drivers* by G Maycock, C R Lockwood and J F Lester. 1991 (price code C, £15)
- CR309 *Decision making, personality and driving style as correlates of individual accident risk* by R West, J Elander and D French. 1992 (price code N, £45)
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