

NEW LOOK DRIVER-TRAINING: DEFLATING CONFIDENCE AND PROMOTING SAFETY

Senserrick, T.M., Monash University Accident Research Centre

AAMI/Skilled Drivers of Australia have developed a driver-training program that departs considerably from previous programs that have focused on advanced vehicle-handling skills and have tended to increase crash risk. The objective of the program is to provide 18-25 year-olds greater insight into potential risks when driving through theory and practical sessions. MUARC evaluated the program through repeated measures analyses of questionnaire responses on driving-related attitudes and behaviours. Questionnaires were distributed to participants on three occasions (final sample $n = 144$). Several positive outcomes were identified, including a protective role of course participation against dangerous driving behaviours and an increase in confidence in hazard management but not in overall driving ability. In fact, males reported a reduction in confidence. Participants reported several behavioural changes in open-ended responses, including safer headways, speeds, and greater awareness of the driving environment at 8-9 weeks following the course. It was concluded that the program effected positive changes that were likely to reduce the crash risk of participants.

Introduction

Driver-training programs have traditionally aimed to improve advanced vehicle-handling skills, such as manoeuvring and skid training. While intended for emergency use only, research has shown that such training tends to increase the confidence of young drivers and, as a result, they tend not to avoid difficult conditions or take on more demanding tasks, such as driving at higher speeds¹⁻³. As a result, training has actually led to increases in some types of crashes for young drivers.³ Therefore, traditional programs have been relatively ineffective in reducing crash rates.

AAMI/Skilled Drivers have developed a program that departs considerably from traditional programs. The objective is to provide 18-25 year-olds greater insight into potential risks they can encounter in everyday driving through both theory and practical sessions. In this way, the program targets safety and deflating the over-confidence of young drivers rather than advancing vehicle-handling skills. A number of theoretical sessions are combined with closed-track driving tasks by which participants experience the distances needed to stop safely and the speeds required to avoid sudden hazards. Participants take part in their own vehicle heightening the reality of the outcomes. Research on insight training provides support for this approach.

Insight training targets the optimism, confidence, and attitudinal / motivational factors rather than advanced vehicle-handling skills. A Swedish study by Gregersen¹ found that a group of young drivers who undertook traditional skid training incorrectly perceived themselves as more skilful than did a group who received insight training. Further, a Finnish study by Keskinen and colleagues has suggested a link between insight training and a reduction in crashes, particularly for young males.³⁵ These studies lend support to the contention that the Skilled Drivers program had the potential to provide an important road-safety countermeasure.

MUARC sought to evaluate the effectiveness of the Skilled Drivers program by determining whether participants reported changes in their driving-related attitudes and behaviours after course participation. Research has shown drivers consistently rate themselves as more safe, more skillful and less risky than other drivers, particularly the young driver.^{4,5} In addition, young males have been found to be more confident, more anti-authority, more conforming to perceived unsafe driving norms, to believe they are more invulnerable to crashes and have superior driving skills, and to rate dangerous driving behaviours as less serious, than young females.⁶⁻⁹ They are also more likely to report traffic violations, drink-driving, and speeding behaviour.^{8,10}

However, young females have been found to be increasingly involved in drink-driving road deaths and in other crash fatalities^{11,12} In a recently published US study that examined traffic offences leading to convictions, only the most serious violations were non-normative among females.¹³ Two studies by Harré^{7,8} found that while males reported having driven significantly faster than females on 100 km/h roads, there was no reported difference for 50 km/h roads. For drivers on restricted licences, males were more likely than females to break the 10 pm curfew, but there were no significant differences for violating restrictions on drinking before or while driving, or for carrying passengers. Therefore, both the young male and female driver tend to engage in risky driving behaviours.

A well-researched measure of dangerous driving behaviours, the Driver Behaviour Questionnaire (DBQ)¹⁴, measures *violations, errors* and *lapses*. Violations refer to deliberate infringements of safe driving practices that pose a definite risk to the driver and other road users (e.g. deliberate disregard of the speed limit or deliberately

driving too close to the vehicle in front). Errors are typically misjudgments and failures of observation that may also be hazardous, such as misjudging the speed or distance of an oncoming vehicle. Westerman and Haigney¹⁵ describe these as *errors of intention*. In contrast, lapses are described as *errors of action* and represent absent-minded behaviours that pose minimal threat to other road users, with consequences mainly for the driver (e.g. missing an exit from the freeway or forgetting where one's car is parked). Therefore, while errors and lapses result from limitations in human information processing or knowledge inaccuracies, violations have a motivational component.¹⁵

Several consistent patterns have emerged from DBQ research. Reported violations have been positively correlated with crash history, including after controlling for exposure, age, and gender.¹⁷⁻¹⁹ While one Australian study did not find this association, it did find that violations were positively correlated with speeding convictions.^{20; also 19} Overall, these findings confirm that violations represent the most risky driving behaviours of the DBQ. Patterns of age and sex differences have also been identified. Young drivers are more likely to report violations and errors compared to older drivers and females more lapses, while young males report more violations.^{15-17,20-22}

MUARC aimed to evaluate changes in self-reported dangerous driving behaviours and road-safety attitudes after participation in the program through both quantitative and qualitative research. The study was limited to those who voluntarily enrolled in the program in order to receive reduced insurance premiums. These circumstances and voluntary participation in the evaluation were likely to bias the sample. Nevertheless, a sizeable subgroup of the young driver population responded to the surveys. It is also important to acknowledge that self-reported attitude and behaviour change is not always consistent with actual behaviour, and therefore crash risk. The study aimed first to assess whether participants believed that the course was effective before recommending an evaluation of claim records. If the participants themselves did not perceive the course to be effective, it was unlikely that a crash-based analysis was merited.

Method

Participants & Procedure

All those who enrolled in the driver-training program during the recruitment period ($N = 644$; 212 M, 432 F) were sent a letter from MUARC endorsed by AAMI/Skilled Drivers, inviting them to take part in the study; usually 2-4 weeks prior to course participation. The letter was accompanied by an explanatory statement, consent form, preliminary questionnaire, and reply-paid envelope. A total of 220 young drivers (54 M, 166 F) chose to participate (34.2% overall response rate). A second interim questionnaire was sent just before or just after the course (to form a control and case group), and a final questionnaire was sent 8-9 weeks after the course.

In total, 177 participants (40 M, 137 F) returned the interim questionnaire (82.7% retention), and 161 (40 M, 121 F) the final questionnaire (75.2% overall retention). Ages of participants ranged from 18 to 25 years, with a median age of 20 years. While mailouts were routinely conducted (weekly) so that approximately equal-sized groups of cases and controls could be recruited, the time frame between enrolment and course participation reduced from 3-4 weeks at the outset of the study to only 2-3 weeks in the remaining months. For this reason and due to the late receipt of many questionnaires the number of controls was reduced. This was true even though several reminder calls were made when necessary. The final sample completing all three surveys without missing data totalled 144 (34 M, 110 F).

Measures

In addition to demographic information, the questionnaires included several items on driving-related attitudes and the DBQ. The final questionnaire also included some open-ended questions seeking general feedback on the course.

Seven attitude items were included (see Table 1). Participants were asked to rate how much they agreed with each statement on a 7-point Likert scale; where 1 = Strongly Disagree and 7 = Strongly Agree. A modified version of the DBQ by Åberg and Rimmö²¹ was used, comprised of 37 items describing examples of everyday driving situations and behaviours. Participants were asked to indicate how often each situation occurred when they were driving according to a 6-point Likert scale; where 0 = Never and 5 = All the time. In this version, lapses are divided into *lapses due to inattention* (such as failing to notice a green arrow or missing one's exit on the freeway) and *lapses due to inexperience* (such as shifting into the wrong gear while driving or forgetting to release the handbrake).

Open-ended questions included what participants remembered most about the course, what part of the course was the most personally relevant, whether the course had changed the way they drive and why or why not.

Results & Discussion

As the research was exploratory and included a relatively small sample, all results that were significant at $\alpha = .10$ were examined. Due to the low response and retention rate of males, there was insufficient power to detect sex differences in the overall analyses. Therefore, once overall trends had been examined, responses for cases and controls were pooled and changes from the preliminary to final questionnaire examined for sex differences.

Repeated measures analyses identified several significant differences between cases and controls indicating positive changes. Results are displayed in Table 1. Items 1 and 4 indicate that participants were more likely to perceive themselves as better drivers than their peers following course participation and that some participants reported increased confidence in their ability to manage hazards. However, items 2-3 show that they did not perceive themselves as better drivers compared to most other drivers and their confidence in their driving ability in general did not increase. In fact, while the means for confidence in ability did not significantly increase from preliminary to interim stages for females ($M_{\text{prelim}} = 5.215$; $M_{\text{final}} = 5.438$), means for males ($M_{\text{prelim}} = 5.882$; $M_{\text{final}} = 5.471$) significantly decreased to the lower levels reported by females ($F_{(1, 149)} = 7.734, p < .01$). These findings suggest that the Skilled Drivers program achieved its objective of increasing awareness of the inexperience of young drivers and improving understanding of everyday hazards when driving. The finding that young males reported a reduction in confidence some 8-9 weeks following the program is a particularly important outcome of the program. The road-safety literature continues to identify young male drivers as a particularly problematic road-user group.^{7,10}

A specific aim of the program, to encourage participants to maintain safer headways, was explored through item 5. Clearly, participants reported greater discomfort both at interim and final stages. At no stage did participants believe driver training was a waste of time (item 6), with this item achieving the lowest scores for attitudes. Further, while 1-2 weeks following course participation, cases less strongly agreed they needed more training, some 7-8 weeks later they agreed just as strongly that they could still use more training (item 7). There were no sex differences for these items. Again, these findings depict both positive outcomes and positive perceptions of the Skilled Drivers program.

Items 8-11 report on the DBQ. As shown in Table 1, the DBQ items achieved very low scores making detection of significant differences difficult. However, scores on the violations factor, that representing the most risky driving behaviours, did show a tendency for these behaviours to increase for controls during the interim period and return to low levels at the final stage. There was no sex difference for this item. This suggested a protective role of the Skilled Drivers program against other factors that contribute to the risky behaviours of young drivers. Alternatively, Manstead²³ has indicated that drivers do not necessarily make conscious decisions about whether or not to violate particular road rules, and others have suggested individuals are generally likely to under-report any experiences of driving-related difficulties.¹⁵ Given that the preliminary and interim questionnaires were completed up to 3-4 weeks apart only, answering several questions about specific aspects of their driving behaviour may have made participants more aware of their driving habits and behaviours and encouraged more realistic self-reports over time. Either interpretation reflects a positive role of the Skilled Drivers program.

Qualitative feedback on the course provided by the open-ended questions clearly indicated that key messages of the day were well retained and were considered important. When asked what they remembered most 44.6% listed learning about safe headways and 28.7% listed insights into the role of speed. These were also considered the most personally important. All but two participants reported positive changes in their driving behaviour, including the adoption of safer headways (66.7%) and speeds (26.0%). Greater awareness of the driving environment was also reported by approximately one-third of respondents. Overall participants enjoyed the course and believed it should be recommended to other road-user groups.

Conclusions/Recommendations

Both the quantitative and qualitative responses indicated that the AAMI/Skilled Drivers driver-training program was perceived as effective in addressing the over-confidence of young drivers and effected positive changes in self-reported driving-related attitudes and behaviours. The program did not inflate confidence as found to be true of traditional programs. In fact, male drivers reported reduced confidence in their driving ability. Awareness of risks when driving increased and dangerous driving behaviours remained low after course participation. Open-ended responses confirmed that participants reported safer headway and speeds 8-9 weeks after participation.

Table 1. Repeated measures analyses of changes in driver attitudes and behaviours of cases ($n = 87$) and controls ($n = 57$)

Item	Preliminary		Interim		Final		<i>F</i> statistic
	Cases	Controls	Cases	Controls	Cases	Controls	
Section I: Driver attitudes							
1. I am a better driver than others my age	4.65 ^a	4.75 ^b	4.79	4.47 ^b	4.90 ^a	4.67	$F_{(2,272)} = 3.782, p < .05$
2. I am a better driver than most drivers	4.01 ^{a,w,x}	3.65 ^w	4.19 ^{b,x,y}	3.65 ^{b,z}	4.35 ^{a,c,y}	3.84 ^{c,z}	$F_{(2,272)} = 0.733, p > .10$
3. I am confident in my driving ability	5.35	5.35 ^a	5.27	5.04 ^{a,b}	5.35	5.44 ^b	$F_{(2,272)} = 1.745, p > .10$
4. I am confident in my ability to manage possible hazards	4.58 ^{a,b}	4.40 ^c	5.03 ^{a,d}	4.56 ^{d,e}	5.05 ^b	4.93 ^{c,e}	$F_{(2,272)} = 1.384, p > .10$
5. I am uncomfortable driving close behind another car	5.04 ^a	4.25 ^{a,b}	5.28 ^c	4.67 ^{c,d}	4.93 ^e	5.54 ^{b,d,e}	$F_{(2,272)} = 8.658, p = .000$
6. Driver-training is a waste of time	1.54	1.53 ^w	1.36	1.53	1.40	1.30 ^w	$F_{(2,272)} = 1.233, p > .10$
7. I could still use more training	5.54 ^a	5.53 ^b	5.10 ^{a,c,d}	5.88 ^{b,c,e}	5.51 ^d	5.53 ^e	$F_{(2,272)} = 5.912, p < .01$
Section II: Reported driving behaviours							
8. Violations	1.43	1.42 ^a	1.39	1.55 ^{a,b}	1.40	1.44 ^b	$F_{(2,270)} = 2.283, p = .10$
9. Inattention Lapses	0.78	0.84 ^a	0.84 ^x	1.01 ^{a,b,x}	0.78	0.85 ^b	$F_{(2,270)} = 1.525, p > .10$
10. Mistakes	0.84	0.86 ^a	0.82 ^x	1.00 ^{a,x}	0.79	0.91	$F_{(2,270)} = 2.161, p > .10$
11. Inexperience Lapses	0.74	0.81 ^x	0.73 ^y	0.90 ^{x,y}	0.73	0.82	$F_{(2,270)} = 1.160, p > .10$

Note: Section I possible range 1-7; Section II possible range 0-5

Identical superscripts *a-e* indicate that row means are significantly different from each other at $p < .05$

Identical superscripts *w-z* indicate that row means are significantly different from each other at $p < .10$

To further the effectiveness of the course, several recommendations were made. Up to 16 young people attend the day-long program at a time. Program instructors generally target the individual, with discussions among participants included occasionally. MUARC recommended that instructors maximise opportunities to incorporate positive social influences in the program. These included more strongly encouraging participants to view themselves both as trainees and observers throughout the day and enhancing theory sessions with a focus group discussion. Social factors can have a powerful influence on behaviour. Educational research, for example, has shown that students use peer comparison not only to gauge the acceptability of their beliefs and behaviours, but also to evaluate their ability levels.^{24,25} Road-safety researchers have stressed the importance of social factors in understanding the driving behaviour of young drivers, in particular, influences from peers.²⁶⁻²⁸

A focus group discussion is a powerful tool that can allow individuals to learn the views of others and match these to their own and/or become aware of aspects they had not considered previously. It can also clarify views for those with divided opinions. An important factor in young people's adoption of safe driving practices is likely to be the perception that their peers find such behaviour acceptable and worthwhile.^{28,29} While it is possible that negative views might also be put forward in this medium, it is likely that they will be challenged. It was recommended that a focus group in which participants can discuss with each other their perceptions and experiences of the program be included during the final review session. The final session had included a review of the messages of the day by the instructor. Prompting participants to recall the key messages themselves and to discuss what they have learnt is likely to promote more longer lasting recall.³⁰ Inclusion of other presenters in this session who would not be viewed as an authority figure, such as young traffic offenders and road trauma survivors, is also likely to enhance recall.²⁹

Many participants included in their open-ended responses a desire to experience different road surfaces and to repeat some of the practical tasks to compare how this influenced their vehicle's performance. A task such as this that focuses on experience and not emergency manoeuvring skills would be in line with the guidelines recommended by the Transport Accident Commission.³¹ The TAC encourages novice drivers to gain as much experience as possible driving in different conditions and circumstances when accompanied by a fully-licensed driver. It was recognised that the inclusion of such a task may be impractical for the current driving course and that additional safety issues would need to be considered. However, if the program was to be extended, it was recommended that this be considered using a contrasting road surface such as sand or fine gravel.

Finally, given that participants perceived the Skilled Drivers program to be effective, MUARC recommended that differences in the incidence of crashes for those who did and did not chose to take part in the course be explored using survival analysis methods. Survival analysis is a statistical technique that is typically used to examine the length of time a group or groups of individuals take to reach a pre-defined event or end-point, when the length of time of the study is fixed and some participants might not reach that end-point.^{32,33} For example, a recent MUARC study explored the time to first fall for older persons who had and had not received training to prevent falls.³⁴ This proved to be a more sensitive analysis than analysis of fall frequency, for example. A survival analysis of young AAMI insurance holders could compare whether the time to first claim (indicating more than a minor incident) was systematically longer for those who completed the program compared to those who did not. This type of analysis would be able to provide conclusive support for the evaluation conclusion that the crash rate of these young drivers is likely to decrease following completion of the Skilled Drivers program.

In conclusion, while this study was based on self-reports rather than actual behaviour, the results support the need to review the potential benefits of driver-training programs. These new-look programs that target awareness and insight show promise as a road-safety countermeasure to address the over-representation of young people in our crash statistics. Further research should include crash-based analyses to provide more conclusive evidence.

References

1. Gregersen, N.P. Young drivers' overestimation of their own skill - An experiment on the relation between training strategy and skill. *Accident Analysis and Prevention*, 28, 1996, 243-250.
2. Katila, A., Keskinen, E., & Hatakka, M. Conflicting goals of skid training. *Accident Analysis and Prevention*, 28, 1996, 785-789.
3. Keskinen, E., Hatakka, M., Katila, A., & Laapotti, S. *Was the renewal of the driver-training successful?* Psychological report, No. 94, 1992. University of Turku.
4. Walton, D. & Bathurst, J. An exploration of the perceptions of the average driver's speed compared to perceived driver safety and driving skill. *Accident Analysis and Prevention*, 30, 1998, 821-830.
5. Williams, A.F., Paek, N.N. & Lund, A.K. Factors that drivers say motivate safe driving practices. *Journal of Safety Research*, 26, 1995, 119-124.

6. Dejoy, D.M. An examination of gender differences in traffic accident risk perception. *Accident Analysis and Prevention*, 24, 1992, 237-246.
7. Harré, N., Brandt, T. & Dawe, M. The development of risky driving in adolescence. *Journal of Safety Research*, 31, 2000, 185-194.
8. Harré, N., Field, J. & Kirkwood, B. Gender differences and areas of common concern in the driving behaviors and attitudes of adolescents. *Journal of Safety Research*, 27, 1996, 163-173.
9. Tränkle, U., Gelau, C., & Metker, T. Risk perception and age-specific accidents of young drivers. *Accident Analysis and Prevention*, 22, 1990, 119-125.
10. Greening, L. & Stoppelbein, L. Young drivers' health attitudes and intentions to drink and drive. *Journal of Adolescent Health*, 27, 2000, 94-101.
11. Finken, L.L., Jacobs, J.E., & Laguna, K. Risky drinking and driving decisions: The role of previous experience. *Journal of Youth and Adolescence*, 27, 1998, 493-511.
12. Shapiro, R., Siegel, A.W., Scovill, L.C., & Hays, J. Risk-taking patterns of female adolescents: What they do and why. *Journal of Adolescence*, 21, 1998, 143-159.
13. Elliott, M.R., Waller, P.F., Raghunathan, T.E., Shope, J.T., & Little, J.A. Persistence of violation and crash behavior over time. *Journal of Safety Research*, 31, 2000, 229-242.
14. Reason, J., Manstead, A., Stradling, S., Baxter, J. & Campbell, K. Errors and violations on the road: a real distinction? *Ergonomics*, 33, 1990, 1315-1332.
15. Westerman, S.J. & Haigney, D. Individual differences in driver stress, error and violation. *Personality and Individual Differences*, 29, 2000, 981-998.
16. Lawton, R., Parker, D., Stradling, S.G. & Manstead, A.S.R. Predicting road traffic accidents: The role of social deviance and violations. *British Journal of Psychology*, 88, 1997, 249-262.
17. Parker, D., Reason, J.T., Manstead, A.S.R. & Stradling, S.G. Driving errors, driving violations and accident involvement. *Ergonomics*, 38, 1995, 1036-1048.
18. Parker, D., West, R., Stradling, S. & Manstead, A. Behavioural characteristics and involvement in different types of traffic accident. *Accident Analysis and Prevention*, 27, 1995, 571-581.
19. West, R. & Hall, J. The role of personality and attitudes in traffic accident risk. *Applied Psychology: An International Review*, 46, 1997, 253-264.
20. Blockley, P.N. & Hartley, L.R. Aberrant driving behaviour: errors and violations. *Ergonomics*, 38, 1995, 1759-1771.
21. Åberg, L. & Rimmö, P. Dimensions of aberrant driver behaviour. *Ergonomics*, 41, 1998, 39-56.
22. Dobson, A., Brown, W., Ball, J., Powers, J. & McFadden, M. Women drivers' behaviour, socio-demographic characteristics and accidents. *Accident Analysis and Prevention*, 31, 1999, 525-535.
23. Manstead, A.S.R. Attitudes and behaviour. In G.R. Semin, K. Fiedler (Eds.), *Applied social psychology*, 1996, 3-29. London: Sage Publications.
24. Reuman, D.A. How social comparison mediates the relationship between ability-grouping practices and students' achievement expectancies in mathematics. *Journal of Educational Psychology*, 81, 1989, 178-189.
25. Suls, J. & Sanders, G.S. Self-evaluation through social comparison: A developmental analysis. In L. Wheeler (Ed.), *Review of personality and social psychology*, Vol. 3, 1982, 171-197. Beverley Hills, CA: Sage.
26. Shope, J.T., Waller, P.F., & Lang, S.W. Alcohol-related predictors of adolescent driving: Gender differences in crashes and offenses. *Accident Analysis and Prevention*, 28, 1996, 755-764.
27. Canterbury, R.J., Gressard, C.F., Vieweg, W.V., & Grossman, S.J. Risk-taking behavior of college students and social forces. *American Journal of Drug and Alcohol Abuse*, 18, 1992, 213-222.
28. Evans, L. Young driver involvement in severe car crashes. *Alcohol, Drugs and Driving*, 3, 1987, 63-78.
29. Rivers, K., Sarvela, P.D., Shannon, D.V., & Gast, J. Youth and young adult perceptions of drinking and driving prevention programs: A focus group study. *Journal of Alcohol and Drug Education*, 41, 1996, 80-91.
30. Matlin, M. *Cognition*, 1994. USA: Holt, Reinhart & Winston.
31. Transport Accident Commission (2001). www.tac.vic.gov.au.
32. Cox, D.R. & Oakes, D. *Analysis of survival data*, 1984. London: Chapman and Hall.
33. Newstead, S.V. *Model free survival analysis*. Unpublished Masters thesis, 1993. Department of Mathematics, Monash University.
34. Day, L., Fildes, B., Gordon, I., Fitzharris, M., Flamer, H., & Lord, S. A randomised factorial trial of falls prevention among community-dwelling older people. Manuscript submitted to *British Medical Journal*, 2001.
35. Keskinen, E., Hatakka, M., Katila, A., Laapotti, S., & Peraaho, M. Driver training in Finland. *IATSS Research*, 23, 78-84, 1999.