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Significant others, who are they? - Examining normative influences on speeding.

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ABSTRACT

This paper examines normative influences on self-reported driving speeds of 160 male and 160 female Queensland drivers, aged 16-79 years. Previous research suggests a variety of 'significant others' can influence many road user behaviours, including driving speed. The presence of passengers, behaviour of other drivers, and attitudes of peers and relatives can impact on driver behaviour. The current research examined normative influences on speeding through the lens of Akers' social learning theory, which posits that learning occurs via the central process of differential association. This concept refers to our associations with others and how these expose us to rewards, punishments, attitudes, and models of behaviour. While considerable research has focused on the influence of peers, Akers theorised that the family is also an important source of learning. The current research therefore, investigated the influence of family and friends on speeding across age and gender, utilising self-report measures. As anticipated, the degree to which significant others were perceived to approve of speeding (i.e., normative influence of family and friends) was significantly associated with more frequent speeding among participants. More particularly, this apparent influence of family and peers on speeding behaviour was found to be independent of the age and gender of the participants. Consistent with previous social learning theory research, peer influence was the strongest predictor of self-reported speeding in this sample. Nonetheless, the influence of family members also appeared important. As such, the role of both family and friends needs to be considered when developing countermeasures to speeding.

INTRODUCTION

Apart from the many cognitive demands associated with the driving task, a wide variety of people are capable of influencing driver behaviour. The ability to identify exactly which of these social (normative) influences are likely to be the most effective in encouraging safe and responsible road use offers the opportunity to make the best possible use of the scarce resources allocated to effect behaviour change. Some countermeasures already draw upon the influence of others in attempts to modify driver behaviour. However, the need for a greater understanding of the reasons underlying such influences is crucial to reducing road trauma. This paper examines the influence of others in relation to driving speeds, as speeding is consistently identified as one of the major contributing risk factors to road trauma (Aarts & van Schagen, 2006; Kloeden, McLean, Moore, & Ponte, 1997). As some of the previous speeding research has been atheoretical in nature, the factors that shape driver behaviour warrant investigation via a range of theoretically robust perspectives (Elliott, 2001).

Some countermeasures are specifically designed to harness the influence of police presence and the perceived likelihood of apprehension (e.g., random breath testing) (Homel, 1988). Other measures, such as publicity campaigns, have attempted to use the influence of peers and family members in a variety of ways. For example, young people have been encouraged to resist the influence of peers in relation to travelling with risky drivers (e.g., the 'if you don't trust the driver, don't get in' advertisement) (Regan & Mitsopoulos, 2001), and to act as a positive influence by speaking out against unsafe driving whilst in the car with another young

driver (Ulleberg & Must, 2005). The 'Foolsspeed' campaign in Scotland challenged people to view their driving through the eyes of others in the car with them (e.g., advertisements showed family and colleagues expressing annoyance at an unsafe driving style) (Stead, Tagg, MacKintosh, & Eadie, 2005).

The importance placed on the influence of other people is evident in graduated driver licensing systems, where family members, typically parents, are encouraged to assist with the transfer of knowledge to, and supervision of novice drivers (Mayhew, Simpson, Singhal, & Desmond, 2006). While the rationale for parental involvement may be self-evident in a practical sense, the actual influence of such people on driver safety remains unclear. The influence of other people on driver behaviour needs further investigation so that those who hold the most influence can be used as catalysts for behaviour change.

The influence of others

Research suggests that young driver behaviour can be influenced by the presence of other people in the car. The age and gender of passengers, relative to the driver, have been shown to be significant predictors of both unsafe driving behaviour and crash risk. Many studies have shown that young driver crash risk increases significantly when carrying passengers of the same, or similar ages (Regan & Mitsopoulos, 2001). In relation to gender, carrying female passengers seems to offer a protective role. Simons-Morton, Lerner, & Singer (2005) observed that male and female teenage drivers allowed greater following distances (between vehicles) when carrying female passengers than when carrying no passengers or male passengers, whereas the presence of young male passengers resulted in greater risky driving behaviours by young males. Together, such results illustrate why some jurisdictions include passenger restrictions in graduated driver licensing systems, as young drivers appear more compromised by the presence of others in the car (Mayhew et al., 2006). Thus, young drivers (especially males) seem particularly susceptible to social influences in relation to driving.

Despite the aforementioned expectations on parental involvement in driver licensing schemes, there is limited research on familial influences on drivers (Ferguson, Williams, Chapline, Reinfurt, & De Leondaris, 2001). Parents and older siblings, through instruction and role modelling, have the potential to influence young driver attitudes and interpretations of social norms about safe driving. An investigation of driver records from North Carolina indicated that 18-21 year olds were 22% more likely to have had at least one crash if their parents' record showed three or more crashes (Ferguson et al., 2001). Additionally, research on parents' driving styles indicated that they were reflected more significantly in same-sex offspring, such that male adult children had a driving style (i.e., patient, reckless, anxious, or angry) that more closely reflected that of their father, than their mother, and vice versa for female children (Taubman-Ben-Ari, Mikulincer, & Gillath, 2005). Such findings signal opportunities for greater exploration of the potentially protective role offered by family members. The paucity of behavioural research examining familial influences has sparked calls for more extensive examinations of parental and sibling influences, especially as parents are encouraged to participate in graduated licensing schemes (Ardelt & Day, 2002; Mayhew et al., 2006).

The influence of others on speeding

The current study focussed specifically on the influence of significant others (i.e., family and friends) in relation to self-reported speeding. Clearly identified as a significant contributing factor to road death and trauma, speeding and its consequences have received much research

attention, and other people have been shown to influence driver speed choice in a variety of circumstances.

Based on the notion that drivers choose a travelling speed according to comparisons made with the speed of others, Haglund and Aberg (2000) examined the influence of other drivers on the road and perceived normative pressure from family members on self-reported and observed speeds. Results indicated that drivers who overestimated the travel speeds of others were significantly more likely to report speeding themselves, and further, that the influence of family members (not present in the car at the time, but reported as not approving of speeding) did not significantly influence choice of driving speeds. This suggests that while individuals may be aware that their driving behaviour is contrary to that espoused by others significant to them (e.g., family members), the impact of those in the immediate situation (i.e., the other drivers sharing the road) can exert more influence on speed choice – highlighting the social nature of the driving environment.

From a theoretical perspective, research into normative influences on speeding has been dominated by the theory of planned behaviour (Ajzen, 1991), and the Theorists' Workshop Model of behaviour change (Fishbein et al., 1992). Both theories examine, among other things, the influence of others through normative pressures i.e., perceptions of how significant others think one should behave, and motivations to comply with such perceptions. As results have generally shown significant but relatively weak relationships between normative influences and driver behaviour (Parker, Manstead, Stradling, Reason, & Baxter, 1992; Warner & Aberg, 2006 are exceptions to this), different types of normative measures have been added to the core theories. For example, the addition of moral norms (i.e., personal beliefs about what is right or wrong), descriptive norms (i.e., beliefs about what most others do), and normative norms (i.e., inferences made about the opinions or norms of other drivers from observing their behaviour) has produced greater ability to account for variation in intentions to speed (and not speed) across a number of studies (Conner, Smith, & McMillan, 2003; De Pelsmacker & Janssens, 2006; Elliott, 2001; Stradling & Parker, 1997).

Previous speeding research has revealed similar age and gender differences to those discussed above (i.e., for crash risk and following distances). Using the Theorists' Workshop Model of behaviour change, Elliott (2001) reported that younger drivers were more influenced by perceptions of the travel speed of other drivers (descriptive norms), such that believing more drivers were speeding led to greater intentions to speed. Further, the combination of one's moral belief about exceeding the speed limit, together with a measure of regret about this (personal norms) was also more influential for younger drivers. Similarly, studies examining normative influences on speeding using the theory of planned behaviour have demonstrated differences across both age and gender. Parker et al. (1992) examined normative influences on drivers by asking participants to indicate how likely it was that a range of salient others (police, spouse/partner, other drivers, typical young male, immediate family, and friends) would approve of them committing driving violations (including speeding). Results revealed that drivers generally believed all referents (except the typical young male) would be unlikely to approve of them speeding, while young drivers reported significantly greater approval from salient others in relation to speeding than older drivers. However, the other people recognised as salient by young drivers were not identified in this study.

Another investigation using the theory of planned behaviour found that a composite measure of normative pressure from salient others (i.e., a combination of police, other drivers,

passengers, partner, close friends, and family members) was better able to predict intentions to speed among male than female drivers, and that males reported significantly more perceived social pressure to speed (Conner et al., 2003). However, the composite nature of this normative measure means it is not possible to draw conclusions about which of the six salient others were most influential on intentions to speed. Together, these results highlight the range and complexity of influences on driver speed choice, and further the case for more research into normative influences on drivers. Only through developing a greater understanding of how people are influenced, by whom, and in what situations, can we hope to design more effective road safety countermeasures.

Theoretical framework used in current research

Akers' social learning theory (SLT) (Akers, 1977) was chosen as the theoretical framework for the current research, as it allows an examination of a broad range of social influence factors, stemming from its dual origins in psychology and sociology. Previously applied to a range of deviant behaviours in criminological research, there is a growing body of research confirming its utility in the road safety context (DiBlasio, 1988; Fleiter & Watson, 2006; Watson, 2004). SLT emphasises that conforming and deviant behaviours are learned in the same way, with the direction of the behaviour ultimately determined by the balance of influences on an individual. The theory proposes that the groups one associates with provide the major social contexts in which all learning mechanisms operate. SLT posits that the likelihood of performing a behaviour is increased when one: is relatively more exposed to salient models of the behaviour (Imitation); personally defines the behaviour as acceptable (Definitions); perceives more actual and anticipated rewards than punishments for performing the behaviour (Differential reinforcement); and differentially associates with others who engage in that behaviour and who hold favourable attitudes to it (Differential association)¹. SLT proposes that the groups with which one is in differential association provide the major social contexts for modelling and reinforcing behaviour, and while much research using this theory has focussed on the influence of peers, Akers theorised that the family is also an extremely important source of learning (Akers & Lee, 1996).

SLT proposes that the duration, frequency, intensity and priority of associations with others (i.e., social interactions) influence the frequency, amount and probability of reinforcement for behaviour. As such, the relationships most likely to be influential are those that commence early in life and develop over a long period of time, occur regularly, and involve those in important and close association with a person. Akers suggests that the modelling of behaviour is more relevant in the acquisition of new or novel behaviours, while differential association with peers has been the single best predictor (after past behaviour) of onset and maintenance across a range of behaviours including alcohol and drug use (Akers & Lee, 1996). In relation to speeding, it could be argued that family members serve as an equally or more significant source of modelling and reinforcement than peers, at least in the initial stages of licensure and in the establishment of driving habits. Moreover, the influence of parents and older siblings may have been previously underestimated in behavioural research, given that they are a primary source of learning before and during adolescence, that they are able to apply restrictions to novice driver behaviour (e.g., limit driving times and number of passengers), and that their impact on a child's peer selection has largely been ignored (Ardelt & Day, 2002; Mayhew et al., 2006).

¹ Differential association is the only component of SLT investigated in the current study.

Aims

Previous research suggests that younger drivers, and males, are more susceptible to social influence factors than older drivers and females. Akers' SLT predicts that an important factor influencing an individual's speeding behaviour is the approval or disapproval of speeding by others significant to them. Therefore, this study aims to compare the influence of family and friends on self-reported speeding, across age and gender, in a sample of general drivers.

METHOD

Participants and procedure

Participants residing in south-east Queensland were recruited and surveyed in mid-2004. A convenience sample of 160 male and 160 female drivers with a current Queensland driver's licence was recruited via snowballing from associates of the researchers, with approximately 1/5 of participants being undergraduate psychology students who received course credit for participation. The mean age was 37.25 years (SD = 15.28) with a range of 17 to 79 years. Unless otherwise stated, analyses were conducted with ages collapsed into three categories - 16-25 years (30.3%), 26-45 years (40.3%), and 46-79 years (29.4%). In line with Queensland University of Technology's Ethics Committee approval, participants completed and returned an eight-page anonymous questionnaire.

Measures

Self-report measures have been criticised for potential inaccuracies due to poor recall and social desirability in responding (i.e., reporting more favourably to present oneself in a positive light). However, in the case of speeding, they have been shown to be an accurate reflection of covertly-measured actual speeds (Hagland & Aberg, 2000). The current study therefore, utilised the self-report method for data collection.

A 113-item questionnaire collected demographic data and used a range of scales designed specifically for the study. The current paper reports only on data relating to normative influences on speeding (Differential association). Refer to Fleiter and Watson (2006) for other SLT applications relating to attitudes, reinforcements, models of speeding, and preferred driving speeds.

*Differential association*² was examined using two scales (scored on a seven-point Likert scale: 1 = *Strongly disagree* – 7 = *Strongly agree*) that measured participants' perceptions of family members' (6 items) and friends' (6 items) attitudes towards speeding (i.e., normative influences). Higher scores indicated the perception that significant others believed speeding was acceptable. Examples of questions include: *Many of my friends think it is OK to exceed the speed limit*, *Most of my family believe exceeding the speed limit by less than 10 km is bad* (reverse-scored), *Most of my friends believe exceeding the speed limit by more than 20 km is bad* (reverse-scored), and *Many of my family members don't care about speeding as long as they don't get caught*. The Family norms and Friends' norms scales included items relating specifically to family or friends' views and had Cronbach's alpha coefficients of .67 and .69 respectively.

² Although comprised of a normative and a behavioural component, only the normative component was operationalised here, as the behavioural measures were incorporated into an Imitation variable and reported elsewhere (Fleiter & Watson, 2006).

Frequency of speeding was measured as a composite of how often, on urban (e.g., 50 km/hour) and open roads (e.g., 100 km/hour), people reported exceeding speed limits by less than 10 km/hour, more than 10 km/hour, and more than 20 km/hour. Modelled on the Australian Transport Safety Bureau Community Attitudes survey, the items were scored using a 6-point Likert scale (1 = *Never*, 2 = *Just Occasionally*, 3 = *Sometimes*, 4 = *Most Occasions*, 5 = *Nearly Always*, 6 = *Always*) (Mitchell-Taverner, 2002). Higher scores represent more frequent speeding at higher speeds.

RESULTS

Bivariate relationships

Table 1 shows a significant, and moderately strong correlation between Family norms and Friends' norms ($r = .54, p < .001$), indicating that those perceiving stronger approval of speeding by family members also perceived stronger approval of speeding by their friends. Both norms scales were significantly correlated to frequency of speeding, such that participants reported more frequent speeding when they perceived greater approval of speeding by family and friends, with Friends' norms showing the stronger of the two relationships ($r = .41, p < .001$). Together, these results indicate that the approval of speeding by family members and friends is associated with more frequent self-reported speeding. Note also that significant correlations indicate that younger participants, and males reported more frequent speeding and stronger approval of speeding by their friends. The approval of speeding by family members was not significantly related to age or gender.

Table 1 *Correlations between age, gender, Family norms, Friends' norms, and speeding*

	Age	Gender	Family Norms	Friends' Norms	Frequency of Speeding
1 Age ^a	-	-.09	.03	-.30*	-.35*
2 Gender ^b		-	-.05	-.22*	-.19*
3 Family Norms			-	.54*	.26*
4 Friends' Norms				-	.41*
5 Frequency of Speeding					-

a Actual age, rather than age groups, was used to calculate correlations

b Gender was coded 1 = Male, 2 = Female

$p < .001$ (2-tailed)

Normative influences on self-reported speeding

To further explore the relationship between the approval of speeding by family and friends and self-reported reported speeding by participants, a multiple regression analysis was conducted. Results indicate that together, the normative influences accounted for approximately 17% of the variance in frequency of speeding, $R = .41, R^2_{adj} = .163, F(2,317) = 32.13, p < .001$. However, Friends' norms was the only significant predictor of speeding ($\beta = .38, p < .001$), and uniquely accounted for 10% of the variance. Family norms did not contribute significantly to the solution ($\beta = .06, ns$). Thus, while the approval of speeding by family members is related to self-reported speeding (as evidenced by the aforementioned significant bivariate correlation), only the approval of speeding by one's friends significantly predicted speeding behaviour in this sample.

Normative influences on self-reported speeding by age and gender

The next pair of analyses sought to determine whether the association between participants' normative perceptions and their self-reported speeding behaviour differed according to their

age and gender³. The differences between Family and Friends' norms scores across age and gender were examined, using frequency of speeding as the dependent variable⁴. The first 3-way ANOVA examined differences between gender, age, and Family norms in relation to speeding. There were significant main effects of gender [$F(1,308) = 15.48, p < .001, \eta^2 = .05$], age [$F(2,308) = 19.38, p < .001, \eta^2 = .11$], and Family norms [$F(1,308) = 22.87, p < .001, \eta^2 = .07$], but no significant interactions. Inspection of the means revealed that males ($M = 14.79, SD = 4.8$) reported speeding significantly more frequently than females ($M = 12.84, SD = 5.2$). Pairwise comparisons with adjustments for familywise error rate showed that drivers <25 years ($M = 16.09, SD = 5.5$) reported speeding significantly more frequently than both the middle-age group (26-45 years, $M = 13.6, SD = 4.4, p < .001$) and the older group (46-79 years, $M = 11.8, SD = 4.5, p < .001$). Additionally, the middle-aged group reported speeding significantly more frequently than the older drivers ($p = .006$). In relation to Family norms, drivers classified as high on the split Family norms variable (that is, those who perceived more approval of speeding by family members) ($M = 15.8, SD = 5.6$) reported speeding significantly more frequently than those who indicated that fewer of their family members approved of speeding ($M = 13.07, SD = 4.7$). The absence of any interactions indicates that, irrespective of their age and gender, drivers who perceived that their family members approved of speeding reported significantly more frequently speeding themselves.

When the influence of friends was considered, a similar pattern of results emerged. A 3-way ANOVA examining differences between gender, age, and Friends' norms on participant speeding also revealed significant main effects of gender [$F(1,308) = 8.6, p = .004, \eta^2 = .03$], age [$F(2,308) = 10.45, p < .001, \eta^2 = .06$], and Friends' norms [$F(1,308) = 23.34, p < .001, \eta^2 = .07$], but no significant interactions. Once again, males ($M = 14.79, SD = 4.8$) reported speeding significantly more frequently than females ($M = 12.84, SD = 5.2$) and younger drivers reported more frequently speeding than older drivers. Pairwise comparisons with adjustments for familywise error rate revealed that drivers aged less than 25 years ($M = 16.09, SD = 5.5$) reported speeding significantly more frequently than both the middle-age group (26-45 years, $M = 13.6, SD = 4.4, p = .012$) and the older age group (46-79 years, $M = 11.8, SD = 4.5, p < .001$). Additionally, drivers aged 26-45 years also reported speeding significantly more frequently than the older driver group (46-79 years, $p = .01$). When means were examined for Friends' norms, drivers who perceived greater approval of speeding by their friends ($M = 15.65, SD = 5.4$) reported speeding significantly more frequently than those who reported less approval of speeding by friends ($M = 12.07, SD = 4.1$). Again, the absence of any interactions indicates that, irrespective of their age and gender, drivers who perceive that their friends approve of speeding reported significantly more frequently speeding themselves.

DISCUSSION

Results of this study highlight the impact that normative influences appear to have on speeding behaviour, and reinforce the need to better understand how influential groups can be harnessed to promote road safety. As there are finite resources available for countermeasures targeting people who can influence safer driving behaviour, it is important that those providing the most influence are targeted. In the current study, two groups previously identified in the literature as likely to influence behaviour, family members and friends, were

³ Due to unequal sample sizes across some cells, weighted means are reported (Green & Salkind, 2000).

⁴ Both norms scales were recoded to create a dichotomous variable for these analyses, where participants were classified as scoring either low or high on the Family and Friends' norms scales.

used to examine normative influences on self-reported speeding across age and gender (Akers, 1977; Akers & Lee, 1996).

An assessment of age and gender differences in the current study revealed all-too-familiar findings in relation to speeding. Males reported speeding significantly more frequently than females, while drivers under 25 years reported speeding significantly more frequently than those over 25, and those aged 26-45 years reported more frequent speeding than those over 45. These findings are congruent with the speeding literature and help explain part of the over-representation of young drivers, and males in crash statistics (Ferguson et al., 2001; Mayhew et al., 2006; Stradling, Meadows, & Beatty, 2000).

The influence of family members and friends proved to be significant in relation to the frequency of speeding reported in this study. Analyses revealed that stronger reported approval of speeding by both family members and friends was significantly associated with more frequent speeding among participants. This finding is congruent with the literature where greater perceived normative influences to speed led to significantly greater intentions to speed (Conner et al., 2003; Parker et al., 1992). Interestingly, however, the lack of significant interactions suggests that the impact of the normative influences was independent of the age and gender of participants. This suggests that normative perceptions influence drivers in similar ways, irrespective of their age and gender. As such, this confirms the potential utility of targeting familial and peer influences as a means of reducing speeding behaviour. However, it is important to acknowledge that differences were found with respect to the relative impact of these two salient groups.

Analyses revealed that it was the influences of ones' friends that appeared to exert the strongest influence on speeding behaviour, as Friends' norms accounted for approximately 10% of the variance in the prediction of self-reported speeding, while the contribution of Family norms to the prediction was not significant. This finding was also reflected in the bivariate relationships between the study's variables, in that Family norms were less strongly correlated with self-reported speeding than Friends' norms. This highlights the apparent potency of the influence of ones' peers, and offers a point for intervention. Countermeasures that can tap this important source of influence hold promise in changing driver acceptance of risky behaviours such as speeding.

From a theoretical perspective, Akers' social learning theory examines the ways in which our associations with different groups provide opportunities for exposure to attitudes, behaviours, and reinforcements that contribute to behavioural learning. The theory predicts that associations most likely to be influential are those that commence when we are young, endure over many years, occur regularly, and involve others in important and close association with us. While family members potentially fit each of those requirements equally as well as, if not better than, close friends, particularly for adolescents learning to drive under the supervision of a parent, the results of the current study support previous SLT research, where peer associations have consistently been found to be the most influential of all variables across a range of behaviours (Akers & Lee, 1996). It is important to carefully target resources aimed at the people who can significantly impact on promoting safe driving behaviour. While the literature suggests that peers are an important target group for safety interventions, results of this study indicate that familial influences, albeit to a lesser extent, cannot be discounted in attempts to modify unsafe driver behaviour such as speeding. As family members (typically parents) are encouraged to participate in the training and supervision of their novice driver offspring (Mayhew et al., 2006; Queensland Transport, 2005), familial influences on drivers

warrant greater research attention. Future research specifically examining familial and peer influences on novice drivers (i.e., learner and provisional drivers) may assist in providing further insights into the relative impact of significant others and the implications of such for graduated driver licensing systems. Such research could also explore Akers' social learning theory's prediction that the influence of family members (via the modelling of behaviour) is more important in the acquisition (learning) phase, than in the maintenance phase of driving. Such findings could offer new opportunities for countermeasure development, particularly in relation to graduated licensing.

Several limitations are noted in the present study, and should be considered when interpreting results. Firstly, familial influences were measured using a general reference to family members (e.g., *my family members*). This terminology may not have been precise enough to capture the subtleties of family associations, and future research could investigate specific family members (e.g., siblings, parents, grandparents) to gain a better understanding of their relative influences on driver behaviour. Additionally, the convenience sample may not be representative of the general driving community. Nevertheless, results of this investigation of Queensland drivers are consistent with previous research examining normative influences on speeding, where greater perceived normative influences to speed led to greater intentions to speed (Conner et al., 2003; Parker et al., 1992).

In conclusion, to answer the question posed by the title of this paper, one's friends and family members are some of the people who significantly influence speeding behaviour, with friends appearing to be the most influential for this sample. It is important therefore, that consideration be given to such influential groups when seeking to harness support for changing driver behaviour. It is worth noting, however, that although statistically significant, the effect sizes in this study were not large. This serves to highlight the complexity of driver behaviour and confirms that many factors influence travel speeds. As such, a range of strategies to counter speeding seems most appropriate in promoting safe road use.

REFERENCES

- Aarts, L., & van Schagen, I. (2006). Driving speed and the risk of road crashes: A review. *Accident Analysis and Prevention*, 38, 215-224.
- Akers, R. L. (1977). *Deviant behaviour: A social learning approach* (2nd ed.). Belmont, California: Wadsworth Publishing Company.
- Akers, R. L., & Lee, G. (1996). A longitudinal test of social learning theory: Adolescent smoking. *Journal of Drug Issues*, 26, 317-343.
- Ardelt, M., & Day, L. (2002). Parents, siblings, and peers: Close social relationships and adolescent deviance. *Journal of Early Adolescence*, 22(3), 310-349.
- Azjen, I. (1991). The theory of planned behaviour. *Organisational Behaviour and Human Decision Processes*, 50, 179-211.
- Conner, M., Smith, N., & McMillan, B. (2003). Examining normative pressure in the theory of planned behaviour: Impact of gender and passengers on intentions to break the speed limit. *Current Psychology*, 22(3), 252-263.
- De Pelsmacker, P., & Janssens, W. (2006). The effect of norms, attitudes and habits on speeding behavior: Scale development and model building and estimation. *Accident Analysis and Prevention*, In Press.
- DiBlasio, F. A. (1988). Predriving riders and drinking drivers. *Journal of Studies on Alcohol*, 49(1), 11-15.
- Elliott, B. (2001). *The application of the Theorists' Workshop Model of Behaviour Change to motorists speeding behaviour in WA*. Perth: Office of Road Safety, Dept of Transport.

- Ferguson, S. A., Williams, A. F., Chapline, J. F., Reinfurt, D. W., & De Leondaris, D. M. (2001). Relationship of parent driving records to the driving records of their children. *Accident Analysis and Prevention*, 33, 229-234.
- Fishbein, M., Bandura, A., Triandis, H., Kanfer, F., Becker, M., & Middlestadt, S. (1992). *Factors influencing behaviour and behaviour change: Final report*. Rockville, MD: National Institute of Health.
- Fleiter, J. J., & Watson, B. (2006). The speed paradox: the misalignment between driver attitudes and speeding behaviour. *Journal of the Australasian College of Road Safety*, 17(2), 23-30.
- Green, S. B., & Salkind, N. J. (2000). *Using SPSS for Windows and Macintosh: Analysing and understanding data* (3rd ed.). Upper Saddle River, New Jersey: Prentice Hall.
- Hagland, M., & Aberg, L. (2000). Speed choice in relation to speed limit and influences from other drivers. *Transportation Research Part F*, 3, 39-51.
- Homel, R. (1988). *Policing and punishing the drinking driver: A study of general and specific deterrence*. New York: Springer-Verlag.
- Kloeden, C. N., McLean, A. J., Moore, V. M., & Ponte, G. (1997). *Travelling speed and the risk of crash involvement, Report CR172*. Canberra: Federal Office of Road Safety.
- Mayhew, D. R., Simpson, H. M., Singhal, D., & Desmond, K. (2006). *Reducing the crash risk for young drivers*. Washington: AAA Foundation for Traffic Safety.
- Mitchell-Taverner, P. (2002). *Community Attitudes to Road Safety: Community Attitudes Survey, Wave 15, 2002*. Canberra: Australian Transport Safety Bureau.
- Parker, D., Manstead, A., Stradling, S., Reason, J., & Baxter, J. (1992). Intention to commit driving violations: An application of the theory of planned behaviour. *Journal of Applied Psychology*, 77(1), 94-101.
- Queensland Transport. (2005). *Queensland youth on the road and in control: A discussion of ways to improve young driver safety*. Brisbane: Queensland Transport.
- Regan, M. A., & Mitsopoulos, E. (2001). *Understanding passenger influences on driver behaviour: Implications for road safety and recommendations for countermeasure development, Report 180*. Melbourne: Monash University Accident Research Centre.
- Simons-Morton, B., Lerner, N., & Singer, J. (2005). The observed effects of teenage passengers on the risky driving behavior of teenage drivers. *Accident Analysis and Prevention*, 37(6), 973-982.
- Stead, M., Tagg, S., MacKintosh, A. M., & Eadie, D. (2005). Development and evaluation of a mass media Theory of Planned Behaviour intervention to reduce speeding. *Health Education Research*, 20(1), 36-50.
- Stradling, S., Meadows, M., & Beatty, S. (2000). *Characteristics of speeding, violating and thrill-seeking drivers*. Paper presented at the International Conference on Traffic and Transport Psychology ICTTP 2000, Berne, Switzerland.
- Stradling, S., & Parker, D. (1997). *Extending the theory of planned behaviour: Attitudes to speeding and other violations*. Paper presented at the British Psychological Society Annual Conference, Edinburgh.
- Taubman-Ben-Ari, O., Mikulincer, M., & Gillath, O. (2005). From parents to children- similarity in parent/offspring driving style. *Transportation Research Part F*, 8, 19-29.
- Ulleberg, P., & Must, T. (2005). *Young car passengers as guardian angels: Factors influencing adolescent passengers' willingness to influence young drivers* (No. 776/2005). Oslo: Institute of Transport Economics.
- Warner, H. W., & Aberg, L. (2006). Drivers' decision to speed: A study inspired by the theory of planned behavior. *Transportation Research Part F*, 9, 427-433.
- Watson, B. (2004). *How effective is deterrence theory in explaining driver behaviour: A case study of unlicensed driving*. Paper presented at the Australasian Road Safety, Research, Policing and Education Conference, Perth.

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