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Exploring how Parents and Peers Influence the Behaviour of Young Drivers

Scott-Parker, B.¹, Watson, B.¹, King, M.¹

¹Centre for Accident Research and Road Safety – Queensland, Queensland University of Technology.

Abstract

Despite ongoing enhancements to graduated licensing systems, young drivers continue to have a high risk of being killed or injured in car crashes. This study investigated the influence of parents and peers on the risky behaviour of young drivers, utilising Akers' social learning theory. The specific factors examined related to parent and peer norms perceived by the young driver, and the rewards and punishments anticipated by the young driver from their parents and peers. A questionnaire was completed by 165 young drivers. Regression analysis revealed that these factors explained 54% of the variance in risky driving. The strongest predictor was anticipated parent rewards, followed by peer norms, and anticipated peer rewards. Exploratory analyses however revealed the profile of predictors varied for male and female participants, and for self-reported offenders and non-offenders. The results highlight the role of psychosocial factors in the risky behaviour of young drivers and the need for road safety policies and programs to consider the influence of both parents and peers upon this behaviour.

Keywords

Road Safety, Social Learning Theory, Adolescents, Young Drivers, Parent Influence, Peer Influence

Introduction

Young persons aged 15-24 years have been over-represented in car crashes around the world [1] for decades [2]. Young persons comprised one tenth of the population in OECD countries in 2004 but contributed more than one quarter of all crash fatalities [3]. Eighty-five percent of young driver crashes involve young passengers [4], with these passengers representing half of all vehicle occupant deaths among this age group [5]. Studies consistently demonstrate that young driver crashes are influenced by numerous driver, journey, vehicle, and passenger variables that can interact with one another. Young male drivers die at three times the rate of young female drivers [6], while novice drivers' crash at 10 times the rate per kilometre traveled than more experienced drivers [7]. Young driver fatalities are 47% more likely to be alcohol-related [8], to involve speeding [9], non-wearing of restraints [10] and fatigue [11]. Their crashes are more likely to occur at high severity times such as at night and on the weekend [9], tend to be single vehicle crashes [8], and involve smaller older cars which are known to be less safe [12]. Carrying two or more young passengers has also been found to increase a young driver's crash risk by 16 times [12], and adults aged over 25 years are absent in more than 80% of young driver crashes [10]. In addition, young drivers who crash or offend are more likely to crash or offend again [13].

Adolescence is a period characterised by developmental changes of a cognitive, physiological, behavioural, and social nature. The individual is predominantly focused upon themselves and their self-esteem fluctuates [14] as they increase their reliance on peers in forming attitudes and behaviours [15, 16]. In addition, statistics reveal that as adolescents mature, injuries and fatalities decrease [6]. Possible explanations for this include physical and psychological maturation, the adoption of appropriate behaviours [17], and diminishing susceptibility to the negative peer passenger influences [18]. It is noteworthy that throughout the young drivers' lifetime they are exposed to numerous influences on their driving attitudes and behaviours, including parents, peers, schoolmates, and workmates [19, 20]. In addition, entrenchment of driving attitudes and motivations are apparent long before the young person obtains a driving licence [21, 22]. To improve the efficacy of young driver road safety interventions, it is vital that this research identifies the mechanisms of both positive and negative influence. Akers' social learning theory [23] appears to be particularly suited to use within the domain of young driver risky behaviour as it considers a number of key personal and social issues relevant to young driver risky behaviour. These include the social processes within youth interactions [24]; the pervasive influence of social reinforcement [25]; the importance of social status to the young person [26];

and the finding that youth are more likely to commit unsafe behaviours if they associate with peers who encourage it [27, 28].

Akers' social learning theory emerged in the 1960's and combined the psychological social learning principles of Bandura [29] with sociological research into deviant and criminal behaviour. Akers' theory asserts that the *differential association* of the young person influences their behaviour. Differential association refers to the patterns of interaction between a person and other individuals and groups with whom they identify. Most importantly, this relates to interaction with primary groups such as friends and family, but also encompasses secondary groups such as work colleagues [23]. It is through differential association that the young driver therefore spends time with "*groups which control (the) individuals' major sources of reinforcement and punishment and expose them to behavioural models and normative definitions*" [23, p. 638]. Accordingly, differential association has both normative (that is, being exposed to the attitudes of the significant others with whom you associate) and behavioural dimensions (that is, the duration, the frequency, the intensity and the priority of these differential associations). The significant persons also punish and reward the individual for behaviours they perform and attitudes they hold [30]. For the young driver who has a provisional or open driving licence, the association with peers, particularly within the car, is likely to be of longer duration and greater intensity, frequency, and priority. In contrast the young driver's association with their parents is likely to be of shorter duration, and less intensity, frequency and priority [28]. Accordingly peers and parents are likely to differentially influence the behaviour of young drivers.

The operationalisation of Akers' theory within the contexts of risky adolescent behaviours such as drinking, smoking, and illicit drugs [23] has explained substantial variance in risky behaviour, frequently more than other theoretical applications. There has also been limited but promising application of Akers' theory within the realm of road safety. To illustrate, the theory has been found to be predictive of American teens traveling as passengers of drinking drivers [30], Australian adults driving whilst unlicensed [31], Australian adults speeding [32], and learner and provisional driver experiences with graduated driver licensing in Queensland and New South Wales [33]. Whilst Akers' theory has not been utilised to investigate the influence of parents and peers upon young driver risky behaviour, it appears to provide a potentially useful framework. In consideration of the developmental influences of parents and peers upon the young driver, it is appropriate that these domains of influence are examined separately, particularly as this has not occurred in research published to date. Accordingly Akers' theory will be used to investigate the influence of parents and peers upon young driver risky behaviour.

More generally, the study was designed to explore the psychosocial factors influencing the risky behaviour of young drivers in south-east Queensland. The influences of various psychosocial variables within Akers' theory upon the self-reported risky driving behaviour of young drivers were examined. The specific hypothesis tested was that both parental and peer norms, anticipated rewards and anticipated punishment inherent in Akers' theory will significantly predict the self-reported risky driving behaviour of young drivers. A number of exploratory analyses stemming from the hypotheses were also undertaken. Firstly, the literature reveals evidence of gender differences in risky driving. Accordingly the hypothesis testing was conducted separately for male and female participants to explore potential differences in the factors influencing risky driving. Secondly, the literature suggests the psychosocial influences upon drivers detected for an offence may differ to those who do not offend [e.g., 13], therefore for exploratory purposes analyses comparing offenders and non-offenders were also undertaken.

Methods

One hundred and sixty-five licensed drivers (105 women and 60 men) aged 17-24 years ($M = 19.65$ years, $SD = 2.10$) volunteered to complete the 25 minute questionnaire. Sixty-one participants were psychology undergraduate students who were granted course credit for participation. Eighty-six participants were students of other faculties and members of the public recruited via convenience sampling of friends, relatives, neighbours, and work colleagues. Eighteen participants were recruited from the local Government Driver Licensing Centre. Of the 480 questionnaires distributed, 165 were returned, representing a response rate of 34.4% (43.6% for females, 25.2% for males).

The study is part of a larger study undertaken in Queensland, Australia that utilised a self-administered questionnaire which was informed by the literature and a number of group interviews with young drivers. The group interviews were undertaken to ensure the language utilised within the questionnaire reliably reflected the perceptions of the young driver and in particular that the language was age-appropriate. To illustrate, terms such as “good time”, “have fun”, and “show off” were taken from the transcribed interviews, reflecting the risky driving behaviour by the young person. That larger study also incorporated the items of the Driver Behaviour Questionnaire in response a number of scenarios [34]. The study utilised a cross-sectional survey design in which a range of self-report data was collected via 7-point Likert scales ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The main dependent variable was participant *self-reported risky driving behaviour*, which was measured using a purpose-designed scale exploring risky behaviours such as speeding, not wearing a seatbelt, tailgating, and drinking before driving. Higher scores on the self-reported risky driving behaviour scale corresponds to more risky driving. The main independent variables included the variables comprising the normative dimension of differential association, and punishment and rewards anticipated from parents and peers, measured as *parent norms* and *peer norms*; *anticipated parent punishments* and *anticipated peer punishments*; and *anticipated parent rewards* and *anticipated peer rewards*. Higher scores on the norms scales indicate that the participant believes that their parents and peers have norms that encourage risky driving in the young driver. Higher scores on the rewards scales indicate that more rewards are anticipated from parents and peers for risky driving. Higher scores on the punishment scales indicate that the young driver anticipates a higher likelihood of punishment from parents and peers for risky driving. Table 1 details the driving-related concepts, example items, the internal reliability, measured as Cronbach’s alpha, and the number of items within each scale. Half the items within each scale were reverse-scored. A number of items

Table 1. Cronbach’s Alpha and the Number of Items in the Scales used in the Study

Scale	Driving-Related Concepts Explored	Example Item	Cronbach Alpha	Initial No. of items	Final No. of Items
Self-reported risky driving behaviour	Current high risk driving behaviours	I weave in and out of traffic trying to get ahead	.76	8	8
Peers norms	Attitudes of friends towards the young driver’s risky behaviour	My friends want me to give them a good time in the car	.76	8	7
Parent norms	Attitudes of parents towards the young driver’s risky behaviour	My parents don’t mind if I have fun in the car with my mates	.74	8	7
Anticipated peer rewards	Anticipated rewards from peers for the young driver’s risky behaviour	I’ve got a great reputation in my group of mates because of the risky things I do on the road	.76	4	4
Anticipated parent rewards	Anticipated rewards from parents for the young driver’s risky behaviour	Mum and Dad let me use the car because they know I am a safe driver ¹	.50	4	3
Anticipated peer punishment	Anticipated punishments from peers for the young driver’s risky behaviour	My mates won’t drive with me if I show off	.44	4	4
Anticipated parent punishment	Anticipated punishments from parents for the young driver’s risky behaviour	Even though Mum and Dad give me an earful if I get caught doing the wrong thing, they let me drive anyway ¹	.45	4	2

Note. All scales have been logarithmically transformed to rectify violations of normality.

¹ Item was reverse-scored in the scale.

were removed from the scales of anticipated parent rewards and anticipated parent punishment in an attempt to improve Cronbach's alpha, however these could not be improved for anticipated parent rewards, and anticipated peer and parent punishment.

Univariate analyses were undertaken using Pearson's product moment (r) correlations to explore the strength of association between the dependent and independent variables. Multivariate analyses were undertaken using multiple regression [35]. For the multiple regression, a minimum sample size of $n \geq 50 + 8m$ (where m = number of independent variables) [36] required for a preferred power of 80%, and to detect a medium effect size of .20, was met, unless otherwise stated. All analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 15.0 and were evaluated at a significance level of $\alpha = .05$.

Results

Missing data was minimal and random. One univariate outlier [35] who reported driving more than 100 hours each week, and three participants who failed to respond to more than 30% of the items, were excluded from the analysis. Violations of normality including a skew of >1 were rectified by logarithmic transformations. Subsequently assumptions of regression such as normality, linearity and homoscedasticity were met. Whilst there were significant correlations amongst the independent variables in the study, this did not exceed .63. In addition, the tolerance statistics were greater than .25 and the VIF statistics were less than 3.9, indicating that no multicollinearity was in evidence [35].

Of the 60 male and 101 female participants, 58 were aged 17-18 years, 47 were 19-20, 36 were 21-22, and 20 were aged 23-24 years. Males had more driving experience ($M = 3.16$ years, $SD = 2.31$) than females ($M = 2.00$ years, $SD = 1.59$), and males reported more hours spent driving each week ($M = 14.20$ hours, $SD = 11.59$) than females ($M = 9.39$ hours, $SD = 11.42$). Driving more each week and gaining more driving experience was significantly associated with more risky driving, males were more likely to report risky driving than females. As can be seen in Table 2, there was a strong positive correlation between risky driving and peer and parent norms and anticipated rewards from peers and parents, indicating that scoring more highly on these scales (that is, more riskily) is associated with more self-reported risky driving. As would be expected, more anticipated punishment from peers and parents was negatively associated with self-reported risky driving, that is, more anticipated punishment was associated with less risky driving.

Table 2. Means, Standard Deviations, and Correlations with Self-Reported Risky Driving

Variable	<i>M</i>	<i>SD</i>	Correlation with self-reported risky driving behaviour
Peer norms	2.67	1.08	.61***
Parent norms	2.29	0.94	.60***
Anticipated peer rewards	1.81	1.03	.59***
Anticipated parent rewards	3.09	1.23	.56***
Anticipated peer punishment	4.82	1.00	-.42***
Anticipated parent punishment	4.87	1.40	-.35***

* $p < .05$. ** $p < .01$. *** $p < .001$.

A standard multiple regression analysis was conducted to test the main study hypothesis. This involved evaluating how well the social learning variables, subdivided into parent and peer sources of influence, predicted risky driving. The predictors were the six scales of anticipated peer and parent punishments, anticipated peer and parent rewards, and peer and parent norms. The dependent variable was the self-reported risky driving score. The linear combination of social learning variables was significantly related to the self-reported risky driving behaviour, $F(6, 154) = 29.82$, $p < .001$. Table 3 presents the results for the standard multiple regression. As shown by the R^2 , 54% of the variance in the risky driving in the sample can be accounted for by the linear combination of parent and peer variables. The strongest predictor was anticipated

parent rewards ($\beta = .23, p < .01$), and the next strongest predictors were peer norms ($\beta = .20, p < .05$) and anticipated peer rewards ($\beta = .14, p < .05$).

Given the differences between the sexes apparent in the literature, two additional simultaneous multiple regressions were undertaken utilising the same variables for each gender for exploratory purposes. The linear combination of social learning variables was significantly related to the risky driving of females, $F(6, 94) = 16.98, p < .001$, and males, $F(6, 53) = 11.43, p < .001$. Approximately 47% of the variance in the risky driving in the sample of females and 56% of the variance for males can be accounted for by the linear combination of social learning variables. Interestingly there are differences between the genders in terms of the individual predictors which are significant. The significant social learning predictors that emerged for females included anticipated parent rewards and anticipated peer punishment, whilst peer norms approached significance ($p = .08$). No significant predictors emerged for male participants, however anticipated peer punishment, anticipated parent punishment, and parent norms approached significance ($p = .06, .05, .07$ respectively). It is important to note however that these are exploratory findings only as the required sample sizes to detect a medium effect with adequate power were not met (because the sample size was less than the 98 participants required based on the formula $\{50 + (8 \times 6)\}$ [36]).

Table 3. Simultaneous Multiple Regression Results

Variables	<i>M</i>	<i>SD</i>	<i>B</i>	<i>SE</i>	β	<i>sr</i> ²	<i>R</i> ²	<i>Adj R</i> ²
Self-reported risky driving behaviour	2.51	1.03						
Anticipated peer punishment	4.82	1.00	-.22	.12	-.12			
Anticipated parent punishment	4.87	1.40	-.15	.08	-.12			
Anticipated peer reward	1.81	1.03	.14*	.07	.16	.01		
Anticipated parent reward	3.09	1.23	.23**	.07	.23	.03		
Peer norms	2.67	1.08	.20*	.08	.21	.02		
Parent norms	2.29	0.94	.15	.08	.15			
							.54***	.52

Note. Untransformed means and standard deviation scores are reported. However, all scales were logarithmically transformed prior to regression analyses to rectify violations of normality.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Two further simultaneous multiple regressions were also undertaken utilising the same variables for self-reported offenders and non-offenders for exploratory purposes. The linear combination of social learning variables was significantly related to the risky driving of offenders, $F(6, 48) = 10.90, p < .001$, and non-offenders, $F(6, 99) = 15.80, p < .001$. Approximately 52% of the variance in the risky driving of the offenders and 46% of the variance in risky driving of non-offenders can be accounted for by the linear combination of social learning variables. There were differences between the offender types, with no significant social learning predictors emerging for offenders whilst peers norms and anticipated parent rewards emerged as significant predictors for non-offenders. Once again, sample size inadequacies prevent definitive conclusions.

Discussion

There was strong support for the main study hypothesis, with the linear combination of anticipated rewards and anticipated punishments from peers and parents, and peer and parent norms, accounting for 54% of the variance in self-reported risky behaviour of young drivers. Peer norms and anticipated peer and parent rewards emerged as significant predictors, suggesting that the norms of their friends, and the rewards anticipated by their friends and parents, influenced the risky behaviour of the young driver. The exploration of the psychosocial influences upon males and females was theoretically and epidemiologically warranted, and an exploratory analysis revealed that significant predictors differed for each gender. Significant predictors for

females included anticipated parent rewards and anticipated peer punishment; for males, anticipated punishment from peers and parents and parent norms were approaching significance. To further explore the psychosocial influences upon risky driving evidenced as being detected for an offence, an exploratory analysis revealed that significant predictors differed for offenders and non-offenders. No significant predictors emerged for offenders, peer norms and anticipated parent rewards emerged as significant predictors for non-offenders.

There are considerable theoretical implications associated with the research findings. Akers' theory has had only limited application to young drivers, and the study lends support for utilisation of this framework for young driver road safety. Some scales exhibited unsatisfactory internal reliability, and attempts to rectify this were only marginally successful. Given that the research was one of the first attempts to apply this theory to the risky behaviour of young drivers, it is anticipated that future applications will further define the role of these influences on young driver risky behaviour. Notwithstanding the low reliability of the some of the scales, psychological theories such as Akers' social learning theory reveal potential avenues and directions for intervention. Whilst the study was soundly based in theory, there are a number of other limitations that need to be borne in mind. Only one third of questionnaires that were distributed were returned, and although this response rate is not uncommon in road safety research [39], it is not known whether the sociodemographic and psychosocial characteristics of the participants differs greatly from those who chose not to participate, and from the general young driver population. The small sample size similarly prevents definitive conclusions. In particular, the sample size requirements were not met in the exploratory analyses of gender (male young drivers) and offender (those young drivers who reported being detected for an offence). Moreover, whilst self-report data collected within the study is frequently criticised for potential reporting biases such as impression management, alternative sources of data such as police records are unlikely to document risky behaviours of interest in the study [40], such as weaving in and out of traffic, and observational studies are similarly restricted by methodological constraints, for example being unable to accurately determine the age of the passengers in vehicles [41].

Traditionally, road safety policies and programs have not directly addressed the influence of parents and peer norms, or the role of anticipated rewards on young driver behaviour. Considerable practical implications arise from the research findings, which highlight the role of particular psychosocial factors in the risky behaviour of young drivers. Of particular interest is that the attitudes and behaviours of parents and peers differentially influence young driver risky behaviour, and anticipated rewards from parents and peers alike are influential on young driver risky behaviour. This influence can guide road safety policy and programs, such as education campaigns targeting young drivers, their parents, and their peer passengers. The Checkpoints program trialed in a number of jurisdictions in the United States encourages parents to place greater restrictions on their novice young driver, rewarding safe driving behaviour with greater driving privileges [37]. Families participating in the program report greater driving restrictions, however no long-term reduction in the rates of offences and crash-involvement of the young driver has been found. The results of this study suggest that greater emphasis be placed upon the influence of *rewards* on young driver risky behaviour. In particular, parents could be encouraged to continue restricting the young driver from carrying their peers as passengers, as anticipated rewards, direct or indirect, from peers for risky driving was found to be influential.

The exploratory analyses also reveal that the influence of the psychosocial factors differs for male and female young drivers, and for those young drivers who report being detected for a driving offence. Whilst these results are preliminary and any conclusions drawn from them are tentative, young driver interventions may need to consider the practical implications of these findings and modify existing programs to target particular young driver populations. For example, preliminary analyses indicated that peer punishment for risky driving was influential upon the self-reported risky behaviour of young female drivers. An education program targeting the passengers of young drivers that encourages them to socially censure the risky behaviour of the young driver may prove beneficial; however it is noteworthy that this is not necessarily a straightforward proposition. To illustrate, the 'Speak Out' campaign created in Norway encouraged passengers to tell their risky young driver to behave in a safer manner. Whilst significant reductions were found in passenger deaths and injuries, there was no change in young driver death and injury rates [38].

Future research should attempt to more reliably measure the constructs of anticipated punishment from parents and peers and anticipated rewards from parents in a larger sample that comprises young drivers residing in both rural and urban areas. A longitudinal methodology may also reveal developmental variation in the extent and duration of the influence of the numerous constructs within Akers' model [25]. Future studies could also include matched samples of only young drivers who have been detected for offences; regular offenders who have not been detected; young person who drive unlicensed; and those young drivers who have crashed. Preliminary analyses indicate that the psychosocial influences upon the risky behaviour of the young driver may vary for those young drivers who have been detected for an offence, and different patterns may emerge in young driver populations who have offended and not been detected for doing so. Objective measures such as police records can be used to verify self-reported offences. The study only incorporated licensed drivers and a small number of drivers who had crashed their car, and therefore it is not known how parents and peers influence the unlicensed young driver or the young driver who has previously crashed their vehicle.

Conclusion

In closing, young drivers around the world are killed and injured in motor vehicle crashes at rates far exceeding older and more experienced drivers, young drivers usually carrying young passengers in these crashes. While graduated licensing has produced encouraging results, further interventions are required. Young drivers are experiencing the developmental stage of adolescence, in which the influence of parents and peers on the behaviour and attitudes of the young driver change and the young person is more likely to engage in risky behaviour. Therefore the study utilised Akers' social learning theory to explore the influence of anticipated rewards and anticipated punishments from parents and peers, and peer and parent norms, upon the self-reported risky behaviour of young drivers. These variables explained 54% of the variance in self-reported risky driving behaviour, anticipated rewards from peers and parents and peer norms significantly predicting self-reported risky driving behaviour. Therefore it appears that young driver road safety as evidenced in risky driving and is differentially influenced by parents and peers. It is reasonable to conclude that education programs that address the influences of anticipated rewards from parents and peers and peer attitudes towards risky driving will enhance the effectiveness of intervention policies and programs.

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References

1. S T Doherty, J C Andrey, C MacGregor, 'The situational risks of young drivers: The influence of passengers, time of day and day of week on accident rates', *Accident Analysis & Prevention*, 1998 30 45-52.
2. J E Chliaoutakis, D Darviri, P T Demakakos, 'The impact of young drivers' lifestyle on their road traffic accident risk in greater Athens area', *Accident Analysis and Prevention*, 1999 31 771-780.
3. OECD Policy brief October 2006, 'Young drivers: The road to safety'. Retrieved 20 January, 2008, from <http://www.internationaltransportforum.org/jtrc/safety/YDpolicyBrief.pdf>
4. D F Preusser, S A Ferguson, A F Williams, 'The effect of teenage passengers on the fatal crash risk of teenage drivers', *Accident Analysis & Prevention*, 1998 30 217-222.
5. A F Williams, J K Wells, 'Deaths of teenagers as motor-vehicle passengers', *Journal of Safety Research*, 1995 26 161-167.
6. ATSB, 'Road safety in Australia. A publication commemorating World Health Day 2004' 2004, Canberra, Australian Transport Safety Bureau.
7. L T Lam, 'Factors associated with young drivers' car crash injury: Comparisons among learner, provisional, and full licensees', *Accident Analysis & Prevention*, 2003 35 913-920.

8. Queensland Transport, '2003 Road traffic crashes in Queensland: A report on the road toll', 2005, Queensland Transport, Brisbane.
9. DITRDLG, 'Road Deaths, Australia. 2008 Statistical summary', 2009, Canberra, Department of Infrastructure, Transport, Regional Development and Local Government.
10. T R Miller, R S Spicer, D C Lestina, 'Who is driving when unrestrained children and teenagers get hurt?', *Accident Analysis & Prevention*, 1998 30 839-849.
11. Queensland Transport, 'Queensland youth: On the road and in control. A discussion of ways to improve young driver safety', 2005, Queensland Transport, Brisbane.
12. L T Lam, R Norton, M Woodward, J Connor, S Ameratunga, 'Passenger carriage and car crash injury: A comparison between younger and older drivers', *Accident Analysis & Prevention*, 2003 35 861-867.
13. M R Elliott, P F Waller, T E Raghunathan, J T Shope, R J A Little, 'Persistence of violation and crash behaviour over time', *Journal of Safety Research*, 2000 31 229-242.
14. N Vanzetti, S Duck, 'A lifetime of relationships', 1996, Melbourne, Brooks/Cole.
15. D Sharpley, 'Driver behaviour and the wider social context', In L Dorn (Ed.), 'Driver behaviour and training (pp. 381-387)', 2003, Burlington, VT, Ashgate.
16. C K Sigelman, 'Life-span human development (3rd ed.)', 1999, Melbourne, Brooks/ Cole.
17. R Jessor, M S Turbin, F M Costa, 'Predicting developmental change in risky driving: The transition to young adulthood', *Applied Developmental Science*, 1997 1 4-16.
18. I Engstrom, 'Passenger influence on young drivers', In L Dorn (Ed.), 'Driver Behaviour and Training, pp. 191-199', 2003, Burlington, Ashgate.
19. S A Brown, S R Tate, P W Vik, A L Haas, G A Aarons, 'Modelling of alcohol use mediates the effect of family history of alcoholism on alcohol expectancies', *Experimental & Clinical Psychopharmacology*, 1999 7 1064-1069.
20. L James, 'Dealing with stress, aggression and pressure in the vehicle: Taxonomy of driving behaviour as affective, cognitive and sensorimotor', In J P Rothe (Ed.), 'Driving Lessons: Exploring systems that make traffic safer (pp. 21-49)', 2002, Alberta, University of Alberta.
21. M Boyes, P Litke, 'Driving identities over the lifespan: Codes for the road', In J P Rothe (Ed.), 'Driving Lessons: Exploring systems that make traffic safer (pp. 97-104)', 2002, Alberta, University of Alberta.
22. B Carcary, 'New driver project', In 'Behavioural research in road safety. Eleventh seminar (pp. 178-183)', 2002, London, Department of Transport.
23. R L Akers, M D Krohn, L Lanza-Kaduce, M Radosevich, 'Social learning and deviant behaviour: A specific test of a general learning theory' *American Sociological Review*, 1979 44 636-655.
24. K Kobus, 'Peers and adolescent smoking', *Addiction*, 2003 98 37-55.
25. R Triplett, B Payne, 'Problem solving as reinforcement in adolescent drug use: Implications for theory and policy', *Journal of Criminal Justice*, 2004 32 617-630.
26. M A Hogg, K P Williams, 'From I to we: Social identity and the collective self', *Group Dynamics*, 2000 4 1089-1099.
27. A Hochstetler, H Copes, M DeLisi, 'Differential association in group and solo offending', *Journal of Criminal Justice*, 2002 30 559-566.
28. K J Shinew, D C Parry, 'Examining college students' participation in the leisure pursuits of drinking and illegal drug use', *Journal of Leisure Research*, 2005, 37 364-387.
29. A Bandura, D Ross, S A Ross, 'Imitation of film-mediated aggressive models', In M A Hogg (Ed.), 'Social Psychology: Vol 2. Social interaction (pp. 191-208)', 2003, London, Sage. (Original work published 1963).
30. F A DiBlasio, 'Predriving riders and drinking drivers', *Journal of Studies on Alcohol*, 1987 49 11-15.
31. B Watson, 'The psychosocial characteristics and on-road behaviours of unlicensed drivers', 2004, Unpublished PhD, Queensland University of Technology, Brisbane.
32. J J Fleiter, B Watson, I Lewis, 'Significant others, who are they? Examining normative influences on speeding', In Proceedings 2006 Australasian Road Safety Research Policing Education Conference, Gold Cost, Queensland, Australia.

33. L Bates, B Watson, M King, 'Factors influencing learner driver experiences', 2009, Canberra, Australian Transport Safety Bureau.
34. B Scott-Parker, B Watson, M King, 'Understanding the influence of passengers upon young driver behaviour'. 2007, Unpublished Honours Thesis, Queensland University of Technology, Brisbane.
35. D C Howell, 'Statistical methods for psychology (4th ed.)', 1997, Belmont, Wadsworth.
36. B G Tabachnick, L S Fidell, 'Using multivariate statistics (3rd ed.)', 1996, New York, Harper Collins College Publishers.
37. B Simons-Morton, 'Parent involvement in novice teen driving: Rationale, evidence of effects, and potential for enhancing graduated driver licensing effectiveness', *Journal of Safety Research*, 2007 38 193-202.
38. A F Williams, S A Ferguson, A T McCartt, 'Passenger effects on teenage driving and opportunities for reducing the risks of such travel', *Journal of Safety Research*, 2007 38 381-390.
39. J Davey, D Wishart, J Freeman, B Watson, 'An application of the driver behaviour questionnaire in an Australian organisational fleet setting', *Transportation Research Part F*, 2007 10 11-21.
40. M Moore, E R Dahlen, 'Forgiveness and consideration of future consequences in aggressive driving. *Accident Analysis and Prevention*, 2008 40 1661-1666.
41. B Simons-Morton, N Lerner, J Singer, 'The observed effects of teenage passengers on the risky driving behavior of teenage drivers', *Accident Analysis and Prevention*, 2005 37 973-982.