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Road Rage: What, Who, When,
Where and How?

by

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ABSTRACT: Road rage is a form of aggressive behaviour by drivers on roadways. The paper addresses two questions: firstly, to what extent is road rage related to driver perceptions, characteristics and background? Secondly, how do drivers exhibit road rage? Recent media speculation implies that some drivers are more susceptible to road rage than others. For example, one commercial study indicated that women are increasingly the perpetrators of road rage. Although research of this kind makes good media headlines, there has been little serious scientific attention on this phenomenon. While the potential impacts of road rage are unknown, its major implication for road safety for drivers and others using roadways is apparent. Careful investigation into road rage may provide greater insight into the contributing factors of specific types of road accidents eg. culpable driving. It may also lead to the development of enhanced coping strategies for professional drivers. The focus of this paper is on firstly, the motivating and activating context of road rage and secondly, a theoretical perspective on roadway aggression and the diffusion of this form of travel behaviour.

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Introduction

How prevalent is road rage in the 1990s compared to previous decades? Judging by the intense media focus, it could be assumed that its prevalence is high. For example in 1997, there were 82 references to road rage in the Sydney Morning Herald. About 25 per cent of these actually referred to the phenomenon of road rage itself, with the remainder concerned with book titles, video games etc. (SMH, 1996 1997). Undoubtedly there is an increased usage of the term 'road rage' if today's media references are compared to even a few years ago: 30 references in 1996, three in 1995 and negligible references earlier than 1994. Increased usage is also supported by the new entry in the Macquarie Dictionary (1997) in which road rage is defined as 'uncontrollable violent behaviour towards another motorist resulting from the tensions and frustrations of driving'. This paper seeks to address the extent that the increased usage of the term road rage is actually a reflection of what is happening on the roads.

Road Rage: the 'What'?

Violence on the road has been an object of study for over thirty years. Whitlock (1971) and others (Bennett 1965 and Raphael 1967) reported on road violence, defining it as drivers who use their vehicle to express aggressive behaviour contributing to violence on the road. These studies link aggressive driving behaviour with a high rate of alcohol or drug abuse, personality-type, work, home and environmental stressors leading to impulsiveness and loss of temper. Underlying these studies is a suggestion of a lack of premeditation to induce harm to others while driving a vehicle.

While the presumption of lack of premeditation associated with aggressive driving behaviour existed in the past in Australia, legislation introduced to manage road rage suggests otherwise. In July 1997, the New South Wales Parliament sought to redress this presumption by introducing a Traffic and Crimes Amendment Act (1997 No 75) with respect to menacing and predatory driving. Under Section 4AA of the Act, menacing driving refers to a person who drives a vehicle with the intent to threaten another person by person injury or damage to property. Under Section 51A of the Act, predatory driving refers to the driver of a vehicle who, while in pursuit of or travelling near another vehicle, engages in a course of conduct that causes or threatens an impact involving the other vehicle and intends by that course of conduct to cause a person in the other vehicle actual bodily harm. In summary under the NSW legislation, road rage refers to the intent to engage in menacing and predatory driving behaviour. This definition is in contrast to the Macquarie Dictionary (1997) definition where 'intent' is not assumed.

It is interesting to note that the legislation introduced into NSW Parliament (referred to above) was passed on the same day as both sides of government read it with little disagreement. This unusual event of being read twice and passed into legislation on the same day suggests a perception about the increased incidence of road rage by politicians and indirectly, the community.

Factors contributing to road rage

The perception of increased road rage may be linked to an increased perception of violence generally in the Australian community over which there continues to be much speculation in the media as well as by community leaders (NSW Police Commissioner 1998). For example in New Zealand, the police have conducted an exploratory study of 16 cases of road aggression. They reported that those drivers who vent their frustration in acts of aggression are likely to demonstrate a lack of personal restraint in other areas of their life, with 73 per cent of those surveyed having previous criminal convictions (ITE 1997).

The perception of violence in the community

In contrast to the increased perception of violence the homicide rate in Australia has not changed over the past 20 years and has declined overall since the early 1900s (Chappell & Egger 1995). In New South Wales, there has been a marginal increase in both homicide (0.2 per cent in 1988 and 0.3 per cent in 1997) and suicide (1.4 per cent in 1988 compared to 1.7 per cent in 1997) (ABS 1300.1 and 1301.1). However since the early 1970s in Australia, the rates of various types of non-fatal violence, that is assault, sexual assault (lowest in NSW) and robbery (second highest in NSW), have increased sharply. This phenomenon is partially explained firstly by an heightened willingness of victims to report such incidents today due to enhanced data collection methodologies, especially when it occurs within the family (Chappell 1995). And secondly, it is a fact that most perpetrators of homicide and violence are known to their victims (Chappell 1995). Overall, these findings do not support a large increase in random acts of homicide or violence. Moreover, it is suggested that human aggressive interactions are statistically rare events compared to kind and co-operative ones (Baenninger 1991).

Road safety

The increased perception of road rage may be linked to the perceived problem of road safety in Australia in both human and monetary terms. After all, road mortality and morbidity in Australia are significant community problems, despite a 47 per cent decline in fatalities over the last 25 years. The decline in road fatalities has occurred at the same time as a 42 per cent increase in population (from 12.7 million to 18.1 million) and 118 per cent increase in the number of registered vehicles (from 4.9 to 10.7 million) (Road Facts 1996). In 1996, there were 1,977 persons killed in 1,775 road crashes (FORS 1996). The road toll in 1996 represented 3.6 per cent of total deaths, distributed differently for men (4.7 per cent of total deaths) and for women (2.5 per cent of total deaths) (ABS 3303.0). Similarly in New South Wales, the road toll has declined from 2.4 per cent of total deaths in 1988 to 1.4 per cent in 1997 (ABS 1300.1 and 1301.1).

Among the potential factors that contribute directly or indirectly to road mortality and morbidity are the effects on driving behaviour of alcohol and drug usage, fatigue, concentration and attention span as well as a range of physiological factors shown in Table 1.

Table 1 Primary cause of fatal road crash

	<i>Total Fatalities %</i>
Motorist intoxication	23
Pedestrian intoxication	6
Asleep or fatigue	4
Other impairment	5
Road or environment factors	5
Vehicle malfunction	2
Excessive speed	8
Other driver risk or error	14
Unexplained fatal crashes	33

(Source: FORS data cited in Road Facts 1996)

A number of other factors contribute to road mortality and morbidity including traffic conditions such as congestion, traffic density, signage, road surface and configuration, vehicle reliability, climactic conditions and the increasing abundance of licensed drivers. In regard to the latter in 1997, 86 per cent of the population holds a vehicle licence compared to 63 per cent in 1970. About 370,000 people hold multiple licences (RTA 1996). Despite the effort invested in bettering the conditions of roads and vehicles, road safety and driver education programs, the most troublesome and unpredictable factors such as climactic conditions (heavy rain and fog), driver characteristics and behaviour remain.

Driver Characteristics and Behaviour

When drivers have to deal with the many frustrations of congestion and the boredom of open highways and railways (Gulian et al 1990), there is a likelihood that they become apprehensive, frustrated or angry, giving rise to speculation about the nature of their response in these situations. A 1997 study conducted in the United States reported that violent traffic accidents have increased nearly seven per cent over the past seven years, linked to an inappropriate response by drivers when feeling frustrated or angry (Urban Traffic Monitor 1998). This type of response resulting in assault or vehicle damage has been labelled 'road rage'.

The purpose of this study is to identify what, who, when, where and how of road rage amidst increasing reports of this phenomenon in western society. A theoretical framework is constructed to provide improved insights into road rage. The paper is divided into three sections. The first section of paper focuses on 'what and how' of road rage by using a literature survey to identify its defining features and contributing factors and includes the conceptual framework. The second section centres on an exploratory study conducted amongst Sydney-based drivers to analyse the 'who, when and where' of road rage. Finally, conclusions are drawn and future research directions indicated.

The conceptual framework of road rage

The scope of this paper focuses on a specific type of risk-taking behaviour by drivers who use their vehicles to engage in aggressive driving, intentionally or otherwise. The aim of this study is to develop a better construct and theoretical model of road rage. Key research questions include:

- What are the motivating and activating contributors of road rage?
- Why do some people and not others engage in road rage? What are the more important factors underlying driver psychology and sociology?
- To what extent is driving behaviour linked to work and home contexts?

The focus of the paper is primarily on a combination of factors that have not been previously considered together in a single framework. To better illustrate the link, the framework in Figure 1 classifies factors into five categories: travel demands, the subjective state of driver, mediating factors, driver response and driving outcomes.

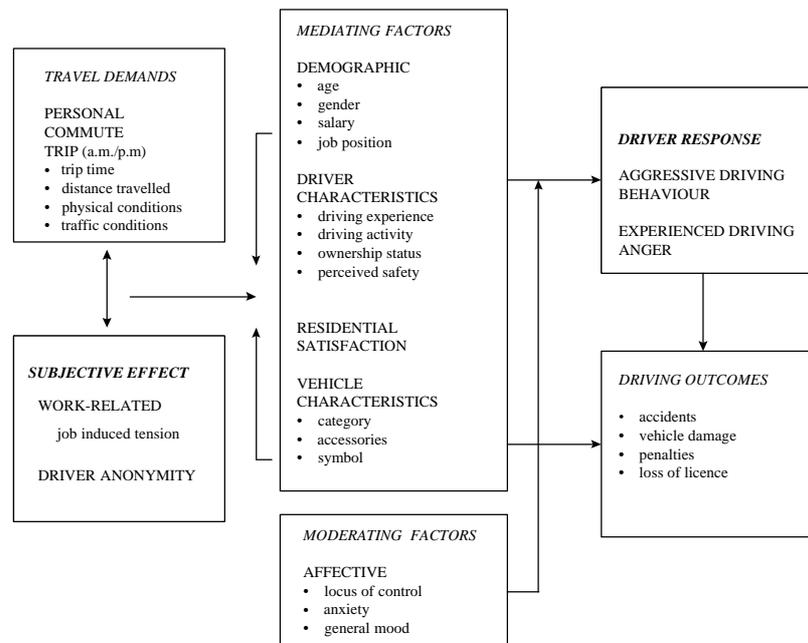


Figure 1 The conceptual framework of road rage

The framework presented in Figure 1, while not all-inclusive, represents some of the potential effects and outcomes that are associated with aggressive driving behaviour. Figure 1 is based on a transactional view where the interaction of driver, roadway and vehicle leads to a response and outcome. In this study, the particular response and outcome being explored is labelled road rage. A transactional model assumes that response and outcome are the cumulative emotional, behavioural and sociological consequences of travel conditions. The model is explained starting with driver response and outcomes.

Road rage

In terms of measuring the response of road rage for this study, the response was limited to self-reporting of driving anger and aggressive behaviour chasing another vehicle, arguing or threatening another driver outside the vehicle, or physical assault at one extreme through to cutting off, shouting, gesturing or flashing lights at the other. For the purposes of this study the response measured assumed either with or without intent. In order to understand driver response fully, risk-taking behaviour also needs to be acknowledged.

The nature of the risk includes exceeding the speed limit, not complying with traffic regulations, overtaking vehicles, racing another driver off at the traffic lights and engaging in other competitive behaviour. Risk-taking is also associated with generalised and specific beliefs. Generally, risk-taking is supported by the truism that 'accidents happen to others' as well as by the overall decline in road mortality and morbidity statistics. This generalised belief is often associated with the ignorance of the consequences of risk-taking behaviour. Specifically, risk-taking is associated with the person's belief that risk-taking is exciting. There is a specific exhilaration for drivers when they intentionally exceed the speed limit, overtake or engage in competitive behaviour with another vehicle. If, in doing so, drivers are not apprehended by a police officer, caught by radar, experience no mishap or feel that the duration of their trip was shortened, risk-taking is positively, and not negatively, reinforced. This specific belief is often associated with a denial of the reality of risk-taking behaviour.

Risk-taking behaviour is associated with identity formation and will vary by age and gender. Identity formation marks the transition from adolescence to adulthood in many cultures and sub-cultures by specific *rites de passage*. Historically, this process was more pronounced for boys than girls, who are required to 'prove their manhood' through risk-taking and engaging in acts of 'daredevil adventure'. Today, girls and young women are asserting their identities and this may be reflected in similar behaviour. Driving behaviour of young people in particular may be associated with a sense of invulnerability connected with identity formation whereby they feel impervious to physical threats to their safety on the roads.

Driving outcomes

Road rage can lead to specific driving outcomes such as accidents, vehicle damage, penalties, and loss of licence.

Mediating effects

Driver behaviour is underpinned by the psychological (age, gender, health, attitudes and feelings) and sociological (beliefs, values, occupation) characteristics of individuals and their responses. Residential characteristics may impact the way drivers feel about their commute trip. For example, a long trip, a congested one or both giving rise to monotony and repetition may be worthwhile if the driver feels satisfied about residential

conditions. Alternatively, trip boredom can be counteracted by a comfortable vehicle and entertainment (radio, music etc.) during the trip.

Driving experience and type of driving activity also modify driver behaviour as well as vehicle ownership status, perception of being a safe driver, and previously experienced mishaps and penalties. Vehicle characteristics include type of vehicle, make, model and year, accessories and driver's perception (or identity) with their vehicle. People purchase vehicles for all sorts of reasons beyond mobility. Associations with power, prestige, territory, sexual imagery are reported which advertisers and car manufacturers promote and exploit (Marsh and Collett 1986, Black 1966, Nichols 1970).

Moderating effects

Travel demands and other stressors evoke different responses from drivers. Some drivers may be able to respond more appropriately than others can. Various factors moderate the relationship between demands and response including locus of control, experienced anxiety and perception of general mood. Consequently, driving can become either a form of relaxation or a way of working-off anxieties or anger and this may be more likely if the vehicle being driven is endowed with qualities that allow the driver to transcend beyond the mundanity of the trip.

Locus of control: Locus of control is based on a scale of internality-externality where externality is associated with an absence of caution and a subsequent deficiency in precautionary action to avoid an unfavourable outcome (Strickland 1977). People who are externally controlled tend to be more anxious than internally controlled. Balanced or internal control is based on a belief that people are capable of exerting influence over situations. Internally controlled people tend to be highly motivated, optimistic and perform well in problem-solving situations.

Anxiety: Most drivers are aware that driving on the road today involves a degree of risk and this is heightened by road safety campaigns etc. In reality though most people drive their vehicle with little apprehension compared to say boarding an aircraft, even though the probability of a mishap is higher with taking a car trip. Increased anxiety modifies perception, thinking, reaction patterns and subsequently deterioration in performance. When this occurs the anxious driver is more likely to make an error or respond inappropriately due to a limited focus of attention, an 'erroneous' process of assumption-making about what is being observed, stereotyping (eg. labelling another driver or pedestrian) and impulsive behaviour (Beaty 1969, Poulton 1970, and Reed 1972).

Contributing Factors to Driver Response

Travel demands

Personal commute trip, frequency of work trips, trip times, distance travelled, physical factors and traffic conditions are included. Physical factors such as road conditions and

traffic congestion can have an effect on mood and perception with a subsequent effect on overall efficiency and safety of driving performance. (Data was collected but not included in this paper.)

Subjective effects

Not all drivers will experience similar consequences. Work-related tension and anonymity are assessed.

Work-related tension: One of the factors that may contribute to a differential response is employment status of drivers in skilled and unskilled work. Job-induced tension may be higher for those drivers working in jobs that place high demands on them such as deadlines and production quotas and yet allow little opportunity for autonomy contributing to a person's frustration (Karasek 1981). Typically these jobs are routine and located in the non-managerial level of the work organisation.

Work stress claims have risen dramatically in NSW over the last five years, with an average annual rate of increase of more than 40 per cent. Work stress is defined where a worker has been paid for total incapacity for five or more working days. In 1991/92, 473 major mental disorder claims were reported to insurers, representing 0.9 per cent of all major injuries. By 1995/96, these claims have risen to 1,738 accounting for 2.8 per cent of all major injuries or eight occurrences per 10,000 workers. Thirty-five per cent of stress claims are from rural regions and 30 per cent from metropolitan. Distribution of claims for women and men differ. For women, work stress represented 6.4 per cent of total injuries and for men 1.6 per cent. From 1993/4, the incidence of women claiming work stress has increased at a faster rate than for men. The highest incidence of claims was for workers aged between 40 and 49 years. Although rail and road transport ranks the ninth worst-affected industry, it had relatively lower total and median cost of claims. Locomotive, bus and truck drivers followed by guards and security officers had the highest number of claims within the rail and road transport group (Workcover NSW 1997).

Anonymity: Drivers feel anonymous in their vehicles and consequently behave differently in a driving context compared to a non-driving one. Anonymity is reduced when drivers feel empathetic (including humour or sexual arousal) towards the focus of their aggression or anger (Baron 1976). Other studies demonstrate that any distraction at the point of frustration may minimise the aggressive response by drivers (McDonald and Wooten 1987).

The literature suggests a number of testable propositions, summarised below under five major headings.

Propositions:

Travel demands

1. Frequency and duration of driver's exposure to traffic congestion and subjective severity of these conditions as perceived by a driver contribute to aggressive driving behaviour and experienced driving anger.
2. Drivers with higher exposure to travel impedance are more likely to engage in driver anger and aggression.

Subjective effects

3. Drivers experiencing high anonymity and work-related tension are more likely to experience driving anger and aggression.

Mediating factors

Driver Characteristics:

4. Bus drivers and non-bus drivers experience different degrees of driver anger and aggression.
5. Drivers believing 'accidents happen to someone else' are more likely to engage in aggressive behaviour.

Demographics:

6. Men and women experience different degrees of driving anger and aggression.
7. Young drivers are more likely to experience aggressive driving behaviour.
8. Drivers working in non-managerial positions will experience higher work-related tension leading to more aggressive driving behaviour.

Residential Satisfaction:

9. High satisfaction with residential conditions is associated with a positive response from commuting.

Vehicle Characteristics:

10. Specific vehicles will be attributed with specific associations eg. prestige car with power.
11. Specific associations may be manifested in a particular driving response eg. power with aggressive driving behaviour.

Moderating effects

12. Emotional tension (work, general anxiety and mood) may be associated with high driver aggression and anger
13. Drivers who believe that performance is the product of the external context beyond their immediate control are more likely to exhibit road rage behaviour.

Driving outcomes

14. Drivers engaging in aggressive driving behaviour are more likely to have been penalised for a traffic offence or experienced licence disqualification.

The Study: Who, When and Where?

The sample

A focus group and pilot study were conducted to refine the survey questionnaire. In the first round, questionnaires were posted to 294 employees in two organisations. Employees formed into three groups: professional bus drivers (28 per cent), sales representatives (41 per cent) and commuters (administrative personnel) (31 per cent). The overall response rate was 30 per cent (88 responses). In the second round, questionnaires were posted to 356 bus drivers employed in six organisations operating in urban, urban fringe and rural locations. Response rate was 52 per cent (185 responses including 20 unusable). Total size of combined sample is 249, categorised into two groups, bus drivers and non-bus drivers. Table 2 shows the demographic characteristics and Table 3 shows driving experience for both groups.

Table 2 Demographic characteristics of Bus Drivers and Non-Bus Drivers

Age (years)	Bus Drivers (%)	Non-Bus Drivers (%)	Gender	Bus Drivers (%)	Non-Bus Drivers (%)
19 – 24	3.2	16.6	Male	90.0	35.0
25 – 30	7.4	23.3	Female	6.3	65.0
31 – 36	9.5	16.7	Not specified	3.7	-
37 – 43	16.9	20.0			
44 – 50	27.0	13.3			
51 - 57	19.6	1.7			
58 – 64	14.3	6.7			
65 & over	2.1	1.7			
TOTAL	100	100	TOTAL	100	100

Table 3 Driving profile for Bus Drivers and Non-Bus Drivers

Driving Experience (years)	Bus Drivers (%)	Non-Bus Drivers (%)
5 & less	27.1	8.3
6 – 10	18.6	23.3
11 – 20	17.0	33.3
21 – 30	14.9	26.7
30 & more	22.3	8.3
TOTAL	100	100

Survey Instrument

A survey comprising eight categories, derived from several inventories, was mailed directly to the employees. Information was sought on:

1. *Driver Behaviour Inventory* based on Glendon et al 1993 comprising seven factors (a) driving aggression; (b) driving alertness; (c) dislike of driving; (d) general driver stress; (e) irritation when overtaken; (f) frustration in overtaking and (g) feelings about driving. Responses are on a 5-point Likert scale measuring frequency (daily through never).
2. *Driving Anger Scale* (Deffenbacher et al 1994) comprising six factors (a) hostile gestures; (b) illegal driving; (c) police presence; (d) slow driving; (e) discourtesy (f) traffic obstruction. Two response formats are included: (1) a 5-point Likert scale measuring frequency (daily through never) and (2) a 6-point Likert scale measuring emotional reaction (astonishment through to indifference).
3. *General Mood Scale* based on Quinn and Shepard (1974) comprising eight items exploring general mood (downhearted through to optimistic) and associated feelings. Responses are on a 5-point Likert scale measuring frequency (expressed as a percentage of time).
4. *Job-Induced Tension* (House and Rizzo 1972) represented by seven items related to work and health. Responses are on a 5-point Likert scale measuring frequency (expressed as a percentage of time).
5. *Anonymity*: five items focusing on driving behaviour in the absence of a passenger. Responses were in true or false format.
6. *Physical Aggression*: based on Novaco (1991) comprising 12 items of physical aggression. Responses are on a 5-point Likert scale measuring frequency (expressed as a percentage of time) as well as a true or false format
7. *Locus of Control*: (Rotter 1966) comprising seven items using a forced choice format.
8. *Commuting*: trip time, distance travelled, physical and traffic conditions
9. *Demographic*: driver characteristics and vehicle characteristics were also included and summarised in Tables 2 - 3.

For the purposes of this paper, job-induced tension, anonymity, physical aggression and commuting were omitted from the analysis due to their non-applicability to bus drivers, and subsequently not all propositions listed above were tested.

Findings

Driver response

The dependent variable is driver response comprising aggressive driving behaviour (see Table 4) and experienced driving anger (see Table 5). *Aggressive driving behaviour* is defined as anyone who reported that they engaged in one or more of the activities listed in Table 4 at least three to four times per week. The trend shows that bus drivers report less aggressive driving behaviour than non-bus drivers do and women more than men. Bus drivers report little irritation caused by passengers.

Table 4 Aggressive Driving Behaviour

<i>Driving Behaviour</i> [†]	<i>Non-Bus Drivers (60)</i>		<i>Bus Drivers (189)</i>		<i>Male* (191)</i>		<i>Female* (51)</i>	
	Total	%	Total	%	Total	%	Total	%
Overall driving behaviour	11	18.3	2	1.1	6	3.1	7	13.7
Dislike of driving	2	3.3	2	1.1	3	1.6	1	2.0
Frustration in overtaking	1	1.7	6	3.2	6	3.1	1	2.0
Irritation when Being Overtaken by another Vehicle	1	1.7	1	0.5	1	0.5	2	3.9
Irritation Caused by Passengers	-	-	10	5.3	10	5.2	-	-

*7 respondents did not specify gender

† Respondents could tick more than one activity

Experienced driving anger is defined as anyone who reported feeling angry or infuriated about one or more of the activities listed in Table 5, more than 50 per cent of the time. The trend shows little difference between bus drivers and non-bus drivers. Women are likely to feel angrier than men about illegal driving and traffic obstruction.

Table 5 Experienced Driving Anger

<i>Others' behaviour</i> [†]	<i>Non-Bus Drivers (60)</i>		<i>Bus Drivers (189)</i>		<i>Male* (191)</i>		<i>Female* (51)</i>	
	Total	%	Total	%	Total	%	Total	%
Hostile Gestures	5	8.3	16	8.5	18	9.4	3	5.9
Illegal Driving	13	21.7	32	16.9	31	16.2	11	21.6
Police Presence	-	-	1	0.5	1	0.5	-	-
Slow Driving	3	5.0	10	5.3	10	5.2	3	5.9
Discourtesy	14	20.3	44	23.3	47	24.6	9	17.6
Traffic Obstruction	7	11.7	9	4.8	11	5.7	5	9.8

*7 respondents did not specify gender

† Respondents could tick more than one activity

Compared to bus drivers, non-bus drivers tend to overtake more frequently and feel irritated and impatient in peak hour. Non bus drivers, particularly women, also report a greater sense of power while driving a vehicle and are more likely to report feeling frustrated and angry with slow drivers and pedestrians as well as more impatient in peak hour compared to men. Women are more likely to use high beam to signal dissatisfaction with these drivers. In contrast, men are more likely to report frustration and anger over someone cutting in on them or not dimming their lights, and are more likely to shout in retaliation.

When bus drivers were asked whether or not they had observed other drivers engaging in aggressive driving behaviour, 52 per cent responded that they had, as shown in Table 6.

Table 6 Aggressive Driving Behaviour: Bus Drivers

Have you ever seen another bus driver.....	Bus Drivers (n=189) %
throw an object at another vehicle	2.4
deliberately bump or ram another vehicle	3.0
threaten another driver with an instrument (of any kind)	4.8
give chase to another vehicle	13.3
have an argument (outside of vehicle) threatening another driver	28.5
have a fight on the road with physical contact	7.9

Stepwise regression was conducted identifying the influences on aggressive driving behaviour summarised in Table 7. These are the six broad categories of significant influence on aggressive driving behaviour: driving behaviour, driving alertness, dislike of driving, frustration in overtaking, irritation when being overtaken by another vehicle and irritation caused by passengers. Overall, feeling confident, optimistic and powerful, a propensity to taking risks, receiving hostile gestures from other drivers contributes to aggressive driving behaviour.

Table 7 Summary of stepwise regression of aggressive driving behaviour

Driving Behavior	t	p
Feelings about driving: confident, powerful, risk-taking etc.	8.68	< .000
Hostile gestures	2.84	< .005
General mood after work: optimistic	2.10	< .040
Driving Alertness		
Feelings about driving	9.32	< .000
General mood before work: carefree	-2.11	< .040
General mood before work: optimistic	-2.13	< .040
General mood after work: tired	3.30	< .001
Anxiety: insecure	-3.30	< .001
Anxiety: out-of-control	2.91	< .004
Dislike of Driving		
Feelings about driving	8.22	< .000
General mood after work: tired	3.71	< .000
General mood before work: optimistic	-3.56	< .000
Anxiety: insecure	3.15	< .002
Frustration in Overtaking		
Feelings about driving	3.48	< .001
Aged between 31 to 36 years	2.77	< .020
General mood before work: tired	2.43	< .020
Slow driving	2.05	< .040
Irritation when being Overtaken by another Vehicle		
Feelings about driving	6.62	< .000
Hostile gestures	4.06	< .000
Gender	-2.62	< .010
Irritation Caused by Passengers		
General mood before work: tired	6.34	< .000
Bus driver	7.43	< .000
Hostile gestures	4.35	< .000
General mood after work: carefree	3.22	< .001
Anxiety: depressed feelings	4.20	< .000
Anxiety: out-of-control	-2.40	< .020
Slow driving	-2.20	< .030
Driving experience: 10 years (bus)	2.17	< .030

Discriminant Analysis was conducted to determine the differences between bus drivers and non-bus drivers on the explanatory variables listed in Table 8. There were significant differences between the two groups on driving behaviour, driving alertness, dislike of driving and irritation caused by passengers, irritation when being overtaken by another vehicle and discourtesy from other road users.

Table 8 Test of equality of group means

<i>Variable</i>	F*	p
Driving behaviour	16.07	< .000
Driving alertness	25.33	< .000
Dislike of driving	17.03	< .000
Frustration in overtaking	0.53	< .467
Irritation when being overtaken by another vehicle	4.42	< .037
Irritation caused by passengers	176.26	< .000
Feelings about driving	1.06	< .303
Hostile gestures	0.10	< .749
Illegal driving	0.20	< .651
Police presence	2.00	< .159
Slow driving	0.30	< .584
Discourtesy	9.18	< .003
Traffic obstructions	0.28	< .596

*Df = 1

Table 9 shows that non-bus drivers, in contrast to bus drivers, are more likely to dislike driving, experience different feelings about driving such as having a greater sense of power when driving, feeling more confident in avoiding an accident, less tense, and taking risks than bus drivers. Bus drivers on the other hand are more likely to feel a greater irritation with passengers than non-bus drivers.

Table 9 Classification of function coefficients

Variable	Bus Drivers	Non-Bus Drivers
Dislike of Driving	0.172	0.490
Irritation Caused by Passengers	0.583	0.102
Feelings about Driving	0.727	0.568
(Constant)	-9.064	-7.164

Conclusions: where to from here?

The phenomenon of road rage was not evident in this study in that drivers generally did not report either a high incidence of aggressive driving behaviour, driving anger, nor negative driving outcomes. Most drivers also reported a positive general mood, low anxiety and balanced control suggesting that their off-road behaviour was similar to on-road behaviour.

The reason for a low incidence of reporting on road rage may be due to firstly, the limitations of the study itself. The paper is based on a study with a limited response rate,

partially explained by the complexity of a self-administered questionnaire. Secondly, the perceptions of road rage reflected by the media may be based on a small sample of well publicised case studies manifesting extreme behaviour (eg. physical assault, vehicle damage) and not mirror the experience of most drivers. While there is evidence in the current study that some drivers engage in horn-blowing, flashing lights, gesturing or shouting, this type of discourteous behaviour has been exhibited by drivers long before the term 'road rage' was coined. Moreover, discourteous behaviour may be a sign of increasing pressures and demands of working in a complex society which is spilling over into driving behaviour, as increasing number of people see their vehicle as their prime place of work. It is important to note that the majority of non-bus drivers are sales representatives using their car as an office between making calls to clients. Further, this study questions the definition of road rage and the extent that this term should be preserved for extreme forms of driver assault and vehicle damage.

Notwithstanding the study limitations and insights, there are some interesting issues that emerge and need to be considered in future research on road rage.

The major difference between the respondents in this study is their driving activity. Bus drivers are less likely to engage in aggressive driving behaviour than non-bus drivers but experience driving anger about the same. The difference may be partially explained by the emphasis on driver education for NSW bus drivers since 1993 and the introduction of a competency testing since 1997. Driver education demonstrates the rights and obligations of passengers and drivers, customer service, vehicle accident and breakdown procedures as well as defensive driving (Driver Authority Training Manual 1992). Over 90 per cent of bus drivers reported that their bus represented a sense of service as opposed to control. These findings suggest that increased driver education and awareness may make a difference in minimising aggressive driving behaviour.

A further difference may exist between men and women drivers due to higher propensity in women to report impatience, frustration and anger. This inclination for higher reporting may be associated firstly with women's capacity to express their emotions more effectively than men (Duncombe and Marsden 1993), and secondly, with working women's perception of their time and balancing work and home commitments. For example, women, in contrast to men, may be more impatient with traffic congestion due to the multiple demands on their time, beyond the driving context, that is, work, home or a combination of both. This finding also has implications for employers in considering driver education and awareness for employees (e.g. sales representatives, long-distance drivers) who spend more and more work time engaged in driving. As work demands and family pressures increase for both men and women in two income families, employees may need enhanced support in counteracting these ill-effects on their driving attitudes and performance.

The implications of this study have important policy implications such as:

1. What are the best ways of informing, promoting and assessing an employee's capacity to spend a significant portion of their work time engaged in driving? This question is important remembering that most employees have to perform a task once they have driven to their destination. It is well recognised that business travellers using air travel, who have to perform soon after arriving at their destination and

often experiencing 'jet lag', should take steps to counteract its ill-effects (Brocato 1996). A similar recognition should exist for people who drive as a significant part of their work activity. Unlike the airline passenger, employees driving themselves are responsible not only for their own safety, their passenger's but also others using the roadways.

2. What are best ways of assisting professional drivers to manage their stress both off and on the road? Some drivers choose their external circumstances (eg. recreational driving) but increasingly most have them thrust upon them (eg. as a result of employment, residential location, road conditions, and other drivers; and bus drivers carrying passengers). It is important that processes are in place to assist professional drivers to deal with these situations so that they can remain optimally efficient on and off the road.

There are times when no amount of restraint will prevent a mishap on the road. However, instead of lamenting the alleged increased incidence of road rage, and rushing to legislation as a 'quick fix' perhaps its time to consider alternative public policy tools such as the education of employee drivers with greater accountability placed on the employer for this process.

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