

Factors Influencing the Effectiveness of Advertising Countermeasures in Road Safety

Ioni Lewis

Bachelor of Science (Psych), Bachelor of Psychology (Hons)

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Queensland University of Technology

Centre for Accident Research and Road Safety – Queensland (CARRS-Q)

School of Psychology and Counselling

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### Key Words

Road safety advertising, threat appeals, emotional appeals, message-relevant affect, positive emotion, response efficacy, persuasion, driver safety, gender



## Abstract

The current program of research contributes to the World Health Organisation's (WHO, 2004) recent call to pool global resources in the attempt to uncover the most effective countermeasures and policies for the prevention of road trauma. Specifically, this program of research investigates the persuasive outcomes of different emotional health messages in an important applied context, road safety. In this context the use of negative, fear-based approaches has predominated with limited use of more positive-based approaches such as humorous- or pride-based emotional appeals. The overarching aim of the current research program was to examine the effectiveness (i.e., persuasiveness) of positive and negative emotional appeals and, specifically, the issue- or message-relevant affect that such appeals evoke. An additional aim was to ascertain the relative influence and effectiveness of positive and negative emotional appeals for specific target audiences. Particular attention was given to the effectiveness of such messages for males, a high risk road user group of particular concern. The research program also aimed to examine the relative roles and interplay of emotion and cognition in determining message effectiveness. The research focused upon the cognitive constructs of response efficacy (i.e., the extent to which a message incorporates coping strategies and information as well as the extent that individuals' perceive a message as incorporating such coping strategies and information) and involvement (i.e., the extent to which individuals perceive an issue or message as personally relevant and/or as being at risk of experiencing).

The research program may be conceptualised as three stages, with each stage comprised of an empirical study and one or more manuscripts. The first stage of the research explored the roles and effectiveness of negative and positive emotional appeals.

With a substantial body of literature available on the use of fear as a persuasive strategy, Paper One reviewed the theoretical and empirical evidence relating to the function and effectiveness of such appeals. This paper highlighted the mixed findings that have been reported and the controversy surrounding the nature of the fear-persuasion relationship. This paper also highlighted the importance of cognitive components of a message and, in particular, the need to incorporate high levels of response efficacy and to be cognisant of the issue of threat and message relevance.

Paper Two was based on qualitative research derived from focus groups of licensed drivers ( $N = 16$ ). The study investigated the roles and effectiveness of positive and negative emotional appeals in road safety advertisements addressing speeding and drink driving. The results suggested that positive and negative emotional appeals may serve different functions. Positive emotional appeals were regarded as a potentially efficacious means of promoting the message of prevention and to model safe behaviour and the rewards received whereas negative emotional appeals were regarded an important way to remind drivers of the dangers of driving.

The second stage of the research program endeavoured to extend upon the findings reported in the first stage by providing an empirical comparison of positive, humorous appeals and negative, fear-based appeals on a range of outcome measures and over time. In Paper Three, the type of emotional appeal (positive/humorous, negative/fear), level of response efficacy (low, high), level of involvement (low, high), and gender were manipulated in a  $2 \times 2 \times 2 \times 2$  mixed group design. Licensed drivers ( $N = 201$ ) completed either a paper-and-pencil or internet-based version of a questionnaire. Prior to the anti-drink driving television advertisements being shown, pre-exposure were assessed. Attitudes and intentions were then assessed immediately after exposure and

attitudes, intentions, and behaviour, 2 to 4 weeks later. The results provided evidence of the greater persuasiveness of negative appeals immediately after exposure and greater improvement of positive appeals over time. Also, the results highlighted the importance of high levels of response efficacy, irrespective of emotional appeal type. Paper Three also supported and extended upon earlier findings by examining third-person perceptions in relation to positive, humorous emotional appeals. The results revealed that males reported significantly greater overall influence both to themselves personally, as well as other drivers in general, than females for the humorous appeals. Further, consistent with the multiple roles of affect posited by Elaboration Likelihood Model, explanations were provided for the differential effectiveness of positive and negative affect.

An additional aim of the second stage of the research program was to clarify an important methodological issue; the sampling adequacy of traditional university student samples versus internet-based samples for health message persuasion research. Fear appeal empirical literature has been criticised for its over-reliance upon student samples. Paper Four examined the extent that the internet may function as an efficacious means of accessing drivers for road safety advertising research. The sample characteristics and results obtained from student and internet samples of drivers were compared empirically. The results provided support for the greater diversity and representativeness of the internet sample and suggested that the two sampling approaches produce equivalent results. This paper served to inform the validity of prior research and informed the choice of sampling methodologies for the subsequent research stage reported in Paper Five.

The third stage of the research built upon the preceding stages and, most notably, broadened the scope of emotional appeals examined by comparing a range of negative and positive emotional appeals addressing the issue of speeding. Drawing upon the Rossiter-Percy (1987, 1997) motivational model, Paper Five examined two different negative and two positive emotional appeals designed as audio messages. Specifically, the type of emotional appeal (Problem Avoidance/Fear based; Problem Removal/Agitation or annoyance-based; Social Approval/ Pride-based; and Intellectual Mastery/Humour-based), level of response efficacy (low, high), level of involvement (low, high), and gender were manipulated in a 2 x 2 x 2 x 2 fully between groups design. A range of persuasion outcome measures, including attitudes and intentions, were assessed immediately after exposure and 1 month later. Further, the study assessed adaptive (message acceptance) as well as maladaptive (message rejection) intentions. The results provided evidence of the effectiveness of humorous-based appeals for males and highlighted that appeals of the same valence (positive or negative) need not have the same persuasive effects. The results also supported the importance of response efficacy for all appeal types and highlighted that a message's overall effectiveness requires consideration of both message acceptance and rejection rates.

Overall, the current research program, based upon a sound, multi-disciplinary theoretical framework, provided evidence for the need to broaden the scope of emotional appeals in the road safety advertising context and which may also be relevant within a wider health persuasion context. The results of the three studies have important theoretical and practical implications for future campaign development which are discussed.



## Publications and Submitted Manuscripts Resulting from the PhD Research Program

|             |                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Paper One   | Lewis, I., Watson, B., Tay, R., & White, K. M. (2007). The role of fear appeals in improving driver safety: A review of the effectiveness of fear-arousing (threat) appeals in road safety advertising. <i>International Journal of Behavioral Consultation and Therapy</i> , 3(2), 203-222. Available on-line from <a href="http://www.ijbct.com/IJBCT-3-2.pdf">http://www.ijbct.com/IJBCT-3-2.pdf</a> . |
| Paper Two   | Lewis, I., Watson, B., White, K. M., & Tay, R. (2007). Promoting public health messages: Should we move beyond fear-evoking appeals in road safety? <i>Qualitative Health Research</i> , 17(1), 61-74.                                                                                                                                                                                                    |
| Paper Three | Lewis, I., Watson, B., & White, K. M. (in press). An examination of message-relevant affect in health messages: Should road safety advertisements aim to make us feel good or bad? <i>Transportation Research Part F: Traffic Psychology and Behaviour</i> .                                                                                                                                              |
| Paper Four  | Lewis, I., Watson, B., & White, K. M. (in press). A comparison of Internet-based versus paper-and-pencil-based survey methods in road safety: Equivalence testing of participant responses to road safety television advertisements. <i>Australian Journal of Psychology</i> .                                                                                                                            |
| Paper Five  | Lewis, I., Watson, B., & White, K. M. Exploring the persuasiveness of emotional health messages: The effectiveness of positive and negative appeals in road safety. <i>Manuscript in preparation</i> .                                                                                                                                                                                                    |

Note: This Table details publications that were produced during the candidate's PhD candidature only. The following publication, Lewis, Watson, and Tay (2007a), which is cited within this dissertation, represents a publication from the candidate's earlier Honours work and, thus, was not produced as part of the current PhD research program.



Conference Papers and Presentations Resulting from the PhD Research Program

|                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lewis, I., Watson, B., & White, K. M. (2006). <i>Factors influencing the effectiveness of advertising countermeasures in road safety</i> . Presentation Queensland Stakeholders Showcase, Brisbane, 4 December.                                                                                      |
| Lewis, I., White, K. M., & Watson, B. (2005). <i>Persuasive processes of different affective appeals in road safety advertising</i> . Paper presented at the European Association of Experimental Social Psychology, Wurzburg, Germany, 19–23 July.                                                  |
| Lewis, I., Watson, B., & White, K. M. (2005). <i>The effectiveness of fear-based advertisements</i> . Presentation to the Australasian College of Road Safety Seminar, Brisbane, 1 March.                                                                                                            |
| Lewis, I., Watson, B., & White, K. M. (2005). <i>Is there another way [to advertise in road safety?]</i> . Presentation to the 3 <sup>rd</sup> School of Psychology and Counselling Postgraduate Research Symposium, Brisbane, Australia, 25 August.                                                 |
| Lewis, I., Watson, B., White, K. M., & Tay, R. (2004). <i>Factors influencing the effectiveness of advertising countermeasures in road safety: The role of emotion</i> . Presentation to the Centre for Accident Research and Road Safety – Queensland, Work in Progress Meeting, Brisbane, 19 July. |
| Lewis, I., Watson, B., & White, K. M. (2004). <i>Factors influencing the effectiveness of advertising countermeasures in road safety: The role of emotion</i> . Presentation to the 2 <sup>nd</sup> School of Psychology and Counselling Postgraduate Research Symposium, Brisbane.                  |
| Lewis, I., Tay, R., & Watson, B. (2003). <i>Factors influencing the effectiveness of advertising countermeasures in road safety</i> . Paper presented at 1 <sup>st</sup> School of Psychology and Counselling Postgraduate Research Symposium, QUT, Brisbane.                                        |



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## Glossary of Terms and Acronyms

### ATSB

Australian Transport Safety Bureau

### BAC

Blood alcohol concentration

### ELM

The Elaboration Likelihood Model of Persuasion (Petty & Cacioppo, 1986).

### EPPM

The Extended Parallel Process Model (Witte, 1992)

### Involvement

When conceptualised in terms of personal relevance, an individual is said to be highly involved with an issue or message when they perceive the issue as having some direct impact on their own life (Perloff, 1993a). Involvement has also been conceptualised in other ways including the degree of perceived risk (Rossiter, Donovan, & Jones, 2000).

### Issue-irrelevant affect

A more generalised state of affect not associated or caused by the content of a message but rather reflects a general reaction to the world at large and that is not particularly focused (or aware) of what caused or triggered it (Burke & Edell, 1989; Dillard & Wilson, 1993; Jorgensen, 1998). Such affect is typically referred to as mood.

### Issue-relevant affect

Affect (or emotion) that is evoked in direct response to an attitude object and is part of the communication itself (Dillard & Wilson, 1993; Jorgensen, 1998). It is regarded as a transient affective response (Monahan, 1995; Nabi, 1999; Schwarz & Clore, 1996).

Additional definitions include message-relevant affect and advertisement-induced affect.

### Message acceptance

Message acceptance represents a measure of message effectiveness. Typically operationalised in terms of adaptive intentions (Witte, 1992a), message acceptance refers to the extent to which an individual reports accepting the recommendations espoused in a persuasive message.

### Message effectiveness

Broadly defined, message effectiveness relates to the extent to which a message is persuasive. As there are many operationalisations of persuasion evident within the extant literature (for examples, see Elliott, 1993), effectiveness in one study may be defined in relation to attitudes and attitude change whilst in other studies it may relate to the degree of intentional and/or behavioural change attained. Generally, the more an individual reports agreement with, or adopting of, the recommendations espoused within a message, the more persuasive and, thus, effective the message may be considered to be.

### Message rejection

Message rejection represents a measure of message ineffectiveness. Typically operationalised in terms of maladaptive intentions (Witte, 1992a), message rejection refers to the extent to which an individual reports being likely to defensively avoid or ignore a persuasive message.

### Message self-efficacy

An individual's perception that they are able to enact the coping strategies and information provided in a persuasive message (Witte, 1992a).

### Perceived risk

Represents the involvement dimension of the Rossiter-Percy (1987, 1997) motivational model. The construct is considered akin to the threat appraisal of popular fear appeal models (e.g., EPPM), and is best operationalised through measurement of an individual's perceptions of susceptibility and severity (Rossiter, Donovan, & Jones, 2000).

### Perceived severity

The extent to which an individual perceives that the consequences of a threat would be severe if the threat was to occur (Witte, 1992a, b).

### Perceived susceptibility

The extent to which an individual perceives themselves as personally susceptible and vulnerable to a particular threat (Witte, 1992a, b).

## PMT

Protection Motivation Theory (Rogers, 1975, 1983).

## Response efficacy

Response efficacy refers to the extent that a message incorporates coping strategies and information (Witte, 1992a, b). According to the Extended Parallel Process Model, response efficacy may be conceptualised as both a message characteristic or as an individual difference variable in regards to individuals' perceptions of response efficacy (Witte, 1992a, b).

## RP motivational model

The Rossiter-Percy (1987, 1997) motivational model of persuasion.

## Serious injury

An injury that results in at least one night in a hospital bed and subsequently being discharged (ASTB, 2007).

## TPB

The Theory of Planned Behaviour (Ajzen & Fishbein, 1980).

## TPE

The Third-person effect. A perceptual disparity with behavioural implications whereby individuals report that others (i.e., third-persons) are more likely to be influenced by a persuasive message than themselves (Davison, 1983).

Statement of Original Authorship

The work contained in this thesis has not been previously submitted for a degree or diploma at any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signed:.....

Date:.....



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Chapter One: The Scope and Nature of Road Trauma and  
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### *1.1 Scope of the Road Trauma Problem*

Road traffic injury represents one of the most significant global public health issues of the 21<sup>st</sup> century (Binder & Runge, 2004; World Health Organisation [WHO], 2004). Presently, worldwide, more than a million people are killed and as many as 50 million are injured or disabled in road crashes each year (WHO, 2004). Consequently, road trauma represents a leading cause of death and the ninth leading contributor to the global burden of disease and injury (Binder & Runge, 2004; WHO, 2004). The WHO projections indicate that, if current trends continue, by 2020 road traffic injuries will increase such that they will rate third among the leading contributors to the global burden of disease and injury (Binder & Runge, 2004).

In Australia, the contribution of road trauma to the death and injury of road users also reflects the global high pattern of involvement. On average, 1,600 road users are killed each year (ATSB, 2007) and a further 21,000 (approximately) are injured requiring hospitalisation each year (BTE, 2000). Beyond the enormous human cost resulting from road trauma, are the substantial social costs. Estimates from the Bureau of Transport and Economics indicated that the total cost of road crashes in Australia in 1996 was \$15 billion (BTE, 2000). The cost incurred for road crashes varies by crash severity: on average, each road fatality costs an average of \$1,652, 994, whilst the costs of injury crashes range from \$407,990 for serious to \$13,776 for minor injury crashes, with property damage-only crashes costing \$5,808 (BTE, 2000, p. 81). Consequently, road crashes in Australia represent a serious and perennial concern not only for public safety but also in terms of financial costs incurred by society.

Perhaps even more concerning to note than the road trauma statistics, is the acknowledgement that road traffic injuries represent one of the most preventable forms

of global burden of injury (Peden et al., 2004; WHO, 2004). In 2004, the WHO dedicated a day to raising awareness of the global crisis that road trauma poses and to highlight the fact that road trauma may be prevented (United Nations General Assembly, 2003, p. 1). Consistent with this sentiment of prevention, the Australian National Road Safety Action Plan 2001-2010 notes that, “the road toll should not be accepted as inevitable” (Australian Transport Council, p. 3). The WHO called for the global concerted effort to identify not only the factors contributing to road trauma but also, and perhaps more significantly, the most effective strategies to address such contributing factors and prevent road trauma.

One of the key strategies for guiding the allocation of efforts (both research and applied) is to identify individuals and groups of individuals at high risk of being involved in road trauma. It follows that significant reductions in road trauma may be achieved by finding more effective ways in which to reduce the crash involvement of high risk groups.

### *1.2 High Risk Road Users*

A long-standing road safety concern has been the high injury (including serious injury) and death rates of males relative to female drivers, young drivers relative to older drivers, and young male drivers relative to other road users in general (see ATSB, 2007; Ferguson, Williams, Chapline, Reinfurt, & DeLeonardis, 2001; Karpf & Williams, 1984; Mayhew, Simpson, Singhal, & Desmond, 2006; Tavis, Kuhn, & Layde, 2001). For instance, in 2006, of the 762 drivers<sup>1</sup> killed in Australia, 588 (77.2%) were males. Of

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<sup>1</sup> In 2006, a total of 1601 road users were killed which included drivers, passengers, pedestrians, cyclists, and motorcyclists. Drivers (both male and female) represented the largest percentage of deaths, accounting for 47.6% of all fatalities (ATSB, 2007).

those male drivers killed, the largest number were drivers aged 17 to 24 years (177; 30.1%) followed by drivers aged 25 to 39 years (164; 27.9%) (ATSB, 2007).

Whilst the relatively greater involvement of males in fatal crashes has been linked to factors including exposure (i.e., more kilometres driven) and more deaths per crash (see Li, Baker, Langlois, & Kelen, 1998), a substantial body of evidence suggests that males, particularly younger ones, are more likely to engage in risky driving behaviour(s) (Job, 1990; Jonah, 1986; Prabhakar, Lee, & Job, 1996; Williams, 1998). Research has shown that males are significantly more likely than females to report engaging in speeding, drink-driving, and breaking rules associated with being on a restricted licence (Harré, Field, & Kirkwood, 1996). Other research has shown male drivers, relative to females, are more likely to report engaging in speeding (Fleiter, Watson, Lennon, & Lewis, 2006) and have been observed to engage in greater speeding behaviour (Wasielewski, 1984), and greater tailgating behaviour (Evans & Wasielewski, 1983).

The engagement in such risky behaviours directly contributes to an increased risk of crash involvement (Iverson, 2004; Tavriss et al., 2001). Iverson (2004) found that individuals who had been involved in at least one road crash in the previous year also tended to engage in more speeding and drink driving (in addition to other behaviours such as failure to use a seat belt) (Iverson, 2004; Tavriss et al., 2001). In short, reductions in road trauma involvement for these high risk road users could be obtained through reducing the extent to which they engage in risky and/or illegal driving behaviours.

A myriad of factors have been examined in the attempt to explain the over-representation of males and younger drivers in road crashes and their tendency to engage in more risky driving-related behaviours. A substantial body of literature attests to the

fact that high sensation seekers are more likely than non-sensation seekers to engage in a range of risky and illegal driving behaviours (Beirness, 1993; Jonah, Thiesen, Au-Yeung, 2001; Zuckerman, 1994) and that males and younger individuals are more likely to be high in sensation seeking (Zuckerman, Eysenck, & Eysenck, 1978). Additionally, a number of psychological biases appear to influence driver perceptions relating to the likelihood of being involved in a road crash or being detected for illegal behaviours which in turn has implications for their engagement in risky behaviour. For instance, optimism bias (Weinstein, 1980) as well as a perception that one is a “better” than the average driver<sup>2</sup> (Delhomme, 1991; McKenna, Stanier, & Lewis, 1991) contributes to the belief that “bad outcomes won’t happen to me” (including being involved in a road crash; see Van der Pligt, 1996). Once again, evidence has shown that males and younger drivers often score higher on such perceptual biases (see DeJoy, 1992; Harré, Foster, & O’Neill, 2005; Prabhakar et al., 1996).

The existence of these biases is likely to have significant implications for the manner in which strategies (including advertising messages) are designed to target these individuals. Evidence has shown that messages incorporating threats of injury or death are not necessarily effective with high sensation-seeking individuals (for HIV/AIDS advertisements, Witte & Morrison, 1995; and road safety advertisements, Champness, 2001; Tay, Champness, & Watson, 2004). Extending upon this issue, consistent with the belief that bad outcomes won’t happen to oneself, studies examining the influence of anti-speeding and anti-drink driving appeals have found evidence that a third-person effect influences the persuasiveness of such appeals (Lewis, Watson, & Tay, 2007a).

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<sup>2</sup> Walton and Bathurst (1998) found support for the Downward Comparison Theory whereby drivers consider other drivers negatively rather than exaggerating their self-perceptions.

Specifically, Lewis et al. reported that males were more likely to report physical threat appeals as having more influence on other drivers in general than themselves, a perceptual disparity known as the third-person effect (Davison, 1983). Whilst it is beyond the scope of this dissertation to provide a review of all the factors contributing to risky driver behaviour(s), given the predominance with which the risky behaviours of drink driving and speeding contribute to crashes, these behaviours are discussed further.

### *1.3 Factors Contributing to Road Trauma*

The Queensland Road Safety Action Plan developed by the Queensland Department of Transport (QT, 1999) focused upon four major contributing factors to road crashes. Such factors have been referred to as the fatal four: specifically, speeding, drink driving, fatigue, and failure to use seatbelts. Given the high involvement of such factors in road crashes, much of the Queensland road safety strategy, including policies and initiatives, has been directed at addressing these factors. Of particular relevance to the current thesis, these four factors have represented the key issues of focus in Government public education campaigns and, thus, budget expenditure (Tay, 2002a). Of these four factors, this dissertation focuses upon mass media campaign messages addressing the issues of drink driving and speeding. These behaviours were chosen given the extent to which they contribute to crash severity and frequency (as opposed to failure to wear a seatbelt which is more likely to contribute to crash severity not frequency) and given that both represent detectable, illegal behaviours. Specifically, if an individual drives in excess of the posted speed limit<sup>3</sup> or drives when their BAC level is higher than the limit specified for their licence status, they are failing to comply with

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<sup>3</sup> Driving at a speed inappropriate for the driving conditions is another aspect of the speed issue (RTA, 2000).

road laws and thus, if detected, may receive punitive sanctions. In contrast, fatigue is not an illegal, behaviour among general drivers since it is difficult to measure and detect.

### *1.3.1 Speeding and drink driving and crash severity and frequency*

Evidence from an extensive body of research suggests that speeding (Fildes & Lee, 1993; Vernon, Cook, Peterson, & Dean, 2004; Wagenaar, Streff, & Schultz, 1990) and drink driving (Compton et al., 2002; McLean, Holubowczyk & Sandow, 1980; WHO, 2004) contribute both to the frequency and severity of road crashes. Although the extent that alcohol contributes to road crashes varies between countries, thus rendering direct comparisons difficult, evidence suggests that in higher income countries approximately 20% of fatally injured drivers have a blood alcohol concentration (BAC) in excess of the legal BAC limit (WHO, 2004). Also, highlighting the contribution of alcohol to crash frequency and severity, evidence suggests that an alcohol-impaired driver has 17 times the risk of being involved in a fatal crash than an unimpaired driver (WHO, 2004).

For speeding, evidence linking speeding to crash involvement has been reported (Kloeden, McLean, & Glonek, 2002; Kloeden, Ponte, & McLean, 2001). For instance, recent research has indicated that drivers who reported frequently engaging in risky behaviours including, racing a motor vehicle for excitement and driving at 20km/hr or more over the speed limit, were up to four times more likely to have been a driver injured in a car crash in that same time period (Blows, Ameratunga, Ivers, Lo, & Norton, 2005). In addition, research has indicated that the risk of being involved in an injury crash increases by 3% with a mean increase in speed of 1 km/hr whilst the risk of being involved in a fatal road crash is 4-5 % greater with the same mean increase in speed (Fildes & Lee, 1993).



It was noted previously that both speeding and drink driving were chosen as the behaviours of focus in the current research program because of their similarities, namely both contribute to crash risk and severity and both represent illegal and detectable behaviours. However, it is equally important to note that such behaviours do differ and such differences are likely to have implications for the manner in which the behaviours are addressed (Elliott, 1992; Tay, 2005b).

### *1.3.2 Differences between drink driving and speeding*

The first distinction between the behaviours relates to the prevailing social norms and attitudes towards the two behaviours. Over the previous two decades, the prevalence of drink driving has been reduced substantially due to the implementation of a range of legislative, enforcement, and public education countermeasures (Harrison, 1998; Shults et al., 2001; Voas & Tippetts, 2002). Additionally, such reductions have coincided with a growing social disapproval towards drinking and driving, as evidenced by increasingly negative public attitudes towards drink driving (ATSB, 1998). The growing social disapproval toward drink driving has become evident to the extent that those engaging in the behaviour are likely to be seen as “criminals” and “breaking the law” (Elliott, 1992).

Speeding, in contrast, is much less likely to be seen as an illegal behaviour and, if caught speeding, an individual may be more likely to be seen as “unlucky” (Elliott, 1992). Interestingly, the Australian Transport Safety Bureau Community Attitudes Survey (Mitchell-Taverner, 2002) of 1,563 Australian residents aged 15 years and over indicated a growing public awareness of the dangers of speeding with speeding identified by the public as the leading contributor to road crashes. Despite this awareness however, there remained evidence of a permissive attitude towards speeding by some members of the public. For instance, approximately one-third of the survey respondents

indicated agreement with the item that it was “okay to speed if you are driving safely” (p. 1). However, of note, research has suggested that perceptions of speeding are also influenced by the driving situation. Specifically, there appears to be less acceptance of exceeding the speed limit on urban roads than on open roads and highways (Fleiter & Watson, 2006; Forward, 2006; Mitchell-Taverner, 2002)

In addition, a difference in attitudes towards the enforcement of the two behaviours has been evidenced: whilst 97% of the sample were found to endorse random breath-testing (RBT), over half (56%) of the respondents still believed that speeding enforcement was primarily linked to the need to raise revenue (Mitchell-Taverner, 2002). Also reflecting a possible difference in the social acceptance of the two behaviours, this survey revealed that more respondents were prepared to admit that they had sped (i.e., engaged in the less socially unacceptable behaviour) than those who were prepared to admit drinking and driving (i.e., the more socially unacceptable behaviour) (Mitchell-Taverner, 2002).

A second difference relates to the amenability of the behaviours to enforcement. It is apparent that, on every driving occasion, a driver has a number of opportunities to speed or not. In contrast, once alcohol-impaired, a driver cannot become unimpaired. In this regard, speeding is sometimes referred to as a transient offence while drink driving is a fixed offence (see Elliott, 1992). Thus, there are many factors likely to be influencing a driver’s decision whether or not to speed at different times and contexts within a driving trip compared with, essentially, the once-off decision to drive after drinking (Tay, 2005b).

The main implication of these differences between speeding and drink driving is that different policies and countermeasures may be required to effectively address the

behaviours. Evidence within the road safety advertising context has shown that different approaches may be needed for these behaviours (Tay, 2005b; see also Elliott, 1992). A difference particularly relevant to advertising messages is the extent to which strategies and information can be provided, as discussed above.

In summary, speeding and drink driving continue to represent significant contributors to road trauma, as well as reflecting the perennial problem of risk road user behaviour in road traffic injury. To the extent that road user factors contribute to road trauma, it may be argued that many improvements in health and reductions in road trauma will result from persuading road users to adopt safer attitudes and behaviour. It follows that advertising may serve a crucial role in attempts to persuade drivers. Whilst evidence suggests that traffic law enforcement programs, such as random breath testing and speed cameras, are effective in reducing drink driving and speeding respectively (e.g., Cameron, Cavallo & Gilbert, 1992; Homel, 1988), mass media advertising also may play an important role in addressing these behaviours. Debate has surrounded and continues to surround, however, the role advertising does play as a road safety countermeasure. This issue is further examined in Section 1.4 including the role of advertising in relation to other key countermeasures such as traffic law enforcement and, in particular, the longstanding debate regarding whether advertising functions directly or indirectly to change behaviour.

#### *1.4 Mass Media and Advertising Messages as a Road Safety Countermeasure*

Each year, Australian governments invest substantial financial cost for the design, production and airing of mass media advertisements and particularly for television advertisements (Tay, 2005a; Tay & Watson, 2002). Reports of some advertisements, namely the graphic, high threat appeals, incurring production costs of up to \$450,000 are

not uncommon (Donovan, Jalleh, & Henley, 1999). Arguably, the high costs incurred by Australian governments contribute to a public belief that advertising is an effective strategy.

Similar to other health promotion campaigns, the ultimate goal of road safety advertising campaigns is to achieve behaviour change and, more specifically, to improve driver safety (Job, 1988). However, a number of evaluations of road safety advertising have been conducted which have yielded inconsistent and mixed findings in relation to its role and effectiveness (e.g., Cameron, Haworth, Oxley, Newstead, & Le, 1993; Cameron & Newstead, 2000; Macpherson & Lewis, 1998; Tay, 1999; 2005b; White, Walker, Glonek, & Burns, 2000). An aspect contributing to the mixed evidence may be the various outcome goals that have been specified for different campaigns and which have contributed to definitional ambiguity surrounding the concept of message effectiveness. Elliott (1993) discusses how the specified outcome goals of a campaign and, thus, the determinant of whether or not a message is deemed effective and persuasive, may range from whether it successfully raises awareness, or whether it strengthens and/or modifies attitudes, through to whether it induces changes in intentions and/or behaviour.

Concerns about its role and effectiveness are further compounded by the fact that much campaign development is not based upon a sound theoretical framework (Elliott, 1993; for an exception see Stead, Tagg, MacKintosh, & Eadie, 2005 for campaign development based on the Theory of Planned Behaviour). The absence of a guiding theoretical framework has implications in terms of heightening concern that advertising design may be based more on a haphazard approach of trial and error (Elliott, 1993). The absence of a theoretical framework has implications for campaign evaluation in that

such evaluation is made more difficult in the absence of clearly defined and thus measurable constructs (Elliott, 1993). Consequently, a long-standing debate has existed in relation to what the “something” is that road safety advertising may achieve in relation to behaviour change and improvements in driver safety. Primarily, the contention surrounds whether advertising functions to influence driver safety indirectly or directly (Donovan et al., 1999; Elliott, 1993).

Generally, most road safety researchers and practitioners advocate the indirect view. The indirect view maintains that advertising has limited (if any) impact upon driver safety in the absence of other countermeasures such as enforcement and legislation (Elliott, 1993; Vingilis & Coultres, 1990). In other words, it is posited that advertising does not have an independent or direct role in changing behaviour and/or reducing crashes but, rather, functions to support other initiatives such as enforcement. In this supportive role, advertising may serve signposting and agenda-setting type functions such as creating awareness of new countermeasures and policies (Elder et al., 2004; Elliott, 1993; Vingilis & Coultres, 1990; Wilde, 1993). It has been suggested that the majority of mass communication strategies in road safety have been carried out in conjunction with other countermeasures (Vingilis & Coultres, 1990). Indeed, road safety advertising is considered unique from the advertising of other health issues because the messages conveyed in the advertisements can often be supported by accompanying enforcement (Delaney, Diamantopoulou, & Cameron, 2003; Newstead, 2006).

Empirical support has been provided for the effectiveness of advertising when combined (and designed to accompany) enforcement. Studies have reported that advertisements with enforcement-related themes have been associated with crash reduction and were more effective than advertisements not specifically relating to

enforcement programs (Cameron et al., 1993; Elder et al., 2004; Fildes, 1995; see also Delaney et al., 2003). Furthermore, the effectiveness of combining advertising and enforcement countermeasures is supported by theory, namely, deterrence theory (e.g., Homel, 1986; Ross, 1982). According to deterrence theory, a main function for advertising is to increase the perceived certainty of detection and punishment (Ross, 1981; DeJong & Aitken, 1995; Donovan et al., 1995; Vingilis & Coultes, 1990). Moreover, to the extent that advertising increases the deterrent properties of a countermeasure, enforcement campaigns are more likely to be effective when accompanied by widespread advertising than when they are not (Donovan et al., 1999; Elliott, 1993). It has been suggested that, in many enforcement evaluations, advertising has been regarded as “vital” to the deterrent effectiveness of enforcement-related countermeasures (Vingilis & Coultes, 1990, p. 71). Thus, advertising and enforcement campaigns have been regarded as having complementary effects which has been supported by evidence of a significant interaction between the two initiatives (e.g., Tay, 2005b; Delaney et al., 2003; but see also Tay, 2004).

Somewhat surprisingly, there is a paucity of evaluations that have attempted to disentangle the relative and interactional effects of enforcement and advertising countermeasures and of those that are available, many have been criticised on methodological grounds (see Vingilis & Coultes, 1990 for a review of evaluations of anti-drink driving campaigns). Most evaluations have been based on drink driving or speeding campaigns with limited research available on the independent and interactional effects of advertising and enforcement in relation to campaigns to improve other unsafe behaviours (Tay, 2005b; see also Vingilis & Coultes, 1990). This lack of research is problematic because, as noted previously, speeding and drink driving are different

behaviours and therefore the enforcement and advertising campaigns do not necessarily produce similar results (Tay, 2005b).

In addition, it has been suggested that advertising may indirectly influence behaviour by facilitating changes in societal and cultural norms and attitudes (Elliott, 1993). In this way, advertising may function ultimately to bring about changes in individuals' behaviour by first motivating shifts in societal expectations and attitudes regarding a particular behaviour. A notable example from the road safety context is the shift in societal attitudes and norms relating to drink driving evidenced over the last few decades (ATSB, 1998). The shift has resulted in less public acceptance of the behaviour, growing negative attitudes towards the behaviour, and a tendency to regard individuals who are detected for engaging in drinking and driving as criminals (Elliott, 1992). Although, as discussed previously, it is difficult to determine the true extent to which advertising has contributed to this social change relative to other countermeasures, it is important to recognise that advertising may function in a more gradual and indirect fashion.

In contrast to the indirect view, proponents of the direct view, regard advertising as having a direct (and powerful) persuasive influence on individuals' behaviour(s) (Donovan et al., 1999; Elliott, 1993). This view is supported by models of persuasion (e.g., fear appeal models discussed in Chapter Two; the Elaboration Likelihood Model, Petty & Cacioppo, 1986; discussed in Chapter Three) and behaviour change (e.g., Theory of Planned Behaviour; Ajzen & Fishbein, 1980) which broadly maintain that, changing individuals' attitudes and intentions through persuasive appeals will ultimately result in adoption of the desired behaviour (Donovan et al., 1999; Vingilis & Coultas, 1990).

Empirical evidence also exists supporting the direct view of advertising in relation to its (desired) influence on different driver behaviours. For instance, for fatigue, Tay and Watson (2002) reported a reduction in self-reported instances of driving fatigued one week after exposure to threatening television advertisements. For drink driving, Tay (2005a) reported a reduction in alcohol-related crashes following an anti-drink driving media campaign and Farmer (1975) found a significant reduction in alcohol impaired driving from pre- to post-test in the geographical area where a media campaign had been run with no corresponding significant reduction in the no-campaign control area. For speeding, a reduction in speed-related serious crashes was found (Tay, 2004) whilst Koenig and Wu (1994) observed an increase in left-yielding behaviours of drivers at intersections following a multimedia campaign. Finally, Ebel, Koespell, Bennett, and Rivara (2003) reported a significant increase in the observed use of child seat-belt restraints in intervention communities relative to control communities from pre- to post- multimedia campaign. However, it is unclear how long behaviour change induced by advertising alone will persist.

Moreover, a number of the studies examining the direct link between advertising campaigns and subsequent behaviour have been questioned on methodological grounds (see Elliott, 1993; Vingilis & Coultres<sup>4</sup>). For instance, a common flaw of many studies has been the omission of a randomised control group: without such a group, the effects of advertising campaigns cannot be separated out from the effects of all other factors confounding the results (Vingilis & Coultres, 1990). In addition, whilst the studies provided in the preceding paragraph as supporting the direct role of advertising have

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<sup>4</sup> Although the criticisms made by Vingilis and Coultres (1990) were directed at evaluations of anti-drink driving mass media campaigns, they arguably apply to evaluations of mass media campaigns in general.



included outcome measures of behaviour (or behaviour-related measures such as crash involvement), many studies are criticised for adopting self-report, proximal measures of behaviour such as attitudes and/or intentions (see King & Reid, 1990; Lewis et al., 2007a; Rogers & Mewborn, 1976; Tay, 2002b). Whilst there are theoretical frameworks that have identified intentions as the most proximal determinants of behaviour, empirical evidence has found that intentions do not account for all the variance in behaviour (for further discussion, see Section 4.4.4). Thus, due to the methodological criticisms and equivocal empirical evidence it is likely that the controversy regarding the role of advertising in changing behaviour will persist.

The general consensus from road safety evaluations conducted in Australia, and elsewhere is that mass media campaigns can be effective in reducing road trauma; however, the caveat is typically added that it is difficult to separate out the effects of specific interventions (Newstead, 2006). Others in the road safety field have argued that the debate regarding whether or not advertising can be effective has really shifted to a debate about what type of advertising is more or less effective (Donovan et al., 1999, p. 244). Consistent with this suggestion is the substantial body of literature that has amassed in relation to examining the role and effectiveness of fear in road safety advertisements. This evidence is discussed in Chapter Two.

The view adopted herein is consistent with the suggestion that contemporary research should focus upon identifying what types of advertising approaches are most effective. A main objective of this program of research is to determine what types of advertising approaches are the most effective (persuasive) and for whom. In relation to the role of advertising more specifically, however, arguably the extant theoretical and empirical literature provides support for both the indirect and direct roles. Advertising

can be used both to maximise the deterrent effects achieved by enforcement programs by heightening the driving public's perceived risk of apprehension (Elliott, 1992; Homel, 1988) and it can, at times, work independently to educate and persuade road users to adopt safer behaviour(s) (Koenig & Wu, 1994; Tay, 2004, Tay, 2005a, 2005b; Tay & Watson, 2002). In this regard, it should be noted that the current program of research is focused upon exploring advertising effects in terms of its direct, persuasive function in relation to changes in self-reported attitudes, intentions, and behaviour.

Also of note, this program of research does not maintain that all of the road trauma problem will ultimately be prevented by developing better public education campaigns. Rather, consistent with the WHO objective of identifying the most effective strategies to address road trauma, this research program views advertising as one such strategy commonly utilised and, thus, warranting further investigation to optimise its effectiveness. Indeed, cognisant of systems models of crash causation, such as the Haddon matrix (Haddon, 1972), it is acknowledged that the attempt to address driver behaviours, such as speeding and drink driving, through advertising countermeasures represents a rather narrow focus upon only one of the possible factors and phases of crash causation; specifically, human factors at the stage of crash prevention (Haddon, 1972, 1975). The Haddon matrix adopts a "causal chain" approach to road crash causation (Williams, 1999, p. 15) whereby the occurrence of a crash is examined in terms pre-crash, crash, and post-crash phases and that crashes result from multiple and inter-relating causal factors relating to the road system or environment, the vehicle, and the road user (see Haddon, 1972, 1975).

### *1.5 Chapter Summary*

This chapter has detailed the scope and nature of the road trauma problem with a focus on high risk road users, particularly young males. The contribution of speeding and drink driving was discussed and, thus, the contribution of human factors to road trauma. The discussion of the Haddon matrix highlighted that preventing the “global health crisis” of road trauma will require efforts to address risk factors relating to not only the road user, but also the driving environment, and the vehicle. This program of research focuses upon one specific countermeasure, namely advertising and mass media efforts. The research addresses the contribution of human factors to road trauma and is focused upon the first phase of the Haddon matrix, crash prevention. Although this focus may appear narrow, arguably it is both warranted by and consistent with the WHO’s call to identify the most effective strategies and interventions to prevent road trauma. To elucidate strategies that better persuade individuals (and groups of high risk road users) to adopt safer attitudes and practice in regards to speeding and drink driving could reduce the impact of two of the major human factors contributing to road crashes which could, in turn, have significant, positive implications for global public health.

The next chapter, Chapter Two, provides an overview of the aims and structure of the research program. Given that this dissertation is being submitted by publication, Chapter Two also specifies the contribution of each manuscript to the research aims.



Chapter Two: Overview of Research Program and Related Publications

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### *2.1 Introductory Comments*

Chapter One discussed the role and effectiveness of mass media campaigns as a road safety countermeasure and highlighted the debate surrounding whether advertising functions in a direct or indirect manner. Whilst this debate is likely to continue, it has been suggested that the focus should shift from not whether advertising *is* effective but, rather what *type* of advertising is the most effective (and for whom) (Donovan et al., 1999). Indeed, the overall focus of this program of research aligns with this suggestion. More particularly, the research focuses on identifying what type, or types, of emotional messages are most effective in persuading road users to adopt safer driving-related attitudes and behaviours.

Such emotional messages evoke emotional or affective responses. Such responses are referred to as message-relevant or issue-relevant affect (Dillard & Wilson, 1993). Message-relevant affect is the focus of the current research program as opposed to issue-irrelevant affect or what is more commonly referred to as mood. Mood, compared with message-relevant affect, is a more generalised affective state not associated or caused by the content of the message (Dillard & Wilson, 1993; Jorgensen, 1998). Thus, the current program of research investigates the extent that emotional messages evoke particular emotions (or message-relevant affect) and the subsequent effect that emotion has upon the effectiveness of persuasive messages.

Of the emotional messages utilised within road safety advertising campaigns, negative, fear-based appeals have featured most prominently and have represented a long-standing persuasive strategy of choice in this health context (King & Reid, 1990; Tay & Watson, 2002; Tay, 1999). Fear-based appeals have also featured prominently in campaigns addressing other health issues including smoking and AIDS/HIV (Elliott,

2005; Job, 1988; Tay & Watson, 2002). The reliance upon fear-based messages in health advertising is underpinned by the fact that fear has been long recognised as a powerful motivator of human behaviour (see Donovan & Henley, 2003; see also Dillard, 1994 who discusses Aristotle's reference to fear as a suasive device). Fear, as an aversive affective state, is a state that individuals are highly motivated to avoid (Donovan & Henley, 2003). Thus, when used as a persuasive strategy the implication is that experiencing such an aversive affect as fear will motivate individuals to undertake action to improve their current situation, most desirably, in the direction of the specific recommendations espoused within the message (Maddaux & Rogers, 1983; Witte, 1992a; Witte & Allen, 2000). Moreover, the strategy of engendering fear to motivate behaviour change extends beyond the health advertising context with the use of extreme simulated or real-world "shock tactics" such as taking young adults to visit morgues (Elliott, 2005). Whilst such shocking experiences may have intuitive appeal and some public support, Elliott (2005) argues that there is currently no empirical evidence to suggest that such "shock tactics" have any impact upon behaviour change.

Similarly, in the health advertising context, despite fear-based approaches being frequently utilised and often associated with public support for their efficaciousness (Elliott, 2005), there is inconsistent empirical evidence relating to their effectiveness (see Chapter Three for a detailed review). Much of the contention surrounds the nature of the fear-persuasion relationship or, more specifically, the extent that a particular level of evoked fear corresponds to a change in attitudes, intentions, or behaviour. Given the mixed findings and the contention in the literature, more contemporary research has focused on the extent to which other factors influence the fear-persuasion relationship.



For instance, extant theoretical and empirical literature has identified a key role of the cognitive processing variable of response efficacy (i.e., when defined in terms of being a cognitive processing variable, response efficacy refers to the extent to which individuals perceive a message as incorporating coping strategies and information. Response efficacy, however, may also be conceptualised as a message characteristic; refer to Witte, 1992a, b) and the importance of relevance (i.e., personal vulnerability and susceptibility to a threat) in determining the persuasiveness of emotional messages. Relating to the issue of relevance, research has examined the impact of the third-person effect (TPE) on the effectiveness of the threat-based anti-drink driving and anti-speeding messages (Lewis et al., 2007a). This research suggests that gender moderates the TPE such that males were less likely to regard threat appeals as influencing them personally, relative to other drivers in general. This evidence suggests that fear-based approaches may be less effective with some key, high risk road user groups such as males who have been found to report such messages as having more influence on others than themselves (Lewis et al., 2007a). Given that males represent a high risk group and are often the intended target audience of fear-based messages (Tay, 2002b, 2005), this research has important implications for the overall effectiveness of fear-based approaches. Arguably, the mixed evidence in relation to the effectiveness of fear-based appeals together with the evidence that such appeals may have relatively less influence on males highlights the need to examine other approaches.

Additionally, as is discussed in Chapter Three, the fear appeal literature features a number of methodological limitations and omissions which limit contemporary understanding. For instance, an often cited limitation is the over-reliance on university

student samples. As noted in Chapter Three, this limitation also applies to evidence available in relation to fear-based road safety advertisements.

A number of methodological concerns have also been raised regarding research conducted into the role of emotion and persuasion more broadly. For instance, as is discussed in Chapter Four, a message and its emotional effects are not isomorphic. Thus, to ensure that the persuasive effects of a particular emotion are assessed accurately, it is crucial that individuals' emotional responses be assessed or measured to first ensure that the anticipated emotion is being experienced (see Dillard et al., 1996). Surprisingly, however, measurement of the affective responses experienced and related manipulation checks are not always conducted; rather, there is a tendency for researchers to rely upon a priori assumptions of an appeal's content and assume the manipulated effect is achieved rather than directly measure (and thus check) the intended content (Dillard et al., 1996; Elliott, 2005; Eveland & McLeod, 1999; LaTour & Rotfeld, 1997).

Additionally, there has been a tendency for studies of health persuasion to not always include follow-up measures within their research designs. Furthermore, despite the nature of the applied context in which many health campaigns function, there has been reliance upon measures of intentions rather than collecting follow-up measures of behaviour (including in road safety research, for examples, see King & Reid, 1990; Lewis et al., 2007a; Rogers & Mewborn, 1976; Tay, 2002b). Addressing this limitation in the literature would provide important contributions to the extant literature by ascertaining persuasive effects over time as well as such effects in relation to practically significant outcomes.

Drawing upon empirical and theoretical evidence from the persuasion and emotion literature (this evidence is detailed in Chapter Four), support has been found for

the persuasiveness of positive emotion broadly as well as humour-based health messages more specifically (e.g., Conway & Dubé, 2002; Petty, Schumann, Richman, & Strathman, 1993). Moreover, evidence of a persuasive advantage for humorous appeals (as opposed to non-humorous appeals) addressing the health issues of AIDS/HIV and sunscreen use has been found for males (Conway & Dubé, 2002<sup>5</sup>; Struckman-Johnson, Struckman-Johnson, Gilliland, & Ausman, 1994). Additionally, research has suggested that humour's positive impact upon persuasion improves over time (Lammers et al., 1983). These findings highlight the potential effectiveness of positive emotional appeals for road safety advertising. However, there are gaps in the extant literature relating to positive emotion and persuasion, three of the most notable being: (i) the majority of evidence of the persuasive advantage of positive emotion is based upon emotion operationalised in terms of mood as opposed to message-relevant affect; (ii) there is a paucity of empirical comparisons of positive and negative emotional appeals addressing the same behaviour in road safety specifically as well as adult health behaviours more broadly (Donovan et al., 1995); and (iii) studies are more likely to assess persuasive outcomes immediately after exposure to a message rather than examine such effects over time, which is problematic given that positive appeals may become more effective over time. Such key omissions highlight the need for further investigation of the potential effectiveness of positive emotional appeals in the road safety advertising context.

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<sup>5</sup> Conway and Dubé (2002) reported this effect for individuals high in masculinity and males have been typically reported as being higher in masculinity than females (Bem, 1974).

## *2.2 Aims of the Research Program*

Based on the evidence discussed above, there is a need to further explore (and compare) the persuasive utility of alternative emotional approaches in road safety advertising. Consistent with this need, the main aims of the program of research are to:

1. elucidate the role and effectiveness of negative and positive emotional appeals in road safety advertising;
2. examine the relative influence of such appeals for different groups of road users;
3. explore the effects and interplay of emotion and cognition on persuasion; and
4. address key methodological weaknesses in contemporary fear-persuasion and emotion-persuasion research.

The following section, Section 2.3, overviews the structure and nature of the overall research program. Additionally, given that this PhD is being completed by publication, Section 2.4, demarcates the contribution of each paper to the research aims.

## *2.3 Overview of the Thesis*

Chapter One provided an overview of the scope and nature of the road safety problem. Key contributing factors to road trauma were identified with a particular focus on the contribution of human factors, namely, speeding and drink driving which are the behaviours addressed within the advertising messages of the three studies of the PhD program. In addition, the role and effectiveness of mass media campaigns as a road safety countermeasure was discussed and the debate surrounding whether advertising functions in a direct or indirect manner was highlighted.

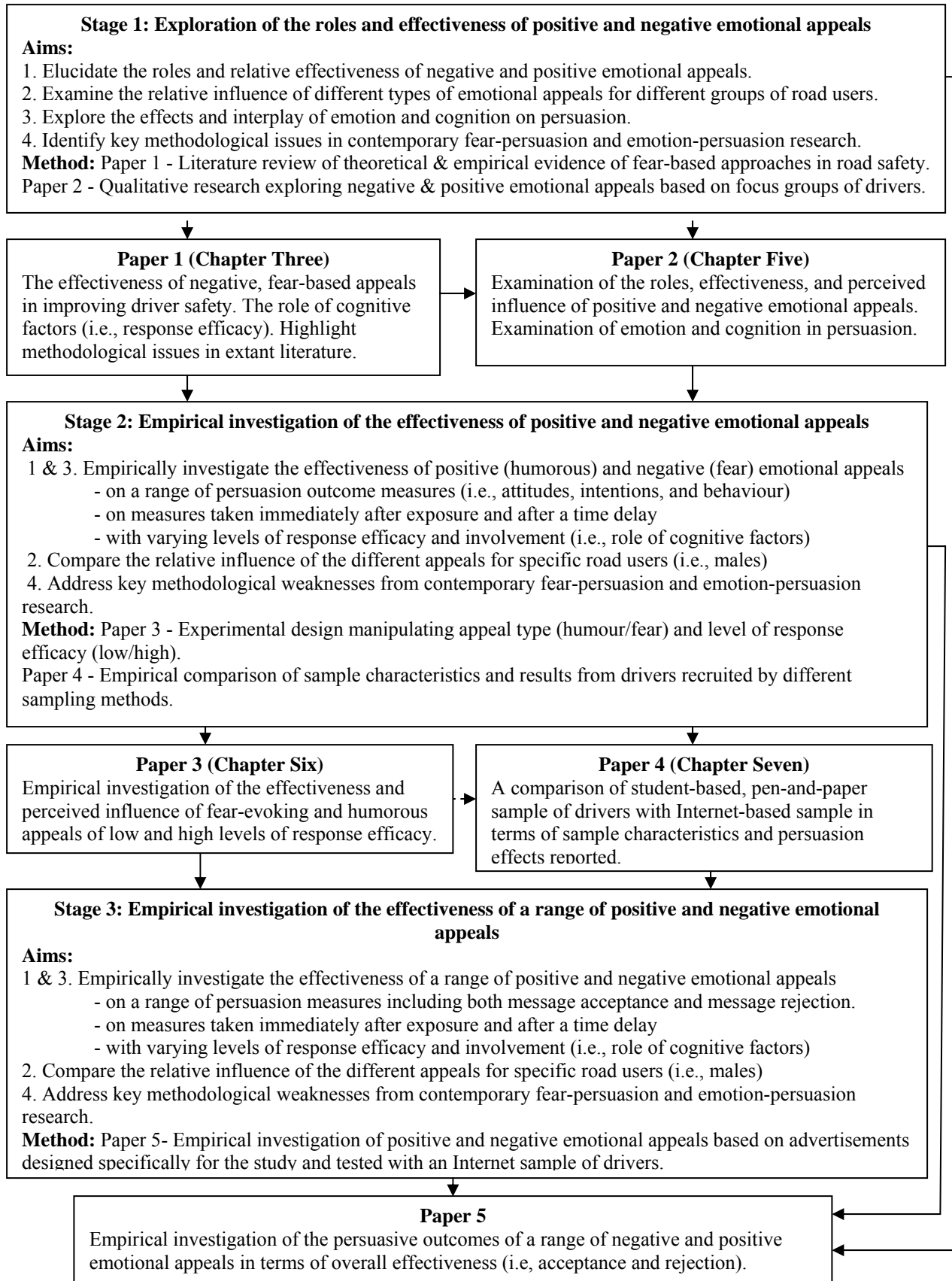
Chapter Three provides a detailed account of the theoretical and empirical evidence relating to the function and effectiveness of fear-based, threat appeals with particular focus on evidence derived from the road safety advertising context. Whilst

representing an introductory chapter functioning to provide detail of theoretical frameworks underpinning this research project, this chapter also represents one of the five papers prepared (and which has been published) for this dissertation.

Chapter Four details the theoretical framework underpinning this dissertation. Given the complexity associated with attempts to persuade individuals to adopt safer driving attitudes and behaviours, a multi-disciplinary framework is adopted. Consequently, the research program has been informed by psychological models of attitude change and persuasion including prominent fear appeal models, a model of health behaviour change, an advertising model of attitude change, emotion theory, and other key constructs from the communication literature such as the third-person effect. Each theory is posited as possessing its own relative strengths and limitations and is best viewed as complementary rather than competing.

Chapter Five, Six, Seven, and Eight represent the papers prepared from the research conducted for the PhD project. To illustrate the manner in which each paper contributes to the overall research aims of the project and the placement of each manuscript in the process, Figure 2.1 is provided. The final chapter, Chapter Nine, provides a discussion of the overall research findings with particular focus on how the findings from each of the studies contributed to informing the project's research aims. Chapter Nine also reviews the strengths and limitations of the research program as well as the theoretical, applied, and methodological implications of the findings.

The subsequent section discusses each paper in terms of its contribution to the research program. Additionally, the publication status of each paper is provided.

Figure 2.1 *Overview of the research process and manuscripts' placement within the process*

#### *2.4 Structure of Research Program and Contribution of the Papers to the Research Aims*

As shown in Figure 2.1, the program of research consisted of three discrete stages. These stages and the role of the papers within these are discussed below. This discussion is followed by a more specific discussion of the contribution of each of the papers to the research aims.

Papers One and Two represent the first stage of the research project and were intended to provide the foundation on which to justify further examination of the roles and effectiveness of positive and negative emotional appeals. Paper One reviewed extant literature on the effectiveness of fear-based appeals in road safety and highlighted some of the inherent difficulties and mixed findings associated with utilising fear as a means to persuade. This review highlighted the need for further examination of other emotional appeals with particular emphasis on the need to identify more effective persuasive approaches for particular target groups. The review also highlighted the significant roles played by the cognitive construct of response efficacy as well as perceptions of personal relevance and involvement with the issue in determining the effectiveness of fear-based appeals. Additionally, the review identified some key methodological weaknesses that exist in contemporary research including the frequent reliance upon university student samples and the tendency for researchers to rely upon a priori assumptions of the emotional content of the messages rather than assess emotional responses elicited in participants.

Paper Two served to gain a rich insight into the perceived roles and relative effectiveness of both positive and negative emotional appeals and, in doing so, demonstrate that each type of appeal could make a unique contribution within a road safety mass media campaign. Also, this paper aimed to show that both emotional and

cognitive components of a persuasive message (and the perceptions individuals have of such aspects of a message) are important to its overall effectiveness. Of specific focus was the provision of information and strategies (i.e., response efficacy) as a cognitive construct and the extent that this construct was regarded as important to emotional appeals in general and not just fear-based messages. Within this Paper, response efficacy was incorporated as a manipulated message characteristic with participants being exposed to messages previously ascertained as having either a low or high level of response efficacy.

Papers Three and Four contributed to the second stage of the research project. Specifically, Paper Three, extending upon particularly Paper Two, aimed to provide an empirical investigation of the effectiveness and perceived influence of positive and negative emotional appeals. Further, it aimed to determine whether high levels of response efficacy functioned in the same way to improve the persuasiveness of the positive humorous messages as it did for fear-evoking appeals. It also examined the impact of differing levels of involvement as well as a respondent's gender on persuasive outcomes. Additionally, the research design enabled a number of key methodological issues to be addressed. More particularly, Paper Four provided examination of two important methodological issues: (i) the validity and reliability of sampling methodologies in health advertising research where the majority of studies have traditionally been based on paper-and-pencil surveys of university student samples; and, (ii) the use of equivalence testing as opposed to null-hypothesis testing methods. The paper examined the extent that the internet may function as a particularly efficacious means of accessing drivers for road safety advertising research. The paper empirically compared sample characteristics and results received from student and internet samples



of drivers who completed respectively either a paper-and-pencil or internet-based version of the same survey. Consequently, this paper served to inform the validity of prior research as well as to inform the choice of sampling methodologies for the subsequent research stage (and documented in Paper Five). Of note, the data analysed within this paper was based upon the data attained for Paper Three.

Paper Five contributed to the third stage of the research project. Representing an important extension upon all earlier papers, this fifth paper addressed issues arising from the previous studies. It provided an empirical comparison of the effectiveness of positive and negative emotional appeals; however, it examined the effectiveness of emotions other than just fear and humour. It utilised advertisements designed specifically (and according to an existing theoretical framework) for the purposes of the research project. Additionally, it extended the definition of message effectiveness to include rates of both message acceptance and rejection and, thus, examined overall effectiveness. Also, it examined the extent to which the key constructs of response efficacy, involvement, and gender influenced the effectiveness of the different emotional messages. Within this paper, unlike Paper Three where response efficacy was a manipulated message characteristic, participants' perceptions of response efficacy were measured and a median split subsequently performed so as to create a measured independent variable comprised of low versus high perceived levels of response efficacy. Finally, similar to Paper Three, the research design of the study reported in Paper Five also enabled a number of methodological issues to be addressed.

#### *2.4.1 Paper One*

This paper provided a comprehensive overview of the extant theoretical and empirical evidence in relation to fear-based, threat appeals with particular focus on the

evidence derived from the road safety advertising context. This paper provided an important foundation on which to build the argument that further exploration of alternative emotional appeals was justified and necessary. This paper highlighted the mixed findings that have been reported as well as the tendency for the fear-persuasion relationship to be influenced by other factors. This paper also highlighted the importance of cognitive components of a message and, in particular, the need to incorporate high levels of response efficacy and the need to be cognisant of the issue of threat and message relevance. Additionally, the review identified some of the key methodological weaknesses that exist in contemporary fear-persuasion literature as previously noted in Section 2.1. Whilst this paper was focused upon reviewing the evidence relating only to negative, fear-based appeals, this paper may be regarded as contributing to all four of the thesis's main aims in that it examined: the role and effectiveness of negative, fear-based appeals; the relative influence of such appeals for different groups of road users; the effects and interplay of emotion and cognition on persuasion; and some of the key methodological weaknesses in contemporary fear-persuasion research.

#### *2.4.2 Paper Two*

This paper, based on qualitative research derived from focus groups of licensed drivers, provided a rich, in-depth investigation of the roles and effectiveness (including identification of for whom the appeals would be effective/influential) of positive and negative emotional appeals in road safety advertising campaigns. The study also examined the importance of emotion and cognition to persuasive health messages. Thus, this paper contributes to the first three of the thesis's main aims. It provided an in-depth examination of the roles and relative effectiveness of negative and positive emotional appeals. Also, it provided information on which type of appeals is effective and for

whom and, thus, examined the relative influence of the different types of appeals for specific road users. Of note, the findings incorporated the concept of influence in terms of the third-person effect and thus also captured the notion of relative influence of self and others referred to in Paper One and which was examined further in Paper Three. Finally, it provided information on the interplay of emotion and cognition by highlighting the importance of providing strategies irrespective of emotional appeal type used.

#### *2.4.3 Paper Three*

This paper extends upon Papers One and Two but, specifically upon Paper Two. Whilst Paper Two provided the in-depth, qualitative investigation, Paper Three provided an empirical comparison. Specifically, Paper Three was based on an experimental design which manipulated the type of emotional appeal (positive/humorous, negative/fear-evoking), level of response efficacy (as a message characteristic where advertisements were assigned to either the low or high response efficacy cell), level of perceived involvement (low, high) and gender. The aim was to examine the relative effectiveness of the different appeals (of varying levels of response efficacy, for males and female participants of different levels of involvement with the issue) in terms of a range of persuasion outcome measures including attitudes, intentions, and behaviour as well as changes in relative effectiveness over time. This latter aspect involved assessment of persuasion outcomes both immediately after viewing the advertisements and after a time delay (of 2 to 4 weeks). The paper also examined effectiveness as relative influence of the different appeals in terms of the TPE (perceived influence on self and others). This paper contributes to all four of the thesis's main aims: (i) it examined the roles and relative effectiveness of negative and positive emotional appeals; (ii) it examined the

relative influence of the different types of appeals for different groups of road users (i.e., males and females); (iii) it provided information on the interplay of emotion and cognition by varying the levels of response efficacy and involvement, and (iv) the research design enabled the paper to address some of the key methodological weaknesses evident in previous research studies.

#### *2.4.4 Paper Four*

This paper informed methodological issues relating to sampling adequacy in health advertising research and the utility of equivalence testing in psychological-based research. This paper, based on the data obtained in Stage 2 (and utilised in Paper Three), provided an empirical comparison of a university student sample of drivers completing a paper-and-pencil survey, a frequently utilised methodology within fear-persuasion research, with a sample of drivers recruited via the internet and completing an internet-based version of the same survey. The comparison entailed examination of the two sample's demographic characteristics as well as equivalence testing of the persuasive outcome measures obtained by the two samples. This paper contributed to the fourth aim of the thesis in that it addressed a key methodological weakness evident in contemporary research, namely, the tendency to rely upon university-student samples. This paper compared the adequacy of different sampling methodologies for obtaining diverse samples of drivers as well as valid and reliable results for health persuasion research. To the extent that the paper provided evidence on the nature as well as the representativeness of the driver samples recruited via the different sampling methods, it functioned to inform the validity of prior research as well as the choice of sampling methodology utilised for the subsequent research stage (and documented in Paper Five).

#### *2.4.5 Paper Five*

This paper extends upon all previous papers. For instance, similar to Paper Three, Paper Five provided further empirical comparison of the issues identified in Paper Two. However, Paper Five extends upon Paper Three by broadening the scope of emotional appeals examined and by examining their effectiveness in terms of acceptance and rejection rates. Also, the choice of sample utilised in Paper Five, namely an internet sample of drivers, was based upon the evidence reported in Paper Four. Specifically, Paper Five was based on an experimental design which manipulated the type of emotional appeal (two negative appeals; one fear-based and the other based on emotions including annoyed/agitated; and two positive appeals; one a pride-based appeal and the other a humour-based appeal including emotions of competence and excitement). These appeals were designed according to the Rossiter-Percy motivational framework and represent, in order, a problem avoidance appeal, a problem removal appeal, a social approval appeal, and an intellectual mastery appeal. Also examined was the influence of other factors including response efficacy (which was conceptualised as either low or high based on a median split performed on participants' perceived ratings on the response efficacy scale), involvement (which, similar to response efficacy, was conceptualised as either low or high based upon a median split performed on participants' perceived ratings on the involvement scale) and gender. Persuasion outcome measures including attitudes, intentions were assessed both immediately after hearing the audio advertisement as well as after a month's time delay. Thus, this paper also contributes to all four of the thesis's main aims: (i) examination of the roles and relative effectiveness of negative and positive emotional appeals; (ii) the relative influence of the different types of appeals for different groups of road users (i.e., males

and females); (iii) it provided information on the interplay of emotion and cognition by varying the levels of response efficacy and involvement; and (iv) the research design enabled the paper to address some of the key methodological weaknesses evident in previous research studies.

### *2.5 Chapter summary*

This chapter has provided an overview of the research program including details of its scope and research aims. The chapter highlighted the overall structure and nature of the research process and how each stage built upon its predecessor. Additionally, given that this PhD is being completed by publication, this chapter also demarcated the contribution of each paper to the research aims.

As noted previously, Chapters Three, Five, Six, Seven, and Eight represent the papers prepared from the studies conducted and that have been published or submitted for publication. Of note, whilst the papers are presented herein according to their published or submitted versions, all papers have had their references added to the one reference list at the end of the thesis document to facilitate the thesis's readability. However, a consequence of doing this is that in some papers the notation of ordered references by the same authors (e.g., Lewis et al.) is not in alphabetical order. The final chapter, Chapter Nine provides a general discussion of the research findings with particular focus on how the findings from each of the studies contributed to informing the project's overall research aims. The strengths and limitations of the research program are also reviewed in the final chapter as are the implications of the findings, both theoretical and applied, and future research directions.

Chapter Three: The Role of Fear Appeals in Improving Driver Safety:

A Review of the Effectiveness of Fear-Arousing (Threat) Appeals in Road Safety

Advertising

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### 3.1 Notes

Taken from Lewis, I., Watson, B., Tay, R., & White, K. M. (2007). The role of fear appeals in improving driver safety: A review of the effectiveness of fear-arousing (threat) appeals in road safety advertising. *International Journal of Behavioral Consultation and Therapy*, 3(2), 203-222. Available on-line from <http://www.ijbct.com/IJBCT-3-2.pdf>.

The candidate is the first author on this published paper and was responsible for all aspects of preparing the manuscript including: reviewing the literature; formulating the ideas and argument(s); and structuring and writing the manuscript. The second, third, and fourth authors are or have been members of the candidate's supervisory team and their contribution to the paper has been supervisory in nature. All co-authors provided permission for this paper to be included in this PhD dissertation.

The manuscript was an invited submission from the journal Editor. All submitted manuscripts (invited or otherwise) must undergo peer review of de-identified manuscripts. It should be noted that this manuscript is the only one included in this thesis by publication submitted to a journal not listed in the Social Sciences Citation Index and, thus, does not have an Impact Factor. Nevertheless, the journal is an international, on-line journal with a readership of close to 3,000. The journal is included in multiple data bases and is available via most University library journal rankings.

Permission has been provided by the publisher of this paper for its inclusion in this PhD dissertation.



### *3.2 Abstract*

This paper reviews theoretical and empirical evidence relating to the effectiveness of fear (threat) appeals in improving driver safety. The results of the review highlight the mixed and inconsistent findings that have been reported in the literature. While fear arousal appears important for attracting attention, its contribution to behaviour change appears less critical than other factors, such as perceptions of vulnerability and effective coping strategies. Furthermore, threatening appeals targeting young males (a high-risk group of concern) have traditionally relied on the portrayal of physical harm. However, the available evidence questions the relevance, and hence effectiveness, of strong physical threats with this group. Consequently, further research is required to determine the optimum way to utilise fear in road safety advertising, as well as the type of threat(s) most effective with different road users.



### *3.3 Introduction*

Risky driver behaviours such as speeding and drink driving continue to represent significant contributors to road trauma, reflecting the perennial involvement of road user behaviour in road traffic injury. Whilst there is a growing body of evidence that traffic law enforcement programs, such as random breath testing and speed cameras, are effective in reducing illegal high-risk behaviours (e.g., Cameron, Cavallo & Gilbert, 1992; Homel, 1988), mass media advertising plays an important role in addressing these behaviours. Firstly, mass media advertising can be used to maximise the deterrent effects achieved by enforcement programs by heightening the driving public's perceived risk of apprehension (Elliott, 1992; Homel, 1988). Secondly, mass media advertising can work independently to educate and persuade road users to adopt safer behaviour(s) and related lifestyles. Consequently, ensuring that advertising approaches are achieving their persuasive goals is paramount.

Of the approaches utilised in road safety publicity campaigns, shock tactics, which aim to evoke strong fear responses in individuals, feature prominently (Tay & Watson, 2002; Tay, 1999). These shock-based, 'fear appeals' or more accurately, fear-arousing threat appeals<sup>6</sup> present individuals with the negative outcomes that they may experience as a result of engaging in the depicted unsafe and/or illegal behaviours. It is expected that the threat will evoke fear at the prospect of experiencing the aversive outcomes, which will in turn motivate the audience to align their attitudes and/or behaviours with those recommended in the message (Maddux & Rogers, 1983; Witte, 1992a). Of the health issues that have utilised threat appeals, road safety is particularly

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<sup>6</sup> The more accurate term is threat appeals because fear is one possible emotional reaction individuals may have in response to a threatening stimulus (Donovan & Henley, 1997).

renowned for its use of physical threats in which drivers and passengers are often shown to be injured and killed as a result of unsafe and/or illegal behaviour (Donovan & Henley, 1997; Rotfeld, 1999; Tay 2005a). Typically, these advertisements, in a graphically explicit manner, portray the crash scene and victims (Dejong & Atkin, 1995).

Despite their widespread use, the use of threat appeals (particularly those that invoke high levels of fear) in road safety remains contentious. For instance, some behavioural scientists as well as health promotion professionals and practitioners advocate the view that it may be best to avoid threat appeals or at the very least to use them with great caution (see Elliott, 2003, Elliott, 2005; Job, 1988; Shanahan, Elliott, & Dahlgren, 2000). Proponents of this view often cite the many inconsistent and mixed findings in the literature as well as the ethical concerns associated with deliberately evoking fear and anxiety in the attempt to persuade as justification of their position (Hastings, Stead, & Webb, 2004; Hyman & Tansey, 1990). In contrast, others have argued that under the correct circumstances the use of fear-arousing communications can be very effective (see Elliott, 2003; Witte & Allen, 2000). Proponents of both views acknowledge that many factors influence the relationship between fear and persuasion; however proponents of the first view are more likely to regard the existence of the many intervening variables as making the use of threat appeals too “risky” (Elliott, 2003, p. 2; Hastings et al., 2004; Hyman & Tansey, 1990) whilst proponents of the latter view are likely to argue that, although generalisations are difficult, understanding the factors that influence the relationship is the key to increasing the likelihood that a threat appeal will be effective.

Thus, the main aim of this review is to examine the role that fear-based appeals have played in improving driver safety; and, more specifically, the use (and effectiveness) of threat appeals in road safety advertising campaigns. Despite what may seem a rather straight forward task, it requires the synthesis of a large body of literature characterised by issues of long-standing debate and inconsistent findings (Ben-Ari, Florian, & Mikulincer, 2000; Bennett, 1996; Boster & Mongeau, 1984; Higbee, 1969; Janis, 1967; Janis & Feshbach, 1953; Elliott, 2003; Haefner, 1965; Insko, Arkoff, & Insko, 1965; LaTour & Rotfeld, 1997; Leventhal 1970; Leventhal & Watts, 1966; Ray & Wilkie, 1970; Sherr, 1990; Sternthal & Craig, 1974; Sutton, 1982; Sutton, 1992, Witte, Berkowitz, Cameron, & McKeon, 1998). Similarly, and of particular note for the current review, is the fact that inconsistent and mixed findings have also been reported in relation to driver-related threat appeals (e.g., Ben-Ari, 2000; Cameron et al., 1993; Cameron & Newstead, 2000; Cameron & Vulcan, 1998; Griffeth & Rogers, 1976; Guria & Leung, 2004; King & Reid, 1990; Kohn et al., 1982; Macpherson & Lewis, 1998; Oppe & Bijleveld, 2003; Rotfeld, 1999; Tay, 1999, 2004, 2005b,c).

Given the sheer volume of research that has examined the fear-persuasion relationship as well as the fact that a number of reviews and meta-analyses; have been conducted previously on the role of fear in persuasion (e.g., Boster & Mongeau, 1984; Dillard, 1994; Higbee, 1969; Job, 1988; Mongeau, 1998; Ray & Wilkie, 1970; Sternthal & Craig, 1974; Sutton, 1982;Witte, 1998; Witte & Allen, 2000), the main focus of this review will be on discussing the findings and limitations of research studies derived from or pertinent to the road safety advertising context. The review begins by highlighting the evolution of thinking that has occurred in relation to the fear-persuasion relationship which is best reflected by the theoretical development in the area.

### *3.3.1 Models of fear and persuasion*

The earliest conceptualisations of the fear-persuasion relationship was based on drive theories which posited that fear appeals would evoke fear arousal and that fear, in turn, would act as a drive to motivate action (Witte & Allen, 2000). Linear and curvilinear views of the relationship between fear arousal and the amount of persuasion are underpinned by drive theories (Dillard, 1994; Witte & Allen, 2000). A number of early studies provided support for a positive linear relationship such that higher levels of fear arousal were the most conducive to persuasive attempts (e.g., Higbee, 1969; Insko et al., 1965; Leventhal & Watts, 1966).

However, other early studies provided evidence of a negative, linear relationship such that decreasing levels of fear (i.e., lower levels of aroused fear) resulted in more persuasion (e.g., Goldstein, 1959; Janis & Feshbach, 1953). Thus, although the linear perspective was parsimonious it was unable to account for these inconsistent findings. Consequently, the curvilinear (or inverted 'u') relationship was proposed as a means of reconciling the inconsistent findings (Janis, 1967; Ray & Wilkie, 1970). This view posited that higher levels of fear enhance persuasion up until some critical point; however, once this critical point is exceeded the level of fear becomes too great and defensive avoidance reactions are likely to result, with subsequent rejection of the message more likely to occur. Some empirical support exists for the curvilinear view with studies indicating that fear is positively associated with both message acceptance and message rejection (Lewis, 2002; Tay & Watson, 2002).

Arguably, such findings highlight not only the particularly ambiguous nature of the fear-persuasion relationship but also a major criticism of the curvilinear view; namely, that empirical tests and refutations of the model are difficult (Leventhal, 1970).

Given that fear is proposed to be positively associated with both message rejection and acceptance, the only explanation as to why one or the other occurs is that, in the case of rejection, the optimal level of fear is exceeded whilst in the case of message acceptance, the optimal level of fear has not been exceeded. Thus, a key construct underpinning the curvilinear view is the notion that some *optimal level of fear* exists (e.g., Janis, 1967).

The location of this point of optimal fear level was believed to be determined by a number of potential moderator variables including situational, content, and dispositional factors (Boster & Mongeau, 1984; Dillard, 1994). The acknowledgement that other factors influenced the fear-persuasion relationship confirmed the complexity and ambiguity of the relationship and subsequently contributed to the development of more complex models to better explain the extant research findings.

Generally, these ‘newer’ models adopted a greater focus on the role of cognitive factors as opposed to a specific focus on the role of fear. One of the first models to do this, the Parallel Response Model [PRM; Leventhal, 1970), maintained that there were two separate paths to persuasion: an emotional ‘fear control response’ and a cognitive ‘danger control response’. Of the two paths, the cognitive response, by controlling the danger or threat, was more likely to promote protective behaviour (i.e., adoption of the message’s recommendations) as opposed to the emotional response which involved controlling the fear by either maladaptive means such as minimising the threat (i.e., rationalising the risk) or rejecting the message. However, the model failed to clearly specify the circumstances under which danger control or fear control responses would be initiated (Witte & Allen, 2000).

The Protection Motivation Theory ([PMT; 1975, 1983) developed by Rogers, featured an even stronger focus on cognitive factors. The PMT<sup>7</sup> incorporates four variables: the perceived severity of the threat; the perceived probability that the threat will occur (often referred to as vulnerability and/or susceptibility); the perceived efficacy of the recommended response (more commonly referred to as response efficacy); and the perceived efficacy of individuals to enact the recommended response (more commonly referred to as message self-efficacy).

More particularly, the four variables function to facilitate one of two cognitive appraisals: severity and vulnerability are regarded as the threat appraisal whilst the variables, response efficacy and message self-efficacy comprise the coping appraisal. Message acceptance is a function of the level of protection motivation produced by the two appraisals; whereby the relationship between variables within each respective appraisal is considered additive whilst the relationship between the two appraisals is considered multiplicative (Rogers, 1983; see also Maddux & Rogers, 1983). For instance, high perceptions of both efficacy and threat produce the most protection motivation and subsequently, the most message acceptance. Of particular note, is the extent that the role of fear is minimised in the model. Specifically, fear is proposed as functioning to influence message acceptance (i.e., persuasion) only indirectly through intensifying the perceived severity of the threat (Rogers, 1983). The model has been extensively utilised and tested (e.g., Floyd, Prentice-Dunn, & Rogers', 2000 meta-analysis of research on PMT). However, whilst the model has been regarded a sound approach to explaining how and when threat messages are successful, it has been

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<sup>7</sup> The more recent version of Rogers' PMT from 1983.



criticised for not providing explanation as to how and why they may fail (Witte & Allen, 2000).

Consequently, Witte developed the Extended Parallel Process Model ([EPPM], 1992a) as a framework to explain not only when threat appeals are successful but also why they fail (Witte, 1992a; Witte & Allen, 2000). The EPPM incorporates elements from some of its theoretical predecessors. Specifically, it incorporates the parallel process first posited by Leventhal's (1970) PRM and the concept of protection motivation including the variables of severity, susceptibility, response efficacy, and message self-efficacy (and the relationships between the variables<sup>8</sup>) from Rogers' (1983) PMT.

Specifically, the EPPM posits that an individual's response to a potentially threatening message involves two distinct appraisals. The first appraisal relates to the degree to which the message is perceived as being threatening. If the individual perceives that they are personally vulnerable to the message, a second, coping, appraisal occurs. In other words, the extent to which they fear the threat, determines whether they are motivated to continue processing the message. In turn, the coping appraisal may initiate a danger control (cognitive) process, a fear control (emotional) process, or the ignoring of a message.

More specifically, if the threat is perceived as high (i.e., perceptions of personal vulnerability and threat severity are high), then there is greater motivation to evaluate the efficacy inherent in the message. If, in turn, efficacy is high (i.e., perceptions that the

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<sup>8</sup> Similar to Protection Motivation theory (Rogers, 1983), the Extended Parallel Process Model (Witte, 1992) maintains that the relationship between variables within each appraisal (i.e., susceptibility and severity in the threat appraisal and response efficacy and message self-efficacy in the coping appraisal) is additive whilst the relationship between the two appraisals is multiplicative.

recommendations of the message and their ability to enact them as high), then cognitive processing and protection motivation is adopted. In other words, adaptive behaviours are adopted and the appeal may be regarded successful. Alternatively, if the threat is perceived as high (i.e., high severity and personal vulnerability perceptions) but perceptions of efficacy are low (i.e., individuals do not believe that they could successfully enact the strategies), then emotional processing occurs whereby an individual will aim to control their fear through maladaptive strategies such as denial or avoidance. The final outcome possible in the EPPM is where individuals simply ignore the message. This outcome is likely to occur in instances where individuals' perceptions of a threat are low because it is regarded as irrelevant. Consequently, there is no motivation for continuing with any processing of the message (Witte, 1992a; Witte & Allen, 2000). It should be apparent from the preceding description that coping appraisal determines whether individuals will be motivated to control the danger of the threat or control their fear about the threat, whereas threat appraisal determines whether individuals continue further with processing the message.

Overall, theoretical development in the fear-persuasion literature has reflected the attempt to provide sound explanatory frameworks for what has become recognised, on account of the inconsistent and ambiguous findings, as an increasingly complex relationship. Of note is the changing nature of the perceived role of fear in the different models. For instance, unlike the PMT in which the role of fear is posited as rather minimal and indirect (i.e., influencing perceptions of severity only), the EPPM proposes a more significant role for fear. Specifically, fear is important for motivating further processing of a message which includes functioning to attain interest in a message (Witte, 1992a). To the extent that individuals are unlikely to be persuaded by a message

that they do not attend to, fear may be regarded as performing an important role in persuasion.

Consistent with this notion, a study of drivers' perceptions of the role (and effectiveness) of different types of road safety advertisements found that fear-based appeals were regarded as relatively more 'attention-grabbing' and 'attention-retaining' than other approaches (Lewis, Watson, White, & Tay, 2007b; see also Tay & deBarros, 2006; in press). A recent meta-analysis (i.e., Witte & Allen, 2000) has identified a small but, reliable correlation between fear arousal and persuasion (i.e., attitudes, intentions, and behaviour) which supports the finding of a previous meta-analysis (i.e., Boster & Mongeau, 1984). Thus, fear does have a role to play in persuasion although the magnitude of the correlation suggests that fear arousal is not the only explanatory factor. Indeed, the more contemporary and most often cited models, namely Rogers PMT and Witte's EPPM, have identified key cognitive factors/processes that influence the fear-persuasion relationship rather than focusing predominantly on the emotion of fear.

### *3.3.2 Some key factors influencing the fear-persuasion relationship*

Although threat appeals had been used in road safety advertising campaigns for over 40 years (Berkowitz and Cottingham, 1960; Griep, 1970; Farmer, 1974; Atkin, 1979; Robertson, 1976; Griffeth & Rogers, 1976; Boyle, 1984), in Australia, the use of such appeals became more prominent in the early 1990's when the Victorian Transport Accident Commission [TAC] launched highly emotive and graphically hard-hitting advertisements depicting scenes of road carnage. The TAC received international recognition for this campaign (Donovan, Jalleh, & Henley, 1999). An implicit assumption underpinning these high threat appeals was that more fear equated to more persuasion (Tay & Watson, 2002). The graphic nature of the advertisements served to

heighten perceptions of threat, and in particular, highlighted the severity of potential outcomes of ‘unsafe’ and/or illegal driving behaviour(s) as well as the possibility that “it could happen to you” (i.e., increased perceptions of vulnerability).

Donovan et al. (1999) examined the reported intentions of a sample of shoppers after being exposed to a range of different advertisement types for different driving behaviours (i.e., speeding, drink driving, fatigue, inattention). The study sought to determine whether the highly emotive, graphic threat appeals, which were more expensive to produce than other advertisement types (i.e., talking heads testimonials), were more effective than their relatively less expensive (and less threatening) counterparts. Overall, the authors concluded that there was no consistent evidence to suggest that the highly expensive, highly emotional threat appeals were the most effective and best option: some high threat appeals performed well whilst others, of equivalent design costs, did not perform as well as their less expensive counterparts addressing the same behaviour (Donovan et al., 1999).

This finding is not that surprising in light of a growing body of research that suggests that increasing perceptions of severity may not be as important to the effectiveness of threat appeals as increasing perceptions of susceptibility (Das, de Wit, & Strobe, 2003; de Hoog, Stroebe, & de Wit, 2005; Henley & Donovan, 2003; Pechmann, Zhao, Goldberg, & Reibling, 2003; Ruiter, Abraham, & Kok, 2001). Whilst meta-analytical evidence has suggested that both severity and susceptibility are positively related with message acceptance (Floyd et al., 2000; Witte & Allen, 2000), ensuring that a threat is regarded as personally relevant by members of the target audience appears to be a key moderating factor (LaTour & Rotfeld, 1997; Rotfeld, 1999).

Moreover, susceptibility has been shown to have greater impact on changes in intentions and behaviour (i.e., change in the direction of greater alignment with recommendations of a message) than fear arousal (de Wit et al., 2005; see also Floyd et al., 2000). This suggests that the key to behavioural change lies in creating susceptible threats as opposed to relying on fear arousal to motivate change. This notion of identifying personally relevant threats for particular target audiences is consistent with market segmentation which suggests that different audiences are likely to respond more or less effectively to particular threats (LaTour & Rotfeld, 1997; Quinn, Meenaghan, & Brannick, 1992; Rotfeld, 1999). Moreover, it acknowledges the fact that individuals fear different threats and to varying extents. Consequently, for a threat appeal to be effective it is essential that the *optimal type of threat* is utilised (Quinn et al., 1992; Rotfeld, 1999).

Whilst, road safety has tended to rely heavily upon physical threats of injury and death (i.e., “commercials of death”; Tay & Watson, 2002), threats may also be social, psychological, or financial (Donovan & Henley, 1997). Evidence suggests that the frequent use of physical threats in road safety advertising may be problematic given that such appeals may not be regarded relevant, and hence persuasive, by those road users most commonly targeted; namely, males and young males. For instance, several studies have found that a strong physical threat (i.e., where death of a passenger was the aversive outcome ‘threatened’ as resulting from illegal and/or dangerous driving) was more effective with female participants than males, with the males reporting significantly less intention to align their future speeding and drink driving behaviour with the recommendations made in the messages (Lewis, Watson, & Tay, 2007a, Tay & Ozanne, 2002). Moreover, the male participants were also more likely to report that the messages would influence the behaviour of other drivers than themselves. Similarly,

another study found that whilst a fear-based advertising campaign effectively reduced drivers' reported intentions to drink and drive, the impact of the campaign was weakest on young males – the main intended target audience for the messages (Tay, 2002b).

These results suggest that, despite often being the intended audience of many advertisements (Tay, 2002b, 2005), young males appear to be less persuaded by appeals involving physical threats, perhaps because they feel less vulnerable to such threats. Consistent with this suggestion, evidence that social threats (e.g., threat of losing licence and the social stigma attached to licence loss) may be an effective threat appeal alternative, particularly for younger individuals (including younger drivers), is accumulating (Kohn et al., 1982; Lewis et al., 2007a; Pechmann & Knight, 2002; Pechmann et al., 2003; Rotfeld, 1999; Schoenbachler & Whittler, 1996; Wiley, Krisjanous & Hutchings, 2002).

Interestingly, whilst evidence derived from the road safety advertising literature suggests that demographic characteristics such as the age and gender influence the effectiveness of threatening messages, such findings are inconsistent with those reported by a recent meta-analysis of threat appeals in health advertising generally. Witte and Allen (2000) noted that, "individual differences do not appear to have much influence on the processing of fear appeals...generally, studies have found no effect on acceptance of fear appeal recommendations due to gender, age, ethnicity, or group membership (Witte & Allen, 2000, p. 602). This discrepancy highlights some of the inherent inconsistencies among studies examining the influence of moderating factors. Furthermore, such evidence attests to the complexity of the fear-persuasion relationship and the care that needs to be undertaken with respect to identifying the specific threat and the target

audience when utilising threat-based appeals (Burnett and Oliver, 1979; Florian & Mikulincer, 1997).

Extending upon this issue, whilst identifying the most relevant threat for a particular audience increases the likelihood that a threat appeal will be effective, it is important to note that this does not necessarily ensure that the target audience will be persuaded. Certain evidence suggests that in some instances threat appeals that are “too relevant” may also be ignored and rejected by those most in need of change (see Higbee, 1969; Phau, 2000; Quinn et al., 1992). Similarly some findings derived from anti-smoking messages have indicated that threat appeals may be more effective with those individuals not engaging in the behaviour and thus those already “converted” to the recommendations espoused in a message (Phau, 2000; Quinn et al., 1992).

Furthermore, evidence from the road safety literature suggests that factors such as sensation seeking and biases are likely to influence perceptions of relevance. For instance, a substantial body of literature attests to the fact that high sensation seekers are more likely than non-sensation seekers to engage in a range of risky and illegal driving behaviours (Beirness, 1993; Jonah, Thiesen, Au-Yeung, 2001; Zuckerman, 1994) which place them at heightened risk of being injured on the road. However, despite their increased risk (and greater personal relevance with the behaviour), evidence derived from HIV/AIDS advertisements (Witte & Morrison, 1995) as well as road safety advertisements (Champness, 2001; Tay, Champness, & Watson, 2004) indicates that threats of injury or death are not effective with high sensation-seeking individuals.

Additionally, a number of psychological biases appear to influence driver perceptions relating to the likelihood of being involved in a road crash or being detected for illegal behaviours. For instance, optimism bias (Weinstein, 1980) as well as a

perception that one is a “better” than the average driver<sup>9</sup> (Delhomme, 1991; McKenna, Stanier, & Lewis, 1991) contributes to the belief that “bad outcomes won’t happen to me (including being involved in a road crash; see Van der Plight, 1996)”. In turn, such beliefs can lead individuals to perceive that a threat is personally irrelevant (see Walton & McKeown, 2001 who found this tendency with speed-related messages).

Indeed, consistent with the belief that “bad outcomes won’t happen to me”, studies examining the influence of anti-speeding and anti-drink driving appeals have found evidence that a third-person effect influences the persuasiveness of such appeals (Lewis et al., 2007b). The third-person effect (TPE) is a perceptual disparity whereby individuals deem a persuasive message as being more likely to influence others in general than themselves (Davison, 1983).

Furthermore, another study exploring individuals’ acceptance of anti-speeding physical threat-based appeals found that, drivers who believed that they drove faster than average tended to accept that the messages were directed at them; whilst, those who believed that they drove slower than the average driver believed that the messages were directed at others (Walton & McKeown, 2001). However, whilst this finding at first may seem encouraging, the study also revealed a perceptual disparity such that most drivers falsely believed that they drove slower than the average driver and tended to greatly exaggerate the usual speeds of others.

These findings highlight the complexity of using threat appeals to modify driver behaviours, as well as the difficulties involved in designing personally relevant threats. Indeed, some researchers have questioned whether optimism biases can be reduced and

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<sup>9</sup> Walton and Bathurst (1998) found support for the Downward Comparison Theory whereby drivers consider other drivers negatively rather than exaggerating their self-perceptions.



that, since physical threat appeals appear not to address these biases, other persuasive approaches may need to be examined (see Harré, Foster, & O'Neill, 2005). Of note, it has been suggested that an important component of designing a threat appeal is to ensure that thorough pre-testing and qualitative research is conducted to examine such aspects as the relevance of the message with the intended target (Ben-Ari et al., 2000; Donovan et al., 1995).

Therefore, on balance, the evidence regarding the role of threat susceptibility and severity (both in general and from road safety studies), suggests that perceptions of vulnerability are more critical to persuasion than fear arousal (e.g., de Hoog et al., 2005). However, threat appeals can backfire even in the case that a personally relevant and severe threat is identified and especially in situations where limited coping strategies are provided (e.g., Witte & Allen, 2000). Indeed, the available evidence suggests that one of the best means of increasing the likelihood that a threat appeal will not backfire is to ensure the inclusion of coping strategies (as discussed previously these are referred to in the literature as response efficacy). Recent evidence has identified efficacy (response and message self-efficacy) as the most significant predictor of a threat appeal's effectiveness (Floyd et al., 2000; Tay & Watson, 2002). The inclusion of coping strategies provides individuals with a potential means of controlling the threat and, as such, if an individual believes that they can effectively enact such recommendations, they are more likely to control the threat or danger (i.e., enact adaptive coping strategies) than deal with it through denial or avoidance of the message (i.e., enact maladaptive coping strategies). In this regard, a number of recent studies support the importance of providing high levels of efficacy not only to increase the level of message acceptance but, to also reduce the likelihood that a threat appeal will backfire (see Rossiter &

Thornton, 2004; Stephenson & Witte, 1998; Tay & deBarros, 2006; Tay & Watson, 2002; Tay et al., 2004; Witte & Allen, 2000).

Moreover, empirical evidence, derived from the road safety advertising context specifically, attests to the importance of efficacy in influencing behavioural intentions (e.g., Rogers & Mewborn, 1976; Tay & Watson, 2002; Tay et al., 2004) as well as longer-term self-reported behavioural change (Tay & Watson, 2002; Tay et al., 2004). The studies which have reported changes in intentions and behaviour (self-reported) were based on threat-based fatigue advertisements (Tay & Watson, 2002) and anti-speeding and anti-drink driving advertisements (Tay et al., 2004). Perhaps, more significantly, Tay and Watson (2002) found that response efficacy was the only significant influence on intentions and behaviour one to two weeks after exposure to the advertisement. The authors concluded that, "...it appears that a key to achieving and sustaining behavioural change lies more in providing the audience with good coping strategies and not simply relying on fear as a source of motivation" (Tay & Watson, 2002, p. 65).

In summary, according to the PMT and the EPPM, severity, susceptibility, response efficacy, and message self-efficacy represent four of the key moderators of the fear-persuasion relationship. Although empirical research has shown each of these factors to be positively related to message acceptance (e.g., Floyd et al., 2000), a growing body of research has highlighted the relatively greater importance of susceptibility and efficacy (e.g., de Hogg et al., 2005<sup>10</sup>; Rossiter & Thornton, 2004; Stephenson & Witte, 1998; Tay & Watson, 2002). Therefore, in order to increase the

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<sup>10</sup> de Hogg et al. (2005) found that changes in intention and behaviour (relating to Repetitive Strain Injury) were solely determined by vulnerability as opposed to severity or response efficacy. This finding is interesting as it attests to the overall significance of vulnerability relative to all other constructs.

likelihood that a threat appeal is effective (and minimise the possibility that it will fail), it must raise perceptions of personal vulnerability and it must incorporate effective coping strategies. However, a myriad of other factors are also likely (and have been found) to influence the effectiveness of threat appeals beyond the factors identified in the PMT and EPPM. The following section will focus particularly on factors likely to influence the effectiveness of threat appeals in the road safety context.

### *3.3.3 Factors influencing the effectiveness of threat appeals in road safety*

As noted previously, road safety advertising campaigns in Australia have long relied upon threat-based appeals as one of the most popular persuasive approaches. However, evidence of a wear-out effect of such advertisements has been reported. For instance, one study based on focus group discussions with drivers found that drivers reported growing increasingly tired of the “shock” approach in road safety advertisements. Further, they suggested that modern society is no longer is shocked by scenes of carnage in such advertisements because such tactics are now more commonplace (Lewis et al., 2007b). Given that it is unlikely that individuals will be persuaded by advertisements that they do not attend to, the possibility exists that such appeals are likely to be less effective overall, irrespective of how well they are designed.

Additionally, factors such as the credibility and realism of road safety threat appeals are likely to be undermined (thus reducing the effectiveness of such appeals) by the fact that, in reality crashes are rare events and that it is unlikely that an individual will be detected for speeding or drink driving on every occasion that they engage in the behaviour. Consequently, threats of being physically harmed and/or being detected for engaging in unsafe or illegal behaviour may come to be perceived as less credible and realistic over time. These factors, in addition to an array of other message characteristics

(see Harrison & Senserrick, 1999) are often varied in threat appeals, which may consequently confound research findings (Job, 1988; Sherer & Rogers, 1984; see also Leventhal, 1970). In addition, while the perceived personal relevance of a threat is often measured, other factors such as credibility and realism are not always measured and may also serve to confound results.

### *3.3.4 Common problems inherent to threat appeal research*

A major methodological problem inherent in many studies in the area is the assumption that threat appeals are generally successful in evoking fear and that this is the only emotional response elicited by exposure to the threat (Dillard et al., 1996; LaTour & Rotfeld, 1997). Evidence has shown that threat-based appeals in road safety advertising do evoke a range of negative emotions other than fear such as guilt and remorse (see Harrison & Senserrick, 1999). However, despite evoking a range of emotions, rarely do empirical studies examine the relationship between these additional emotions and persuasion despite the fact that evidence exists that has shown different discrete emotions do have differential persuasive effects: some inhibit whilst some facilitate persuasion (Dillard et al., 1996; Dillard & Peck, 2000). Most critically, if a study does not take precautions to ensure that a message is indeed fear-evoking (such as measuring the change in levels of fear and/or performing a manipulation check), then any conclusions drawn are likely to be erroneous. In other words, if fear was not successfully evoked, or alternatively, if different emotions other than fear were evoked, then the study is no longer examining the relationship between the emotion of fear and subsequent persuasion.

A related issue highlighted in the preceding point and representing one of the most commonly cited flaws in the fear appeal literature is the misuse of the terms “fear”

and “threat”. Although the terms tend to be used interchangeably in the literature they are conceptually different constructs with fear being a possible *response* to a threatening *stimulus* (Donovan & Henley, 1997; LaTour & Rotfeld, 1997). Consequently, the most appropriate terminology is a threat appeal rather than a fear appeal (Donovan & Henley, 1997; Elliott, 2003; LaTour & Rotfeld, 1997).

Further, as noted previously, fear represents only one type of emotional response that may or may not be evoked in response to a threat (Dillard et al., 1996). Despite this distinction, studies often refer to fear as a stimulus (i.e., a manipulation of different levels of fear is referred to) without actually measuring the level of fear arousal among the participants. Beyond this definitional ambiguity, omissions and a number of methodological limitations exist in the threat appeal literature (generally, as well as in the road safety advertising context more specifically) that have produced gaps in contemporary understanding about the effectiveness of threat appeals.

### *3.3.5 Gaps in current knowledge and limitations in the literature*

*3.3.5.1 Omissions.* It has been suggested that the lack of clear empirical support for the use of threat appeals in road safety advertising is due to both the paucity of studies in general, as well as the mixed and inconsistent findings that have been reported (Ben-Ari et al., 2000; Donovan et al., 1995). Moreover, of the studies that have been conducted many have tended to examine threat appeals that address the behaviour of drink driving (Dillard & Peck, 2000; Kind & Reid, 1990; Lewis et al., in press; Tay, 1999, 2002b, 2005a,b,c; Tay et al., 2004). This criticism is supported by the fact that comprehensive reviews of advertising countermeasures in road safety exist for anti-drink driving messages but not other behaviours (Dejong & Atkin, 1995; Elder et al., 2004; Vingilis & Coultis, 1990).

Nevertheless, it does not mean that the effectiveness of threat appeals in relation to other driving behaviours has not been examined. For example, Ben-Ari et al. (2000) examined reckless driving; Donovan et al. (1999) analysed speeding, inattention, fatigue, and drink driving; Lewis et al. (2007a) and Tay et al. (2004) investigated speeding and drink driving; Rossiter and Thornton (2004) and Tay (2004) examined speeding; and Tay and Watson (2002) studied driving while fatigued.

However, a large part of what is currently known about driving-related threat appeals has tended to be based on the behaviour of drink driving. This is problematic since other evidence suggests that there are important differences between drink driving and other high-risk behaviours and, more importantly, the means of addressing such behaviours are also different (Tay, 2005b). For instance, appeals focusing on behaviour of drink driving have the opportunity to focus on a range of coping strategies (e.g., designated driver, taking public transportation) by contrast, few strategies are available in relation to speeding (i.e., the main strategy to avoid speeding is not to speed; Donovan et al., 1995; Tay, 2005b). Given the importance of efficacy to the effectiveness of threat appeals, it is likely that different behaviours are likely to be influenced by different strategies.

*3.3.5.2 Message rejection ignored.* Message rejection refers to the extent that threat appeals fail. When it is measured, studies typically assess the extent to which individuals report that it is likely that they would defensively avoid, deny, or ignore a threat message (i.e., maladaptive coping strategies are measured; see Lewis et al., 2007a; Tay et al., 2004; Tay & Watson, 2002; Witte, 1994). However, compared with the concept of message acceptance, limited attention has been given to the measurement of message rejection. This tendency is problematic because theoretical (see Witte's EPPM,

1992) and empirical (Tay & Watson, 2002; Tay et al., 2004) evidence has shown that message acceptance and message rejection are not mutually exclusive outcomes.

Furthermore, empirical evidence based on road safety threat appeals addressing driver fatigue (Tay and Watson, 2002) as well as speeding and drink driving (Tay et al., 2004) found that fear arousal was positively correlated with both message acceptance and rejection; however, only the correlation with rejection was significant (Tay & Watson, 2002). The conclusion drawn by the researchers from these studies was that reductions in fear would not adversely influence acceptance rates but, could potentially decrease rejection rates. Therefore, the inclusion of measures of message rejection in addition to measures of message acceptance would provide a more accurate and comprehensive understanding of the effectiveness of a threat appeal.

*3.3.5.3 Measures of message acceptance.* Due to the fact that specific mass media campaigns are designed according to their own respective persuasive goals, message acceptance can be operationalised in a range of ways including: changes in self-reported attitudes, intentions, or behaviour or changes in observed behaviour (see Elliott, 1993). Consequently, studies evaluating the effectiveness of threat appeals are often based on different outcomes rendering comparisons across studies difficult.

Moreover, in road safety advertising research on threat appeals, many studies have relied upon self-reported behavioural intentions as the primary measure of message acceptance (see King & Reid, 1990; Lewis et al., 2007a; Rogers & Mewborn, 1976; Tay, 2002b); although self-reported behaviour has been assessed in some studies (Kohn et al., 1982; Lewis et al., in press; Tay et al., 2004; Tay & Watson, 2002). However, while intentions are a good predictor of behaviour, they are far from a perfect measure. Indeed, recent meta-analytical research has indicated that a medium to large intentional change

( $d = 0.66$ ) leads to a small-to-medium behavioural change ( $d = 0.36$ ) (Webb & Sheeran, 2006). To the extent that road safety and other health-related interventions are implemented in an applied context, outcomes of practical significance are most significant.

Moreover, studies that have included an objective measure of behaviour via the use of a driving stimulator have produced inconsistent findings. For instance, one study found that whilst threat appeals led to less reported intentions of reckless driving they also led to higher driving speed on a simulator<sup>11</sup> (Ben-Ari et al., 2000). In contrast, an earlier study reported that fear arousal "...was highly effective in suppressing braking, steering, and speeding errors" (Griffeth & Rogers, 1976, p. 505). In one of the few studies that examined actual driving behaviour, Tay and deBarros (2006) found that anti-speeding messages displayed on variable message signs induced only a small to moderate change in speeding behaviour on the highway. Consequently, such inconsistent findings make it difficult to draw definitive conclusions.

An additional concern relating to the operationalisation of message acceptance is the self-report nature of many of the measures utilised. Whilst the biases associated with self-reported data are not particular to threat advertising research, because road safety advertising research often requires individuals to report on their engagement in illegal behaviours, it is reasonable to presume that the reported data may be influenced by social desirability biases. Additionally, discrepancies have been found between self-reported behaviour and actual behaviour (Evans et al., 1970).

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<sup>11</sup> These results were found for drivers who scored high in the driving as relevant to self-esteem scale (see Ben-Ari et al. 2000).



*3.3.5.4 Study design and sample issues.* Limitations relating to the design and participant samples of research studies tend to reduce the generalisability of findings. For instance, fear appeal literature in general has been criticised for its over-reliance on student samples (Hastings et al., 2004). The extent that findings may be generalised to the broader population remains largely unknown. Similarly, much of what is known about threat appeals in road safety advertising has been based on studies conducted with student samples (Elliott, 2005; e.g., Dillard & Peck, 2000; King & Reid, 1990; Kohn et al., 1982; Rogers & Mewborn, 1976; Lewis et al., 2007a). Consequently, similar concerns surrounding the generalisability of findings to the general driving public exist (Elliott, 2005).

Also serving to reduce the generalisability of research findings is the fact that most research studies in the fear appeal literature have been based on laboratory studies as opposed to field studies (Elliott, 2005; for an exception see Donovan et al., 1999). Although laboratory studies offer heightened internal validity they do represent rather artificial, contrived settings. This type of setting is particularly troublesome for advertising research because it may force participants to attend to or watch a message that they would not typically watch in their general life (Hastings et al., 2004).

Taking these limitations and omissions into consideration, it is apparent that gaps do exist in contemporary understanding of the extent that fear appeals specifically has been instrumental in improving driver safety. The theoretical and empirical evidence generally suggests that fear itself may be important for capturing attention; however, is not the sole, or even, key factor determining the effectiveness of an advertisement. It has been shown that emotional advertising campaigns are more effective than rational, information-only advertisements (Flora & Maibach, 1990). Thus, it appears that whilst

emotion is an important component of advertisement effectiveness the critical issue is the need to determine which type of emotion is the most effective. Currently, the authors of this manuscript are examining whether other emotions, including more positive emotions and the modelling of safe behaviour (and the positive emotions associated with depiction of such positive behaviour), represent effective persuasive alternatives. The possibility of using more positive reinforcement and rewards in road safety initiatives generally, as well as in advertising more specifically, represents a rather contentious issue. However, it has been suggested and advocated by others in the road safety arena (see Elliott, 1992, 2003, 2005; Job, 1988).

### *3.4 Conclusion*

The prevailing viewpoint among some behavioural scientists and health promotion professionals and practitioners is to avoid threat appeals or to use them with great caution (Elliott, 2003; Elliott, 2005; Shanahan et al., 2000). Similar to the fear-persuasion literature in general, mixed and inconsistent findings have been reported in relation to threat appeals utilized in the road safety advertising context (Ben-Ari et al., 2000). Whilst innumerable attempts have been undertaken to reconcile the disparate findings through identifying key moderating factors and methodological limitations of the available studies, the fact that so many other intervening factors influence the fear-persuasion relationship has lead some to suggest that the use of such appeals is too risky and complicated (Elliott, 2003). The most consistent and definitive conclusions appear to be in relation to the importance, not of fear arousal but, of relevance (i.e, vulnerability) and provision of coping strategies and recommendations that an individual can effectively enact to avoid or prevent a threat from occurring (i.e., efficacy).

Moreover, the concern associated with the frequent use (and preference) of strong physical threats to target young males was highlighted. For instance, it was suggested that, “eliciting fear of personal death may not be always necessarily the most appropriate way to change dangerous behaviour” (Ben-Ari et al., 2000, p. 8; see also Henley & Donovan, 2003). Given that young males represent a high risk road user group yet, appear less influenced by physical appeals intending to target them (Lewis et al., 2007a; Tay, 2002b), this evidence provides perhaps one of the most significant challenges to the effectiveness and continued use of strong (physical) threat appeals in the road safety context. Consequently, it seems more than justified to explore the effectiveness of alternative approaches (which may or may not be threat-based). Any reductions in the road trauma among this high risk road user group would have significant implications not only for road safety but for public health generally.

In conclusion, without doubt, the issue of whether or not to use threat appeals in road safety advertising as well as health advertising more generally, will continue to be contentious and prompt debate among researchers and practitioners. Perhaps, the most sound recommendation for anyone considering the use of threat appeals is to ensure that thorough pre-testing and qualitative research be conducted to examine the relevance of the intended message among the target audience as well as to ensure that it elicits high levels of efficacy and vulnerability.



## Chapter Four: Literature Review of Theoretical Perspectives of the Research

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#### *4.1 Introductory Comments*

This chapter details the theoretical framework that underpins this program of research. The nature of the research topic necessitated the adoption of a multi-disciplinary approach to theory. As Slater (1999, p. 335) maintains “changing behaviors via communication interventions represents an enormous intellectual and practical challenge” that requires cross-theoretical frameworks to fully capture all aspects of the persuasion task at hand in such an applied context. Consequently, the research program has been informed by psychological models of attitude change and persuasion including prominent fear appeal models, a model of health behaviour change, an advertising model of attitude change, emotion theory, and other key constructs from the communication literature such as the third-person effect. Consistent with the view adopted by Slater (1999) and others (e.g., Armitage & Conner, 2000; Witte, 1995 in relation to the Persuasive Health Message framework; see also Fishbein et al., 1992 in relation to the Theorists’ Workshop Model of behaviour change), the different theories informing the basis of the current research are best regarded as complementary rather than competing. Each theory, because it focuses upon different aspects in the persuasion and behaviour change process, brings to the framework its own relative strengths and limitations.

The importance of theory in this applied context cannot be understated. Evidence relating to health advertising generally as well as road safety advertising more specifically has found theoretically-based persuasive messages and campaigns to be more effective than atheoretical campaigns, resulting in greater levels of health-protective behaviours (e.g., Elliott, 1993; Maibach & Parrott, 1995). Moreover, such campaigns are often more cost effective and easier to evaluate (Elliott, 1993; Maibach & Parrott, 1995). Despite this evidence, surprisingly, most campaign development in road

safety is atheoretical; having been designed in the absence of any clearly defined guiding principles (Elliott, 1993). Part of the reasoning for this tendency may relate to the difficulty in identifying the most appropriate theory; however, as advocated in this dissertation and by other researchers mentioned previously, this search for *a theory* may be part of the problem as the issue may be more a case of the need to identify and draw upon appropriate *theories*.

Whilst the theories discussed within this chapter have informed all aspects of the research program, the emphasis of particular studies (and manuscripts) on particular aspects of the theoretical framework are detailed more specifically in the introduction of each empirical chapter (or manuscript). Additionally, given that Chapter Two has extensively reviewed the fear appeal literature, this information will not be replicated within this Chapter.

#### *4.2 The Importance of Emotion to Persuasion*

Aristotle is regarded as having provided the most the most significant and enduring contribution to the study of persuasion. He identified the significance of pathos or the emotions of the audience, for persuasion in addition to logos (the logic or arguments) and ethos (essentially akin to the modern construct of source credibility) (Jorgensen, 1998; Perloff, 1993a). Since Aristotle, many orators and philosophers as well as more contemporary persuasion researchers have echoed similar sentiments of the importance of emotion for persuasion. For instance, Kennedy (1994) cites Cicero as arguing “...For everyone knows that the power of an orator is most manifest in dealing with people’s feelings...” and more recently it has been argued that, “feelings *do* matter” (Edell & Burke, 1987, p. 422) and that “...[they] can exert a powerful impact on persuasion (Dillard & Peck, 2000, p. 490).



In modern advertising practice, it is evident that many attempts in both commercial as well as health messages rely upon emotional appeals to achieve persuasive ends (Dillard & Peck, 2000; Jorgensen, 1998). Surprisingly, however, of the persuasive dimensions of ethos, logos, and pathos, it is the role of emotion in persuasive appeals that is least well known and remains relatively unexplored (Jorgenson, 1998; Nabi, 2002; 2003). This dearth in extant literature exists despite persistent calls by researchers in the attitude, persuasion, and emotion disciplines for the need to further understanding of the manner in which emotions influence attitudes (i.e., persuasion) (e.g., Breckler, 1993; Dillard & Wilson, 1993; Zajonc, 1980).

The current chapter provides a review of the extant literature on the structure(s) of emotion and its role in attitude change. To understand the role of emotion in attitude change, however, it is important to understand first the role of emotion in the structure of an attitude (Petty, DeSteno, & Rucker, 2001). The chapter begins with reviewing the definition and structure of attitudes. Also, whilst attitude change is important, of greater significance, particularly in such an applied health context as road safety, is the extent that attitudes may ultimately influence behaviour (see Job, 1988). Thus, prior to discussing attitude change and the emotion persuasion literature, the chapter reviews the link between attitudes and behaviour and, in particular, two of the prominent models that have investigated attitude-behaviour relations; the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB).

#### *4.3 Attitude Definition and Structure*

Generally, according to more recent definitions, an attitude is best defined as a “psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (Eagly & Chaiken, 1993, p. 1). Adding further clarification

to this definition, Eagly and Chaiken (1993, p.1) note that ‘psychological tendency’ refers to an internal state whilst ‘evaluating’ refers to all classes of evaluative responding which includes cognitive, affective, or behavioural responses. Thus, according to this definition, an attitude develops as a result of an evaluated response. As such, it is only after an individual has responded evaluatively to an entity on an affective, cognitive, or behavioural basis that an attitude is formed (Eagly & Chaiken, 1993, p. 2). Two key aspects to be drawn from this definition are: (i) in incorporating positive and negative feelings (i.e., favour or disfavour) made about an attitude object, the definition highlights the importance of emotion in evaluative judgments (Breckler, 1993); and (ii) in identifying cognitive, affective, and behavioural classes of evaluative responses, one of the more popular and enduring conceptualisations of attitude structure, namely, the multidimensional or tripartite model (Eagly & Chaiken, 1993) is highlighted.

The tripartite model of attitudes posits that attitudes are comprised of three correlated, but distinct components: affect, cognition, and behaviour (Katz & Shotland, 1959; Rosenberg & Hovland, 1960). The affective component consists of feelings, emotions, or moods that a person has towards an attitude object; these can range from extremely positive to extremely negative. The cognitive component relates to thoughts, often and perhaps more accurately conceptualised as beliefs that a person has which associate an attitude object with various attributes. Whilst the behavioural component incorporates a person’s actions with respect to the attitude object, behavioural responses encompass overt actions that an individual exhibits in relation to the attitude object as well as behavioural intentions (Eagly & Chaiken, 1993; Jorgensen, 1998).

Whilst the tripartite model of attitude has empirical support (Eagly & Chaiken, 1993; Jorgensen, 1998), considerable debate tends to surround the behavioural

component of attitudes; and, more specifically, the, apparent prejudgment that a direct link between attitudes and behaviour must exist (Zanna & Rempel, 1988). Wicker (1969) maintained that attitudes were only weakly related to overt behaviour based on an average correlation of .15 found across 42 studies reviewed. Consequently, uniform acceptance of the tripartite model of attitudes does not exist (Farley & Stasson, 2003). Indeed, as will be discussed in Section 3.4.1, theoretical models such as the Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1975) and Theory of Planned Behaviour (TPB; Ajzen, 1985, 1987, 1988, 1991) have been developed to better account for factors that mediate the link between attitudes and behaviour.

In contrast, there appears to be a greater acceptance of and empirical evidence for the notion that attitude, as a global evaluation of an attitude object, consists of the independent influence of affective and cognitive components (e.g., Abelson, Kinder, Peters, & Fiske, 1982; Breckler & Wiggins, 1991; Edwards, 1990). The key implication of this evidence is that, irrespective of whether the tripartite or two-component model of affect and cognition is adopted, there is distinction made between affect and cognition and that both are considered important components of attitudes and, thus, it follows are likely to have important implications for attitude change.

Supporting the importance of the distinction between emotions and cognitions for attitude change, research has examined the impact of matching emotional or cognitive persuasive appeals with affectively- or cognitively-based attitudes appeal (e.g., Edwards, 1990; Edwards & von Hippel, 1995; Fabrigar & Petty, 1999; Millar & Millar, 1990; Petty, Gleicher & Baker, 1991). This research is underpinned by the notion that not all attitude objects will elicit cognitive and affective responses or consist of both components (or all three components if based on the tripartite model; see Eagly &

Chaiken, 1993); rather, individuals' attitudes may be comprised primarily of a particular component. Thus, the issue is whether individuals are more susceptible to a persuasive appeal that matches their initial attitude basis.

Currently, the research evidence regarding the link between attitude bases and message bases is mixed. Some studies have indicated that persuasive appeals are more effective when they match an individual's initial attitude basis such that an affective appeal was more effective for an affectively-based attitude (e.g., Edwards, 1990; Edwards & von Hippel, 1995). In contrast, other studies have found that mismatching persuasive appeals and attitude bases is more effective such that emotion-based attitudes were more susceptible to cognitive-based persuasive attempts and vice versa (e.g., Millar & Millar, 1990). Whilst the results of this research have been inconsistent, it does highlight the complexity of the relations among the components of attitude and that affect and cognition have different influences on attitude change (Farley & Stasson, 2003). As noted previously, although attitude change is important, it is extent that attitude change corresponds to changes in behaviour that is crucially important to improving road user behaviours.

#### *4.4 The Impact of Attitudes on Behaviours*

In order to address the poor correspondence that had been demonstrated in the research between attitudes and behaviour (Wicker, 1969), the TRA (Fishbein & Ajzen, 1975) was developed to explain the psychological processes that mediate attitudes and behaviour (Eagly & Chaiken, 1993). Specifically, the TRA, a model of rational, logical decision making, maintained that the impact of attitudes on behaviour was mediated through the effects of attitudes on intentions and was designed to improve prediction of volitional behaviour (Fishbein & Ajzen, 1975). Its successor, the TPB (Ajzen, 1985,

1988, 1991) whilst also explaining the psychological processes that mediate attitudes and behaviour, was designed to improve prediction of non-volitional behaviour (Ajzen, 1991, 1998, 2001, Ajzen & Madden, 1996).

#### *4.4.1 Theory of Reasoned Action and Theory of Planned Behaviour*

Although not developed specifically to explain health-related behaviours, the TRA and the TPB have been applied extensively to the domain of health behaviour (see Conner & Sparks, 2005; Godin & Kok, 1996). Both of these theories propose that the most immediate precursor to behaviour is intentions or an individual's internal declaration to act. In turn, both models identify two of the predictors of intentions as attitudes and subjective norm. Attitude relates to an individual's internal positive or negative evaluation of the value of performing a behaviour and is determined by the behavioural beliefs that one has about the outcomes expected (e.g., the advantages and disadvantages of performing the behaviour) and the evaluation of the salient outcomes (i.e., how favourable or unfavourable these outcomes are considered to be). Subjective norm refers to the perceived social pressure to perform or not to perform the behaviour and is guided by the underlying normative beliefs related to social pressure from significant referents and the motivation to comply with these referents (Ajzen, 1988; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975).

The TPB was introduced primarily to address a central weakness of the TRA: the TRA assumed volitional control over behaviours without consideration of various other non-motivational factors (e.g., facilitating or impeding factors) that also influenced an individual's ability to perform a particular behaviour. Thus, the TPB was extended through the addition of perceived behavioural control as a predictor of intentions and in doing so, was intended to improve prediction of non-volitional behaviours (Ajzen, 1991,

1998, 2001; Ajzen & Madden, 1986). Perceived behavioural control relates to an individual's perception of how easy or difficult it is to perform a behaviour and is determined by control beliefs (i.e., the perception that an individual possesses the resources and abilities necessary to enact the behaviour). To the extent that an individual believes that they have control over a behaviour, the more confidence they have in their ability to perform the behaviour and, thus, the stronger their intention to perform the behaviour (Ajzen, 1985, 1988, 1991). Also, it was hypothesised that perceived behavioural control could function directly to influence behaviour (Ajzen, 1991, Armitage & Conner, 2001). The addition of the perceived behavioural control has been associated with empirical evidence of the greater predictive utility of intentions and behaviour by the TPB relative to the TRA (e.g., Hausenblas, Carron, & Mack, 1997; Madden, Ellen, & Ajzen, 1992). Moreover, the TPB has amassed a substantial body of supporting empirical evidence in the prediction of non-violitional intentions and behaviours. This evidence has been found in relation to a range of social behaviours (Armitage & Conner, 2001) and health behaviours more specifically (Conner & Sparks, 2005; Godin & Kok, 1996; Hausenblas et al., 1997; and including in the road safety context, as will be discussed in Section 3.4.3).

An issue relating to perceived behavioural control that has been subject to debate in the literature has been the extent that this construct is similar to Bandura's self-efficacy construct (Armitage & Conner, 2001). Bandura's concept of self efficacy has been defined as "the conviction that one can successfully execute (a given) behaviour" (Bandura, 1977, p. 193). Empirical research has indicated that perceived behavioural control and self-efficacy share correlations of similar nature and strength with intentions and behaviour (Armitage & Conner, 2001). However, the issue is raised here given that

self-efficacy also features within prominent fear appeal models, namely Rogers' (1983) Protection Motivation Theory and the more recent, Extended Parallel Process Model (Witte, 1992a). In these theories, the construct features as message self-efficacy and represents both a message characteristic as well as an individual processing variable. As an individual processing variable, message self-efficacy represents one of the two key components of the coping appraisal of a threat; the second component of this appraisal being response efficacy, or the degree to which an individual perceives that a message incorporates information and strategies (Witte, 1992a). Defined, message self-efficacy refers to the extent that an individual perceives that they are able to enact the information and strategies provided in a message (Witte, 1992a). Message self-efficacy and response efficacy have been shown to be relatively stronger predictors of acceptance of a fear-based message than other factors including the emotion of fear (Floyd et al., 2000; see Chapter Three).

Some research has been conducted into the extent that Bandura's conceptualisation of self-efficacy influences the effectiveness of threat-based messages (Champness, 2001). This research revealed that self-efficacy may work through minimising message rejection whereby rejection referred to the extent that individuals reported intentions to avoid a message via strategies such as switching channels and/or ignoring the message (Champness, 2001). However, it is not an intention of the current research to examine the relationship between the constructs of perceived behavioural control, Bandura's self-efficacy, and efficacy as conceptualised within the fear appeal models. Rather, the research program has focused upon response efficacy; incorporating it both as a manipulated message characteristic (see Chapter Six) as well as a measured independent variable based upon individuals' perceived levels of response efficacy (see

Chapter Eight). The research program has sought to highlight the fact that response efficacy, as a message characteristic, represents a message component that advertisement designers can aim to incorporate within a message. Ultimately, however, similar to other message characteristics such as emotion, it is individuals' perceptions that determine whether or not the message functions as intended (i.e., whether it evokes the intended emotions, whether the perceived level of response efficacy corresponds with the intended level of response efficacy). The significance of response efficacy to message effectiveness was highlighted in Chapter Three.

#### *4.4.2 The Theory of Planned Behaviour in the health context*

A large body of literature exists that supports the predictive capabilities of the TPB for a range of social and health behaviours (see Armitage & Conner, 2001; Conner & Sparks, 2005; Godin & Kok, 1996). For instance, Armitage and Conner's (2001) meta-analysis of the TPB attested to the efficaciousness of the model in a range of health and social behaviours (e.g., safer sex, AIDS prevention, dental hygiene, condom use, smoking, exercise, use of investigative teaching methods, blood and organ donation). Specifically, based on 185 empirical tests of the TPB, Armitage and Conner reported that attitudes, subjective norm, and perceived behavioural control, when combined, accounted for 39% of the variance in intentions. Additionally, intentions were found to account for 27% of the variance in behaviour.

A meta-analysis of 56 studies of the TPB in relation to explaining health-related intentions and behaviour specifically also found support for the efficaciousness of the TPB (Godin & Kok, 1996). The health behaviours examined included addictive behaviours (e.g., smoking), health checks (e.g., cancer screenings), eating, exercising, HIV/AIDS, and road user behaviours (e.g., use of seatbelts). It was found that attitude,



subjective norm, and perceived behavioural control accounted for 41% of the variance in intentions, and intentions, in turn, accounted for 34% of the variance in behaviour. Also, of the predictors of intentions, attitudes and perceived behavioural control were most often the significant factors, accounting for most of the variance in intentions.

#### *4.4.3 The Theory of Planned Behaviour in the road safety context*

In the road safety context, support for the application of the TPB in explaining and predicting intentions and behaviour has been found across a diverse range of road user behaviours including: speeding, closely following and overtaking in risky circumstances (Parker, Manstead, Stradling, & Reason, 1992; Parker, Manstead, Stradling, Reason, & Baxter, 1992; Elliott, Armitage, & Baughan, 2003); drink driving and seat belt wearing (Gordon & Hunt, 1998; Sheehan et al., 1996); weaving, cutting across traffic, and overtaking on the inside on a highway (Parker, Manstead, & Stradling, 1995); aggressive driving (Parker, Lajunen, & Stradling, 1998); helmet use amongst school-aged cyclists (Quine, Rutter, & Arnold, 2001), and risky motorcycle rider intentions and behaviour (Watson et al., 2007) .

The results of these studies have highlighted that the relative importance of the different components of the TPB does vary according to the particular driving behaviour being examined. Whilst all the behaviours represent potential traffic violations, not all traffic violations are the same; even when examining a particular type of violation such as speeding across different contexts (Elliott, 2001). With this acknowledgement in mind, the results have generally highlighted the importance of attitude and perceived behavioural control in predicting driving behaviours. In contrast, weaker support has been found subjective norm (for an exception, see Parker, Manstead, Stradling, & Reason, 1992). The importance of attitude relative to subjective norm is not particular to

road safety and has been reported elsewhere (e.g., Armitage & Conner, 2001; Hardeman et al., 2002; Sheeran, Norman, & Orbell, 1999).

Many studies have utilised the TPB and its constructs for the purposes of measuring process and outcome variables as opposed to developing interventions (Hardeman et al., 2002). Consistent with this tendency, the current research program has incorporated the TPB as a means of assessing persuasive outcomes. As will be discussed in the literature on persuasion models (see Section 4.7); the persuasion outcomes generally focused upon in the literature include attitudes (e.g., Elaboration Likelihood Model [ELM]; Petty & Cacioppo, 1986) and intentions (e.g., EPPM; Witte, 1992a). Thus, the TPB with its postulated and empirically-well supported attitudinal, intentional, and behavioural links has provided the important link between attitudinal and intentional change and subsequent behaviour change, made particularly necessary by the applied health context in which this research is based. Moreover, the current research, as noted previously, rather than draw upon the TPB's construct of perceived behavioural control, draws upon the efficacy constructs as conceptualised in prominent fear appeal models (i.e., PMT and EPPM). Thus, whilst providing an important theoretical foundation to the current research in relation to the outcome measures of interest, the TPB, as a complete model is not assessed in the current program of research.

It should be noted that the TPB has been utilised to guide the development of road safety interventions. Indeed, a number of interventions in road safety have been guided by the TPB (e.g., Parker, Stradling, & Manstead, 1996; Sheehan et al., 1996) including guiding the development of advertising campaigns. For instance, the "Foolspeed" campaign in Scotland which aimed to reduce urban speeding behaviour was based on the TPB whereby particular advertisements addressed the components of

attitude, subjective norm, and perceived behavioural (Stead, MacKintosh, Tagg, & Eadie, 2002). Subsequent examination of the campaign's effectiveness provided support for the use of the TPB to guide campaign development and subsequent evaluation (Stead, Tagg, MacKintosh, & Eadie, 2005). The results found changes in attitudes towards speeding such that speeding became perceived as less favourable. Moreover, the TPB constructs were found to explain 47% to 53% of variance in intention to speed and 33 to 40% of variance in self-reported speeding on 30mph roads (Stead et al., 2005).

#### *4.4.4 Limitations of the Theory of Planned Behaviour*

*4.4.4.1 The intention-behaviour gap.* Whilst the TPB represents a sound, empirically well-supported framework, evidence has consistently shown that intentions are not always good predictors of behaviour (Sniehotta, Scholz, & Schwarzer, 2004). Recent meta-analytical research has indicated that a medium to large intentional change ( $d = 0.66$ ) leads to a small-to-medium behavioural change ( $d = 0.36$ ) (Webb & Sheeran, 2006). Given that road safety advertising is implemented in an applied context where outcomes of practical significance are most important, it is necessary to acknowledge the existence of the intention-behaviour gap.

*4.4.4.2 Informing advertisement design.* As previously noted, the TPB has been utilised to guide the development of road safety campaign and has demonstrated positive outcomes (Stead et al., 2002; 2005). However, the TPB was not designed for the specific purpose of guiding the development of health messages. Consequently, the model was not designed with the aim of providing clear guidelines for the development of message content (Slater, 1999; Rossiter, Donovan, & Jones, 2000). Consistent with this criticism, Quine et al. (2001) utilised both the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1986) and TPB in the design and subsequent examination of the effectiveness

of an intervention they designed to increase helmet use amongst school age cyclists. These authors argued that, whilst the TPB was essential in identifying salient beliefs underpinning helmet use (or non-use) that could be targeted in an intervention, the TPB did not specify how to choose arguments to include in the messages to induce an enduring change in beliefs. Thus, the ELM, which provided important insight into the persuasion process, was necessary.

*4.4.4.3 Affective factors.* Another limitation of the TPB of particular significance to the current research program is that it does not provide a clear delineation of the role of emotion in subsequent intentional and behavioural change. Indeed, the model has been criticised for its exclusion of an affective processing component (Ajzen, 1991). Research has demonstrated that improvements in the predictive capability of the TPB can be achieved through the addition of the affective construct, anticipated regret (e.g., see Newnam, Watson, & Murray, 2004 in relation to speeding in personal and work vehicles).

Thus, whilst acknowledgement of the first limitation is necessary for the current research program, the latter two, although related to the current research, do not function to limit aspects of the research. Rather, the theoretical framework of the current program of research was strengthened through acknowledgment of these two limitations and the incorporation of additional theories to better address these issues and thus complement the contribution of the TPB. These frameworks include the Extended Parallel Process Model (Witte, 1992a; see Chapter Two) as well as the Elaboration Likelihood Model (Petty & Cacioppo, 1986; see Section 3.7.1) and the Rossiter-Percy motivational model (Rossiter & Percy, 1987; 1997; see Section 3.7.2).

#### *4.5 Definitional Issues relating to Positive and Negative Appeals*

It is important to provide clarification of three issues relating to definitions utilised and the focus of the current research in relation to the type of emotion being examined. First, some researchers have drawn distinctions between the terms emotion, affect, and feelings or have questioned the definitional consistency between these constructs (Guerrero, Andersen, & Trost, 1998; Holbrook & O'Shaughnessy, 1984; Sjöberg, 2006). However, in the current research program, similar to other research (e.g., Burke & Edell, 1989; Dillard & Peck, 2000, 2001; Jorgensen, 1998) the terms are treated as synonymous and, thus, used interchangeably.

Second, it is important to note that the current program of research is focused upon a particular type of affect, namely, message-relevant affect. Message-relevant affect, also known as advertisement-induced affect (Dillard & Meijnders, 2002; Dillard & Peck, 2000, 2001), refers to affect that is evoked in direct response to an attitude object and is part of the communication itself (Dillard & Wilson, 1993; Jorgensen, 1998). It may be contrasted with message-irrelevant affect, or what is more commonly referred to as mood. Mood is considered a more generalised state of affect not associated or caused by the content of a message but rather reflects a general reaction to the world at large and that is not particularly focused (or aware) of what caused or triggered it (Burke & Edell, 1989; Dillard & Wilson, 1993; Jorgensen, 1998). Mood is also considered more longer-lasting than its message-relevant counterpart with the latter regarded as a rather transient affective response (Monahan, 1995; Nabi, 1999; Schwarz & Clore, 1996).

Further, it is important to note that a message and its emotional effects are not isomorphic (Dillard & Meijnders, 2002). Although there should be some degree of correspondence between the structure and content of an emotional message and the

emotions it subsequently evokes it (Flora & Maibach, 1995), is important to acknowledge that it is the viewers' subjective experience of emotion which may or may not be consistent with the structure and content of a message, that determines the emotionality of a message (Dillard & Meijnders, 2002). This issue highlights the importance of assessing participants' emotional responses through the means of manipulation checks rather than rely upon a priori assumptions of a message's content (see Dillard et al., 1996; Eveland & McLeod, 1999).

Third, irrespective of the conceptualisation of the structure of affect adopted, a commonality between all views is the positive-negative valence dimension (Dillard & Wilson, 1993). Even the least parsimonious approach which advocates focus on specific, discrete emotions, such discrete emotions may be (and are commonly) classified as either positive or negative (e.g., Dillard & Peck, 2000, 2001; Nabi, 2002). Thus, this valence dimension, together with the identification of message-relevant affect, highlight the focus of the current program of research upon positive and negative message-relevant affect.

However, it is important to note that definitional inconsistency has surrounded use of the terms positive and negative in relation to persuasive appeals (Henley, Donovan, & Moorhead, 1998) and this inconsistency can be evidenced also in the road safety advertising literature (Donovan et al., 1995; see also Elliott, 1993). This ambiguity has evident implications for the ability to generalise findings across studies and has most likely contributed to the gap in literature as to when it is best (e.g., for which behaviours and/or for whom) to utilise either a negative or positive appeal (Donovan et al., 1995). For instance, in addition to positive and negative emotional appeals (the focus of the current research), the terms positive and negative have also

been used for appeals defined in relation to, for example,: (i) message framing effects; (ii) offering of rewards or punishments for desired or undesired behaviours; and (iii) motivations.

#### *4.5.1 Message framing effects*

Prospect theory was originally developed for understanding of risk-related decision making and has become increasingly applied to persuasive health messages (see Kahneman & Tversky, 1979). According to the framing hypothesis of prospect theory, messages containing equivalent content can be framed either to focus upon the possible benefits or advantages (i.e., gain-framed message) of engaging or the possible costs or disadvantages (i.e., loss-framed message) of not engaging in a “safe” behaviour (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981; 1992). Such framing will differentially influence behaviour-related decision-making by altering the way in which individuals cognitively process the information in the message (Detweiler et al., 1999; Kahneman & Tversky, 1979; Rothman & Salovey, 1997; Tversky & Kahneman, 1981, 1992).

Broadly, evidence derived from a large number of studies on the effects of message frame in relation to the promotion of health behaviours has been mixed (e.g., Lauver & Rubin, 1990; Meyerowitz & Chaiken, 1987; Rothman & Salovey, 1997). Consequently, research has tended to examine the extent that other factors influence the effectiveness of the different frames. For instance, distinction has been made between illness detection (e.g., undertaking a breast self-examination, gum disease protection) and health prevention (e.g., sunscreen use, undertaking regular exercise) behaviours. Specifically, gain-frames have been found to be more effective for health-prevention behaviours (e.g., Detweiler et al., 1999; Robberson & Rogers, 1988) whilst loss frames

have been found to be more effective for illness detection behaviours (Meyerowitz & Chaiken, 1987; Rothman, Salovey, Antone, Keough, & Martin, 1993).

Also, the involvement with the issue in the message has been shown to moderate the relative effectiveness of the different messages (Maheswaran & Meyers-Levy, 1990; Millar & Millar, 2000; Rothman et al., 1993). Specifically, the evidence suggests that, the more an individual is involved with a message's issue, the more they are likely to process the message and, thus, the more likely that message framing effects are likely to occur. The identification of the involvement construct in the message framing literature aligns with the importance of the construct in prominent persuasion models, namely the Elaboration Likelihood Model (Petty & Cacioppo, 1986).

In relation to promoting safe driving behaviours more specifically, limited empirical research is available in relation to message framing effects (Millar & Millar, 2000; for an exception, see Christophersen & Gyulay, 1981). However, of the evidence that is available, the findings reflect the preventive nature of the behaviours such that gain-frame messages have been found to be relatively more effective for the increased performance of safe driving behaviour (Millar & Millar, 2000) and the use of child-car restraints (Christophersen & Gyulay, 1981). Moreover, of particular note, Millar and Millar (2000) highlighted the importance of the involvement construct; specifically, they found that individuals who were more involved with the issue of safe driving behaviour were more likely to report stronger intentions to perform a range of different driving (and driving-related) behaviours (e.g., 10mph the speed limit, wearing seat belts, following too closely) after being exposed to gain- as opposed to loss-frame messages. The authors suggested that their results highlighted that higher involvement increased the systematic processing and that the positively framed information was more effective



than negatively-framed information in promoting cautious driving behaviour (akin to the advantage of gain-frames for the promotion of health-prevention behaviours).

Thus, whilst there is a paucity of empirical evidence based on road safety advertising messages specifically, the available findings are consistent in their support for gain-framed messages in the promotion of more cautious, “safe” driving behaviours. These findings challenge the traditional suggestion that road safety advertising is best based upon loss- rather than gain-framed messages (Donovan et al., 1995).

#### *4.5.2 Offering of rewards or punishments for desired or undesired behaviour*

A fundamental tenant of learning theory is that behaviour is learned and altered over time depending on the types of effects it produces and the types of cues that precede it. In other words, the future likelihood of any behaviour is increased or decreased by the type of consequences that follow the behaviour. More specifically, behaviour may be suppressed or decreased via punishing consequences. Punishment may result either through the addition of a negative, aversive stimulus or through the removal of a positive, reinforcing stimulus. In contrast, behaviour may be strengthened or increased via reinforcing consequences. Reinforcement may result either from the addition of a positive, reinforcing stimulus or the removal of a negative, aversive stimulus (see Baldwin & Baldwin, 2001). Moreover, learning may occur vicariously through the observation and modelling of others (Bandura, 1977; 1986). It occurs when individuals learn new responses not by directly experiencing positive or negative outcomes but by observing the outcomes of others’ responses.

Broadly, according to social learning principles, mass media road safety campaigns may model unsafe behaviour coupled with either aversive consequences (e.g., risky driving results in a crash) or the removal of positive consequences (e.g., risky

driving results in licence loss and loss of freedom to drive). Alternatively, such campaigns may model safe driving behaviour resulting in either rewarding consequences (e.g., safe driving results in arriving safely at one's destination) or avoidance of negative consequences (e.g., safe driving results in avoidance of a speeding fine). Although learning theory may apply directly to actual behaviour, when advertisements model the relevant behaviours and the appropriate reinforcers and punishers, attitudinal and behavioural change may occur due to vicarious learning (Donovan et al., 1995).

Thus, according to learning theory, both the reinforcement of positive behaviour and the punishment of negative behaviour should produce the desired result; an increase in positive, safer behaviour. However, the modelling of positive behaviours and the associated rewards has not been a common approach in road safety advertising (Donovan et al., 1995). The possibility of using more positive reinforcement and rewards in road safety initiatives generally, as well as in advertising more specifically, represents a rather contentious issue with a long-standing belief that negative approaches are best suited to road safety (see Donovan et al., 1995). However, some notable road safety researchers have advocated greater use of positive approaches in the road safety advertising arena (see Elliott, 1992; 2003; 2005; Job, 1988). Perhaps, not surprisingly, given the limited extent that reinforcement and reward are utilised in road safety, Donovan et al. (1995) has noted that no empirical comparisons of the effectiveness of the modelling and reward of positive behaviour versus the modelling and punishment of negative behaviour have been conducted.

#### *4.5.3 Motivations*

Positive and negative may also be used to refer to the motivations that underpin behaviours (Fennell, 1978; Henley et al., 1998). Rossiter and Percy (1987, 1997;

Rossiter, Donovan, & Jones, 2000) proposed that five negative and three positive motivations energise all behaviour. According to Rossiter and Percy, negative motivations relate to actions that are taken to solve current problems or to avoid future problems, whilst positive motivations relate to actions taken to experience an enhanced emotional state. These respective actions are, therefore, encouraged and maintained via negative reinforcement and positive reinforcement, respectively (see Donovan & Henley, 2003; Rossiter et al., 2000). The full motivational model also includes a role of emotion and, thus, is discussed in a subsequent section on persuasion and emotion theories (see Section 4.7.2). However, the key aspect to note at this time is that this motivation classification highlights that it is necessary to determine which motive (either negative or positive in origin) is primary for a particular behaviour and to target these in health promotion messages (Henley & Donovan, 2005).

Donovan (1995) conducted a wide ranging review of the literature to determine what road safety researchers and practitioners considered to be the main motivators of risky and/or illegal driving behaviour(s) and safe and/or legal driving behaviour(s) (see also Donovan et al., 1995). The results of this review suggested that the adoption of safe (or compliant) driving is influenced mostly by negative motivations (e.g., one seeks to avoid being injured/killed in a road crash and thus does not speed/drink drive). In contrast, positive motives commonly underpin risky (or non-compliant) driving behaviour (e.g., one seeks to experience more of the thrill of driving fast and arriving early at one's destination) (see Donovan et al., 1995). Consequently, Donovan (p. 23) concludes that, "an analysis of violators' motives for compliance and non-compliance strongly supports an emphasis on punishment of non-compliance rather than rewards for compliance". Consistent with these motivations, road safety advertising relies mostly

upon appeals to negative motivations. Thus, according to the motivation-based definition of the positive-negative dichotomy, the suggestion is that negative rather than positive approaches are likely to be more effective in the road safety advertising context.

Although the different positive and negative definitions discussed above have been referred to separately, it is important to note that there is considerable overlap between them (Donovan et al., 1995). Overlap between these definitions and the one adopted by the current research program in relation to positive and negative emotional appeals also exists. For instance, gain- and loss-framed messages are more likely to be associated with positive and negative emotions, respectively (e.g., Wegener, Petty, & Klein, 1994). Similarly, in relation to the positive and negative distinction based on rewards and punishment, depiction of the desired behaviour(s) is typically followed by a favourable outcome and the experiencing of positive emotions whereas the depiction of undesirable behaviour(s) is continually accompanied by the depiction of an aversive outcome and, thus, likely to evoke negative emotions (Donovan et al., 1995). Finally, as mentioned previously, the Rossiter-Percy framework incorporates a link between motivations and appropriate emotions (Rossiter & Percy, 1987, 1997; Rossiter et al., 2000).

Thus, there are two key aspects to be drawn from the different definitions of positive and negative appeals. First, whilst different studies have focused on different definitions of positive versus negative appeals, considerable overlap is evident. For example, whilst a study may explicitly aim to examine the relative effectiveness of loss and gain-frame messages, it is important to acknowledge that such messages are also likely to manipulate other factors such as the types of emotions that are experienced and the nature of the behaviour modelled. To improve the generalisability of research studies

as well as the reliability of research findings relating to positive and negative appeals, it is necessary for studies to identify explicitly at the outset definition of the positive-negative appeal dichotomy is being adopted. Consistent with this suggestion, the current program has defined clearly the focus on positive and negative message-relevant affect. To highlight the focus on emotions and emotional appeals, the terminology adopted in this thesis (including manuscripts submitted or published) is to refer to the appeals as positive or negative *emotional* appeals rather than simply positive or negative appeals. Arguably, more widespread adoption of this terminology may assist in reducing some of the definitional ambiguity.

Second, irrespective of the definition adopted, negative as opposed to positive approaches have been favoured in the road safety advertising context. This tendency has continued despite the calls for the greater use positive approaches as well as evidence suggesting that positive approaches may represent a persuasive alternative to negative approaches. The current research seeks to provide a significant contribution to the existing literature by extending the evidence available on the relative effectiveness (persuasiveness) of positive and negative emotional appeals in the road safety advertising context.

#### *4.6 Structure of Affect*

Dillard and Meijnders (2002, p. 310) note that, “conceptions of affect are nearly as diverse as emotional life itself”. The number of conceptualisations are perhaps not that surprising given that over 200 emotion words have been identified (Shaver, Schwartz, Kirson, & O’Connor, 1987). Cognisant of this issue that numerous conceptualisations currently exist, this section reviews two of the dominant views most relevant to the persuasion literature as have been regarded by others (e.g., Huang, 1997).

Specifically, the review focuses upon the bipolar valence model and the discrete emotions model (see Guerrero, Andersen, & Trost, 1998, for a review of further perspectives).

#### *4.6.1 Dimensional approach: The bipolar valence model*

Representing the most parsimonious approach to explaining the structure of affect, the bipolar valence model posits that affect may be conceived as being upon a single continuum of valence from positive to negative (Guerrero et al., 1998; Dillard & Meijnders, 2002). Given its parsimony, it is perhaps not surprising that some have advocated their preference for the adoption of this approach (e.g., Green, Salovey, & Truax, 1999). A substantial body of empirical literature examining the emotion-persuasion relationship has been based upon the bipolar valence model (Dillard & Meijnders, 2002; e.g., Worth & Mackie, 1987). Much of this evidence has been derived from studies based on the ELM. Typically, these studies have focused predominantly upon positive affect with comparisons of positive affect with neutral affect and positive with negative affect (Dillard & Peck, 2000; e.g., Worth & Mackie, 1987; Petty et al., 1993). However, the affect examined in such studies has been affect defined as mood (i.e., issue-irrelevant affect) as opposed to issue-relevant affect (Dillard & Meijnders, 2002). Much of this evidence has shown that positive mood may have advantageous effects for persuasion and attitudes whilst negative mood tends to be associated with reduced persuasion and less favourable attitudes (e.g., Petty et al., 1993; see McGuire, 1985; Petty, Gleicher, & Baker, 1991, for reviews). It should be noted that there are exceptions to this finding (e.g., Martin, Abend, Sedikides, & Green, 1997).

Underpinning the bipolar valence model is the general or global perspective of affect (see Dillard et al., 1996; Dillard & Peck, 2000; Huang, 1997). This perspective

maintains that, because there is underlying similarity between the different types of emotions of a particular valence (e.g., positive or negative), a general/global feeling (either positive or negative) emerges and, thus, there is no need to refer to unique, specific emotions. Empirical support of this general view of affect has been found based on affective responses to advertising messages, providing support for the utility of the model in relation to message-relevant affect. For instance, Edell and Burke (1987) and Burke and Edell (1989) factor analysed various negative affective responses and found that they loaded on a single factor. Additionally, Watson and Clark (1992) suggested that the valence perspective (i.e., a general negative affect factor) accounted for twice as much variance as any of the specific negative emotions that underpinned the global negative affect (i.e., fear, guilt, sadness, and hostility). Whilst research has examined the negative emotions that may load together to provide a general view of negative affect, limited evidence is available that has examined what (and if) particular positive emotions may load together to form a general view of positive affect. Thus, there is need to examine further the general view of positive issue-relevant affect. This suggestion highlights that an important gap for research to address would be to provide a comparison of the persuasiveness of positive and negative message-relevant affect. Consistent with this omission in the literature, Study Two (as detailed in Chapter Six), compares the effectiveness of fear-evoking and humorous advertisements in terms of the broad negative and positive feelings experienced by respondents.

Whilst there has been empirical support for the adoption of the general view (of negative affect), Huang (1997) compared the effectiveness of the general view of negative affect with the more discrete view of negative emotions that takes into account the separate and differential effects of specific emotions. Specifically, Huang compared

models in terms of their parsimony and precision of estimation for the variance explained in attitude towards an advertisement. Whilst both models significantly predicted attitudes, the variance explained in the attitudes did vary. Specifically, Huang found that the discrete approach explained almost double the amount of variance as the general view. Consequently, Huang suggested that, despite the loss of parsimony in adopting the more discrete approach, persuasion research needs to consider the different types of affective responses generated in response to an advertisement and the subsequent effect that each has on persuasion. This evidence provides strong support for the second of the two views of affect structure: the discrete emotions perspective.

#### *4.6.2 The discrete emotions perspective*

As noted above, the discrete emotions perspective is the least parsimonious of the different affect structures (Dillard & Meijnders, 2002; Huang, 1997). However, the view that affect is structured in terms of a number of specific and discrete emotions is supported theoretically by several prominent models of emotion (e.g., Ekman, 1992; Izard, 1971; Lazarus, 1991; Tomkins, 1963). These models, although unable to reach consensus in relation to the exact number of emotions that should be considered discrete, do contend that a core set of basic and distinguishable emotions exist (Guerrero et al., 1998). For instance, Izard (1971) proposed the greatest number with 10 basic emotions including; joy, surprise, sadness, anger, disgust, contempt, fear, shame, shyness, and guilt. Moreover, the models differ in relation to what features they posit distinguish between the emotions. Nabi (2002) overviews the different definitions of emotion and identified that five components represent the ways in which discrete emotions differ. Specific emotions provide a unique: (i) cognitive appraisal or evaluation of a situation;



(ii) physiological component of arousal; (iii) motor expression; (iv) motivational component; and (v) subjective feeling state.

In relation to evidence of persuasion of discrete emotions, in addition to the findings of Huang (1997) cited previously, a growing body of empirical evidence has provided support for the discrete emotions view. This evidence has indicated that: (i) emotional message are more likely to evoke multiple emotions as opposed to a single emotion (Dillard & Peck, 2000; Dillard et al., 1996); (ii) the emotions evoked may be both “intended” emotions based on the structure and content of the message as well as “collateral” (or unintended) emotions (Burke & Edell, 1989; Dillard et al., 1996; Dillard & Meijnders, 2002; Edell & Burke, 1987); (iii) the different emotional responses have separate and differential impacts upon persuasion (Dillard et al., 1996; Dillard & Meijnders, 2002; Dillard & Peck, 2000); and (iv) depending on whether an emotion was an intended or unintended response, its persuasive effects may vary. For instance, anger, when evoked as an intentional emotion, has persuasive effects, yet, when evoked unintentionally as a collateral emotion, has been shown to have dissuasive effects (Dillard et al., 1996). Consequently, some have argued that the discrete emotions perspective, although least parsimonious, is best suited to furthering understanding of the persuasive impact of affect (DeSteno, Petty, Wegener, & Rucker, 2000; Dillard & Meijnders, 2002).

Whilst the discrete emotions view continues to amass support in recent persuasion literature, an evident gap in the extant literature is that the focus has primarily been upon discrete, negative emotions and, in particular, fear as the large body of theoretical and empirical evidence relating to fear-based messages attests (see Chapter Two). Although a growing number of studies have begun to examine other negative

emotions, such as sadness, anger, and guilt (e.g., Coulter & Pinto, 1995; Dillard & Peck, 2000), there tends to be relatively less research on positive discrete emotions (Nabi, 2002). This tendency is in direct contrast to the body of empirical evidence relating to the bipolar view of affect which has predominantly focused upon affect defined as positive mood. Although relatively less evidence exists in relation to positive discrete affects than negative discrete affects (Nabi, 2002), evidence for the differential effects of discrete positive emotions such as pride, happiness, and contentment does exist (e.g., Dillard & Peck, 2001).

Whilst the current research program does not include a direct test of a range of discrete emotions *per se*, it does draw upon this perspective and, in particular, the acknowledgement that emotional appeals are likely to evoke multiple emotions. Thus, the empirical test examined in Study Three (Chapter Eight) compares positive and negative appeals that each evoked different emotional responses in relation to a range of persuasive outcomes.

In summary, the evidence relating to the structure of affect has highlighted important gaps in the extant literature relating to positive message-relevant affect and how it may compare with negative message-relevant. First, studies adopting the bipolar valence model of affect, although focusing upon examining the persuasive effects of positive affect, have examined positive affect in terms of positive mood. Thus, given that mood and emotions evoked directly from exposure to a message represent different affective states (Nabi, 1999), research is necessary to examine the extent that the persuasive effects of positive mood may generalise to positive message-relevant affect. Second, the research based upon the discrete emotions perspective, whilst commonly

examining message-relevant affect, has been based upon negative emotion and, in particular, fear.

#### *4.7 Models of Attitude Change and the Role of Emotion*

Over recent decades, two models of attitude change, the ELM (Petty & Cacioppo, 1986) and the heuristic-systematic model (Chaiken & Eagly, 1983), have dominated research on persuasion. Given that much of the recent evidence on the role of emotion in attitude change has been based upon the ELM, the focus of this review is upon the ELM.

##### *4.7.1 The Elaboration Likelihood Model*

The ELM proposes that attitude change via persuasion occurs through one of two processing routes: central or peripheral processing (Petty & Cacioppo, 1986). Attitude change via central processing results from the systematic consideration of the issue-relevant arguments contained in a persuasive message and it represents the more effortful alternative to peripheral processing in which individuals are persuaded by some peripheral cue(s) (e.g., the number, as opposed to the quality, of arguments presented, see Petty & Cacioppo, 1984; and the extent that pleasant images and music may be present, Donovan & Henley, 2003). The type of processing enacted depends upon the extent of elaboration of the issue-relevant arguments. Elaboration is based upon a continuum from limited thinking to extensive consideration of a message's arguments. In turn, the extent of elaboration is mediated by the individual's level of motivation and/or ability (Petty & Cacioppo, 1986; Petty & Wegener, 1999).

Specifically, when motivation or ability levels are high, elaboration is also high and the message is processed centrally. Conversely, when motivation or ability levels are low, elaboration is also low and the message is believed to be processed peripherally.

Given the greater effort involved in central processing, it is also believed to produce attitudes that are more enduring than peripheral processing (Petty & Cacioppo, 1986; Petty, Haugtvedt, & Smith, 1995; see also, Haugtvedt & Petty, 1992; Haugtvedt & Strathman, 1990).

Numerous individual difference and situational factors have been shown to influence an individual's level of motivation and ability to elaborate. For instance, an individual's involvement with this issue may influence their motivation to process a message. Involvement, when conceptualised in terms of personal relevance, posits that an individual is highly involved with an issue when they perceive the issue as having some direct impact on their own life (Perloff, 1993a). In turn, involvement increases the propensity to process the information carefully (or centrally) and the more thinking about the issue the stronger and more extreme the attitude toward the issue is likely to become (Roser, 1990). The ELM's predictions that high involvement with an issue will produce central processing whilst low involvement produces peripheral processing, has been supported empirically (e.g., Petty, Cacioppo, & Goldman, 1981).

These findings highlight the significant role played by involvement and suggest that, to heighten the effectiveness of persuasive messages, consideration of the target audience's level of involvement or personal relevance to the issue is necessary (Perloff, 1993a). Moreover, the level of involvement is believed to determine the particular role that affect will play in persuasive messages (see Petty et al., 2001; e.g., Petty, Schumann, Richman, & Strathman, 1993). According to the ELM, affect (similar to any other variable) can influence persuasion in one of four ways: (i) it can serve as an item of issue-relevant information; (ii) it can serve as a peripheral cue; (iii) it can influence the amount of elaboration; and (iv) it can influence (or bias/slant) the types of thoughts that

come to mind (Petty et al., 1991; Petty et al., 2001). A substantial body of evidence supports that affect does influence attitudes in different ways under different levels of elaboration (Eagly & Chaiken, 1993; Petty et al., 1993; 2001). The key implication from this evidence is that a single role of emotion in persuasion does not exist rather there are multiple ways that emotion may influence persuasion (Petty et al., 2001).

With much of what is currently known about the persuasive effects of emotion is based upon the ELM, this evidence is derived largely from affect in terms of issue-irrelevant affect or mood and affect conceptualised in terms of the bipolar valence model (i.e., positive versus neutral and positive versus negative). However, more recent studies utilising the ELM have been based on discrete emotions and have demonstrated that the ELM may assist in explaining the effects of more specific, discrete emotions. Thus far, studies have focused upon negative discrete emotions such as fear and anger (e.g., Desteno, Petty, Rucker, Wegener, & Braverman, 2004).

*4.7.1.1 The ELM and health and road safety interventions.* The ELM has enhanced the understanding and evaluation of persuasion effects of advertising and communication interventions addressing health issues including: eating disorders (Withers, Twigg, Wertheim, & Paxton, 2002); adolescent smoking (see White, Tan, Wakefield, & Hill, 2003); alcohol consumption (Agostinelli & Grube, 2002); and road safety interventions in relation to information newsletters for fleet safety managers (e.g., Newnam, Tay, & Mason, 2006) and persuasive messages to heighten bicycle helmet use among school-age cyclists (Quine et al., 2001).

Representing a major model of persuasion, the ELM has functioned to highlight the importance of the involvement construct and the different pathways to persuasion and their respective impact upon the extent that attitude change is enduring. However, in

relation to providing guidance with respect to the actual design of message content, the ELM is limited (Slater, 1999). Specifically, in relation to the purposes of the current research program where an intention was to develop a range of positive and negative emotional appeals (see Chapter Eight), the ELM was unable to provide specific guidance. Consequently, an additional theory, the Rossiter-Percy motivational model (RP model; Rossiter & Percy, 1987, 1997) was utilised. The RP model has been referred to as the advertising domain's counterpart to the ELM (Donovan & Henley, 2003). Similar to the ELM, the RP motivational model assigns an important role to the involvement construct as reflected in its incorporation of an involvement dimension in the model (see Section 4.7.2). However, unlike the ELM, the RP motivational model provides specific guidance in relation to the development of the emotional content of specific appeals.

#### *4.7.2 Rossiter-Percy motivational model*

At the outset, it is important to note that the overall Rossiter-Percy (1987, 1997) advertising framework was not utilised in the current research program; rather, focus was upon a specific aspect of the theory, what has been termed the Rossiter-Percy motivational model ([RP motivational model], see Donovan & Henley, 2003). A key aspect underpinning inclusion of this framework in the current research program was its identification of the role of specific emotions in relation to different messages. Specifically, this framework guided the development of the emotional appeals utilised in the third stage of the research (see Chapter Eight).

Whilst originally designed for use in commercial advertising, the Rossiter-Percy motivational model has been applied more recently to appeals in health promotion (Donovan & Francas, 1990; Henley & Donovan, 2002) and has been discussed in relation to its application to road safety advertising (see Donovan et al., 1995; Rossiter,

Donovan, & Jones, 2000). Similar to the ELM, the RP motivational model proffers an important role of involvement. Both models highlight that messages must take into account not only the target audience's initial attitude, but also their involvement or level of interest in the issue and their motivation to process information (Donovan & Henley, 2003).

Specifically, the RP motivational model classifies individuals' attitude change in terms of two dimensions: the level of involvement associated with the decision (either low or high) and the nature of the primary motivations driving the decision (either negative or positive) (Rossiter & Percy, 1987, 1997). More recent conceptualisations of involvement in the RP framework have been based on the degree of perceived risk. This conceptualisation was utilised to address the definitional inconsistencies surrounding the existence of multiple conceptualisations of involvement (Rossiter et al., 2000). This perceived risk dimension is best considered akin to the threat appraisal of popular fear appeal models (i.e., PMT and EPPM). As such, it is best operationalised through measurement of an individual's perceptions of susceptibility and severity. The impact that the high and low perceived level of risk has on processing is conceptually similar to Petty and Cacioppo's (1986) central and peripheral routes in the ELM (Donovan & Henley, 2003). Generally, the more effortful (central) processing results in stronger and longer-lasting attitude change (Petty & Cacioppo, 1986; Petty et al., 1995). Thus, it follows that presumably high levels of perceived risk (involvement) would have similar effects on attitudes.

The motivation dimension of the model was discussed previously in Section 4.5.3 and is not repeated at length here. Briefly, eight motivations were regarded as driving all behaviour (five negative and three positive). However, an aspect not

previously discussed was that each motivation is accompanied by a corresponding set of appropriate emotions (or sequence of emotions). Such emotions are considered the energising component of behaviour and together with the motivational (or cognitive component) are essential for achieving behaviour change (Donovan & Henley, 2003). The list of motivations and their accompanying emotions are shown in Table 4.1.

A key tenet of this framework is that, to be effective, persuasive emotional messages must portray the appropriate emotions associated with a particular motivation. To not incorporate appropriate emotions, a message risks being regarded as inappropriate, less credible, and ultimately, less effective. It is important to note that the list of emotions provided in Table 4.1 is not exhaustive (Henley & Donovan, 2002). It is also important to acknowledge that, whilst the model may advocate the importance of emotional sequences, arguably, the most important aspect to be drawn from such sequences is that the model posits that the elicitation of single emotions is neither likely to occur nor be effective.

This suggestion affirms the importance of measuring multiple emotions not simply a global positive versus negative emotional response in relation to persuasive messages. Whilst the model has been applied more recently to health issues, to the author's knowledge, an empirical comparison of the different appeals based on the RP motivational and emotions classifications has not been conducted within the road safety advertising context.



Table 4.1

*Motivations and accompanying emotions adapted from the Rossiter-Percy motivational model*

| Negative motives            | Emotions                       |
|-----------------------------|--------------------------------|
| 1. Problem removal          | Annoyance → relief             |
| 2. Problem avoidance        | Fear → relaxation              |
| 3. Incomplete satisfaction  | Disappointment → optimism      |
| 4. Mixed approach-avoidance | Conflict → peace of mind       |
| 5. Normal depletion         | Mild annoyance → convenience   |
| Positive motives            | Emotions                       |
| 1. Sensory gratification    | Neutral → sensory anticipation |
| 2. Intellectual mastery     | Neutral → excited, competent   |
| 3. Social approval          | Neutral → flattered            |

#### *4.8 A final key construct: The Third-person effect*

Derived from the communication literature, the third-person effect (TPE) refers to a perceptual disparity in how individuals assess the influence of persuasive messages for themselves and others. According to the classic TPE, individuals are likely to perceive relatively greater influence on the attitudes and behaviours of others (i.e., some “third persons”) than themselves (Davison, 1983). Although most empirical focus has been upon this perceptual component, Davison’s original conceptualisation of the TPE also included a behavioural component (Perloff, 1993b).

Much of the earlier evidence on third-person perceptions was found in relation to negative or anti-social media content such as violence or pornography (i.e., content that would presumably be undesirable to admit being personally influenced by relative to others) (Duck, Terry, & Hogg, 1995; e.g., Gunther, 1995). Moreover, most of the

evidence relating to the behavioural implications of the perceptual disparity associated with such negative content has been based on censorship: The literature has well established that stronger third-person perceptions are associated with greater support for censorship (e.g., Cohen & Davis, 1991; Gunther, 1995; Gunther & Thorson, 1992).

Whilst the TPE has been shown to be a robust phenomenon with negative media content (Perloff, 1993b), the extent that the TPE influences judgments relating to positive media content such as health messages has become an issue of increasing attention more recently (e.g., Duck & Mullin, 1995; Duck et al., 1995). Evidence derived from persuasive health messages has shown mixed evidence including, most notably, third-person reversals or attenuations of the classic TPE such that there is no difference in relative influence ratings for self and others (e.g., Brosius & Engel, 1996; Duck & Mullin, 1995; Duck et al., 1995; Gunther & Mundy, 1993; Gunther & Thorson, 1993; Hoorens & Ruiter, 1996; Innes & Zeitz, 1988).

Of note, in the road safety context specifically, evidence of third-person reversals have been found (i.e., relatively greater influence on self than others) in relation to high physical threats (Lewis, Watson, & Tay, 2007a). However, of note, the third-person perceptions were moderated by gender such that females reported reversals whilst males reported classic third-person perceptions. Further, such perceptions had implications for intentions with females reporting greater intention to improve their future driving behaviour than males. The significance of such findings is substantial given that high physical threats are often the approach of choice to target males and young males (Tay, 2002b). This research reflects the need to examine other approaches that may be more effective for males and identifies the TPE as a construct that should be examined in relation to determination of the effectiveness of different persuasive messages.

#### *4.9 Chapter Summary*

In summary, this chapter has described the extensive theoretical foundation that has informed the current research program. Given the complexity of the task confronting the effort to modify individuals' health attitudes and behaviours through persuasive health messages, it is perhaps not surprising that such an extensive and diverse set of theories was drawn upon. As has been noted elsewhere, "changing attitudes and health behaviours is notoriously difficult" (Quine et al., 2001, p. 337). The theories have assisted in the identification of a range of key constructs, relating to message, individual, and situational factors likely to impact upon the effectiveness of positive and negative emotional appeals.



Chapter Five: Promoting Public Health Messages: Should We  
Move Beyond Fear- Evoking Appeals in Road Safety?

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[Note: Appendix A provides additional background information relating to the choice of research methodology.]

### 5.1 Notes

Taken from Lewis, I., Watson, B., White, K. M., & Tay, R. (2007). Promoting public health messages: Should we move beyond fear-evoking appeals in road safety? *Qualitative Health Research*, 17(1), 61-74.

The candidate is the first author on this published paper and was responsible for all aspects of preparing the manuscript including; reviewing the literature, formulating the ideas, argument(s) and hypotheses, interpreting the research findings and their implications, and structuring, writing, and appropriately referencing the manuscript. In addition, the candidate facilitated all of the focus groups conducted (with such groups representing the methodological approach undertaken for the study on which the manuscript was based) and was responsible for conducting the qualitative analyses of all data collected. The second, third, and fourth authors are or have been members of the candidate's supervisory team and their contribution to the paper has been supervisory in nature. All co-authors provided permission for this paper to be included in this dissertation.

This paper is published in a peer reviewed international journal which is listed in the Social Sciences Citation Index and recognised for the DEST publication collection. The 2006 Impact Factor for this journal is 0.994.

Permission has been provided by the publisher of this paper for its inclusion in this PhD dissertation.

### *5.2 Abstract*

Road traffic injury represents one of the most significant global public health issues of the 21<sup>st</sup> century. It remains a contentious public and empirical issue the extent that negative, fear-evoking messages represent effective persuasive strategies. Despite the contention, negative, fear-based appeals represent a frequently utilized approach in Australasian road safety advertising. The authors conducted a series of focus groups with 16 licensed drivers to explore the potential utility of appeals to emotions other than fear. More specifically, we sought to explore the utility of positive emotional appeals such as those incorporating humor. The themes emerging from the qualitative analysis suggested that both emotion and the provision of strategies represent key components contributing to the overall persuasiveness of a road safety advertisement. Overall, it appears there is support for researchers and health advertising practitioners to provide further attention to the role that positive emotional appeals may play in future campaigns.





### 5.3 Introduction

Beyond representing a serious road safety problem, road traffic injury represents one of the most significant global public health issues of the 21<sup>st</sup> century (Binder & Runge, 2004; Pan American Health Organization [PAHO], 2004; World Health Organization [WHO], 2004). Currently, worldwide, over a million people are killed and as many as 50 million are injured or disabled in road crashes each year. Consequently, road trauma represents a leading cause of death and the ninth leading contributor to the global burden of disease and injury (Binder & Runge, 2004; WHO, 2004). Moreover, if current trends continue, World Health Organization projections indicate that by 2020 road traffic injuries will increase such that they will rate third among the leading contributors to the global burden of disease and injury (Binder & Runge, 2004; PAHO, 2004). It is apparent that this “global road safety crisis” (United Nations General Assembly, 2003, p. 1) requires urgent attention not only because of the threat it poses to global public health and development but, because road traffic injuries *can* be prevented (Peden et al., 2004; WHO, 2004).

Beyond the need to simply identify the key risk factors contributing to road crashes, preventing road trauma will require a concerted global effort to identify and develop the most effective policy and intervention strategies (Peden et al., 2004). Based on this urgent need to pool global resources and uncover effective interventions, we believe that it is timely to examine the effectiveness of one particular road safety intervention, public health campaigns. Arguably, given that human factors such as speeding and drink driving remain major contributors to road traffic injury (PAHO, 2004) many improvements in health (i.e., reduction in injury) will ultimately be brought about by changing people’s attitudes and persuading them to adopt healthier, safer

lifestyles. To achieve this, the mass media and health communication will play a crucial role. To increase the persuasive influence of future mass media campaigns, it is imperative that researchers and practitioners of health promotion continue to explore and evaluate different advertising strategies. Consistent with this aim, we highlight the concerns often raised regarding the effectiveness of threat-based health advertisements. Moreover, we explore whether health messages may be more effective when appealing to emotions other than fear.

Many public health campaigns use fear (or threat) as a persuasive strategy with the aim of producing specific changes in attitudes, intentions, and/or behaviors (Maddux & Rogers, 1983). Within Australian public health campaigns, road safety is particularly renowned for its use of graphic, threat-based appeals (Donovan & Henley, 2003). Typically, these advertisements depict graphic crash scenes as resulting from unsafe and illegal driving behavior(s) such as speeding and drink driving (Donovan, Jalleh, & Henley, 1999). These appeals aim to evoke a negative emotional response in the audience, namely fear, that is expected to motivate compliance with the message's recommendations (i.e., persuasion) (Witte, 1992a).

However, it is well known that an extensive body of literature has yielded complex and often inconsistent results regarding the extent to which negative, fear-evoking appeals change attitudes and behaviors (see Leventhal, 1970). Contemporary theoretical perspectives suggest that it is not the level of fear evoked but, the provision of strategies that individuals believe they can enact that are the most important components of a message (Rogers, 1975; Witte, 1992a). Such strategies and the belief that one can enact them are referred to as response efficacy and message self-efficacy, respectively (Witte, 1992a). Moreover, the empirical evidence based on health messages

addressing various issues, including road safety (Lewis, Watson, & Tay, 2003; Tay & Watson, 2002), has demonstrated that response efficacy and message self-efficacy are better predictors of message persuasiveness than even the emotion of fear (Floyd et al., 2000).

These findings suggest that appeals that aim primarily to evoke fear may not be the most effective means of persuading drivers to adopt safer attitudes and behaviors. However, somewhat contrary to these findings is evidence that suggests emotional health messages are more effective than rational or informational type appeals. This support for the effectiveness of emotional messages has been found for health campaigns addressing various issues including AIDS/HIV (Flora & Maibach, 1990) and road safety (Elliott, 1993). Thus, it seems the issue is not whether or not health campaigns should utilize emotional appeals but, whether such campaigns should utilize emotional appeals other than negative, fear-based appeals.

Moreover, evidence suggests that the introduction of another type of emotional appeal may help to draw new attention to an issue when a campaign has matured and the effect of one type of appeal has diminished (Nabi, 2002). Consistent with this suggestion, research has found that the use of positive emotions including humor and joy are effective in gaining attention and in particular, the attention of individuals who may have considered themselves as being overly familiar with a campaign (Monahan, 1995). Additionally, research has indicated that positive emotions including empathy and compassion may help individuals to reframe and reconsider issues that they may have felt as being not particularly relevant to their lives (Monahan, 1995). Arguably, within the road safety context, after many years and many campaigns relying upon negative, fear-inducing appeals it is possible that individuals have tired of this approach. The

introduction of more appeals to positive emotions such as humor may help to renew interest in road safety messages. Presently, however, there is limited theoretical and empirical research pertaining to the use of humor in health campaigns (Monahan, 1995; for exceptions see Conway & Dubé, 2002). The majority of what is known about the persuasive effects of humor is based upon commercial advertising as opposed to health campaigns and it is questionable the extent to which research findings can be generalized (Conway & Dubé, 2002; Dillard & Peck, 2000; Monahan, 1995).

Thus, we recognize the need for research to explore the respective roles and relative effectiveness of positive and negative emotional appeals in health campaigns (Reeves et al., 1991). Arguably, providing support for the use of positive emotional appeals would require demonstrating that positive appeals are more effective than traditional, negative emotional appeals or that the two appeal types serve different roles and thus are both necessary within health campaigns. Meta-analytical research has provided support for the latter view that both positive and negative appeals are necessary within health campaigns. This research, based on 87 road safety campaigns, indicated that the relative effectiveness of positive and negative appeals depended on the existing levels of compliance with a particular behavior. Specifically, when the base level of knowledge or behavior compliance was less than 40%, negative appeals were relatively more effective however, when the base level was greater than 40%, then positive appeals were relatively more effective (Elliott, 1993).

In contrast, it has also been suggested that positive appeals should be considered the approach of choice because too many intervening variables impact upon the effectiveness of negative appeals rendering them too “risky” and “complicated” (Elliott, 2003, p. 7). However, it should be noted that intervening factors have also been

identified as influencing the effectiveness of positive emotional appeals. For instance, positive emotions such as humor may work against the advocacy of the message in instances where an audience deems such an appeal as inappropriate or offensive (Weinberger & Gulas, 1992). Currently, however, no prior research has explored the appropriateness of humor in the road safety advertising context.

In sum, we believe that there is sufficient need and justification to explore the persuasive utility of emotional appeals beyond that of traditional negative, fear-evoking emotional appeals. In particular, we argue for the need to gain further insight into the potential utility of positive emotional appeals in the road safety advertising context. We believe that this need for further insight is especially warranted given that positive emotion, relative to negative emotion, remains relatively unexplored in health communication research and underutilized in health communication practice. We believe that qualitative data derived through focus groups might be an ideal way to gain this insight. Prior research has indicated that it is qualitative rather than quantitative research that is more important for the design and development of effective health campaigns (Elliott, 1993). Moreover, focus group discussions represent the most suitable and efficacious means of obtaining an in-depth understanding of the key issues of interest (Morgan, 1998a). Thus, using focus-group discussions we will explore the respective roles and relative effectiveness of positive and negative emotional road safety appeals as perceived by a sample of drivers<sup>12</sup>. Exploration of the respective roles of positive and negative appeals will provide important insights into whether positive

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<sup>12</sup> Neutral emotional appeals were also selected for inclusion in the study. These appeals were deemed to incorporate no or very limited appeal to emotion(s). It was intended that these appeals would provide a baseline not only allowing exploration of emotional versus rational advertisements but, also enabling comparison of whether positive or negative emotional appeals were considered more effective than appeals incorporating very little or no emotion.

appeals represent an alternative approach to negative fear-inducing appeals or whether positive emotional appeals should be utilized in conjunction with negative emotional appeals. Moreover, we will explore the appropriateness of utilizing positive emotion such as humor in road safety advertising. Additionally, given the established importance of efficacy in relation to the use of fear, we wish to also explore whether efficacy as a cognitive construct, remains as critical to the persuasiveness of positive emotional appeals. As such, it is anticipated that we will provide further insights into the relationship between emotion and cognition in persuasive emotional appeals. To facilitate our discussions, we will expose participants to a number of speeding or drink driving advertisements<sup>13</sup>. Arguably, providing contemporary exemplars of different emotional appeals of varying levels of efficacy will assist participants to attain a similar understanding of the key issues. This understanding should increase the rigor of the findings.

## 5.4 Method

### 5.4.1 Participants

The only criterion for participation in the study was that individuals held a current driver's or motorcyclist's license. Overall, 16 drivers participated voluntarily in five separate focus groups between August and October 2004. To increase the representativeness of the sample, it was the intention of the researchers to recruit both male and female drivers of varying ages. To increase the likelihood that opinions of younger drivers were included in the study, first year psychology students were recruited ( $n = 8$ ) in addition to participants recruited from the general public ( $n = 8$ ). The former

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<sup>13</sup> The advertisements included in the study were selected in consultation with the second author, Dr Barry Watson, a road safety expert.

group of participants signed up for the study via a recruitment notice placed on a university notice board whilst the latter group responded to a recruitment notice placed in an Australian state automobile club magazine. Consistent with our intention, the sample consisted of 11 females and 6 males with ages ranging from 17 to 53 years ( $Mean = 28.93$  years).

In regards to incentives, the recruitment notices indicated that refreshments would be provided. However, in addition to refreshments, the first year psychology students received partial course credit whilst all other participants received no further incentives than the refreshments. We concede that it is difficult to determine the true impact that this difference in incentives offered may have had on participation in the study. However, we are confident that we made the experience of partaking in the group discussions sufficiently similar for all participants thus minimizing the impact of any difference between the groups due to the initial incentives provided. For instance, at the commencement of the discussions, it was emphasized to participants that every individual's thoughts were appreciated and valued. Moreover, participants were instructed that differences of opinion were likely and were most encouraged. Consistent with this introductory spiel, throughout the group discussions, the group moderator continually invited individual participants to share their thoughts thus reiterating the notion that every individual's opinions were of significance. For example, individual participants were asked, "Do you have anything you would like to add at this point?".

#### *5.4.2 Materials*

*5.4.2.1 Stimulus materials.* We believed that showing participants a selection of advertisements of different emotions and varying levels of response efficacy would facilitate discussions and increase the rigor of our findings. The advertisements included

in the study were selected from a large pool of Australian and New Zealand television road safety advertisements. To minimize previous viewing exposure, only advertisements not aired in the Australian state in which the study was conducted, were selected. All the advertisements focused upon either speeding or drink driving. From this initial pool, eight speeding and eight drink driving advertisements were selected after consultation with several road safety experts. For the purpose of this study, positive (i.e., lighthearted and humorous advertisements), negative (i.e., threatening and fear-evoking advertisements), and neutral (i.e., advertisements of limited or no emotion) emotional appeals that incorporated low and high levels of response efficacy were chosen. Brief descriptions of the drink driving and speeding advertisements are included in Tables 5.1 and 5.2 respectively.

Participants watched advertisements addressing either the issue of speeding or drink driving. Four randomly selected speeding advertisements were shown to one group of participants while the remaining four speeding advertisements were shown to a second group. This process was repeated with the drink driving advertisements for the third and fourth focus groups. The fifth focus group was added to increase the number of participants and to have approximately equal numbers in each of the four conditions.



Table 5.1

*Brief descriptions of drink driving advertisements included in study*

| Ad name          | Description                                                                                                                                                                                                                                                                                                                                    |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Glasses          | Empty beer glasses appear in front of the windscreen one by one causing increasingly blurred vision. The car collides into the rear of a stationary truck. Shows the wife of the driver at home, being told by police her husband has been killed.                                                                                             |
| Bush             | Tradesmen are drinking and are warned of a booze bus via a phone call from a mate. A man agrees to have one more beer. On the way home, the man drives through a stop-sign and a large truck runs over the ute.                                                                                                                                |
| John and Jessica | In a hospital, male driver is arguing with his girlfriend. The driver does not want his blood tested for alcohol concentration. Police officers inform him that the other person in the crash has died.                                                                                                                                        |
| Never            | “Julie” and her boyfriend are at her dad’s birthday party. The boyfriend drives home and runs into a stationary truck. Julie is shown covered in blood and lifeless. The boyfriend survives. Julie’s dad has flashbacks of Julie at his party.                                                                                                 |
| Hangover         | Two men at a bar drinking. One guy talks about the future as though it has already happened. He says that he has too much to drink and kills a motorcyclist on his way home. Very brief visions of a crash are shown as he is talking. Ad utilizes black humor.                                                                                |
| Taxi             | Shows the comical conversations a taxi driver experiences with intoxicated passengers. The advertisement concludes with, “If you drink and drive and take a taxi, you’re a bloody genius”.                                                                                                                                                     |
| Stop-Bus         | Many potential options for avoiding drink driving including, walking home, leaving keys at home, taking a taxi, refusing drinks at a bar. The voiceover suggests to “Stop yourself here” at each option. The advertisement ends with, “Or we will stop you here” with the picture of a driver being tested at a booze bus.                     |
| Karaoke          | Set in a bar with a karaoke machine. Shows that the more people drink the more confident and loud they become. The voice over explains that the more we drink the more we get false confidence and do things we normally wouldn’t. The advertisement concludes that unlike drinking and driving singing after drinking will never kill anyone. |

Table 5.2

*Brief descriptions of speeding advertisements included in the study*

| Ad name      | Description                                                                                                                                                                                                                                                                                                          |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10K Less     | Stopping from 70km/h compared with 60km/hr. A man walks out from between parked cars. At 70km/hr he is hit by a car. The crash is replayed in slow motion as a doctor simultaneously explains the injuries. A second scene shows that at 60km/h, the driver stops before impact.                                     |
| Little Girl  | Similar to the 10k Less advertisement. Difference in stopping distance. A cardboard cut-out of a girl is used. Drivers are randomly selected from the street and then try to stop before hitting the cut-out.                                                                                                        |
| Mum and Son  | Young man is shown getting ready for a night out. He is in the car and you assume he is driving. He is shown however, to be being driven by his mum. The voice over suggests not to speed because losing your licence can really cramp your style.                                                                   |
| Split Scenes | The advertisement shows scene in two separate panels simultaneously. In the first panel, a driver hits a jogger and in the other it is a near miss. The scenes fade to black and 70km/hr appears on the first panel and 60km/hr on the second panel.                                                                 |
| Consequences | Different consequences of speeding for different drivers. For example, one driver is shown receiving the infringement notice in the mail and another is shown to be quadriplegic.                                                                                                                                    |
| Rachel       | A young woman standing describes her crash. At the same time, a graphic crash is shown in slow motion. She says never to think a little speed won't make a difference because it can completely change your life.                                                                                                    |
| Spot         | Advertisement begins with, "Can you see the spot cameras?". The voiceover says cameras are in all types of vehicles.                                                                                                                                                                                                 |
| Don          | A family is shown driving along an open road. The father is driving. His speed is increasing beyond 100km/hr. The scene freezes and the voice-over explains how "Don is about to kill his wife" The scene continues, showing the complete crash and a scene of Don's wife with blood all over her face and lifeless. |

### 5.4.3 Procedure

Prior to conducting the study, ethical clearance was applied for and granted from the University Human Research Ethics Committee. At the commencement of the study sessions, participants were provided an information sheet. This sheet explained the voluntary nature of participation and participants' right to withdraw from the study at any time without explanation or penalty. Participants were assured of the confidentiality of their written responses and the anonymity of their verbal responses. All participants were required to sign a consent form.

Within the two hour session, before group discussions were commenced, participants first watched all the advertisements<sup>14</sup>. The group discussion sessions were guided by semi-structured questions that explored the key constructs of interest including emotion and response efficacy. For instance, participants were asked (1) how emotion and the provision of strategies impacted upon the effectiveness of a road safety advertisement, (2) about the roles and shortcomings of positive and negative emotion, and (3) for any ideas or suggestions for effective future campaigns. We found that our questions 'evolved' as our focus group discussions continued. In other words, our initial questions were further refined and additional questions were added based on participant responses from preceding focus groups. Participants were invited first to discuss their thoughts about each specific advertisement they had viewed within the session. This discussion focused upon the emotions experienced during or after exposure to a particular advertisement, the incorporation of recommendations/strategies within the

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<sup>14</sup> Prior to the group discussions commencing and subsequent to the advertisement viewings, participants completed a self-report questionnaire. Among other measures, this questionnaire collected demographic details and assessed the emotionality and response efficacy of the specific advertisements that participants had viewed. Sample questionnaire items are provided in Table 5.3.

advertisement, and perceptions of the advertisement's overall effectiveness. As the discussion continued, questions encouraged participants to think and discuss the use of emotive appeals and the provision of strategies in road safety advertising campaigns more generally.

To increase the rigor of the findings from this study, member checking was conducted routinely within each group session. This ensured that the researcher adequately understood the responses of the participants and enabled immediate clarification of any ambiguity (Murphy & Dingawall, 2003). Additionally, toward the end of each focus group, the researcher provided a summary of the key points of the discussion and participants were invited to amend any aspect of this summary. If suggestions or comments were made, these were discussed within the group until participants felt their views had been appropriately interpreted by the researcher. This summary was important because it provided participants with the opportunity to hear what the researcher was intending to take away from the discussion whilst participants were still within the group and thus able to confirm or challenge the researcher's interpretations (Murphy & Dingawall, 2003).

All group discussions were audio-taped. The decision to run five group sessions was based on an ongoing analysis of the discussion transcripts that indicated by the end of the fifth session that theoretical saturation (Morgan, 1998a) had been attained.

### *5.5 Data Analysis*

The audio-tape discussions were forwarded to a professional transcriber and were transcribed verbatim. These transcripts were analyzed and coded using thematic analysis.

Table 5.3

*Brief summary of questions asked in questionnaire prior to group discussions*

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|                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------|
| Response Efficacy <sup>a</sup>                                                                                         |
| 1. This advertisement motivated me never to want to drink and drive/speed                                              |
| 2. The advertisement increased my intention not to drive when I have been drinking/to not speed                        |
| Emotions Evoked <sup>b</sup>                                                                                           |
| Sad, Guilt, Angry, Fearful, Distressed, Irritated, Anxious, Happy, Afraid, Relieved, Amused, Scared, Annoyed, Cheerful |
| Overall Effectiveness of the Advertisement <sup>c</sup>                                                                |
| 1. Not at all Persuasive/Very Persuasive                                                                               |
| 2. Not at all Convincing/Very Convincing                                                                               |
| 3. Not Very Effective/Very Effective                                                                                   |
| 4. Not at all Appealing/Very Appealing                                                                                 |
| 5. Not at all Memorable/Very Memorable                                                                                 |

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<sup>a</sup> Items were assessed on a seven-point scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*)

<sup>b</sup> Participants were asked to indicate the extent that an advertisement had made them feel a particular emotion on a seven-point scale from 0 (*None of this feeling*) to 6 (*A lot of this feeling*).

<sup>c</sup> Each bipolar pair was assessed using a seven-point scale with higher scores indicating more persuasive and effective advertisements.

Concepts were identified as themes if they were expressed with frequency, extensiveness, or intensity (Krueger, 1998). When new themes emerged we recoded previously coded transcripts in order to include the newer themes. This process continued until no new themes emerged. The first author, who also had moderated the focus groups, conducted the analysis. However, to improve the validity and reliability of the first author's coding, frequent consultations with the other authors were held. These additional authors, who had not been present during the focus groups but, whom were involved closely with the planning and design of the study, were able to review the analysis with "fresh eyes". Thus, these authors were particularly useful in identifying themes and interpretations that needed further clarification and/or explanation. We believe that the combined efforts of the authors have resulted in a thorough and well-justified analysis which in turn, has provided a comprehensive and accurate reflection of the data received.

## *5.6 Results*

### *5.6.1 Role of emotion*

Overall, with the exception of one participant, all participants regarded emotion as an essential component of road safety television advertisements. For instance:

"I think it would be effective as a general overall thing because it is so emotional"

More specifically, participants identified emotion as important for attracting a viewer's attention, increasing the likelihood that the advertisement and its message would be remembered, and preventing the advertisement from being boring. Statements illustrating these roles included:

"I think the emotional part really grabs me, grabs my attention. And later I'll think about it."

"...there needs to be some sort of connection there; otherwise you're not going to do anything about it; you're not going to remember it next time you're out on the road."

"Just the ones of facts and statistics are, like, quite boring – switch off."

#### *5.6.2 Role of positive and negative emotion*

The use of positive emotion in road safety messages was associated with promoting the message of prevention and providing positive role models of safe driving behavior. For example, the following were suggested for a future positive appeal:

"...have a campaign or some sort of run of ads that will bring out this positive thing of what's required of people to keep themselves out of trouble", and

"...[we need to start] showing people what they can do to avoid being in this situation to start with."

Alternatively, it appeared that the message of prevention was not well communicated within traditional, negative emotional appeals. For instance:

"There was nothing there to say, 'well, you've got to do this to prevent this'. It comes back to what we said before about the positive message. There was nothing in [negative messages] to say, 'well, you should be doing this to prevent this'"

In other words, positive emotional messages would be more suited at promoting the message of prevention than negative emotional messages.

In contrast, the inclusion of negative emotion, as in traditional threat-based messages, was associated with increasing the likelihood of the advertisement being remembered, increasing attention paid to the advertisement, and providing a means of

reminding drivers that crashes do occur. The following comment reflected the important role some participants assigned to negative appeals:

"...[threat-based advertisements] provide the regular “top-up” of fear necessary to remind drivers that driving is perhaps the most dangerous thing they do in a day and that things can go wrong."

Differences of opinion emerged about the shortcomings of positive and negative emotional appeals. With regards to positive emotion, concerns related to the how long the message would be remembered and that the effect would be only short-term as opposed to long-term. For instance,

“I think it would have an effect, but it wouldn’t have a lasting effect as a negative ad. Like it would have an effect right there and then and every time you see it.”

Regarding the issue of how appropriate the use of positive emotion, specifically humorous appeals, would be in road safety advertising, there was some concerns expressed that humor would be inappropriate. For instance:

"...it did appear to be a bit frivolous and a bit – they weren’t treating the issue seriously."

"...It’s not funny and the subject is not funny.”

However, there was also some support for the use of humor. In particular, there was support for incorporating the emotions of humor and fear in the same campaign or advertisement in order to provide a comparison of potential outcomes. For instance,

“...like split scenes where you’ve got the one person driving in the car and other people in a taxi, singing. One getting home and one almost getting home [but crashing before they get there]... the humorous side...but then also showing you the fearful side.”



Concerns raised regarding the use of negative emotion indicated a belief that such appeals were less effective nowadays because viewers have become numbed to shock and/or have become tired of there being too much shock.

"...shock tactic advertising came into our culture, probably around the '70s, coming into the '80s, and then it started to get a little bit more sophisticated. But then it started to lose it because the audience actually went, "Can't shock me, I'm watching, you know, Razorback and cutting people's heads off."

"So, to me there's a whole spectrum [of emotional appeals] that really would have more impact than just a one-off thing that you do over and over and over again."

"There's too much shock."

An additional concern was that responses from some participants implied a third-person effect ([TPE], Davison, 1983) as being associated with negative emotional appeals. The TPE maintains that an individual perceives a persuasive message as being of greater relevance and influence to others than themselves. Interestingly, whilst these participants perceived 'others' as being the target of negative messages, rather than themselves personally, these participants also reported that these "others" were not likely to change their behavior. For instance:

"Well, I've got a lot of idiot mates...so they're just like, 'Oh, pass it off'. It just doesn't affect them."

From the context of the discussion, this participant was suggesting that they had many acquaintances for which negative, threatening messages would apply however these acquaintances were unlikely to be affected by such messages.

Moreover, of these participants whose responses highlighted the presence of the third-person effect, two participants explicitly referred to the TPE. These participants

also referred to the TPE as explanation as to why ‘others’ do not change their behavior following exposure to a threatening advertisement. For instance:

"... if you see somebody flying through the air and they're dead, *they* go, "That won't happen to me," and *they* immediately block that out and make a third person."

(Note: emphasis added to highlight the TPE)

Generally, participants across different focus groups tended to support the use of more positive emotion in future campaigns. However, there were different ways in which participants suggested positive appeals should be incorporated within campaigns. Specifically, some participants supported adopting positive appeals as the preferred approach over the use of traditional, negative threat-based appeals.

"I think the emotions we should be trying to invoke are the joy that you feel when you actually get somewhere and get through your day in the way that you choose to, not being fearful of the consequences."

"I think we're going in the wrong direction by doing that [by making people fearful of the consequences]". Facilitator: "So...show the positive of if you do the right thing, then you'll get where you're going". Participant: "Definitely, Absolutely."

Moreover, another participant commented that whilst fear and scenes of carnage and mayhem had very strong emotional impact, she found this negative emotion more "off-putting" commenting that:

"...I would much rather be persuaded in a pleasant way."

Similarly, other participants noted:

"I think we need to get away from the negative and going more to the positive and say, well rather than say if this happens to you, you won't get to the end of the

journey, have it more like, well I got to the end of the journey because I did this, this, and this."

"It's no accident that people get to their destinations."

From the context of the discussion, it appears that this last participant believed that showing people what other drivers do correctly and safely could be achieved through positive appeals and thus such appeals would provide an important road safety message.

Additionally, participants suggested that such positive appeals may ultimately prove effective just because they are different to negative appeals.

"I think it's an important message because it's different..."

In contrast, other drivers reported that positive appeals should be seen as another potential strategy within a complete campaign and, thus, utilized in conjunction with traditional negative appeals. For example:

"Well, I think you need a little bit of negativity, but they could do a lot more positive..."

"I would just like to say with every negative, you should have a positive...then put an option in, put a choice and say, 'Okay, this is what could have happened. This is an option. You have a choice'"

"...isn't that what we're trying to achieve? To even think about it before the accident happens, rather than being remorseful because it happened?...energy into preventing."

Alternatively, several other drivers identified positive appeals as being particularly effective for targeting particular groups of road users and the group of

particular mention was young drivers. It was perceived that such positive appeals would be able to provide such drivers with positive models of safe driving behavior.

"...if you have a youth audience...I think [advertisements should]...give them positive role models."

Moreover, some participants believed that rather than negative appeals that tend to depict an irresponsible young person as being the cause of a crash, positive appeals with a positive role model may appear less condescending to young drivers.

"...especially young people are very defensive about being – well, I know my daughter a little it is – about older people like us sort of putting them down at bit, in a way...So, maybe from that point of view, it would be good to have something positive in the message."

Additionally, a number of drivers supported the need for more positive appeals to at least be trialed in the road safety advertising context.

### *5.6.3 Cognitive responses: The importance of efficacy*

Another key component of road safety advertisements identified by almost all participants was the importance of providing strategies within the message (i.e., response efficacy). Typically, the presence or absence of strategies was associated with participants' perceptions of an advertisement's effectiveness or ineffectiveness, respectively. Participants comments regarding efficacy in regards to threat-based messages were consistent with previous research.

"...I think fear plus a good dose of what you can do to prevent the outcome from occurring."

"...You can't give all the negatives and not give something to replace it."

Interestingly, however, there was some indication that response efficacy remains important for positive emotional appeals also. For instance, when asked to compare the relative effectiveness of two humorous drink driving advertisements (i.e., “Taxi” and “Karaoke”), one participant commented that the advertisement with the strategy of taking a taxi was more effective than the karaoke advertisement which did not appear to depict any strategies.

“It was more persuasive, more effective...because they provided the strategy of taking a taxi home, whereas the other one didn’t really have a strategy at the end of the humor.”

Further, when asked what they would do to particular advertisements to improve them, one participant responded that, whilst she found an advertisement humorous and likely to be effective because it was different, she believed that the inclusion of strategies on how to avoid drinking and driving would have made the advertisement more effective. Empirical comparison of the persuasiveness of high efficacy positive and negative appeals appears to be a significant topic for future research. Potentially, the results of such research could have significant implications for future public health advertisement design.

### *5.7 Discussion*

We aimed to explore the potential role that positive emotional appeals may play in road safety television campaigns. We suggested that support for the use of positive emotional appeals would require obtaining evidence that positive appeals were more effective than traditional, negative emotional appeals or that the two appeal types served different roles and thus were both necessary within health campaigns. Overall, we suggest that the key conclusion emerging from our results is that there may be times

when positive appeals have a persuasive advantage over negative appeals. The discerning reader may assert that this conclusion also implies that there are times when negative appeals may be more effective. Consistent with this assertion, our results highlight that the notion of adopting one emotional appeal type in place of another is likely to be too simplistic given that each appeal type is associated with different roles and respective shortcomings. Arguably, to increase the likelihood that a persuasive message reaches its intended target audience with the intended effect, practitioners of health persuasion must have an array of strategies and tactics at the ready. Presently, as has been discussed previously, negative emotion as a strategy, has received extensive attention both in advertising research and practice. Thus, we suggest the significance of our findings is in broadening the scope of emotions examined and identifying times when positive emotion may represent a more effective strategy than negative appeals. Consequently, our results challenge the persistent belief that persuading individuals to adopt safer driving behavior(s) can only be achieved (or even attempted) through negative, fear-evoking appeals.

Positive emotional appeals were identified as a potentially effective way of promoting the theme of prevention. Participants believed that there was a need for appeals that depicted “safe” driving and the positive consequences of that behavior. In depicting such behavior, drivers could be provided positive role models of what they could do to “keep themselves out of trouble” on the roads. Thus, participants tended to link positive emotional appeals with the notion of doing the “right” thing (or more specifically seeing the “right” thing being modelled) and the subsequent prevention of aversive outcomes. This finding suggests that some drivers may appreciate seeing more drivers being rewarded for “safe” behavior. The issue of whether to reward and thus

reinforce safe driving is not new to the road safety. Indeed, it has, for some time represented an issue of considerable contention in the road safety context. Our findings suggest, however, that it may represent a potentially persuasive strategy and as such it is deserving of more attention by health advertising researchers and practitioners.

Moreover, by suggesting a way that road safety advertisements may be designed to focus more on preventing road trauma, such a finding aligns well with the WHO's recent focus on improving interventions in order to prevent the "global road safety crisis".

In contrast, focusing on prevention was not considered a theme well communicated by or consistent with the focus of traditional, fear-evoking messages. Participants regarded negative appeals as focusing on making drivers feel fearful and/or remorseful after a crash had occurred, at which time, it was too late to change the outcome. However, although not promoting the message of prevention, negative emotional appeals were considered an effective means of "grabbing attention" and providing the regular "top-up" of fear necessary to remind drivers that driving is dangerous. Interestingly, whilst negative appeals were also considered highly memorable, one of the main concerns associated with positive appeals pertained to the duration of their effectiveness. Specifically, participants believed that positive appeals may not be remembered too long after exposure and that their persuasive effects would be short-lived. Future empirical investigation would assist in determining whether this is indeed the case. Arguably, the most comprehensive investigation of duration effects on persuasion would require comparison of such effects for both positive and negative emotional appeals. This comparison would determine whether one appeal type provides relatively longer-lasting persuasive effects. Thus, these results suggest that positive appeals may deliver an important and distinct message (i.e., prevention) from that of

negative appeals. Through the identification of a difference in the purpose or focus of positive and negative appeals, this research extends upon previous research that has suggested both appeal types serve different functions and therefore are both necessary within road safety campaigns (see Elliott, 1993). Thus, depending on the intended aim or focus of a message, there may be times where positive appeals are more effective than negative appeals.

Interestingly, additional evidence of a persuasive advantage of positive appeals over negative appeals may be derived from the shortcomings associated with negative appeals. Two main shortcomings/weaknesses of negative appeals were identified; their association with the third-person effect (TPE) and the growing discontent with the continued use of such appeals in road safety. We argue that these particular shortcomings may significantly undermine the overall effectiveness of negative appeals. First, the association between negative emotional appeals and the TPE should be of particular concern to health advertising practitioners given that previous research has indicated that when individuals perceive greater influence of a message on others' relative to self (i.e., the TPE), the individual's own attitudes and behaviors are less likely to change or to become consistent with a message's recommendations (Lewis et al., 2003; Mutz, 1989). Moreover, this finding should be of added concern to road safety advertising practitioners given that the aversive impact of the TPE on persuasion has been moderated by gender with males more likely to regard negative appeals as having less influence on their attitudes and behaviors (Lewis et al., 2003). Given that males, and specifically young males, are over-represented in road trauma, it would appear that despite being the intended target audience of many road safety threat appeals, many young males are not heeding the messages. In our view, the association of the TPE with



negative appeals represents a serious shortcoming of negative appeals as it may render such appeals ineffective with one of the most 'at risk' road user groups.

The second shortcoming associated with negative appeals pertains to the growing discontent with their continual use in road safety campaigns. Confirming our predictions, participants indicated growing tired of such negative appeals and feeling numbered to "shock tactic advertising". Arguably, this growing discontent should not be taken lightly as it may have diminished the persuasive ability of negative appeals. Specifically, individuals may have tired of such appeals to the extent that they no longer attend to the messages and/or feel that the road safety issue is over-familiar. Given that it is unlikely that individuals are likely to be persuaded by messages that they no longer are attending to, this indeed poses a serious concern to the effectiveness of negative appeals.

Whilst these identified shortcomings may impact adversely upon the effectiveness of negative appeals, evidence derived from the current study and elsewhere suggests that positive appeals may 'overcome' these same shortcomings. Such evidence supports the notion of a persuasive advantage of negative appeals. For instance, whilst the association between the TPE and negative appeals may have reduced the persuasiveness of such appeals for young drivers and particularly young male drivers, the results from the current study identify positive appeals as a potentially effective strategy for young drivers. Such appeals were considered potentially effective for these drivers because; (1) they could provide positive role models of "safe" driving behavior, and (2) they would be less likely to be perceived as condescending to young drivers than

traditional negative appeals<sup>15</sup> and thus, less likely to be ignored and/or rejected. Given that young drivers are being injured and killed in road crashes at a rate much higher than any other age group (Williamson, 1999) there is an evident need to reconsider the most effective means to tailor persuasive appeals so as to target these individuals. Consistent with this need, we have identified positive appeals as a potentially effective strategy for this group of high risk road users. We advocate the need for further focus groups discussions comprised of young drivers and perhaps, more specifically, young male drivers to continue the exploration of the role and potential effectiveness of positive appeals.

In relation to the concern that the growing discontent with the use of negative appeals may have diminished their persuasiveness, previous research has suggested that positive appeals may assist in renewing interest and drawing new attention to an issue that individuals may feel is overly familiar (Monahan, 1995; Nabi, 2002). Consistent with this suggestion, our results indicated that even participants who were not completely confident of how effective positive appeals would be were supportive of trialing such appeals on the basis that a different strategy may ultimately prove effective (e.g., “I think it is an important message because it is different”). Presently, very limited empirical research exists that has examined the impact that the introduction of a different, subsequent emotional appeal has upon the overall effectiveness of a health campaign. We highlight this as an important endeavor for future empirical research – after all, ensuring that attention for a campaign remains at a high level is paramount because it is unlikely that individuals would be persuaded by a campaign that they are no longer

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<sup>15</sup> Participants suggested that negative appeals were condescending to young drivers because they believed that such advertisements typically depict a crash occurring as a result of a young, irresponsible driver behaving foolishly on the road.

attending to. In particular, we suggest that future empirical research should ascertain whether positive emotional appeals represent the “different” emotional appeal that is capable of re-capturing attention. In the event that positive appeals were found to re-capture attention, such findings would have significant implications for the design, not only of future road safety campaigns, but health campaigns in general.

Whilst the evidence discussed thus far, has highlighted a number of advantages of utilizing positive emotional appeals, it is important to note a specific concern participants associated with positive appeals. This concern pertained to the appropriateness of positive appeals that evoke humor. Some participants were concerned that lighthearted, humorous messages may appear too frivolous for the road safety context. Future empirical research would need to determine whether this concern does indeed have implications for the overall effectiveness of humorous road safety appeals. However, we are particularly encouraged by recent findings based on health messages that found humorous appeals were more persuasive than non-humorous messages for males (Conway & Dubé, 2002). Once again, there appears to be support for the adoption of more positive appeals in the attempt to persuade these high risk road users. Moreover, we believe that this finding supports our view that positive emotions such as humor may be implemented effectively within campaigns for threatening topics such as road safety. It is possible that making light of the strategies used to prevent serious health threats rather than the topic itself may be the manner in which humor could be effectively utilized (Conway & Dubé, 2002; Nabi, 2004).

If, however, empirical research found that humorous road safety appeals were deemed inappropriate and thus, associated with dissuasive effects, it is important to remember that humor represents only one possible positive emotion. Given that positive

emotional appeals are not utilized commonly within road safety, we were limited in the number and type of positive appeals that were available. As such, we would encourage researchers not to abandon interest in the role that other positive emotional appeals (e.g., appeals to pride and empathy) may play in health campaigns. Relative to the research available on negative emotions and persuasion, much more empirical research and theoretical development is needed to further understanding of the role of positive emotions in persuasion (Nabi, 1999).

To provide further validation of our interpretations of the respective roles of positive and negative appeals, we also asked participants directly if positive emotional appeals should be used in road safety campaigns and if so, in what way such appeals should be utilized in future campaigns. We believed that this represented a notable aspect of our research because participants were invited to share their thoughts about what they would like to see in future road safety campaigns.

These direct reports revealed that most participants supported increased trialing of positive emotional appeals in the road safety context. However, despite this support, there was contention regarding the manner in which different appeals types should be utilized. Some participants supported the adoption of positive appeals as the preferred approach in place of negative, threat appeals. In contrast, other participants supported the need to incorporate both positive and negative emotional appeals within campaigns. For instance, it was suggested that combining humor and fear within a campaign, or even within a single advertisement, may be an effective means of depicting the consequences of doing the “right thing” and the “wrong thing” respectively. Presumably, when confronted with the two opposing outcomes, arriving safely at one’s destination versus being involved in a crash, individuals would choose the behaviors that resulted in

the former outcome. Arguably, this finding may have important implications for road safety advertising research and ultimately, practice. In relation to research, no study has directly compared the effectiveness of modeling the correct behavior versus depicting the incorrect behavior (Donovan, Henley, Jalleh, & Slater, 1995). According to our results however, this comparison represents a significant issue for future research pursuits. In advertising practice, whilst we acknowledge that attempts have been made to depict the outcomes of doing the “right” versus the “wrong” thing, we believe the majority of these attempts have addressed speeding behavior<sup>16</sup>. Interestingly, however, speeding is perhaps the least likely behavior that requires modeling of an alternative, more desired behavior given that there is only one alternative to speeding and that is, not speeding (Donovan et al., 1995). In contrast, for behaviors such as drink driving where there are a number of alternative behaviors to avoid engaging in the risky behavior, modeling has been regarded as an “appropriate and *recommended* response since learning is required to increase the salience of these alternatives” (Donovan et al., 1995, p. 25). It is our hope that the current findings provide the justification for road safety advertising practitioners to at least consider the utility of using such an approach for a range of driving behaviors.

#### *5.7.1 Emotion and Cognition More Broadly*

Although our primary aim was to explore the respective roles of positive and negative emotional appeals, we also explored the role of emotion more broadly. Additionally, given the established importance of efficacy in relation to the use of fear, we also explored whether efficacy as a cognitive construct, remained as critical to the

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<sup>16</sup> Typically, these advertisements depict a collision occurring or being avoiding according to whether the driver is driving over or at the speed limit respectively.

persuasiveness of positive emotional appeals. Our findings indicated that emotion was regarded an essential component of effective public health messages. Specifically, emotion was believed to be a key factor influencing the degree to which the message was initially attended to and subsequently remembered. Emotional messages were also regarded as being more likely to maintain a viewer's interest than rational or informational type messages. These findings are consistent with previous research that has compared the relative effectiveness of emotional and informational messages (e.g., Elliott, 1993; Flora & Maibach, 1990).

Additionally, the results indicated that the cognitive factor of response efficacy was considered important by participants in all focus groups. Further, views expressed indicated that, irrespective of the emotional appeal type (i.e., positive or negative), individuals require information about what they can do to be safer on the road. Such findings do highlight the need for further understanding of the persuasive process. For instance, determining the most persuasive combination of emotion and efficacy represents an interesting question for future research pursuits.

### *5.8 Conclusion*

The current study supports the important role of emotive appeals in health promotion. Overall, one of the key findings to emerge from this study is that positive emotional appeals may serve an important and unique role in the promotion of health behaviors. We believe that this finding provides sound justification for challenging the persistent belief existing in road safety and health advertising practice in general, that the only way to modify health behavior is through graphic, scare tactics. We believe that this research highlights that there may be another way and that way may be through positive emotional appeals that model safe behaviors and that evoke such emotions as

humor. Furthermore, the results highlight that positive appeals may have a particular advantage for individuals at high risk of injury, namely young drivers. Reducing the incidence of road trauma amongst these high risk road users would represent not only a significant improvement for road safety but for public health more broadly.

### *5.9 Final Note*

We acknowledge that preventing the “global health crisis” of road trauma will require efforts to address risk factors relating to not only the road user, but also the driving environment, and the vehicle. However, we believe that persuading individuals to adopt safer driving practices in regards to speeding and drink driving would reduce the impact of two of the major human factors contributing to road crashes. Although our efforts may appear focused narrowly upon only one road safety intervention, namely health advertising, we believe our focus is completely warranted and consistent with the need to uncover effective interventions and policies in order to ultimately prevent road trauma.





Chapter Six: An Examination of Message-relevant Affect in Health Messages: Should  
Road Safety Advertisements Aim to Make us Feel Good or Bad?

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[Note: Appendix B provides the Participant Information Sheet utilised for the study reported within this manuscript.]

### 6.1 Notes

Taken from Lewis, I., Watson, B., & White, K. M. (in press). An Examination of message-relevant affect in road safety messages: Should road safety advertisements aim to make us feel good or bad? *Transportation Research Part F: Traffic Psychology and Behaviour*.

The candidate is the first author on this paper and was responsible for all aspects of preparing the manuscript including; reviewing the literature, formulating the ideas, argument(s) and hypotheses, interpreting the research findings and their implications, and structuring, writing, and appropriately referencing the manuscript. In addition, the candidate also organised all data collection and was responsible for analysing the data collected. The second and, third authors are members of the candidate's supervisory team and their contribution to the paper has been supervisory in nature. All co-authors provided permission for this paper to be included in this dissertation.

This journal in which this paper has been accepted for publication in is a peer reviewed, international journal which is listed in the Social Sciences Citation Index and recognised for the DEST publication collection. The 2006 Impact Factor for this journal is 0.860.

Permission has been provided by the publisher of this paper for its inclusion in this PhD dissertation.

### 6.2 *Abstract*

Drawing upon the multiple roles of affect posited by Elaboration Likelihood Model, the current paper examines the effectiveness of message-relevant affect. Specifically, humorous and fear-evoking anti-drink driving messages are examined in terms of perceptions of relative influence on self and others (i.e., the third-person effect) and their performance on a range of persuasion outcomes. The influence of involvement, response efficacy, and gender on persuasion outcomes is also examined. Participants ( $N = 201$ ) viewed two advertisements and completed two questionnaires: the first assessed pre-exposure attitudes and behaviour and immediate-post exposure attitudes and intentions; the second, 2 to 4 weeks later, assessed attitudes and behaviour. The results revealed, as predicted, interactions of the key variables and evidence of the greater persuasiveness of negative appeals immediately after exposure whilst greater improvement of positive appeals over time. The findings highlight the importance of continuing the exploration of positive appeals as a persuasive alternative to negative appeals.

### *6.3 Introduction*

This study examines message-relevant affect and, in particular, the relative effectiveness of negative and positive emotional appeals in the road safety advertising context. Message-relevant affect (or advertisement-induced affect) refers to affect that is evoked in direct response to an attitude object (i.e., persuasive message) and is part of the communication itself (Dillard & Wilson, 1993). It is a transient affective state that may be contrasted with message-irrelevant affect, or what is more commonly referred to as mood. Mood is considered an enduring, longer-lasting, diffused affective state that is not typically focused upon (or aware) of a specific cause (Dillard & Wilson, 1993; Jorgensen, 1998).

This research is informed by a number of practical considerations relating to the use of emotional appeals in road safety as well as contemporary developments in persuasion literature. At a practical level, in many countries including Australia and New Zealand, there is a strong reliance on the use of negative, fear-based appeals in road safety. However, the empirical evidence relating to the use of such messages has been mixed. Furthermore, there is some evidence suggesting that community expectations may be shaped by advertising practice such that there may be circularity in public perceptions based on frequency of use and perceived effectiveness. For instance, given that appeals to positive emotions are seldom used in the road safety context they may be considered relatively less effective than fear-based approaches simply because the latter approach is utilised more frequently (see Lewis, Watson, White, & Tay, 2007b). It follows that individuals may hold specific expectations regarding what a road safety advertisement should incorporate including what types of emotions it should evoke.

In relation to persuasion literature, reflecting the complexity of the emotion-persuasion relationship, there has been a growing acceptance of the view that emotion (or affect) plays multiple roles as opposed to a single function in persuasion (see Petty, DeSteno, & Rucker, 2001). A key factor identified as influencing the particular role that affect does play in persuasion is an individual's level of involvement with the issue and/or message (see Petty et al., 2001; e.g., Petty, Schumann, Richman, & Strathman, 1993). Consequently, the involvement construct represents a key consideration when examining the emotion-persuasion relationship. Moreover, evidence has suggested that there are differences in the manner in which individuals of varying levels of involvement process persuasive messages. Specifically, prior research has established that highly involved individuals are likely to process persuasive messages systematically whereas individuals of low involvement are more likely to process the same message heuristically (see Petty & Cacioppo, 1986; e.g., Petty, Cacioppo, & Goldman, 1981). The Elaboration Likelihood Model of persuasion (Petty & Cacioppo, 1986) provides the theoretical foundation for each of these key considerations underpinning the current research.

### *6.3.1 The Elaboration Likelihood Model and affect*

Much of the more recent evidence on the role of emotion (affect) in attitude change has been based upon the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1986). As a multi-process theory of persuasion this framework better captures the complexity of the many roles of affect (Petty et al., 2001). The ELM proposes that attitude change via persuasion occurs through one of two processing routes: central or peripheral (Petty & Cacioppo, 1986). The processing enacted depends upon the extent of elaboration which ranges from limited thinking to extensive consideration of message

arguments. The extent of elaboration is mediated by the individual's level of motivation and/or ability (Petty & Cacioppo, 1986; Petty & Wegener, 1999). When motivation/ability levels are high, elaboration is also high and the message is processed centrally. Conversely, when motivation/ability levels are low, elaboration is also low and the message is believed to be processed peripherally whereby individuals are persuaded by some peripheral cue(s) (e.g., the number, as opposed to the quality, of arguments presented; Petty & Cacioppo, 1984). Also, central processing is believed to produce attitudes that are more enduring than peripheral processing (Petty & Cacioppo, 1986; Petty, Haugtvedt, & Smith, 1995).

Whilst numerous factors have been shown to influence an individual's level of motivation and ability to elaborate, one key factor is an individual's level of involvement. Involvement, when conceptualised in terms of personal relevance, posits that an individual is highly involved with an issue when they perceive it as having some direct impact on their life (Perloff, 1993a). Moreover, a substantial body of research supports that notion that involvement also influences the manner in which affect influences attitudes is believed to determine the particular role that affect will play in persuasion (Petty et al., 2001; e.g., Petty et al., 1993). Thus, there is an important interplay between level of involvements and affect in determining persuasive outcomes as reflected by a substantial body of evidence supporting the notion that affect does influence attitudes in different ways under low- and high- elaboration conditions (Petty et al., 1993; 2001).

*6.3.1.1 Affect under low involvement conditions.* Under low involvement conditions, affect is believed to influence attitudes in a simple and direct manner with minimal cognitive effort (see Petty et al., 1993). Under such conditions, affect has been

shown to operate as a peripheral cue, impacting upon attitudes in a manner consistent with its valence such that positive affect is more likely to result in favourable attitudes than negative affect (see Petty et al., 2001). Classical conditioning has been provided as one explanation of this effect (e.g., Zanna, Kiesler, & Pilkonis, 1970). Alternatively, it has also been suggested that under low involvement conditions, affect may be more likely to provide informational value (Petty et al., 2001) consistent with the “how do I feel about it” heuristic (see Schwarz, 1990; Schwarz & Clore, 1983, 1988). According to this heuristic, individuals simply assess how they feel while evaluating the attitude object (i.e., the message) and base their evaluation on this assessment. If the affect is positive an individual will form a favourable evaluation however, if it is negative they will form an unfavourable evaluation (Schwarz, 1990).

Thus, immediately after exposure, for individuals of lower involvement, the positive appeals should be more persuasive than the negative appeals. This expectation is consistent with the “how do I feel about it?” heuristic and is based on evidence that individuals lower in involvement are more likely to rely on simple heuristic cues to process rather than engage in effortful processing (Petty, Gleicher, & Baker, 1991). More specifically, given that immediately after exposure, the cause of individuals’ feelings is salient (i.e., the persuasive message) individuals would attribute (correctly) their positive feelings to the effect of the message and thus would evaluate the positive messages more favourably.

Moreover, in relation to the interaction with other variables, analogous to evidence that under low involvement conditions, a number of weak arguments may be rated better than fewer strong arguments (see Petty et al., 1981), it is expected that rather than the strength of the response efficacy present, individuals may be guided by a simple



heuristic of strategy present versus strategy absent (as opposed to quality or appropriateness of the strategy recommended). Thus, response efficacy may interact with involvement and appeal type such that, for those individuals lower in involvement, the positive, high response efficacy appeal is most persuasive.

Hypothesis 1a: It is predicted that, immediately after exposure, for individuals who report lower involvement, the highest attitudes and intentions would be associated with the positive, high response efficacy appeal.

In contrast, after a time delay, for individuals lower in involvement, previous evidence would suggest that such individuals would process the messages less elaborately and, thus, could be expected to have less enduring attitudes formed overall.

Hypothesis 1b: At follow-up, for individuals who report lower involvement, no difference will be found between the mean attitudinal and intentional scores provided for the positive and negative appeals.

*6.3.1.2 Affect under high involvement conditions.* Under high involvement conditions, emotional states may be subject to careful scrutiny for their informational value similar to arguments included in a message (see Petty et al., 2001). The influence of affect upon attitudes under such conditions is likely to be mediated by other factors such as the valence of the thoughts generated (Petty et al., 1993) and the interpretations individuals make of their affective states (Bohner & Weinerth, 2001; Martin, Abend, Sedikides, & Green, 1997; Petty et al., 2001). In relation to interpretations of affect, of particular relevance to the current research, is the view that affect may function in terms of an input-to-role-fulfilment evaluation process (Martin et al., 1997). This affect-as-input view poses that the more individuals experience feelings they expected to feel if the target object had fulfilled its role, the more favourable their subsequent evaluations

of the target (Martin et al., 1997). Empirical evidence has been provided for this view of affect's role (see Bohner & Weinerth, 2001; Martin et al., 1997) For example, Martin et al. (1997) found that the more individuals experienced the feelings that they had expected to from a given story (i.e., felt tearful or amused following either a sad or humorous story respectively), the more favourably they responded to the story.

When applying this view to persuasive messages, the view proposes that if an individual's expectations of how they expect to feel match the affect that was actually experienced, persuasion will likely be enhanced whereas in instances where there is a mismatch between expectations and experience, an aversive effect on persuasion is likely to ensue.

For instance, individuals cognizant of (or highly involved with) the road safety issue may have difficulty accepting positive emotional messages over traditional, negative, fear-based approaches because the former appeal type would likely evoke unexpected positive emotions. Thus, immediately after exposure, for individuals who score higher in involvement, the negative appeal should be the most persuasive. This expectation is consistent with the affect-as-input view of affect's role and is based on evidence that individuals higher in involvement are more likely to engage in systematic processing of the message (Petty et al., 1991). Moreover, to the extent that those higher in involvement would be more likely to consider the cognitive components of the message and, in particular, the level of response efficacy incorporated within the message, it is expected that high rather than low levels of response efficacy will be interact with involvement and appeal type such that, for individuals higher in involvement, the negative, high response efficacy appeal is most persuasive.

Hypothesis 2a: It is predicted that, immediately after exposure, for individuals who report higher involvement, the highest attitudes and intentions will be associated with the negative, high response efficacy appeal.

In contrast, after a time delay, consistent with evidence that individuals of higher involvement would systematically process, it follows that such individuals would also be more likely to consider (and scrutinize) the affect that they experienced. Whilst this increased elaboration may lead individuals to favour negative appeals immediately after exposure, at follow-up, highly involved individuals may be likely to consider simply how they felt at the time in a more general sense. This suggestion is based on the notion that, as a transient affective state, message-relevant affect is likely to inform judgements immediately after exposure to a message while it remains salient; however, after a time delay, the affective state may become more diffused and consistent with a general mood (Schwarz, 1990). Consequently, in the case of positive emotional appeals, individuals may recall a more general sense of having felt “good”. This “feeling good” may be misattributed to the extent that it leads them to think that because they felt good about the message that it must have been a “good” message and to be a good message they must have been persuaded by it (i.e., the “how do I feel about it?” heuristic).

Hypothesis 2b: At follow-up, for individuals who report higher involvement, higher attitudes and intentions would be associated with the positive rather than the negative appeals.

### *6.3.2 Negative versus positive message-relevant affect: An overview of existing evidence*

Despite the frequent use of fear-based health messages, a substantial body of literature attests to the contradictory findings between the level of fear evoked and the extent of subsequent persuasion achieved (for review of the use of fear in road safety

campaigns see Elliott, 2003; Lewis, Watson, Tay, & White, 2007). Although recent meta-analytical research has proposed a small but reliable positive linear relationship between fear and persuasion (e.g., Witte & Allen, 2000), the magnitude of this correlation suggests that fear arousal is neither the only nor the main explanatory factor of a message's persuasiveness. Indeed, the more contemporary fear appeal models, namely Rogers' (1975) Protection Motivation Theory and Witte's (1992a) Extended Parallel Process Model have identified key cognitive factors/processes that influence the fear-persuasion relationship and consequently have afforded less focus upon the emotion of fear.

Of the factors examined in relation to the fear-persuasion relationship, particular significance has been placed upon the role of response efficacy (Witte & Allen, 2000). Response efficacy refers to the provision of coping strategies or recommendations within a message (Witte, 1992a, b). Of note, recent meta-analytical evidence has identified response efficacy as one of the most important predictors of adaptive outcomes resulting from exposure to fear-evoking messages (Floyd et al., 2000).

In addition to response efficacy, a number of individual difference factors have been examined. Interestingly, whilst meta-analytical evidence has suggested that demographic characteristics such as gender and age have limited or no impact upon the effectiveness of fear appeals (Witte & Allen, 2000), recent evidence, found in relation to gender, has challenged this conclusion (Goldenbeld, Twisk, & Houwing, 2008; Lewis, Watson, & Tay, 2007a). For instance, Lewis et al. (2007a) found that males were more likely to report appeals of high physical threats (i.e., appeals which depict death and/or injury as the consequences of unsafe/illegal behaviour) as having more influence on other drivers in general than themselves (the third-person effect [TPE], Davison, 1983;

Lewis, et al., 2007a). Moreover, males in this study were found to report significantly less intention to improve their future driving behaviour in relation to speeding and drink driving than females (Lewis et al., 2007a).

The concerning aspect of these findings is that males, as a high risk road user group, frequently represent the intended target of high physical threats (Tay, 2002). Compared with females, males are at much greater risk of being injured or killed in road trauma and are more likely to engage in risky behaviours such as speeding and drink driving (e.g., Harré, Field, & Kirkwood, 1996). Thus, despite representing the intended target of many of the high fear-based appeals, it seems that males are not being persuaded by such messages (or, at least, relatively less so than their female counterparts; Lewis et al., 2007a). Arguably, any evidence suggesting that such appeals are not reaching their persuasive goals justifies the need for further exploration for more effective approaches.

Interestingly, contemporary literature has identified humorous appeals as more persuasive than non-humorous appeals for males for health appeals addressing AIDS and sunscreen use (Conway & Dubé, 2002<sup>17</sup>; Struckman-Johnson et al., 1994; see also Hastings, Stead, & Webb, 2004). Although not road safety messages, these findings are encouraging and suggest that, even for messages addressing serious health topics, positive message-relevant affect (i.e., humour) may be an alternative, effective persuasive strategy for one of the key high risk road user groups.

However, a concern that has been associated with the possible increased use of positive emotional appeals in road safety is that such appeals, relative to negative

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<sup>17</sup> Conway and Dubé (2002) found this effect for high masculinity individuals. Evidence has suggested that males are typically higher in masculinity than females (Bem, 1974).

appeals, are less likely to be recalled and, thus, less effective over longer time intervals than negative appeals (Lewis et al., 2007b). However, other research, not from the road safety advertising context, has challenged this concern indicating that whilst negative appeals incorporating threats of physical harm may have a diminishing influence over time, positive appeals may actually become more persuasive over time. For instance, research based on messages promoting tooth brushing, found that high threats of physical harm had a persuasive advantage over other appeals (i.e., low threats of physical harm and social approval threats) on immediate post-exposure measures of intention. However, on longer-term measures of actual behaviour change, the persuasive advantage of such appeals disappeared (Evans et al., 1970). Whilst Lammers et al. (1983), utilising audio-taped advertisements for an industrial product, reported that a humorous appeal was more persuasive than a serious appeal after a delay. The authors concluded that the persuasive impact of humour cannot be measured immediately after exposure as to do so would typically reveal a persuasive disadvantage of humorous appeals relative to other messages. Rather, humour's positive impact on persuasion can only be detected after a time delay. Although not providing direct comparisons of positive versus negative emotional appeals, the Lammers et al.'s (1983) and Evans et al.'s (1970) studies, suggest that the relative effectiveness of the two appeal types may vary over time.

Although there is emerging empirical evidence supporting the potential use of positive emotion in appeals in road safety, it is important to note that compared with the substantial body of empirical and theoretical evidence that has amassed in relation to negative message-relevant affect in terms of fear-based messages, there is a relative paucity in theoretical explanations of the manner in which positive message-relevant

affect influences persuasion (Nabi, 2002). Moreover, much of what is currently known about positive affect and persuasion is based upon studies of positive message-*irrelevant affect* (i.e., mood) (Petty et al., 1993). Of note however, much of this evidence has shown that positive mood may have advantageous effects for persuasion (Petty et al., 1993). Thus, the important aspect to be noted from this evidence is that experiencing a positive feeling state (albeit a diffused, long-lasting state rather than transient affective response) can evidence improved persuasive effects.

Thus, the evidence discussed suggests that there may be a persuasive advantage for using positive appeals with males. Consequently, an important contribution to the literature may be to examine the TPE (i.e., the perceived relative influence on self and others) in relation to both negative and positive emotional appeals and, in particular, to examine the extent that males may report being more influenced than others to positive appeals.

Hypothesis 3: In relation to the TPE and positive and negative emotional messages, it is predicted that a gender effect will be found such that males will report a classic TPE and females a reversal of the TPE in response to negative appeals. However, for the positive appeals it is expected that TPE reversals will be found for males and classic TPE's for females.

Finally, in addition to the expected gender effects in relation to the TPE, gender effects are also expected in relation to the persuasion outcomes utilised in the current study.

Hypothesis 4: Males will rate positive appeals as more effective in terms of the attitudinal and intentional measures than females.

In summary, the overarching aim of the current study is to explore the relative persuasiveness of positive (humorous) and negative (fear-evoking) emotional appeals for anti-drink driving messages. This aim includes examining effectiveness in terms of (i) a range of persuasive outcomes and (ii) with such measures assessed both immediately after viewing of the advertisements as well as after a time delay. Moreover, the study examines the extent that involvement, response efficacy, and gender influence the relative effectiveness of the different emotional appeals. Additionally, the study aims to support as well as extend upon previous evidence relating to the TPE, gender, and the relative influence of the emotional appeals.

#### *6.4 Method*

##### *6.4.1 Participants*

To participate, a current motor vehicle's licence was required. Overall, 201 (71 males, 130 females) drivers participated at Time 1. Approximately half of the sample were aged 34 years or younger ( $N = 109$ , 54.2%). In an attempt to increase the representativeness of the participating drivers, two data collection strategies were utilised: participants completed the study on-line ( $N = 94$ , 46.8%<sup>18</sup>) or with a pen and paper version ( $N = 107$ , 53.2%). The internet option was advertised through print and radio media and was intended to provide a more diverse representation of the general driving public compared with the sample offered by the pen and paper version given that the latter version was completed by students undertaking a psychology unit at a major Australian university. Some students received partial course credit for their involvement in the study.

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<sup>18</sup> Surveys submitted that were complete or that contained minimal missing data.



Of the participants who completed the first questionnaire, 118 (Males = 30, Females = 88) completed the follow-up questionnaire. Of note, whilst the actual number of males and females who did not continue with the study was equal, proportionally more females (67.7%) were retained in the follow-up sample than males (42.3%). However, analyses revealed that participants who completed the second survey did not differ from participants who did not complete it on key dependent variables assessed in the first questionnaire (i.e., drink driving attitude and intentions).

#### *6.4.2 Design*

The study incorporated data collection via questionnaires administered at the time of exposure to the advertisements and 2 to 4 weeks later. At the first stage of data collection, a 2 x 2 x 2 x 2 mixed design was utilised with appeal type (positive, negative), involvement (low, high), and gender as between-groups variables and response efficacy (low, high) as a within-groups variable (to ensure that, at the end of exposure, individuals had been exposed to the same level of information and strategies provided). The dependent variables assessed in the first questionnaire were immediate-post exposure attitudes and intentions relating to drink driving whilst at follow-up, attitudes, intentions, and behaviour were assessed.

#### *6.4.3 Materials*

Four anti-drink driving advertisements (see Table 6.1) were identified from previous research (see Lewis et al., 2007a). These advertisements incorporated either a low or high level of response efficacy and evoked either positive emotions (i.e., the humorous advertisements evoked feelings such as being ‘amused’ and ‘happy’) or negative emotions (i.e., the fear-evoking advertisements evoked feelings such as being ‘afraid’ and ‘scared’).

#### 6.4.4 Measures

*6.4.4.1 First questionnaire.* Prior drink driving behaviour was assessed using an item that asked participants whether they had driven when over the legal limit in the previous 12 months. Responses were coded into a scale of 1(*Never*), 2(*Once*), 3(*Twice*), 4(*Three or more times*).

To assess the TPE, participants indicated the extent that “you yourself would be influenced” and “other drivers in general would be influenced by the advertisement” on a scale of from 1 (*Not influenced at all*) to 7 (*Extremely influenced*). The items were derived from previous research (e.g., Lewis et al., 2007a; see also Duck & Mullin, 1995; Henriksen, & Flora, 1999).

A composite scale of four items assessed response efficacy in terms of the effectiveness and usefulness of the information and strategies provided in the message (e.g., the advertisement provided information that would be useful to avoid situations involving drinking and driving). Responses were made on a scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). The scale for both the high and low response efficacy advertisements was internally reliable (Cronbach alphas of .88 and .86, respectively).

To measure emotional responses to the advertisement participants were asked to rate, on a scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*), the extent that viewing the advertisement had made them feel mostly (i) positive feelings and (ii) negative feelings<sup>19</sup>.

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<sup>19</sup> The following instruction preceded the questions assessing emotions experienced: “The following section of questions relate to the feelings you experienced from watching the advertisement. Before continuing, please refer to the following information. NEGATIVE feelings = experiencing feelings such as sadness, anger, guilt, and fear. POSITIVE feelings = experiencing feelings such as happiness, excitement, contentment, cheerfulness.

Table 6.1

*Brief descriptions of anti-drink driving advertisements utilised in the study*

| Ad Name | Condition                                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Glasses | Negative Appeal/<br>Low Response<br>Efficacy  | Empty beer glasses appear in front of the windscreen one by one causing increasingly blurred vision. The car collides into the rear of a stationary truck. The wife of the driver is told by police that her husband has been killed.                                                                                                                                                                                                                                            |
| Never   | Negative Appeal/<br>High Response<br>Efficacy | “Julie” and her boyfriend are at her dad’s birthday party. The boyfriend is shown drinking alcohol. “Julie” asks if she should drive because he has been drinking. Her boyfriend says that he is okay to drive. He collides with a stationary truck. Julie is shown covered in blood and lifeless. The boyfriend survives. Julie’s dad has flashbacks of Julie at his party. The advertisement highlights the strategy of letting someone else, who hasn’t been drinking, drive. |
| Karaoke | Positive Appeal/<br>Low Response<br>Efficacy  | Set in a bar with a karaoke machine. Intending to be humorous, the advertisement shows that the more people drink the more confident they become. The advertisement concludes, that unlike driving after drinking, singing after drinking will not kill anyone.                                                                                                                                                                                                                  |
| Taxi    | Positive Appeal/<br>High Response<br>Efficacy | Shows the comical conversations a taxi driver experiences with intoxicated passengers. The advertisement concludes with, “If you drink and drive and take a taxi, you’re a bloody genius”. The advertisement models an alternative, safe behaviour, namely, taking a taxi after drinking and is intended to be humorous.                                                                                                                                                         |

Attitude towards drink driving was measured pre-exposure and following each advertisement. Given the strong social disapproval that surrounds drink driving, participants would likely report ceiling effects if the items assessed driving after drinking when over the legal BAC limit. Thus, participants indicated the extent that it was *unacceptable* (1) to *acceptable* (7) and *foolish* (1) to *wise* (7) to (i) drive after

consuming a quantity of alcohol likely to leave you under the legal blood alcohol concentration (BAC) limit, and to (ii) drive after consuming any quantity of alcohol. A composite measure was created from these four items. Cronbach alphas ranged from .87 to .90 indicating that each scale was internally reliable. Responses were reverse scored such that higher scores indicated less favourable attitudes towards drink driving.

Intentions were measured after each advertisement. Participants were asked to indicate the extent that they intended to use strategies to reduce the risk of drink driving from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Similar to the attitude items, it was thought that assessing participants' general intention to "do something" would be associated with less social desirability bias than items that assessed an intention such as "I intend not to drive after drinking".

Involvement was operationalised in terms of personal relevance. Specifically, participants were asked, "How relevant is the advertisement to you and your driving". Responses were made on a scale from 1 (*Not relevant at all*) to 7 (*Extremely relevant*). This question was assessed after each advertisement and an overall measure of involvement was obtained by computing an average score of these two responses (i.e.,  $r = .52, p < .001$ ). A median split was then performed on the average score variable to form a dichotomous variable of low ( $M = 1.39, SD = 0.54$ ) and high ( $M = 4.34, SD = 1.14$ ) involvement.

*6.4.4.2 Follow-up questionnaire.* Attitude towards drink driving was assessed using the same items as those used in the first questionnaire and was again internally reliable (Cronbach alpha = .80). Self-reported drink driving behaviour was also assessed. Participants were asked to indicate how many times, in the past 2 to 4 weeks, they had driven after consuming alcohol and possibly were over the legal blood alcohol

concentration (BAC) limit. Participants responded to this item on a scale of 1 (*Never*), 2(*Once*), 3(*Twice*), 4(*Three or more times*).

#### 6.4.5 Procedure

All material describing the study (e.g., leaflets posted on noticeboards) including the information flyer provided to participants explicitly noted that the study was about road safety advertisements and that each participant would be viewing road safety television advertisements. Of note, the material also included a warning that some people may find the advertisements distressing and should consider whether they would feel comfortable continuing. Whilst this warning was real, it also would have contributed to the expectation that individuals had of the advertisements that they were likely to see and thus, the feelings they were likely to experience. Participants in the pen and paper version completed the survey in groups with the researcher present throughout the study. All participants viewed two advertisements and viewed each advertisement once only. Participants were instructed to commence the first section of the survey immediately and once completed, then viewed the first advertisement and completed the relevant section of the questionnaire. This procedure was repeated for the second advertisement. The condition shown (i.e., appeal type) was alternated from session to session and the advertisement order (i.e., low or high response efficacy) counterbalanced.

The condition appearing on-line was rotated every few days and the advertisement order counterbalanced. For the follow-up survey, participants completed the same version of the survey that they had completed previously and surveys were matched via email addresses in the internet version and via a unique identifying code in the pen and paper condition. At follow-up, no advertisements were shown.

## 6.5 Results

### 6.5.1 Manipulation Checks

To check the effectiveness of the response efficacy and appeal type manipulations, 2 (positive, negative) x 2 (low, high) mixed-design MANOVAs were conducted. For the response efficacy manipulation, a significant main effect for response efficacy was found (Wilks'  $\Lambda = .90$ ,  $F(1, 198) = 22.15$ ,  $p < .001$ ,  $\eta_p^2 = .10$ ). As expected, advertisements in the high response efficacy condition were significantly higher in response efficacy than advertisements in the low response efficacy condition ( $M_s = 4.95$  and  $4.43$ , respectively), Wilks'  $\Lambda = .90$ ,  $F(1, 198) = 22.15$ ,  $p < .001$ ,  $\eta_p^2 = .10$ .

For the appeal type manipulation, a significant main effect for appeal type was found (Wilks'  $\Lambda = .39$ ,  $F(2, 198) = 154.26$ ,  $p < .001$ ,  $\eta_p^2 = .61$ ). As expected, participants exposed to the positive appeals reported a significantly higher level of positive feelings than participants exposed to the negative appeals ( $M_s = 5.02$  and  $1.70$  respectively) and participants assigned to the negative appeals reported a significantly higher level of negative feelings than participants exposed to the positive appeals ( $M_s = 5.88$  and  $3.34$  respectively).

### 6.5.2 Immediate persuasion outcomes

The effects of appeal type, response efficacy, gender, and involvement were tested in 2 x 2 x 2 x 2 mixed design ANCOVAs with the appropriate pre-exposure variable for each respective analysis entered as a covariate<sup>20</sup>. The use of a covariate avoids the use of difference scores given such scores have attracted criticism in relation

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<sup>20</sup> For the analysis involving intention, consistent with evidence of the proximal relationship between intentions and behaviour (i.e., Theory of Planned Behaviour; Ajzen & Fishbein, 1980) and evidence identifying past behaviour as one of the best predictors of future behaviour (Albarracín, Johnson, & Zanna, 2005), the pre-exposure measure of prior drink driving behaviour was entered as a covariate.

to their poor psychometric properties (e.g., Humphreys, 1993; Peter, Churchill, & Brown, 1993). For each analysis, all significant results are reported in Table 6.2 whilst the results of all follow-up tests of significant interactions are reported in Sections 6.5.2. to 6.5.3. For follow-up tests, Bonferroni adjustments of alpha were made.

*6.5.2.1 Attitude.* Further examination of the significant 3-way interaction (see Table 6.2) revealed a significant effect for individuals higher in involvement in the high efficacy condition. Subsequent pairwise comparisons revealed that the negative appeal condition was associated with significantly less favourable attitudes towards drink driving than the positive appeal condition ( $M_s = 5.32$  and  $4.77$ , respectively). The only other significant effect was the main effect for gender which revealed that males had significantly weaker (more favourable) views towards drinking and driving than females ( $M_s = 4.19$  and  $5.14$ , respectively).

*6.5.2.2 Intentions to use strategies.* The results revealed a 4-way interaction approaching significance (see Table 6.2). Subsequent examination of this tendency revealed significant effects for males, lower in involvement, in the low efficacy condition ( $F(1, 112) = 7.78, p = .006, \eta_p^2 = .07$ ) as well as for females, higher in involvement in the low efficacy condition ( $F(1, 112) = 9.37, p = .003, \eta_p^2 = .08$ ). Pairwise comparisons revealed males had significantly less intention to use strategies to avoid drink driving after being exposed to the positive appeal than the negative appeal ( $M_s = 4.25$  and  $5.90$ , respectively) whilst females reporting higher involvement in the in the low efficacy condition also indicated significantly less intention to use strategies after viewing the positive appeal than the negative appeal ( $M_s = 4.63$  and  $6.73$ , respectively).

Table 6.2

*All significant effects for immediate and follow-up persuasive outcomes by appeal, involvement, response efficacy (RE), and gender<sup>a</sup>*

| Immediate       |                                      |                                               |
|-----------------|--------------------------------------|-----------------------------------------------|
| Outcome Measure | Significant Effects                  |                                               |
| Attitude        | Appeal                               | $F(1, 190) = 5.70, p = .001, \eta_p^2 = .05$  |
|                 | Gender                               | $F(1, 190) = 5.70, p = .018, \eta_p^2 = .03$  |
|                 | Appeal x RE x Involvement            | $F(1, 190) = 4.53, p = .035, \eta_p^2 = .02$  |
| Intentions      | Appeal                               | $F(1, 112) = 7.19, p = .008, \eta_p^2 = .06$  |
|                 | Appeal x RE                          | $F(1, 112) = 7.54, p = .007, \eta_p^2 = .06$  |
|                 | Appeal x RE x Involvement            | $F(1, 112) = 6.31, p = .013, \eta_p^2 = .05$  |
|                 | Appeal x RE x Involvement x Gender   | $F(1, 112) = 3.78, p = .054, \eta_p^2 = .03$  |
| Follow-up       |                                      |                                               |
| Outcome Measure | Significant Effects                  |                                               |
| Attitude        | Appeal                               | $F(1, 103) = 8.92, p = .004, \eta_p^2 = .08$  |
|                 | Time                                 | $F(2, 102) = 10.31, p < .001, \eta_p^2 = .17$ |
|                 | Time x Gender                        | $F(2, 102) = 4.20, p = .018, \eta_p^2 = .08$  |
|                 | Time x Involvement                   | $F(2, 102) = 3.94, p = .022, \eta_p^2 = .07$  |
|                 | Appeal x Gender x Involvement x Time | $F(2, 102) = 3.25, p = .043, \eta_p^2 = .06$  |
| Behaviour       | Gender                               | $F(1, 108) = 7.56, p = .007, \eta_p^2 = .07$  |
|                 | Appeal x Involvement                 | $F(1, 108) = 15.26, p < .001, \eta_p^2 = .12$ |
|                 | Appeal x Involvement x Gender        | $F(1, 108) = 8.43, p = .004, \eta_p^2 = .07$  |

Note. <sup>a</sup> Table 4 summarises only the significant effects found for each analyses. The follow-up results for the significant interactions are reported in the relevant section of the body of results. <sup>b</sup>  $\eta_p^2$  or partial eta-squared is a measure of effect size. This measure of effect size is recommended when comparisons of an identical manipulation across studies that have different factorial designs are wanted and/or likely (Levine & Hullett, 2002; Pierce, Block, & Aguinis, 2004).



### 6.5.3 *Follow-up persuasive outcomes*

6.5.3.1 *Attitude*. The effects of appeal type, gender, involvement, and time (pre-exposure [Time 1], immediate-post [Time 2], follow-up post [Time 3]) were tested in a 2 x 2 x 2 x 3 mixed design analysis of variance.

Further examination of the significant 4-way interaction (see Table 6.2) revealed a significant effect for individuals who scored higher in involvement only. Subsequent pairwise comparisons revealed significant effects for both males and females in the positive appeals condition and for females only in the negative appeals condition. In the positive condition, males demonstrated a consistent and significant improvement in attitude scores over each of the three time periods with means scores at follow-up being significantly higher than scores at both pre- and immediate post-exposure (see Table 6.3).

In contrast, whilst inspection of the means reveals that females demonstrated a similar trend of improvement over time, a significant difference was found between pre- and follow-up post-exposure only. In the negative condition, females' mean attitude scores at pre-exposure were found to be significantly lower than at immediate post- and follow-up post-exposure. Moreover, inspection of the means in Table 6.3 reveals that females' attitude scores at follow-up were lower than immediately after exposure indicating no further persuasive improvement over time than that achieved immediately after.

Table 6.3

*Means attitude scores at follow-up by appeal type, gender, involvement, and time*

| Appeal Type | Gender | Involvement <sup>a</sup> | Time <sup>b</sup> | Mean | Std. Error |
|-------------|--------|--------------------------|-------------------|------|------------|
| Positive    | Male   | 1.00                     | 1                 | 5.04 | 0.57       |
|             |        |                          | 2                 | 4.75 | 0.55       |
|             |        |                          | 3                 | 5.42 | 0.51       |
|             |        | 2.00                     | 1                 | 4.06 | 0.50       |
|             |        |                          | 2                 | 4.25 | 0.48       |
|             |        |                          | 3                 | 4.88 | 0.44       |
|             | Female | 1.00                     | 1                 | 4.22 | 0.28       |
|             |        |                          | 2                 | 4.45 | 0.27       |
|             |        |                          | 3                 | 4.54 | 0.25       |
|             |        | 2.00                     | 1                 | 4.18 | 0.31       |
|             |        |                          | 2                 | 4.38 | 0.29       |
|             |        |                          | 3                 | 4.68 | 0.27       |
| Negative    | Male   | 1.00                     | 1                 | 5.29 | 0.40       |
|             |        |                          | 2                 | 5.54 | 0.39       |
|             |        |                          | 3                 | 5.48 | 0.36       |
|             |        | 2.00                     | 1                 | 4.75 | 0.99       |
|             |        |                          | 2                 | 5.00 | 0.95       |
|             |        |                          | 3                 | 6.13 | 0.88       |
|             | Female | 1.00                     | 1                 | 5.82 | 0.33       |
|             |        |                          | 2                 | 5.86 | 0.32       |
|             |        |                          | 3                 | 5.75 | 0.29       |
|             |        | 2.00                     | 1                 | 5.17 | 0.32       |
|             |        |                          | 2                 | 5.90 | 0.31       |
|             |        |                          | 3                 | 5.79 | 0.29       |

<sup>a</sup> 1 = Low involvement and 2 = High involvement. <sup>b</sup> Time 1 = pre-exposure, Time 2 = average of immediate post-exposure scores for the two advertisements, Time 3 = follow-up post-exposure.

*6.5.3.2 Driving after drinking when possibly over the limit.* The effects of appeal type, gender and involvement were examined in a 2 x 2 x 2 ANCOVA with pre-exposure behaviour of driving when possibly over the legal limit entered as a covariate. Further investigations of the significant 3-way interaction (see Table 6.2) revealed a significant effect for males reporting higher involvement only. Specifically, pairwise comparisons indicated that the positive appeal condition was associated with significantly less reported driving when possibly over the limit than the negative appeal condition ( $M_s = 0.96$  and  $1.26$ , respectively).

#### *6.5.4 Perceptions of influence on self and others*

To examine the perceived influence of the different appeals on self and others, a 2 (appeal type: positive or negative) x 2 (target of influence: self and others) x 2 (gender) mixed-design analysis of variance (ANOVA) with appeal type and gender as the between-groups variables and target of influence as a repeated-measures variable, was conducted. The dependent variable was the influence score. The high and low response efficacy appeals were analysed separately.

*6.5.4.1 High response efficacy appeals.* The results revealed significant main effects for target ( $F(1, 197) = 9.91, p = .002$ ) and appeal ( $F(1, 197) = 8.81, p = .003$ ), as well as the effect of gender approaching significance ( $F(1, 197) = 3.76, p = .054$ ). Additionally, the 2-way interaction between appeal and gender was significant, ( $F(1, 197) = 7.12, p = .008$ ) which was clarified further by a significant 3-way interaction between appeal type, gender, and target, ( $F(1, 197) = 5.42, p = .021$ ).

Follow-up tests revealed significant effects for influence ratings for both self ( $F(1, 197) = 9.27, p = .003$ ) and others ( $F(1, 197) = 7.73, p = .006$ ) for the negative appeal only. Pairwise comparisons revealed that males perceived significantly less

influence on self than females ( $M = 3.87$ ;  $M = 5.12$ , respectively). Additionally, males perceived significantly less influence on others than females ( $M = 4.33$ ;  $M = 5.20$ , respectively). Moreover, of note, inspection of the mean scores (see Table 6.4) reveals that males perceived relatively greater influence on others than self (i.e., 4.33 versus 3.87) and, thus, evidenced a classic TPE (subsequent significance tests revealed that this difference approached significance,  $p = .09$ ). In contrast, the self and others ratings reported by females reveals an attenuation of the classic TPE (i.e., 5.12 versus 5.20, ns).

Although the univariate tests for both influence on self and others failed to reach significance for the positive appeal, some interesting and noteworthy trends emerged. The means in Table 6.4 show a reversal of the results found for the negative high efficacy appeal. Specifically, for males, minimal difference in perceived influence on self and others ( $M = 3.97$  versus  $M = 4.09$  respectively) was found indicating an attenuation of the classic TPE; however, for females, evidence of a classic TPE was found with self ( $M = 3.40$ ) and others' ( $M = 4.33$ ) influence ratings.

Table 6.4

*Mean and Standard Deviations of self and other influence ratings by appeal type and gender for the high response efficacy advertisements*

| Appeal type | Gender (N)  | Self/Others | Mean | SD   |
|-------------|-------------|-------------|------|------|
| Negative    | Male (39)   | Self        | 3.87 | 2.11 |
|             |             | Others      | 4.33 | 1.90 |
|             | Female (60) | Self        | 5.12 | 2.04 |
|             |             | Others      | 5.20 | 1.36 |
| Positive    | Male (32)   | Self        | 3.97 | 1.96 |
|             |             | Others      | 4.09 | 1.57 |
|             | Female (70) | Self        | 3.40 | 1.88 |
|             |             | Others      | 4.33 | 1.37 |

*6.5.4.2 Low response efficacy appeals.* The results revealed significant main effects for target ( $F(1, 197) = 20.58, p < .001$ ) and appeal ( $F(1, 197) = 12.29, p = .001$ ). Additionally, significant 2-way interactions of target x appeal ( $F(1, 197) = 6.14, p = .014$ ) and appeal x gender ( $F(1, 197) = 15.54, p < .001$ ) were found. However, these results were clarified further by a significant 3-way interaction between target, appeal, and gender ( $F(1, 197) = 5.42, p = .021$ ).

Further examination of the significant 3-way interaction revealed significant effects for influence ratings for self ( $F(1, 197) = 15.89, p < .001$ ) and others ( $F(1, 197) = 7.06, p = .008$ ) for the negative condition with the effect for influence on self for the positive condition approaching significance ( $F(1, 197) = 3.74, p = .054$ ). Pairwise comparisons revealed that, for the negative appeal, males perceived significantly less influence on self than females ( $M = 3.21$ ;  $M = 4.70$ , respectively). Additionally, males perceived significantly less influence on others than females ( $M = 3.80$ ;  $M = 4.60$ ,

respectively). Similar to the high efficacy negative appeal, inspection of the means (see Table 6.5) reveals that males perceived relatively greater influence on others than self (i.e., 3.80 versus 3.21 respectively) and, thus, evidenced a classic TPE (subsequent significance tests revealed that this difference was significant,  $p = .023$ ). In contrast, the self and others ratings reported by females reveals an attenuation of the TPE with a non-significant difference ( $p = .630$ ) between the mean perceived influence ratings for self and others ( $M_s = 4.70$  and  $4.60$ , respectively).

Table 6.5

*Mean and Standard Deviations of self and other influence ratings by appeal type and gender for the low response efficacy advertisements*

| Appeal type | Gender (N)  | Self/Others | Mean | SD   |
|-------------|-------------|-------------|------|------|
| Negative    | Male (39)   | Self        | 3.21 | 1.87 |
|             |             | Others      | 3.79 | 1.67 |
|             | Female (60) | Self        | 4.70 | 2.05 |
|             |             | Others      | 4.60 | 1.51 |
| Positive    | Male (32)   | Self        | 3.28 | 1.73 |
|             |             | Others      | 3.91 | 1.53 |
|             | Female (70) | Self        | 2.53 | 1.62 |
|             |             | Others      | 3.57 | 1.28 |

For the positive appeal, pairwise comparisons indicated that males perceived significantly more influence on self than females ( $M = 3.28$ ;  $M = 2.53$ , respectively). No other effects were significant. Although males reported significantly greater influence on self relative to females, inspection of the means in Table 6.5 reveals that, overall, males perceptions were consistent with a classic TPE (i.e., mean scores of influence on self and others were 3.28 and 3.91 respectively and this difference approached significance,  $p$

= .029). Similarly, the self and other influence ratings reported by females indicated a classic TPE ( $M = 2.53$  and  $M = 3.57$  respectively; a difference which was significant,  $p < .001$ ).

## 6.6 Discussion

The study aimed to examine the relative effectiveness of positive (humorous) and negative (fear-evoking) emotional appeals for anti-drink driving messages in terms of a range of persuasive outcome measures taken both immediately after exposure and after delay. It also aimed to investigate the impact of some key variables identified from theoretical and empirical evidence; namely, involvement, response efficacy, and gender on persuasiveness of the appeals. Finally, the study also aimed to examine the appeals in terms of their perceived influence on self and others; namely, the TPE.

### 6.6.1 Immediate persuasion outcomes

In relation to attitudes towards drink driving, the results supported the hypothesis that participants reporting higher involvement would associate the high response efficacy negative appeal with a more disapproving attitude towards drink driving than participants who viewed its positive counterpart (Hypothesis 2a). This finding may be explained by the affect-as-input explanation of affect's role (Martin et al., 1997).

Because participants knew that they were going to view road safety advertisements from the outset, it could be argued that participants were expecting the advertisements to be similar to the typical negative, fear-based approach often utilised and, thus, expected to feel negative feelings such as fear and sadness. However, for those participants who viewed the positive advertisements and, thus, experienced more positive feelings, such feelings would not have been consistent with how they had expected they would feel. Consequently, they interpreted their positive affective state as indication that the

advertisements had not been effective because they did not feel as they should (see Martin et al., 1997).

Whilst support was found for the affect-as-input view of affect's role in relation to individuals of higher involvement, no support was found for the hypothesis relating to the "how do I feel?" heuristic in relation to individuals of lower involvement (Hypothesis 1a). This hypothesis proposed that if participants enacted the simple "how do I feel about it?" heuristic, the positive appeals, which presumably would have made participants feel "good", would have subsequently led them to believe that they should be persuaded by the message. It would seem that, for those individuals of limited involvement with the road safety issue, persuasion is not simply achieved by making such individuals feel good or that other peripheral cues predominated their responses to the message.

With intentions, consistent with expectations, a significant interaction was found between appeal type, involvement, and response efficacy. Additionally, gender also interacted to result in a significant four-way interaction between all the key variables. However, analysis of the simple main effects revealed findings that were inconsistent with Hypotheses 1a and 2a. Specifically, for males reporting lower involvement in the low response efficacy condition and females reporting higher involvement in the low response efficacy condition, the negative appeal was associated with significantly more intentions to use strategies than the positive appeal. The result found for males provides no support for the "how do I feel about it?" heuristic (and Hypothesis 1a) given that evidence of greater persuasion (i.e., higher intentions) was associated with the negative rather than positive appeal. In relation to response efficacy, for individuals reporting lower involvement, high response efficacy may not have been so crucial to message



persuasiveness given analogous evidence derived from earlier studies that weak arguments may be as effective as strong arguments (e.g., Petty et al., 1981). It is perhaps worthy to note that these persuasion outcome results appear consistent with the TPE results (see Section 6.6.3). The male respondents' influence ratings for the low response efficacy, positive advertisement revealed a classic TPE whilst there appeared to be an advantage in using positive, high response efficacy appeals with males (i.e., where an attenuation of the TPE was found). Arguably, the broader implication of this finding is that, for individuals of low involvement, it would be ill-advised to rely on appeals that just aim to make males "feel good" as emotion alone is not sufficient to persuade: positive appeals with low response efficacy appear to be rated poorly by males whereas positive appeals with high response efficacy are more effective.

In relation to females reporting high involvement in the low response efficacy condition, finding stronger intentions not to drink and driving following exposure to the negative appeal relative to the positive appeal is consistent with the affect-as-input view (i.e., greater persuasion should be associated with the emotional appeal that evokes the expected negative emotions rather than an appeal that evokes the unexpected positive emotions such as humour). However, the fact that this persuasive advantage for negative appeals was found for the low rather than high response efficacy appeals is inconsistent with Hypothesis 2a and previous literature. For highly involved individuals, elaboration on the quality of the information and arguments presented (which presumably would include consideration of the efficaciousness of the strategies provided as either weak or strong) would be expected (e.g., Petty et al., 1981). Moreover, evidence derived from the fear appeal literature attests to the importance of response efficacy as one of the strongest predictors of message effectiveness (see Floyd et al., 2000). Thus, for a low

response efficacy negative appeal to be regarded as more persuasive than a positive, low response efficacy alternative attests particularly to the poorer performance of the positive advertisement: a low efficacy negative advertisement should not be effective according to fear appeal theories (e.g., PMT and EPPM) and empirical evidence (e.g., Tay & Watson, 2002).

In sum, the affect-as-input view of affect's role may provide one possible explanation of the results obtained from the immediate post exposure measures of attitudes and intentions<sup>21</sup>. It appears that, immediately after exposure, there is a persuasive advantage for negative appeals. This result is consistent with previous empirical research (e.g., Evans et al., 1970). It appears that there is some support for the notion that individuals have grown to "expect" road safety advertisements to be a certain way and to make them feel certain emotions. Thus, the expectation to feel negative emotions, such as fear and sadness, were fulfilled with the negative appeals; however, with the positive, humorous appeals, feeling positive emotions was interpreted as inconsistent with expectations and, thus, the positive appeals were evaluated as less effective. This finding suggests that an important first step towards increasing the perceived effectiveness of positive appeals may be to simply increase the use of such appeals within road safety campaigns. Increasing their use may also increase individuals' expectations that positive emotions may be felt after exposure to a road safety message.

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<sup>21</sup> A more definitive empirical test of this affect-as-input view of affect's role would be to incorporate a pre-test questionnaire in which participants would provide information on what they regard to be a "good" road safety advertisement in terms of the emotional content it incorporates and the emotional responses that it evokes. We thank an anonymous reviewer of our article for this suggestion.

In contrast, the immediate-post exposure findings provide no support for the “how do I feel about it?” heuristic. For individuals reporting low involvement, some evidence counter to what was expected was found: the negative appeal was more effective than its positive counterpart for intentions to use strategies for males. It would seem that attempts to persuade low involved male drivers by appeals that simply aim to make them feel “good” are not sufficient to influence future driving intentions.

Other immediate exposure measures, however, such as the TPE, suggest that the positive high efficacy appeal was more effective than its low response efficacy counterpart. Thus, it would appear that not only emotional content of the message determines the effectiveness of positive appeals for males, but also the level of response efficacy incorporated within the message. The broader implication of this finding is that it appears that response efficacy is as important to positive emotional appeals as it is for negative, fear-based appeals.

#### *6.6.2 Follow-up persuasion outcomes*

Unlike immediate persuasion outcome measures, it was predicted that affect may function more according to the “how do I feel about it?” heuristic (Schwarz, 1990; Schwarz & Clore, 1983) for individuals reporting higher involvement (Hypothesis 2b). Support for this prediction was underpinned by previous evidence that found positive appeals are more likely to improve in persuasiveness over time (e.g., Lammers et al., 1983; see also Godart & Prigongine, 2001; Prigongine, 2004). It was predicted that, for individuals reporting higher involvement, because they could have been expected to have processed the message more centrally, these individuals would be more likely to have processed the message more elaborately. After a time delay, rather than recall whether or not the emotion they felt at the time was appropriate or consistent with what

they expected, perhaps it is the more general experience of having felt “good” at the time that may have been remembered (given the transient nature of message-relevant affect). The follow-up post exposure attitudinal and behavioural measures provide support for this explanation.

Consistent with predictions, the results revealed that the relative effectiveness of appeal type was influenced by the level of involvement, time, and gender as evidenced by a significant four-way interaction. Moreover, consistent with the attitude durability hypothesis of the ELM (Petty & Cacioppo, 1986) and, as predicted, analysis of the simple effects revealed that all significant effects were found for individuals reporting high involvement only (Hypothesis 1b and 2b). These results suggest that those individuals who scored higher in involvement and whom, presumably, processed the messages centrally did have more enduring persuasive effects.

Additionally, consistent with the expectation that positive appeals would show improvement over time, evidence was found of positive appeals producing significant improvement in attitudes at follow-up. Moreover, this pattern of improvement differed by gender and appeal type. Specifically, for the positive appeals, males showed significant and consistent improvement from pre- to immediate post- to follow-up post-exposure; whereas females showed significant improvement only between pre and follow-up post-exposure (Hypothesis 4).

In contrast, for negative appeals, the only significant effect was for females who were found to report higher attitude scores at immediate post- and follow-up post- than at pre-exposure. Of particular note, immediate post-exposure scores did not significantly differ from follow-up post-exposure and, in fact, the latter mean score was lower than the former score suggesting that the greatest improvement in attitudes was found

immediately after exposure with no further improvement (in fact a decrease) over time. This finding is consistent with previous empirical research of the attenuated effects of negative appeals over time (Evans et al., 1970; see also Godart & Prigogine, 2001; Prigogine, 2004). Thus, consistent with previous research (e.g., Lammers et al., 1983) the current findings suggest that the persuasive effects of positive emotions are most likely to emerge after a time delay. The implication of this finding is that studies that examine the persuasiveness of positive appeals only in terms of immediate post-exposure measures are unlikely to provide a complete account of the persuasive effects of positive appeals.

With behaviour, consistent with predictions (Hypothesis 2b and 4), a significant interaction was found between appeal type, involvement, and gender. Specifically, males reporting higher involvement were less likely to have reported driving when possibly over the legal limit after having been exposed to the positive rather than the negative appeal. Thus, in relation to self-reported drink driving behaviour, a significant reduction was found from pre-exposure measures of past behaviour to behaviour reported at follow-up. The results obtained revealed a number of consistencies with predictions. First, the significant simple effect was found for individuals higher in involvement (i.e., those individuals more likely to engage in central processing and thus evidence more enduring persuasive effects). Second, consistent with the expectation that positive appeals would show improvement over time, the only significant effect was found for the positive appeal condition. Third, it was expected that males would show evidence of a persuasive advantage for positive appeals.

Arguably, this finding is particularly encouraging given that it is a behavioural outcome measure (albeit self-report). The inclusion of a behavioural measure reflects the

attempt to assess more practically significant outcomes which is pertinent in the health advertising context given that most campaigns aim to motivate longer-term health behaviour change (Job, 1988). Indeed, it represents a notable strength of the current study that a measure of behaviour, as opposed to behavioural intentions, was obtained. Although intentions are significant predictors of behaviour, the existence of the “intention-behaviour gap” highlights the fact that intentions are not perfect predictors of behaviour (Sniehotta, Scholz, & Schwarzer, 2004). Further research is necessary to support this finding as well as to ascertain whether messages addressing other risky driving behaviours such as speeding, are able to report a similar persuasive advantage for behavioural outcome measures with males. In summary, at follow-up, the persuasion outcome measures of attitudes and behaviour provide evidence that the function of affect changes over time.

#### *6.6.3 TPE results*

As predicted (Hypothesis 3), the current study’s results supported previous empirical evidence (i.e., Lewis et al., 2007a) with females demonstrating an attenuation of the classic TPE and males demonstrating a classic TPE, for negative appeals of both high and low response efficacy. Thus, similar to the conclusions drawn by Lewis et al., (2007a), the TPE results derived in the current study have significant theoretical and practical implications. Theoretically, the findings highlight that the TPE is a factor possibly mediating the effectiveness of fear-based appeals. Derived from the communication literature, the TPE has received limited attention in the fear-based literature. Whilst it has been acknowledged that a myriad of factors, including individual difference and situational factors, influence the effectiveness of fear messages (Witte &

Allen, 2000), the TPE is demonstrating itself to be a robust phenomenon in relation to impacting upon the effectiveness of fear-based appeals.

In an applied context, these findings highlight that despite many physical threats being designed to target male road users (Tay, 2002), such appeals, whilst being rated as personally influential by females, are more likely to be regarded by males as more influential to some “other” third-person rather than oneself. Given that males are at a greater risk of being injured or killed in a road crash than females, it appears that current persuasive appeals may not be the most effective means of delivering road safety messages. The current study provides some evidence of alternative approaches that may be effective.

More specifically, the current study also extended upon the previous TPE research by examining the TPE in relation to road safety appeals incorporating positive emotion. To the authors’ knowledge, few studies have examined the TPE in relation to humorous or positive emotional messages addressing a serious health topic. As predicted (based on previous empirical evidence not examining the TPE and positive messages but, positive messages and persuasion outcomes; e.g., Conway & Dubé, 2002) the results indicated that, for humorous appeals, males reported an attenuation of the TPE whilst females reported a classic TPE. This finding represents a reversal of the perceived self and other influence ratings reported by males and females for negative, fear-based appeals. In other words, in relation to self and others influence, there appears to be a persuasive advantage for using positive appeals for males.

Additionally, the current findings reflect the importance of response efficacy in relation to positive appeals. Specifically, evidence of the attenuation of the classic TPE for males was found only for the high response efficacy positive appeal; in the low

efficacy condition, both males and females reported significant classic TPE's. To date, limited evidence is available in relation to what types of appeals response efficacy is important for and what types of additional information positive appeals may require (see Dillard & Nabi, 2006). Consequently, these TPE results provide important extensions to contemporary understanding by highlighting the importance of response efficacy for positive appeals and by identifying the third-person perceptions as an additional factor mediating the influence of not only negative appeals but also positive appeals.

#### *6.6.4 Strengths, limitations, and future research*

Overall, the current study offers a number of significant contributions to the literature. First, it provides further evidence of the gender differences in relation to the impact of the TPE in relation to negative, fear-evoking appeals. Further, the study extends current understanding of the impact of the TPE in relation to positive emotional messages for health advertising. Second, the current study provides a direct comparison of the relative effectiveness of positive, humour-evoking and negative, fear-evoking health messages over time rather than only immediately after exposure. As such, the current study provides insight into the relative duration of the persuasive effects of different emotional appeals in the health advertising context. Additionally, the comparison is based on a range of persuasion outcome measures including attitudinal, intentional, and behavioural change, thus providing insight into the manner in which emotional appeals exert their persuasive effects. Although previous studies have compared the effectiveness of positive and negative appeals, not all included outcome measures taken over time nor for a range of measures (e.g., Brooker, 1981). Moreover, the study represents one of only a limited number of studies that have compared the



persuasiveness of positive and negative messages addressing the same behaviour (i.e., drink driving) within the road safety advertising context.

Third, as noted previously, much of what is currently known on the role of emotion in relation to attitude change has been based on affect defined in terms of mood. In such mood studies, manipulations to mood are made prior to the exposure to a persuasive message and this methodology is distinctly different from the impact of affective responses generated from the persuasive message itself. Thus, the current paper furthers understanding of message-relevant affect beyond what is currently known and based predominantly upon negative (i.e., fear) message-relevant affect.

Finally, the study does provide further support for the need to consider the effect of gender when examining the persuasiveness of health messages. However, whilst the study does contribute to the growing body of evidence highlighting the importance of gender it does not provide explanation for the presence of this gender effect. Thus, an important aim for future research may be to better understand this effect through relevant theorising such as Eagly's (1987) social role theory (see also Putrevu, 2001 for an review of the origins of behavioural and processing differences for males and females) or methodological approaches (see Fisher & Dubi, 2005; Putrevu, 2001). Such improved understanding may facilitate the development of more appropriately targeted messages for particular audiences.

The study has limitations that should be acknowledged. The first limitation relates to the lack of a neutral emotion condition (i.e., advertisements incorporating limited or no emotional content such as informational only advertisements). The inclusion of such a condition would improve the validity of the results through the provision of a baseline measure with which the relative effectiveness of positive and

negative appeals could be compared<sup>22</sup>. It should be noted, however, that considerable research already attests to the persuasive advantage of emotional appeals relative to non-emotional, fact-providing appeals for health campaigns addressing various issues including road safety (Elliott, 1993) and AIDS/HIV (Flora & Maibach, 1990). A second limitation relates to the fact that the study was based only on affect defined in terms of a positive versus negative dichotomy. A growing body of literature is supporting the need for emotion to be examined in terms of discrete emotions (see Dillard & Peck, 2000). To the extent that the current study attempts to raise research interest in relation to positive message-relevant affect, it is hoped that further studies are conducted that support or challenge suggestions of the manner in which message-relevant affect may function under different conditions of involvement.

A third limitation is that our results are based on two advertisements per participant. Consequently, it is possible that our results reflect specific responses to other characteristics of these advertisements that we did not anticipate or measure. A fourth limitation is that positive emotion was operationalised only in terms of humorous appeals and, thus, the extent to which the current results would generalise to other types of positive emotions, such as pride, is unknown. There remains much unexplored in relation to positive emotional appeals, not only in road safety, but within health campaigns more generally. Thus, future research should aim to examine different types of positive emotional appeals.

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<sup>22</sup> Although our early sessions of the experiment included a neutral condition, this condition was discontinued after preliminary analysis indicated that the advertisements were evoking significant negative emotional responses. This finding emerged despite pre-testing which identified the advertisements as neutral.

We also note that there are particular limitations associated with aspects of the study's measures as well as the nature of the sample and, in particular, how representative the sample is of the general driving population. In relation to the measure utilised, all were self-report in nature. Additionally, while the current study adopted one of the more common conceptualisations of the involvement construct in terms of personal relevance (see Roser, 1990), it is important to note that there is still debate surrounding how best to define involvement. Moreover, even when involvement has been conceptualised as personal relevance, evident disparity exists in relation to the actual measures adopted (see Roser, 1990). Indeed, criticism has been directed at the various conceptualisations of the construct that have emerged and which have resulted in numerous operationalisations (see Rossiter, Donovan, & Jones, 2000). The involvement measure would benefit from further refinement within the applied health advertising context. Also, the current study's measurement of the construct was limited due to the adoption of a single item measure. Despite the use of such a measure, the inclusion of the involvement construct was based on a substantive body of theoretical and empirical evidence which has identified the construct's importance for determining the role that affect may play in persuasive messages (e.g., Petty & Cacioppo, 1986; Petty et al., 1993).

A final limitation of the current study is that it focused more on the relative persuasive *outcomes* of positive and negative appeals as opposed to the persuasive process of such appeals. Thus, given the relative dearth of explanatory frameworks for the operation of positive message-relevant affect, future research should focus on explaining the persuasive *process* of positive appeals with the aim of explaining how and when (and why) humour and other positive emotions may work in health advertising.

The overarching aim of the current study was to provide an empirical comparison of the relative persuasiveness of positive and negative emotional health appeals. Overall, the study highlights that positive appeals may play a role within the array of strategies that advertising practitioners draw upon in future campaigns with a particular and notable advantage for males.

Chapter Seven: Internet versus paper-and-pencil survey methods in psychological experiments: Equivalence testing of participant responses to road safety television advertisements

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### 7.1 Notes

Taken from Lewis, I., Watson, B., & White, K. M. (in press). Internet versus paper-and-pencil survey methods in psychological experiments: Equivalence testing of participant responses to health-related messages. *Australian Journal of Psychology*.

The candidate is the first author on this paper and was responsible for all aspects of preparing the manuscript including; reviewing the literature, formulating the ideas, argument(s) and hypotheses, interpreting the research findings and their implications, and structuring, writing, and appropriately referencing the manuscript. In addition, the candidate was responsible for conducting the statistical analyses of all data collected.

The second and third authors are members of the candidate's supervisory team and their contribution to the paper has been supervisory in nature. All co-authors provided permission for this paper to be included in this dissertation.

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### 7.2 *Abstract*

Despite experiments being increasingly conducted over the internet, few studies have tested whether such experiments yield data equivalent to traditional methods' data. In the current study, data obtained via a traditional sampling method of undergraduate psychology students completing a paper-and-pencil survey ( $N = 107$ ) were compared with data obtained from an internet-administered survey to a sample of self-selected internet-users ( $N = 94$ ). The data examined were from a previous study which had examined the persuasiveness of health-related messages. To the extent that internet data would be based on a sample at least as representative as data derived from a traditional student sample, it was expected that the two methodologies would yield equivalent data. Using formal tests of equivalence on persuasion outcomes, hypotheses of equivalence were generally supported. Additionally, the internet sample was more diverse demographically than the student sample, identifying internet samples as a valid alternative for future experimental research.



### *7.3 Introduction*

World-wide, an estimated 15 million people access the internet each day and reports indicate that every three months this rate increases by a further 25% (Rhodes, Bowie, & Hergenrather, 2003). In Australia, a similar pattern has been evidenced with recent estimates indicating that households with internet access have almost quadrupled between 1998 (16%) and 2005-06 (60%) (Australia Bureau of Statistics [ABS], 2005-06). With increasing internet use, has come greater use of the internet as a modern medium for conducting psychological research (Buchanan & Smith, 1999; Gosling, Vazire, Srivastava, & John, 2004).

#### *7.3.1 Internet-based research: Advantages and issues relating to data quality*

There are a number of advantages of conducting internet-based research such as: the ability to acquire large and diverse samples; greater time efficiency; the reduced costs and fixed costs (i.e., the costs of conducting an internet survey remain the same irrespective of the number of respondents); the reductions in data entry errors; the capacity to incorporate visual and auditory stimuli; heightened anonymity and confidentiality which is particularly advantageous for surveys addressing sensitive issues; and greater convenience for respondents in terms of the time and place of participation (Birnbaum, 2004; Carlbring et al., 2005; Iragüen & de Dios Ortúzar, 2004; Pasveer & Ellard, 1998; Perkins & Yuan, 2001; Rhodes et al., 2003).

However, accompanying the increased reliance on internet-administered surveys is the obligation for researchers to demonstrate the reliability, validity, and overall quality of the data obtained via the internet. Many studies have sought to establish the worth of internet surveys by comparing the data they obtain with data obtained from more traditional methods such as paper-and-pencil surveys completed in-person or over

the phone. These comparative studies have aimed to demonstrate that the different methodological approaches produce equivalent data.

Researchers have undertaken various approaches in their attempts to demonstrate the equivalence of the two approaches (Meyerson & Tryon, 2003). These approaches include: *t* tests comparing the means and standard deviations of items/scales (e.g., Whittier, Seely, & St. Lawrence, 2004), psychometric analyses via comparisons of Cronbach alphas and factor structures of scales (e.g., Pasveer & Ellard, 1998); formal tests of equivalence to compare means (or proportions) of specific items (e.g., Epstein, Klinkenberg, Wiley, & McKinley, 2003); and a comparison of item completion rates, response time, and item completion errors for the two methods (e.g., Pealer et al., 2001). Generally, the results of these studies suggest that internet-based surveys produce data that is at least as reliable, valid, and of equal quality as data obtained via more traditional survey methodologies. Consequently, internet surveys and more traditional paper-and-pencil surveys have been reported as producing equivalent data. However, there are gaps in this literature as well as definitional inconsistency with the term “equivalence” that need to be noted and that highlight the need for further research.

In relation to the gaps in understanding, two key omissions are evident. First, these comparison studies have largely been based upon non-experimental research designs (see Musch & Reips, 2000). Experimental designs which feature more than one level of an independent variable (and/or more than one independent variable) have been increasingly utilised in internet research since the late 1990s (Musch & Reips, 2000; for an example, see Kypri & Gallagher, 2003). Despite their increasing usage, few published studies are available that provide a comparison of the data obtained in internet experimental studies with data obtained using a traditional research methodology such as

a paper-and-pencil questionnaire (Musch & Reips, 2000). Second, where experimental designs have been utilised on the internet, the research is often likely to have a cognitive psychological focus as opposed to other research areas such as social psychology (Musch & Reips, 2000; for an example, see Eichstaedt, 2002). An implication of this cognitive research focus is that the comparison studies are more likely based on a comparison of an experiment conducted on a computer in a laboratory setting versus the same experiment conducted on a computer over the internet. This methodology differs from comparisons in which the data obtained via a paper-and-pencil administered survey or questionnaire are compared with the data obtained by a computer-administered version of the same survey or questionnaire completed via the internet (see Musch & Reips, 2000). These limitations notwithstanding, the available evidence regarding psychological experiments on the internet suggests that such experiments yield equivalent data to more traditional approaches (Musch & Reips, 2000; for an example see Eichstaedt, 2002).

### 7.3.2 *Defining 'equivalence'*

As noted previously, various approaches have been utilised in attempts to determine data equivalence. The number of different approaches highlights that definitional ambiguity has surrounded the term equivalence (Schulenberg & Yutrzenka, 1999). Schulenberg and Yutrzenka cite the definition of equivalence provided by the American Psychological Association within its Guidelines for Computer-Based Tests and Interpretations. According to this definition, one aspect of determining equivalence between computerised tests and the paper-and-pencil versions is, "if the means, dispersions, and shapes of the score distributions are *approximately the same*" (italics added). Given this definition, it becomes evident that the absence of a statistical

difference found by null hypothesis statistical testing (NHST) methods does not indicate that two means are the same or 'equivalent'; rather, it suggests that insufficient evidence was found to reject the null hypothesis (Tryon, 2001).

Despite there being substantial literature attesting to the fact that the absence of a significant statistical difference does not indicate statistical equivalence (see Anderson & Hauck, 1983; Cook & Campbell, 1979; Tryon, 2001), some studies have examined the equivalence of different data collection strategies by using such methods (e.g., Horswill & Coster, 2001; Perkins & Yuan, 2001; Whittier et al., 2004). Indeed, concluding statistical equivalence on the basis of the absence of a significant difference has been identified as one of the most common misuses of NHST methods (Tryon, 2001). In NHST, the null hypothesis tested is that there is no significant difference between group means (Rogers, Howard, & Vessey, 1993). This hypothesis is different from the research hypothesis tested by formal tests of equivalence. The latter research hypothesis tests whether the means of two groups are equivalent or, more specifically, whether two group means are sufficiently near to each other to be considered equivalent (Cribbie, Gruman, Arpin-Gribbie, 2004; Rogers et al., 1993). In formal tests of equivalence, a researcher seeks to reject the null hypothesis that there *is* a difference and accept the alternative hypothesis that the two means are equivalent (see Rogers et al., 1993). Moreover, the approaches are not mutually exclusive; the results obtained via tests of equivalence using non-equivalence null hypothesis testing methods can often contradict the results obtained via traditional NHST approaches (see Cribbie et al., 2004; Rogers et al., 1993).

### *7.3.3 Internet-based research: Some challenges and concerns*

Internet-based samples and the data they derive are not without challenges and concerns. Among some of the most commonly cited issues are sample representativeness and the loss of control over the testing conditions (for a review of the advantages and disadvantages of internet research, see Birnbaum, 2004). Concerns surrounding the representativeness of internet samples are often discussed together with the concept of the 'digital divide'. This divide refers to the disparities in Internet-access based on socio-demographic dimensions that exist between Internet-users and non-users (Rhodes et al., 2003). Early research suggested that the 'digital divide' favoured greater internet-use by younger, more educated, higher income, white males but, with the dramatic increases in internet-use around the world, this issue is becoming less relevant (Rhodes et al., 2003). Recent Australian evidence suggests that the socio-demographic profiles of Internet-users are broadening with gender gaps largely disappearing, and age disparities lessening, but some other disparities in use remain based on education, income, geographical region, disability, and indigenous status (ABS 2004-05; Rhodes et al., 2003; Willis & Tranter, 2006).

Despite the disparities, evidence suggests that internet samples are at least as representative as other traditionally used samples such as university student samples. In a recent meta-analytical study exploring the relative diversity of a typical self-selected Internet sample with more traditional (predominantly student) samples, Gosling et al. (2004) found that the internet sample was found to be more diverse than the traditional samples with respect to gender, age, geographic region, education and socio-economic status. Similarly, comparative studies based on non-random assignment of participants to the internet and paper-and-pencil conditions (with university students assigned to the

latter condition and self-selected internet users assigned to the former) have also provided evidence of internet samples being at least as representative as traditional student samples (e.g., Pasveer & Ellard, 1998; Whittier et al., 2004) and more diverse for some variables (e.g., gender and age; Smith & Leigh, 1997). Moreover, comparisons of the outcome data derived from these comparative studies utilising non-random assignment found that traditional student samples and typical self-selected internet sample produce similar responses (see Pasveer & Ellard, 1998; Smith & Leigh, 1997; Whittier et al., 2004) albeit without the use of formal tests of equivalence. Overall, these studies have concluded that, while internet samples are not representative of the general population they are as diverse as student samples, if not more so.

In relation to the loss of control that experimenters have over testing conditions in internet-based research, this loss of control applies to a range of context-related factors from whether other people are present while a participant is completing a survey through to hardware and software variations across respondents (Skitka & Sargis, 2006). For the latter factor at least, adequate piloting can ensure that the survey runs effectively on a range of computer systems prior to the survey being released on-line (Birnbaum, 2004). However, despite piloting, in studies where stimuli such as audio or video files are included differences in equipment will mean that the stimuli received may vary between participants and this possibility should be acknowledged by researchers (Birnbaum, 2004; Smith & Leigh, 1997).

In summary, of the issues affecting internet-based studies, although some are unique to the internet (e.g., loss of control and the threat to internal validity) others apply also to traditional methodologies. For instance, concerns surrounding the representativeness of convenience samples of students have been long-standing (Sears,

1986) and self-selection occurs in most traditional samples (Madge & O'Connor, 2004).

Although internet methods have limitations, other approaches are not without their limitations. Consequently, internet based surveys may be considered at least as acceptable as other survey methods (Harrison & Christie, 2004).

#### *7.3.4 The current study*

Even as recently as 2003, it was suggested that “further comparisons across a range of procedures will help clarify the validity of internet research in other domains” (Hewson, p. 292). Consistent with this suggestion, the current study addresses limitations in the extant literature relating to the validity of internet-based research. Specifically, the current study will compare the effectiveness of internet and paper-and-pencil methods for experimental research in an applied social psychological research context. The study will examine the data derived from an earlier experimental study which had examined the effectiveness of persuasive messages in the context of an important health area, that of road safety (see Lewis, Watson, & White, in press). It is important to note that the data utilised in the current study is by way of example only; such data were selected because it was derived from a social psychological experiment which consisted of two independent variables each with two levels and was completed by samples of participants responding to either a paper-and-pencil or an internet version of the same survey. Furthermore, participants responding to the paper-and-pencil survey were university undergraduate students (i.e., a more traditional sampling methodology) while those completing the internet survey represented a sample of self-selecting internet users. In order to facilitate understanding of the current results, it should be noted that the original experiment from which the data were derived was a 2 (appeal type: positive/humorous, negative/fear-evoking) x 2 (response efficacy: low, high) mixed-

group design with appeal type as a between groups variable and response efficacy as a repeated measures variable. Additionally, in relation to outcome measures, the advertisements were compared in terms of their persuasive impact on individuals' reported attitudes and intentions.

The main aim of this study is to determine whether an applied social psychological experiment administered to an internet sample yields equivalent data to that of a more traditional, university student-based sample. This aim is underpinned by the notion that, until the equivalence of a particular administration format is demonstrated empirically, its validity remains unknown (Schulenberg & Yutrzenka, 1999). Currently, the validity of internet survey methods for experimental social psychological research remains largely unknown. Given the current study seeks to determine statistical equivalence of data derived from the two sampling methodologies, an additional objective of the study is to illustrate the suitability and usability of equivalence testing in psychological research. The second main aim of this study will be to provide empirical comparisons of demographical characteristics of the two samples.

### *7.3.5 Research hypotheses*

It is expected that, based on previous empirical evidence, the internet sample will be more diverse than the traditional student sample in relation to age and gender. Thus, it is expected that significant differences will be found between the two samples of drivers.

It is expected that, based on previous empirical comparisons of internet and pencil-and paper methods, participants in the two conditions should enter and exit the study with equivalent mean scores. More specifically, it is hypothesised that the internet survey will yield equivalent mean ratings as the paper-and-pencil survey on pre-attitudinal measures, as well as on the outcome measures of persuasion (post-exposure



attitudes and intentions). Moreover, it is expected that, when performing comparisons between internet and paper-and-pencil conditions based on the cells within the original 2 x 2 experimental data (i.e., Positive/High Response Efficacy, Positive/Low Response Efficacy, Negative/High Response Efficacy, and Negative/Low Response Efficacy), the mean post-exposure attitudinal and intentional scores will be equivalent.

#### *7.4 Method*

##### *7.4.1 Participants*

The study's sample comprised 201 (71 males, 130 females) participants. All participants were holders of a current Australian drivers' or motorcyclists' licence. Almost half of the participants ( $N = 94$ , 46.8%) completed the internet-based version (this number represents surveys that were completed or that contained only minimal missing data), while 107 (53.2%) participants completed the paper-and-pencil version of the same survey.

The link to the internet survey was placed on the authors' research centre's homepage. To promote the existence of the internet survey, the survey and its location were advertised quite extensively through radio and print media. In addition, an email calling for participants was forwarded to staff at a multifaceted organisation involved in many aspects of motoring (e.g., insurance and travel). This organisation also provided a link to the internet survey on their homepage thus increasing the likelihood that drivers would find the study while visiting a driving-related website.

The majority of participants completing the paper-and-pencil version of the survey were undergraduate students studying a first year psychology unit at a major Australian university (74.8%). The remaining participants were second year psychology students ( $N = 27$ ; 25.2%). Thus, participants included in the paper-and-pencil version

were considered typical of more traditional undergraduate student samples. The first year students were recruited via a flyer on a university noticeboard while the second year students responded to a request by the researchers made at the end of a lecture. Of all the participants, the first year psychology undergraduate students were the only participants who received an incentive (i.e., partial course credit) for participating. All participants in the paper-and-pencil condition completed the survey in groups.

#### *7.4.2 Measures and procedure*

The survey from the original study was divided into two sections: measures assessed prior to exposure to the advertisements and measures assessed following exposure to each advertisement. Prior to exposure, participants were asked to provide demographic information, information about their drinking and driving histories, and attitudes towards drinking and driving. Following exposure to each advertisement (i.e., individuals viewed a low and high response efficacy advertisement in either the positive or negative appeal condition) participants were assessed on their attitudes towards drink driving as well as their intentions to drive after drinking.

#### *7.4.3 Statistical analyses*

*7.4.3.1 Sample comparisons.* The categorical data relating to the samples' characteristics (i.e., demographics and prior drinking and driving behaviour) were analysed using Chi-square ( $\chi^2$ ) tests for independence. Post hoc analyses were conducted for all significant chi-square tests using an adjusted standardised residual statistic ( $\hat{e}$ ) (see Haberman, 1978).

*7.4.3.2 Equivalence testing of persuasion outcomes.* Of the equivalence tests that are available, Schuirmann's (1987) two one-sided tests procedure was selected (see also Cribbie et al., 2004; Rogers et al., 1993; Seaman & Serlin, 1998). This approach is

widely used and offers advantages such as a bounded Type 1 error rate and good power (Dixon & Pechmann, 2005). Two steps are needed to perform a test of equivalence: first, determining what constitutes equivalence and; second, performing two simultaneous one-sided hypothesis tests (Rogers et al., 1993). In determining equivalence, an a priori decision must be made regarding the minimum difference between the means of two groups that would be important enough to make the groups nonequivalent: Any difference smaller than delta ( $\delta$ ) would be considered meaningless within the context of a particular experiment (Cribbie et al., 2004; Rogers et al. 1993). Thus, two means would be considered equivalent if they differed by less than  $\delta$  in both a negative ( $\delta_1$ ) and positive ( $\delta_2$ ) direction (Rogers et al., 1993). As noted previously, the argument for greater use of equivalence testing for psychological research has only been proffered recently. Consequently, a standard equivalence criterion for use in such research has not yet been established (Epstein et al., 2003). After reviewing equivalence criteria utilised in available studies (e.g., Cribbie et al., 2004; Epstein et al., 2003; Rogers et al., 1993; Streiner, 2003), the decision was to utilise the equivalence criterion of  $\pm 20\%$  of the mean outcome scores derived in the paper-and-pencil condition. The paper-and-pencil condition was the condition on which the criterion was based because it represents the traditional approach with which the more 'modern' internet approach is being compared.

The second step in equivalence testing relates to the need to perform two simultaneous one-sided tests to establish equivalence. The null hypothesis relates to the nonequivalence of the group means and may be expressed as two composite hypotheses; the upper and lower null hypothesis. The upper and lower hypothesis can be expressed as follows, respectively (Cribbie et al., 2004, p. 3; Seaman & Serlin, 1998):

$$H_{01} : \mu_1 - \mu_2 \geq \delta_2; H_{02} : \mu_1 - \mu_2 \leq \delta_1$$

Rejection of the upper hypothesis implies that  $\mu_1 - \mu_2 < \delta_2$  and rejection of the lower hypothesis implies that  $\mu_1 - \mu_2 > \delta_1$ . The logic underpinning the test is that rejection of both hypotheses implies that  $\mu_1 - \mu_2$  falls within  $\delta_1$  to  $\delta_2$ , rendering the difference between the means less than the minimum difference of importance (determined a priori) and the means equivalent (Cribbie et al., 2004, p. 3; see also, Rogers et al., 1993; Seaman & Serlin, 1998). Thus, to establish equivalence both one-sided null hypotheses must be rejected. However, in determining equivalence, only one test is required; the test relating to the shorter distance between the observed difference (i.e.,  $\mu_1 - \mu_2$ ) and either  $\delta_1$  or  $\delta_2$ . The one-sided test with the shorter distance will be associated with the smaller test statistic and the larger  $p$  value and will be the least likely to be rejected. In instances where the test with the larger  $p$  value is rejected, the other one-sided test, which will necessarily evidence a smaller  $p$  value, will not need to be performed as it also will always be rejected. However, in instances where the test with the largest  $p$  value is not rejected, the second test still will not need to be conducted because both tests must be rejected for equivalence to be determined. For the error rate of the equivalence test, it follows that, although two sides are being tested the error rate depends on one side only (i.e., the side with the largest difference) and the critical value chosen needs to be set at  $\alpha$  for each side of the test (Rogers et al., 1993, p. 554).

In the current study, equivalence tests were performed on a number of pre- and post-exposure variables measured in the internet and paper-and-pencil versions of the survey for both the study's full sample ( $N = 201$ ) as well as for the cells of the original 2 x 2 experimental design. Specifically, the variables examined were attitudes towards

drink driving (assessed both pre- and post-exposure) and behavioural intentions (assessed post-exposure).

## 7.5 Results

### 7.5.1 Comparisons of the samples' demographical characteristics

The comparisons of the internet and student samples' demographics are shown in Table 7.1.

Table 7.1

*Socio-demographic characteristics of participants by version of survey*

| Variable       | Version of the Survey |                      | Significance level <sup>a</sup> |
|----------------|-----------------------|----------------------|---------------------------------|
|                | Internet (%)          | Paper-and-Pencil (%) |                                 |
| Gender         | <i>n</i> = 94         | <i>n</i> = 107       | $\chi^2(df1) = 19.15, p < .001$ |
| Males          | 51.1                  | 21.5                 | $\hat{e} = 4.4, p < .001$       |
| Females        | 48.9                  | 78.5                 |                                 |
| Age (in years) | <i>n</i> = 94         | <i>n</i> = 107       | $\chi^2(df6) = 39.40, p < .001$ |
| <18            | 0.0                   | 11.2                 | $\hat{e} = 3.3, p < .001$       |
| 18-24          | 12.8                  | 38.3                 | $\hat{e} = 4.1, p < .001$       |
| 25-34          | 25.5                  | 18.7                 |                                 |
| 35-44          | 25.5                  | 16.8                 |                                 |
| 45-54          | 20.2                  | 13.1                 |                                 |
| 55-64          | 11.7                  | 1.9                  | $\hat{e} = 2.8, p = .002$       |
| ≥65            | 4.3                   | 0.0                  | $\hat{e} = 2.2, p = .01$        |

<sup>a</sup> Significant adjusted standardised residuals ( $\hat{e}$ ) are shown.

As can be seen, there was a significant difference between the internet and paper-and-pencil versions of the survey in terms of gender. There were significantly more females (and fewer males) in the paper-and-pencil condition than the internet condition. Of the two conditions, the rate of males to females was more equally distributed in the internet version than in the paper-and-pencil version where females outnumbered males at a rate of approximately 4:1. Additionally, an age-related difference was found

between the two conditions. The post hoc tests revealed that the internet sample had significantly fewer participants aged 24 years and under but significantly more participants aged 55 years and over than the student condition.

### 7.5.2 *Equivalency testing of outcome variables*

To demonstrate the potential utility of formal tests of equivalence, prior to reporting the results of the formal tests of equivalence, results are provided from analyses based on 2 x 2 x 2 analysis of variance in which the survey version (internet or paper-and-pencil) was added as a third independent variable. In instances where a researcher may not be aware of equivalence testing, it could be anticipated that this analysis (i.e., 2 x 2 x 2 ANOVA) would be the most likely approach selected given the research design and hypotheses posed. The NHST analyses results reported are based upon immediate post-exposure attitudes and intentions only (as opposed to pre-exposure measures).

*7.5.2.1 Analyses based on NHST techniques.* For both attitudes and intentions, no significant main effects of survey version (attitude,  $F(1, 195) = 0.68, p = .411, \eta_p^2 = .003$ ; intention,  $F(1, 196) = 1.78, p = .183, \eta_p^2 = .009$ ) or 2-way effects involving survey version and appeal type (attitude,  $F(1, 195) = 0.77, p = .380, \eta_p^2 = .004$ ; intention,  $F(1, 196) = 2.55, p = .112, \eta_p^2 = .013$ ) or 3-way effects involving survey version, appeal type, and response efficacy (attitude,  $\Lambda = .99, F(1, 195) = 1.94, p = .166, \eta_p^2 = .010$ ; intention,  $\Lambda = .99, F(1, 196) = 0.28, p = .601, \eta_p^2 = .001$ ) were found. This finding indicates that the version of survey did not differentially influence the immediate-post exposure results obtained.

*7.5.2.2 Analyses based on formal tests of equivalence.* Mean attitudinal and intentional scores were computed for the study's full sample ( $N = 201$ ) and the results

are shown in Table 7.2. Table 7.2 shows that a significant result (using the larger  $p$  value) was found for all three variables indicating that the mean scores for pre-exposure attitudes, and post-exposure attitudes and intentions were equivalent for the paper-and-pencil and internet conditions. Similarly, when examining the confidence intervals, for all three variables, the upper and lower confidence intervals fall within the equivalence interval that was established a priori. The results of the equivalence tests conducted between the internet and paper-and-pencil conditions according to the cells of the original study's 2 x 2 experimental design are reported in Table 7.3.

As shown in Table 7.3, for post-exposure attitudes towards drink driving, the  $p$  scores are significant for each cell of the experimental design (i.e., positive/high response efficacy, positive/low response efficacy, negative/high response efficacy, and negative/low response efficacy) indicating that the mean attitudinal scores were equivalent for the two conditions. Additionally, for all cells, the specified upper and lower confidence intervals fall within each relevant equivalence interval that was established a priori.

Table 7.2

*Mean differences in ratings of the complete sample (N = 201) by survey condition*

| Variable                | Paper-and-Pencil<br>(n = 107) |           | Internet<br>(n = 94) |           | Difference |            |                                       |          |                       | 90%<br>Confidence<br>Interval |       |
|-------------------------|-------------------------------|-----------|----------------------|-----------|------------|------------|---------------------------------------|----------|-----------------------|-------------------------------|-------|
|                         | <i>M</i>                      | <i>SD</i> | <i>M</i>             | <i>SD</i> | <i>M</i>   | <i>S.E</i> | Equivalence<br>criterion <sup>a</sup> | <i>z</i> | <i>p</i> <sup>b</sup> | Lower                         | Upper |
| Pre-exposure attitude   | 4.64                          | 1.48      | 4.95                 | 1.49      | -0.31      | 0.31       | ±0.93                                 | 1.98     | .020*                 | -0.82                         | 0.20  |
| Post-exposure attitude  | 4.92                          | 1.46      | 5.18                 | 1.48      | -0.26      | 0.31       | ±0.98                                 | 2.36     | .009*                 | -0.74                         | 0.28  |
| Post-exposure intention | 5.63                          | 1.56      | 5.40                 | 1.73      | 0.23       | 0.38       | ±1.13                                 | -2.36    | .009*                 | -0.40                         | 0.86  |

<sup>a</sup> Equivalence criterion equals ±20% of Paper-and-Pencil group mean. <sup>b</sup> The largest *p* value derived from the smallest difference

between the ±EC and  $M_1 - M_2$  is shown (see Rogers et al., 1993). \* denotes a significant result whereby the means of the two groups are statistically equivalent.



Table 7.3

*Mean differences in ratings by appeal type, level of response efficacy, and version of the survey*

| Variable                         | Paper-and-Pencil<br><i>n</i> = 60 (Positive)<br><i>n</i> = 47 (Negative) |                   | Internet<br><i>n</i> = 42 (Positive)<br><i>n</i> = 52 (Negative) |           | Difference |            |                                    |          |                       | 90% Confidence Interval |       |
|----------------------------------|--------------------------------------------------------------------------|-------------------|------------------------------------------------------------------|-----------|------------|------------|------------------------------------|----------|-----------------------|-------------------------|-------|
|                                  | <i>M</i>                                                                 | <i>SD</i>         | <i>M</i>                                                         | <i>SD</i> | <i>M</i>   | <i>S.E</i> | Equivalence Criterion <sup>a</sup> | <i>z</i> | <i>p</i> <sup>b</sup> | Lower                   | Upper |
| <b>Post-exposure attitude</b>    |                                                                          |                   |                                                                  |           |            |            |                                    |          |                       |                         |       |
| Positive, Low Response Efficacy  | 4.60                                                                     | 1.43              | 4.89                                                             | 1.46      | -0.29      | 0.29       | ±0.92                              | 2.17     | .015*                 | -0.77                   | 0.19  |
| Positive, High Response Efficacy | 4.47                                                                     | 1.43              | 4.88                                                             | 1.39      | -0.41      | 0.28       | ±0.89                              | 1.70     | .045*                 | -0.87                   | 0.05  |
| Negative, Low Response Efficacy  | 5.37                                                                     | 1.45              | 5.43                                                             | 1.53      | -0.06      | 0.45       | ±1.07                              | 2.25     | .012*                 | -0.80                   | 0.80  |
| Negative, High Response Efficacy | 5.48                                                                     | 1.48 <sup>c</sup> | 5.40                                                             | 1.54      | 0.08       | 0.26       | ±1.10                              | -3.91    | <.001*                | -0.35                   | 0.51  |
| <b>Intention</b>                 |                                                                          |                   |                                                                  |           |            |            |                                    |          |                       |                         |       |
| Positive, Low Response Efficacy  | 5.37                                                                     | 1.88              | 4.60                                                             | 1.85      | 0.77       | 0.38       | ±1.07                              | -0.81    | .209                  | 0.07                    | 1.40  |
| Positive, High Response Efficacy | 5.62                                                                     | 1.85              | 5.05                                                             | 2.07      | 0.57       | 0.39       | ±1.12                              | -1.42    | .078                  | -0.07                   | 1.21  |
| Negative, Low Response Efficacy  | 5.85                                                                     | 1.40              | 5.96                                                             | 1.61      | -0.11      | 0.46       | ±1.17                              | 2.30     | .011*                 | -0.57                   | 0.65  |
| Negative, High Response Efficacy | 5.74                                                                     | 1.64 <sup>d</sup> | 5.79                                                             | 1.76      | -0.05      | 0.59       | ±1.15                              | 1.86     | .031*                 | -1.02                   | 0.92  |

<sup>a</sup>Equivalence criterion equals ±20% of Paper-and-Pencil group mean. <sup>b</sup>The largest *p* value derived from the smallest difference between the ±EC and  $M_1 - M_2$  is shown (see Rogers et al., 1993). <sup>c,d</sup>*n* = 45 and 46, respectively. \* denotes a significant result whereby the means of the two groups are statistically equivalent.

For post-exposure intentions, the results show that the  $p$  scores were significant for both the negative/high response efficacy and negative/low response efficacy advertisements, indicating that the internet and paper-and-pencil versions had equivalent mean intention scores for the negative advertisements. In contrast, however, the results show that the  $p$  scores were not significant for the positive/high response efficacy or the positive/low response efficacy advertisement indicating that the two conditions' mean intentional scores were not equivalent for the positive condition. Moreover, the upper confidence interval associated with each comparison exceeds the relevant equivalence interval.

### *7.6 Discussion*

One aim of the current study was to determine whether the data obtained from an internet-based survey would yield equivalent data to a more traditional paper-and-pencil version in an applied psychological research context. Specifically, the study explored whether the responses from a sample of participants recruited via the internet completing an internet survey were equivalent to the responses derived from a sample of university undergraduate student participants who completed a paper-and-pencil version. Generally, the results were consistent with expectations with the majority of mean comparisons between the two conditions found to be equivalent. The only exception was in the positive appeal condition of the study in which equivalent mean post-exposure intentions scores were not found. This result was found for both the positive, low response efficacy advertisement as well as the positive, high response efficacy advertisement and, thus, is indicative of an issue specific to the positive condition overall. Inspection of the means reveals that the mean intentional score was lower in the internet condition than the paper-and-pencil condition for both advertisements.

This finding may have potential implications for how positive, or more specifically, humorous road safety appeals are tested. This suggestion is underpinned by the notion that aspects of the respective testing environments of the internet and paper-and-pencil conditions may have influenced the results. For instance, given that the paper-and-pencil survey was administered in group settings there was a tendency for the positive advertisements to receive overt emotional responses from participants such as laughter. Consequently, such overt responses may have affected others' responses to the study's items by leading them to presume that others had formed favourable impressions of the advertisement(s). With interest in the potential role that positive emotional approaches may play in health advertising increasing (e.g., Lewis et al., in press), understanding the most valid way of assessing individuals' responses to such appeals becomes most important. Moreover, the notion that the respective testing environments of paper-and-pencil and internet-based surveys may influence the results obtained may have implications for survey-based, psychological research more broadly given that many paper-and-pencil surveys are conducted in group settings. A key endeavour for future research may be to identify topics that are suitable for survey-testing in groups via paper-and-pencil surveys (i.e., where the impact of others is likely to be minimal) and those topics perhaps better tested in private settings (e.g., as in the case of some internet-based surveys) so as to minimise the impact of other participants.

#### *7.6.1 Comparisons of the samples' demographical characteristics*

The second aim of the current study was to provide empirical comparisons of the age and gender of the two samples. As expected, significant differences were found between the two samples. Generally, the internet sample appeared to be more diverse than the student sample in relation to age. Additionally, for gender, the internet sample

provided a more equitable representation of males to females than the student sample.

While it is interesting to note how the demographic characteristics of the internet and student samples differed, arguably, the more significant issue is the extent to which the samples are representative of the general population.

Of the two samples, the internet sample appeared more representative of the Australian population in relation to age and gender. According to the Australian Bureau of Statistics (ABS), in 2006, the median age of Australia's population was 36.6 years. Although the categorical nature of the measure used in the current study prevents determination of the exact median age for each sample, inspection of the data in Table 1 reveals that the student sample's median would be much lower than the national level with essentially half of the sample aged 24 years and under. In contrast, the internet sample is much closer to the national level with the median age situated within the 35-44 years category. Neither sample included the same proportion of people aged 65 years and over as within the national population (i.e., 13%; ABS, 2006); however, as the student sample included no persons within that category and the internet sample included some respondents within this age category (i.e., 4.3%), the latter sample may be regarded as more diverse. In relation to gender, the equitable split of males to females in the internet sample is more representative of the Australian population which has been reported as being a ratio of 98.8 males per 100 females (ABS, 2006) than the unequal gender distribution in the student sample.

The current study, in finding evidence of greater diversity in the internet sample than the student sample in terms of the socio-demographical variables assessed, is consistent with previous research (e.g., Gosling et al., 2004; Smith & Leigh, 1997). While it is acknowledged that participants in the internet sample were self-selected and

cannot be considered a true random or representative sample of the general driving population, the sample of drivers recruited were more diverse and representative of the general population (as based on the comparisons with the ABS data) than those recruited via a more traditional university student sample of drivers. These findings are encouraging and highlight that as internet use increases and the characteristics of internet users broaden, the representativeness of internet samples is likely to continue to improve (Rhodes et al., 2003). It is also important to note, however, that the results highlight not the overall shortcoming of the paper-and-pencil technique per se but the problems associated with sampling from undergraduate psychology classes more generally.

The biases and subsequent problems with generalising from convenient student samples have been long acknowledged (Gosling et al., 2004; Sears, 1986). It has been argued that the popularity of student samples, despite their inherent problems, may be due to the lack of a practical alternative (Gosling et al., 2004). While internet samples also represent convenience samples of the population, there is a growing body of evidence confirming their diversity relative to student samples. In addition, the many advantages that internet samples offer may see them become an alternative for psychological research (Gosling et al., 2004).

Of particular note for road safety research is the inclusion of a greater number of males in the internet sample relative to the student sample. In the context of road safety research, given that males are at a higher risk of being injured or killed on the roads relative to females (Tay, 1999, 2002b), there is a need to ensure that this demographic is well-represented within studies that evaluate the effectiveness of particular countermeasures. For certain topics in road safety research the internet may prove to be

an effective means to reach such road users. Furthermore, for researchers examining the effectiveness of advertising in this context, as well as other health topics more generally, the internet may become the preferred means to conduct such studies given that radio or television advertisements can be added easily within an internet survey as stimulus materials.

#### *7.6.2 Equivalence testing*

Different results were obtained via the NHST technique utilised and the formal tests of equivalence. As noted previously, the 2 x 2 x 2 ANOVA in which the version of survey was entered as a third independent variable was conducted as it was considered the most likely approach that would be utilised without awareness of the existence of formal tests of equivalence. Specifically, while the 2 x 2 x 2 ANOVA results indicated no significant effects (main or interactional effects) of survey version in relation to post-exposure attitudes or intentions, the formal tests of equivalence results indicated that the post-intentional scores in the positive appeal condition were not equivalent between the two survey groups. Finding contradiction between the results obtained via these two types of tests is consistent with previous evidence (see Rogers et al., 1993) and highlights the point argued throughout the current paper that NHST techniques are not optimal tests of equivalence.

#### *7.7 Conclusion*

The current study has addressed some significant omissions in the extant literature relating to the validity of internet research. Specifically, it has provided an empirical comparison of the sample characteristics and data obtained via internet and paper-and-pencil approaches for an experimental study addressing health message persuasiveness. Further, the empirical comparison was based upon formal tests of equivalence and, thus,

provides a more appropriate and accurate test of equivalence than similar previous empirical comparisons based upon NHST.

Overall, the results suggest that an internet sample of drivers is more diverse and representative of the general population than a university-student sample of drivers. Additionally, the results indicated that the two samples of participants produce predominantly equivalent data. While it is acknowledged that internet data are not free from methodological constraints, the results contribute to a growing body of evidence that highlights the feasibility of internet-based research. During a time when response rates to all sampling methodologies are declining (Birnbaum, 2004; Madge & O'Connor, 2004), the current study's results suggest that internet surveys may represent a valid, alternative means to access participants for psychological research and, in particular, for psychological experimental research that aims to evaluate the effectiveness of health messages. Continued empirical investigation is necessary to gain greater insight into the validity of internet research for psychological research more broadly (Hewson, 2003). Once validity has been established for data collected on a broad range of psychological research topics and designs, researchers will be able to place greater confidence in the use of the internet as a means to collect valid data.





Chapter Eight: Exploring the Persuasiveness of Emotional Health Messages: The Effectiveness of Positive and Negative Emotional Appeals for Anti-Speeding Messages

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[Note: Appendix C provides the Participant Information Sheets utilised, and Appendix D provides brief outlines of the advertisements utilised as stimulus materials, for the study reported within this manuscript.]

*8.1 Notes*

Taken from Lewis, I., Watson, B., & White, K. M. Exploring the persuasiveness of emotional health messages: The effectiveness of positive and negative appeals in road safety. *Manuscript in preparation.*

The candidate is the first author on this paper and was responsible for all aspects of preparing the manuscript including; reviewing the literature, formulating the ideas, argument(s) and hypotheses, interpreting the research findings and their implications, and structuring, writing, and appropriately referencing the manuscript. In addition, the candidate also organised all data collection and was responsible for analysing the data collected. The second and, third authors are members of the candidate's supervisory team and their contribution to the paper has been supervisory in nature. All co-authors provided permission for this paper to be included in this thesis.

It is intended that this paper will be submitted to a peer reviewed international journal which will be listed in the Social Sciences Citation Index and recognised for the DEST publication collection.

### 8.2 *Abstract*

The current study examined the effectiveness of positive and negative emotional messages for the advertising of threatening health topics. Guided by an existing theoretical framework, the Rossiter-Percy (RP) motivational model, participants ( $N = 551$ ) listened to one of four messages, each representing an anti-speeding appeal and each designed to evoke different emotional responses (two positive, two negative). Participants completed two questionnaires: the first assessed pre-exposure and immediate post-exposure attitudes and intentions (reflecting both message acceptance and message rejection); and the second, one month later, assessed follow-up attitudes and intentions. The study also examined the impact of theoretically established constructs, namely involvement (as perceived risk) and response efficacy, as well as gender on persuasion outcomes. Overall, the study provided support for adopting the RP framework in the design of emotional health messages. As predicted, the findings confirmed the importance of providing high levels of response efficacy for all emotional appeals and the effectiveness of positive emotional messages for males. The findings also highlighted that, emotions of the same valence do not have similar persuasive effects, message acceptance and rejection are not mutually exclusive outcomes, and that time may influence the effectiveness of emotional appeals.

### *8.3 Introduction*

Each year, globally, over a million people are killed and a further 50 million are injured due to road trauma (WHO, 2004). Such trauma is preventable, however, necessitating the need to identify the most effective countermeasures (WHO, 2004). A perennial road safety concern has been the high injury and death rates of males compared with females. In response to this trend, many jurisdictions have devoted considerable resources to modifying the attitudes and behaviours of males through the use of high threat, fear-evoking road safety messages (Tay, 2002b). Unfortunately, the available evidence suggests that males are often more likely to report such messages as having stronger influence on other drivers than on themselves (i.e., the classic third-person effect; Davison, 1983; Lewis, Watson, & Tay, 2007a; Lewis, Watson, & White, *in press*). The implication of this evidence, when considered in accordance with the WHO's call to identify the most effective interventions, is that there is a need to improve the effectiveness of road safety messages, particularly for males.

The current study will compare the persuasiveness of different positive and negative emotional messages addressing speeding behaviour. Specifically, the study will examine the effectiveness of positive and negative message-relevant affect. Message-relevant affect, also known as advertisement-induced affect, refers to affect that is evoked in direct response to an attitude object and is part of the communication itself (Dillard & Wilson, 1993). It may be contrasted with message-irrelevant affect, or mood which is a generalised state of affect not associated or caused by the content of a message (Dillard & Wilson, 1993; Jorgensen, 1998).

### 8.3.1 *Negative versus positive affect: Theoretical evidence*

A growing body of evidence suggests that discrete emotions of the same valence (e.g., anger, sadness as negative emotions) have differential effects on message processing and persuasion (e.g., DeSteno, Petty, Wegener, & Rucker, 2000; Dillard et al., 1996). There is a substantial body of research attesting to the persuasive effects of message-relevant affect when the affect is fear; however, a relative dearth of research exists for the persuasive effects of other message-relevant affect, especially in relation to positive emotions (Nabi, 2002).

In the fear appeal literature, prominent models, such as the Extended Parallel Process Model ([EPPM]; Witte, 1992a), have highlighted the importance of response efficacy which refers to the provision of strategies and information in messages (Witte, 1992a). Recent meta-analytical evidence has identified response-efficacy as one of the most important predictors of the acceptance of a fear appeal's recommendations<sup>23</sup> (Floyd, Prentice-Dunn, & Rogers, 2000). Although these models were not intended for use in explaining discrete negative emotions other than fear, evidence has shown that the provision of strategies may be important for positive (e.g., humorous) health messages as well as negative, fear-based messages (Lewis et al., in press; Lewis, Watson, White, & Tay, 2007b). The important aspect to be drawn from such evidence is that response efficacy may be important for improving the persuasiveness of emotional messages generally and not only fear-based messages.

With most of what is currently known about message-relevant affect and persuasion based on negative affect (i.e., fear), most of what is known about message-irrelevant affect (i.e., mood) and persuasion is based upon positive affect (Petty,

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<sup>23</sup> Together with message self-efficacy (Floyd et al., 2000).

Schumann, Richman, & Strathman, 1993). Much of this evidence has shown that positive mood may have advantageous effects for persuasion (see Petty et al., 1993). Whilst, as defined earlier, message-relevant and message-irrelevant affect are conceptually different constructs, the important aspect to be noted from this evidence is that experiencing a positive feeling state can have improved persuasive effects.

Whilst many existing explanatory frameworks appear limited in terms of explaining the persuasive effects of positive emotional appeals, the Rossiter-Percy motivational model (RP motivational model; 1987, 1997) does identify a role for emotion (Donovan & Henley, 2003).

*8.3.1.1 The Rossiter-Percy (RP) motivational model.* The RP motivational model assigns a significant role to the construct of involvement (Donovan & Henley, 2003). Specifically, the model classifies individuals' attitude change in terms of two dimensions, the level of involvement associated with the decision (either low or high) and the nature of the primary motivations driving the decision (either negative or positive) (Rossiter & Percy, 1987;1997). More recent conceptualisations of involvement in the RP framework have been based on the degree of perceived risk. This perceived risk dimension is best considered akin to the threat appraisal of popular fear appeal models (e.g., EPPM), and is best operationalised through measurement of an individual's perceptions of susceptibility and severity. The impact that the high and low perceived level of risk has on processing is conceptually similar to Petty and Cacioppo's (1986) central and peripheral routes in the Elaboration Likelihood Model of persuasion (ELM; see Donovan & Henley, 2003). Generally, the more effortful (central) processing results in stronger and longer-lasting attitude change (Petty & Cacioppo, 1986) and

presumably high levels of perceived risk (involvement) would have similar effects on attitudes.

The motivational dimension of the model proposes that eight motives (either positive or negative) underpin all behaviour. Positive motivations refer to actions taken to achieve an enhanced positive emotional state whereas negative motivations refer to actions taken to avoid or reduce a negative or aversive emotional state (Donovan & Henley, 2003). Importantly, each motivation is accompanied by a corresponding set of appropriate emotions. Such emotions are considered the energising component of behaviour and are essential for achieving behaviour change (Donovan & Henley, 2003). The list of motivations and their accompanying emotions are shown in Table 8.1.

### *8.3.2 Negative versus positive affect: Empirical evidence*

Of the health issues that utilise fear-based messages, road safety advertising has become particularly renowned for its reliance upon such messages (Tay & Watson, 2002). However, it has been suggested that greater attitudinal and behavioural compliance may be achieved through the adoption of more positive messages that depict the correct or safe behaviour, the rewards associated with such behaviour, and that evoke positive emotions (e.g., Elliott, 1992; Lewis et al., 2007b). Currently, limited research is available in health advertising broadly as well as road safety specifically, that has provided empirical comparisons of negative and positive emotional messages for the same behaviour (Donovan et al., 1995). Of the comparisons that are available there has been a tendency to examine the broad positive-negative dichotomy of humorous versus fear-evoking messages (e.g., Brooker, 1981; Lewis et al., in press) or humorous versus non-humorous messages (e.g., Conway & Dube, 2002; Lammers et al., 1983).



Table 8.1

*Details of the current study's appeals based on the original motivations and emotions of the Rossiter-Percy (RP) motivational model*

| Motives and Emotions from RP<br>Motivational Model |                               | Appeals used in the Current Study           |                             |                                                                                                                                                                                                                           |
|----------------------------------------------------|-------------------------------|---------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Negative motives                                   | Emotions                      | Appeal Name / Type                          | Emotions                    | Brief Description                                                                                                                                                                                                         |
| 1. Problem avoidance                               | Fear→ relaxation              | “Matt” / Problem Avoidance (PA) appeal      | Fear, Anxious, Relaxed      | A young male is driving and shown to be exceeding the posted speed limit. He hits a pedestrian who is shown lifeless and covered in blood. The driver realises it is his friend, “Matthew”.                               |
| 2. Problem removal                                 | Annoyance → relief            | “Phone Ahead” / Problem Removal (PR) appeal | Annoyed, Agitated, Relieved | A young male and female couple walk hurriedly to a parked car. The young male opts to make a phone call advising that they will be arriving a little later rather than receive a speeding fine and be held up at a radar. |
| 3. Incomplete satisfaction                         | Disappointment→ optimism      | -                                           | -                           | -                                                                                                                                                                                                                         |
| 4. Mixed approach-avoidance                        | Conflict→ peace of mind       | -                                           | -                           | -                                                                                                                                                                                                                         |
| 5. Normal depletion                                | Mild annoyance→ convenience   | -                                           | -                           | -                                                                                                                                                                                                                         |
| Positive motives                                   | Emotions                      |                                             |                             |                                                                                                                                                                                                                           |
| 1. Social approval                                 | Neutral→ flattered            | “Kiss” / Social Approval (SA) appeal        | Proud, Flattered            | A young male is driving with a female and male passenger. The male passenger is ridiculing the driver for not speeding. At home, the female passenger kisses the driver for driving safely.                               |
| 2. Intellectual mastery                            | Neutral→ excited, competent   | “Dummy” / Intellectual Mastery (IM) appeal  | Competent, Excited, Amusing | A crash dummy is seen driving and not speeding. As he approaches a speed camera, a young male driver speeds past him and the speed camera flashes. The dummy passes the speed camera without incident and smiles.         |
| 3. Sensory gratification                           | Neutral→ sensory anticipation | -                                           | -                           | -                                                                                                                                                                                                                         |

Evidence from the available studies suggests that positive emotional appeals may represent an effective persuasive alternative to negative, fear-evoking appeals. Two pertinent findings emerging from these studies are that: (i) the persuasive effects of humorous appeals may not be detectable upon immediate post-exposure measures, but rather emerge after a time delay (see Lammers et al., 1983) and (ii) humorous health messages<sup>24</sup> may be relatively more effective for males than females. These findings suggest that gender moderates the effectiveness of different emotional appeals and that studies that do not incorporate follow-up post-exposure measures are likely to draw incomplete and possibly erroneous conclusions about the overall effectiveness of different emotional appeals.

Contemporary fear appeal models (e.g., EPPM) also highlight that an appeal's overall effectiveness necessitates the measurement of both message acceptance as well as the relatively less often measured construct of message rejection (Witte, 1992a). Message acceptance is often measured in terms of adaptive intentions whereas message rejection is measured in terms of maladaptive intentions such as denial and avoidance strategies (see Witte, 1992a).

The empirical evidence discussed has focused upon humorous and fear-evoking appeals. However, as the RP motivation model attests that neither fear nor humour represent the only negative and positive emotions that may be examined. Furthermore, evidence based on studies assessing a range of discrete emotions have suggested that advertisement-induced emotions of the same emotional valence (i.e., positive or negative) may have different persuasive (and possible dissuasive) effects (Dillard et al., 1996). There is a need then, to broaden the scope of positive and negative emotions examined

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<sup>24</sup> These health messages addressed specifically the issues of AIDS and sunscreen use.

to better inform contemporary understanding of the persuasive effects of different emotions.

### *8.3.3 The current study*

Guided by an existing theoretical framework (the RP motivational model), a range of positive and negative emotional health appeals were developed for examination of their relative persuasiveness. The appeals were designed for an important health context, namely road safety and, in particular, the behaviour of speeding.

In providing this examination of the effectiveness of a range of emotional health messages, the current study addresses some important gaps in the extant literature. In health advertising research broadly, as well as road safety research more specifically, no prior studies have been conducted which provide an empirical comparison of different emotional appeals from the RP motivational framework and that address the same behaviour (see Donovan et al., 1995).

Additionally, some ambiguity is evident in the health advertising context about when it is best to use what type of appeal, and in particular, positive appeals. Some researchers have questioned the suitability of positive emotions and motivations for messages that address more threatening health issues such as AIDS/HIV, smoking, and road safety as opposed to health messages that promote such issues as increasing physical exercise (see Donovan, 1995). It has been suggested that, if positive messages are used for a threatening health issue such as road safety they may be more effective for individuals low in involvement (Donovan & Henley, 2003). However, recent empirical evidence examining anti-drink driving messages found no persuasive advantage for positive, humorous messages for individuals reporting lower involvement (Lewis et al., in press). The current study endeavours to provide some clarification about this issue.

Finally, given that the behaviour of focus in the current study is speeding, it is important to note that distinctions have been made between the factors that influence speeding on urban as opposed to open roads/highways (see Fleiter & Watson, 2006; Forward, 2006). To the extent that the relative effectiveness of different appeals may also vary according to this distinction, the current study examines persuasive outcomes in terms of speeding behaviour in these different contexts. Currently, no prior studies have evaluated the effectiveness of different emotional appeals for speeding behaviour classified according to this distinction and, thus, the current study addresses another gap in the available persuasion literature.

#### *8.3.4 Study hypotheses*

H1a: A main effect of appeal type is expected such that negative emotional appeals will produce greater changes in attitudes and adaptive intentions immediately after exposure than positive emotional appeals; however, at follow-up, positive emotional appeals will be more effective on these same measures than negative emotional appeals (H1b).

H2: A main effect of appeal type is expected such that the positive appeals, in minimising avoidance reactions, will be associated with less message rejection than negative appeals.

H3: A main effect of response efficacy is expected such that, irrespective of appeal type, high response efficacy will produce greater changes in attitudes and adaptive intentions than low response efficacy and will be associated with less maladaptive intentions.

H4: A main effect of involvement is expected such that those higher in involvement will report stronger attitudinal and (adaptive) intentional change on

immediate and follow-up attitudinal and adaptive intentional measures than those lower in involvement. Whilst it is expected that appeal type and involvement will interact, given a paucity of previous evidence and mixed findings with the evidence that is available, this hypothesis is exploratory in nature.

H5: It is expected that appeal type and gender will interact such that positive appeals will be more persuasive for males than negative appeals.

#### *8.4 Method*

##### *8.4.1 Participants*

All participants were holders of a current motor vehicle's licence. Participants completed the study via an on-line survey. A total of 551 participants completed the Time 1 survey. The sample consisted of 356 females (64.6%) with an age distribution as follows: 17-24 years (40.1%), 25-34 years (24.9%), 35-44 years (18%), 45-54 years (13.2%), 55-64 years (3.3%), and 60 years and over (0.5%). Participants were offered the chance to win a \$50 shopping voucher.

The link to the survey was placed on the authors' research centre's homepage. Advertising of the survey to particular participant groups was approached in a pre-determined, manner which included emails forwarded to student and staff lists of a large Australian university as well as staff of a multifaceted organisation involved in many aspects of motoring. Additionally, a link to the survey was placed on this organisation's homepage to increase the likelihood that drivers would find the study.

A total of 201 (36.5%) participants completed the Time 2 survey. A computer-generated email invited participants to complete the second questionnaire one month after the first. Of those who completed the second survey, most were females ( $n = 139$ , 69.2%; one did not specify) and ages ranged from 17 to 59 years ( $M = 30.89$ ,  $SD =$

10.63). In the second study, a similar proportion of females participated (68.2%) as those who did not (62.6%) and a similar proportion of participants aged 34 years and under participated (65.7%) as those who did not (64.6%).

#### *8.4.2 Materials*

*8.42.1 Advertisements.* Based on recommendations (see Elliott, 1987), audio messages were developed and each participant was exposed to only one advertisement. The RP motivational framework informed the types of emotions to be incorporated within the different emotional appeals (see Table 8.1). Four road safety advertisements (two negative, two positive) were written by the authors. For brevity, the four advertisements will be referred to herein according to their motivation type; namely, Problem Avoidance appeal (PA appeal), Problem Removal appeal (PR appeal), Social Approval appeal (SA appeal), and Intellectual Mastery appeal (IM appeal). However, it is important to note that, when referring to the PA appeal, this appeal is conceptualised as the fear-based appeal, the PR appeal is the agitated/annoyed-based appeal, SA appeal is the pride-based appeal, and the IM appeal is the humour-based appeal. Table 8.1 provides a brief description of each appeal.

Some specific emotions, namely “anxious” and “agitated” were added to the original conceptualisation given that the list of emotions has been regarded as not exhaustive (Henley & Donovan, 2002). Also, humour/amusement was not included in the original conceptualisation of appropriate emotions for IM appeals but was included in this appeal type given that humour would be more appropriate for positive motives (Donovan, 1995). The advertisements were piloted with focus groups of drivers to confirm that participants distinguished between the appeals in terms of emotional

content. The final versions of the advertisements were recorded by a professional radio journalist.

*8.4.2.2 Measures.* The Time 1 survey was divided into pre-exposure (e.g., demographics, attitudes, adaptive intentions, and perceptions of susceptibility and severity); and immediate post-exposure measures (e.g., attitudes, adaptive and maladaptive intentions, and response efficacy). The Time 2 survey assessed attitudes and intentions (both adaptive and maladaptive). All items were assessed on 7-point likert scales (1[*Strongly disagree*] to 7[*Strongly agree*]) or in the case of attitude items, on 7-point semantic differential scales.

Involvement was operationalised in terms of perceived risk. Two particular risks associated with speeding are the threat of being in a road crash and of being fined. To assess the threat of each risk, the perceived susceptibility and severity of each risk was assessed with items adapted from elsewhere (e.g., Witte, 1992b). The susceptibility and severity score for each threat were added to provide a measure of the threat of being in a crash and the threat of being fined. These two scores were then added to provide a total perceived risk score<sup>25</sup>. A median split was then performed on this total risk score to distinguish participants as low ( $M = 2.87$ ;  $SD = 0.96$ ) or high ( $M = 5.32$ ;  $SD = 0.76$ ) involvement.

Two composite measures were devised to assess attitude towards speeding in two distinct contexts: on urban roads (i.e., 50 and 60 km/hr roads) and on highways/open roads (i.e., 100 and 110km/hr). This distinction is consistent with previous research (e.g., Fleiter & Watson, 2006). Each measure was created from three items measuring how *wrong/right*; *unfavourable/favourable*; *unacceptable/acceptable* exceeding the speed

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<sup>25</sup> A significant, positive correlation was found between these two scores ( $r = .39$ ,  $p < .001$ ).

limit would be ( $\alpha$ s ranged from .91 to .94). Responses were reverse scored such that higher scores indicated a less favourable attitude towards speeding.

Based on previous research (Lewis et al., 2007a), adaptive future intentions (i.e., message acceptance) were also measured for exceeding the speed limit on urban and open roads/highways. Participants reported the extent that they did not intend on exceeding the speed limit by more than 10km/hr on urban and open roads/highways. Higher scores indicated stronger intention not to exceed speed limits.

Maladaptive intentions (i.e., message rejection) were measured with five items adapted from previous research (e.g., Tay & Watson, 2002). Participants reported how likely they would be of changing channels or ignoring the ad if it appeared on television ( $\alpha = .84$  and  $.86$  for the Time 1 and Time 2 surveys, respectively).

Based on Lewis et al. (2007a), a composite measure of response efficacy was devised from three items that assessed the effectiveness of the strategies and information provided in the advertisement (e.g., “The advertisement was effective in providing a strategy (or strategies) to reduce speeding”). The scale was internally reliable ( $\alpha = .79$ ). A median split was conducted on the measure to separate low ( $M = 3.74$ ;  $SD = 0.72$ ) and high ( $M = 4.78$ ;  $SD = 0.68$ ) ratings of response efficacy.

Emotional responses adapted from the RP motivational model were assessed in terms of the extent that participants had experienced the emotion from 1 (*Not at all*) to 7 (*Very much*). The responses for the emotions relating to each specific advertisement were summed (see Table 8.1). For instance, for the PA appeal, the emotions fear, anxious, and relaxed were added. The groups of emotions applicable to the PA appeal, PR appeal, SA appeal, and IM appeal were labelled Emotions List 1, 2, 3, and 4, respectively.



### 8.4.3 Procedure

At Time 1, pre-exposure measures were assessed, the advertisement (computer-generated random selection) was then played, and immediate post-exposure measures were subsequently assessed. At Time 2, participants were emailed the web address of the second survey which comprised of the measures assessing follow-up attitudes and intentions. The advertisements were not re-shown in the second survey. Responses to the two surveys were matched by a unique identifying code which preserved the anonymity of the participants.

## 8.5 Results

### 8.5.1 Manipulation Check

To ensure that participants perceived the four appeals as eliciting distinctive emotions, a manipulation check was conducted. A repeated-measures MANOVA confirmed that each advertisement evoked more of its appropriate emotion list than other emotion lists (i.e. PA appeal evoked more of Emotion list 1 than the other emotion lists, PR appeal more of Emotion list 2, etc). Specifically, whilst significant main effects for appeal and emotion list were found, these effects were further clarified by a significant appeal x emotion list interaction,  $\lambda = .47$ ,  $F(9,1304) = 53.41$ ,  $p < .001$ , which revealed that each appeal evoked significantly more of its relevant Emotions List than any other Emotions List. For Emotion Lists 1, 2, 3, and 4 the following means were found for each appeal: PA appeal  $M_s = \mathbf{3.26}$ , 2.57, 1.34, 1.38; PR appeal  $M_s = 2.23$ , **2.73**, 1.98, and 1.91; SA appeal  $M_s = 2.31$ , 2.61, **3.25**, 2.48; and IM appeal  $M_s = 2.07$ , 2.63, 2.24, **2.93** (note: the emotion list relevant to a specific advertisement is bolded). Thus, the manipulation was successful.

### 8.5.2 Immediate outcomes

For each analysis, a 4 (appeal type; PA, PR, SA, and IM appeals) x 2 (involvement; low, high) x 2 (response efficacy; low, high) x 2 (gender) ANCOVA was conducted with the appropriate pre-exposure measure entered as a covariate. The only exception was for message rejection which did not have a pre-exposure equivalent score to use as a covariate and, thus, an ANOVA was conducted. Where required, follow-up tests utilised a Bonferroni adjustment of alpha. Table 8.2 reports the significant results found for all analyses. The following sections focus upon the main effects and interactions (as shown in Table 8.2) relevant to the study hypotheses.

*8.5.2.1 Attitude to speeding (urban).* Follow-up analyses of the significant appeal x gender x involvement interaction indicated significant effects for males only. The effects were found for males who reported both lower ( $F(3, 485) = 5.50, p = .001, \eta_p^2 = .03$ ) and higher levels of involvement ( $F(3, 485) = 5.26, p = .001, \eta_p^2 = .03$ ). For males of lower reported involvement, the IM appeal was associated with a significantly higher mean attitude score than the SA appeal ( $M_s = 6.46$  versus  $5.84$ ) and the PR appeal ( $M_s = 6.46$  versus  $6.11$ ). Also, the PA appeal had a significantly higher mean score than the SA appeal ( $M_s = 6.29$  versus  $5.84$ ). For males who reported higher involvement, the IM appeal and the SA appeal were associated with a significantly higher mean score than the PR appeal ( $M_s = 6.59, 6.51, \text{ and } 5.88$ , respectively). In addition, the difference between IM appeal and PA appeal approached significance ( $M_s = 6.59$  versus  $6.16, p = .039$ ) with the former advertisement associated with a higher mean score than the latter.

Table 8.2

Summary of analyses results for immediate and follow-up persuasive outcomes by appeal, involvement, and gender

| Immediate                   |                                                                                                                   |                                                                                                                                                                                                                                                                                              |                                                                                                                                  |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Outcome Measure             | Significant Effects                                                                                               |                                                                                                                                                                                                                                                                                              | Means of significant main effects <sup>a</sup>                                                                                   |
| Attitude Urban              | Appeal<br>Gender<br>Response efficacy<br>Appeal x Gender<br>Appeal x Involvement<br>Appeal x Gender x Involvement | $F(3, 485) = 3.74, p = .01, \eta_p^2 = .02$<br>$F(1, 485) = 5.66, p = .018, \eta_p^2 = .01$<br>$F(1, 485) = 15.65, p < .001, \eta_p^2 = .03$<br>$F(3, 485) = 4.37, p = .005, \eta_p^2 = .03$<br>$F(3, 485) = 2.91, p = .034, \eta_p^2 = .02$<br>$F(3, 485) = 4.05, p = .007, \eta_p^2 = .02$ | $M_{Low} = 6.19; M_{High} = 6.42$                                                                                                |
| Attitude Highway            | Involvement<br>Response efficacy                                                                                  | $F(1, 506) = 11.28, p = .001, \eta_p^2 = .02$<br>$F(1, 506) = 5.63, p = .018, \eta_p^2 = .01$                                                                                                                                                                                                | $M_{Low} = 5.70; M_{High} = 6.12$<br>$M_{Low} = 5.76; M_{High} = 6.06$                                                           |
| Adaptive Intentions Urban   | Gender<br>Involvement                                                                                             | $F(1, 522) = 6.38, p = .012, \eta_p^2 = .01$<br>$F(1, 522) = 13.20, p < .001, \eta_p^2 = .03$                                                                                                                                                                                                | $M_{Male} = 5.79; M_{Female} = 6.09$<br>$M_{Low} = 5.72; M_{High} = 6.16$                                                        |
| Adaptive Intentions Highway | Gender<br>Involvement<br>Response efficacy                                                                        | $F(1, 507) = 26.69, p < .001, \eta_p^2 = .05$<br>$F(1, 507) = 9.98, p = .002, \eta_p^2 = .02$<br>$F(1, 507) = 7.42, p = .007, \eta_p^2 = .01$                                                                                                                                                | $M_{Male} = 5.13; M_{Female} = 5.81$<br>$M_{Low} = 5.26; M_{High} = 5.67$<br>$M_{Low} = 5.29; M_{High} = 5.64$                   |
| Maladaptive Intentions      | Appeal<br>Involvement<br>Response efficacy                                                                        | $F(3, 513) = 5.32, p = .001, \eta_p^2 = .03$<br>$F(1, 513) = 9.67, p = .002, \eta_p^2 = .02$<br>$F(1, 513) = 68.87, p < .001, \eta_p^2 = .12$                                                                                                                                                | $M_1 = 3.11; M_2 = 3.80; M_3 = 3.26; M_4 = 3.55^{b,c}$<br>$M_{Low} = 3.64; M_{High} = 3.23$<br>$M_{Low} = 3.98; M_{High} = 2.88$ |
| Follow-up                   |                                                                                                                   |                                                                                                                                                                                                                                                                                              |                                                                                                                                  |
|                             | Significant Effects                                                                                               |                                                                                                                                                                                                                                                                                              | Means of significant main effects <sup>a</sup>                                                                                   |
| Attitude Urban              | Gender<br>Involvement x Response efficacy                                                                         | $F(1, 159) = 7.47, p = .007, \eta_p^2 = .05$<br>$F(1, 159) = 3.92, p = .050, \eta_p^2 = .02$                                                                                                                                                                                                 | $M_{Male} = 6.19; M_{Female} = 6.50$                                                                                             |
| Attitude Highway            | Involvement<br>Appeal x Gender x Response efficacy                                                                | $F(1, 159) = 3.41, p = .067, \eta_p^2 = .02^d$<br>$F(3, 159) = 2.51, p = .060, \eta_p^2 = .05^d$                                                                                                                                                                                             | $M_{Low} = 5.74; M_{High} = 6.02$                                                                                                |
| Adaptive Intentions Urban   | Appeal<br>Gender<br>Involvement<br>Appeal x Involvement<br>Gender x Involvement                                   | $F(3, 166) = 2.59, p = .054, \eta_p^2 = .05^d$<br>$F(1, 166) = 3.40, p = .067, \eta_p^2 = .02^d$<br>$F(1, 166) = 9.67, p = .002, \eta_p^2 = .06$<br>$F(3, 166) = 3.05, p = .030, \eta_p^2 = .05$<br>$F(3, 166) = 6.31, p = .013, \eta_p^2 = .04$                                             |                                                                                                                                  |
| Adaptive Intentions Highway | Involvement<br>Gender x Involvement                                                                               | $F(1, 166) = 11.39, p = .001, \eta_p^2 = .06$<br>$F(1, 166) = 3.65, p = .058, \eta_p^2 = .02^d$                                                                                                                                                                                              |                                                                                                                                  |
| Maladaptive Intentions      | Appeal<br>Response efficacy                                                                                       | $F(3, 167) = 3.08, p = .029, \eta_p^2 = .05$<br>$F(1, 167) = 17.64, p < .001, \eta_p^2 = .10$                                                                                                                                                                                                | $M_1 = 3.36; M_2 = 4.24; M_3 = 3.36; M_4 = 3.53^{b,e}$<br>$M_{Low} = 3.75; M_{High} = 3.49$                                      |

Note. <sup>a</sup> Table provides mean scores for significant main effects only. Follow-up results for significant interactions are reported in-text. Where no significant interaction is reported above, no significant interaction(s) were found. <sup>b</sup>  $M_1, M_2, M_3$ , and  $M_4$  denote mean scores for the PA, PR, SA, and IM appeals respectively.

<sup>c</sup> No difference attained significance. <sup>d</sup> Result approached significance. <sup>e</sup> The difference between the IM appeal and the PR appeal was significant and the difference between the IM appeal and the SA appeal approached significance with a Bonferroni adjustment ( $p = .034$ ).

### 8.5.3 Follow-up outcomes

*8.5.3.1 Attitude to speeding (urban).* Follow-up analyses of the significant 2-way interaction revealed a significant univariate effect for individuals reporting lower involvement only, ( $F(1,159) = 7.99, p = .005, \eta_p^2 = .05$ ) such that the mean attitude score was lower in the low than the high response efficacy condition ( $M_s = 6.08$  versus  $6.51$ , respectively).

*8.5.3.2 Attitude to speeding (open roads/highways).* Follow-up analyses of the marginally significant ( $p = .060$ ) 3-way interaction revealed that no effects were significant with the effect most close to approaching significance being for males in the high response efficacy condition ( $p = .069$ ). Inspection of the means revealed that the PA appeal was associated with lower mean score than any of the three other advertisements, ( $M_{PA \text{ appeal}} = 5.27; M_{PR \text{ appeal}} = 6.38; M_{SA \text{ appeal}} = 6.22; M_{IM \text{ appeal}} = 6.25$ ).

*8.5.3.3 Intention to speed (urban).* Follow-up analyses of the significant appeal x involvement interaction revealed a significant univariate effect for the individuals who reported lower involvement ( $F(3,166) = 6.07, p = .001, \eta_p^2 = .10$ ) such that the IM appeal ( $M = 4.92$ ) was associated with significantly weaker intentions not to exceed the speed limit on urban roads (i.e., stronger intention to speed) than any of the other three advertisements which did not differ significantly from one another ( $M_{PA \text{ appeal}} = 5.95; M_{PR \text{ appeal}} = 6.19; M_{SA \text{ appeal}} = 6.22$ ). Follow-up analyses of the significant involvement x gender interaction revealed a significant effect for individuals of lower reported involvement ( $F(1,166) = 10.94, p = .001, \eta_p^2 = .06$ ) such that males had significantly weaker intentions not to exceed the speed limit on urban roads (i.e., stronger intentions to speed) than females ( $M_s = 5.30$  and  $6.26$ , respectively).

*8.5.3.4 Intention to speed (open roads/highways).* Follow-up analyses of the significant 2-way interaction revealed a significant effect for individuals who reported lower levels of involvement only,  $F(1,166) = 7.68, p = .006, \eta_p^2 = .04$ , such that males had significantly weaker intentions not to exceed the speed limit on open roads/highways (i.e., stronger intention to speed) than females ( $M_s = 5.03$  and  $5.86$ , respectively).

## *8.6 Discussion*

The current study examined the persuasiveness of a range of positive and negative emotional appeals related to an important health context, namely road safety, addressing the behaviour of speeding. In addition to drawing upon a theoretical model, the RP motivational model, which enabled examination of a broad range of emotion types, the study examined the impact of some key theoretical constructs previously established as impacting upon the effectiveness of persuasive messages. Specifically, the study examined the impact of one's level of involvement (as perceived risk), the level of response efficacy, and gender on the effectiveness of the appeals. Additionally, the study incorporated a range of persuasion outcome measures including message rejection, as well as acceptance; also, it examined persuasive effects over time; and it acknowledged and assessed for persuasive differences on outcomes relating to speeding in different contexts.

Overall, the study demonstrated the utility of the RP motivational model for the design of a range of emotional health messages. In relation to the study's hypotheses, evidence was found in general for each of the predictions. The results suggested that positive emotional messages incorporating humour can be an effective approach for males. In addition, the results highlighted that emotions of the same valence do not

always have similar persuasive effects and that the provision of high levels of response efficacy is similarly important for positive emotional appeals as it is for negative, threat-based appeals. Also, the results provided further support for the non-mutual exclusivity of message acceptance and rejection as outcome measures of persuasion. In other words, the results suggest that message acceptance and rejection, albeit related, are distinct outcomes. Finally, the need to distinguish between speeding on urban and on open roads was supported with different factors influencing attitudes and intentions in these two driving contexts.

#### *8.6.1 Immediate outcomes*

For attitudes towards speeding on urban roads, a main effect for appeal type was found which revealed a persuasive advantage for negative appeals, supporting Hypothesis 1. In addition, the results revealed that the effectiveness of the different appeals was influenced by involvement and gender such that males, reporting either lower or higher involvement, reported the highest attitude scores (less approving views of speeding) following the IM appeal (i.e., positive emotional appeal incorporating humour) advertisement. These findings provide support for Hypotheses 4 and 5 that involvement would interact with appeal type and males would report stronger attitudes and intentions for positive appeals than negative appeals. This result is interesting because it suggests that, irrespective of whether males perceived themselves as being of low or high perceived risk (involvement), the positive emotional appeal that incorporated humour was the most effective. This finding, whilst inconsistent with Lewis et al.'s (in press) findings for anti-drink driving messages whereby no persuasive advantage was found for males who reported either higher or lower levels of involvement on immediate post-exposure persuasion measures, is consistent with

Conway and Dubé (2002) who found humorous health messages to be more effective for males (individuals high in masculinity<sup>26</sup>) on immediate outcome measures.

Consistent with the ELM, Lewis et al. (in press) had suggested that, on immediate measures if a persuasive advantage was found for positive appeals it would be most likely found for individuals reporting lower levels of involvement because positive emotion would act as a peripheral cue increasing liking and subsequent persuasion. The results of the present study support his suggestion. The most significant implication of this finding is that a possible means of delivering the road safety message to one of the most hard-to-reach road user groups, namely, males who regard themselves as being of low likelihood of being caught speeding and being involved in a road crash, may be through positive, humorous appeals. Moreover, the significant main effect found for response efficacy indicates that, as expected (H3), high rather than low response efficacy is more effective. This finding suggests that it is important for persuasive appeals to not only rely upon emotion but also the inclusion of information and strategies, irrespective of appeal type.

For individuals who reported higher levels of involvement, some unexpected findings emerged. Previous research (Lewis et al., in press) found that, consistent with the affect-as-input view of affect's role (see Martin, Abend, Sedikides, & Green, 1997; Petty, DeSteno, & Rucker, 2001), because individuals would have expected health messages addressing threatening issues (such as road safety) to evoke negative rather than positive feelings, feeling positive affect would have been inconsistent with their expectations which, in turn, would have had aversive effects on persuasion. The extent to which the findings of this previous research may be compared with those of the

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<sup>26</sup> Males are typically found to be higher in masculinity than females (see Bem, 1974).

current study, however, are uncertain given that the previous study was based on fear-evoking and humorous appeals that addressed the behaviour of drink driving. Although both behaviours derive from the road safety context, evidence has indicated that different road safety behaviours require different advertising approaches (e.g., Tay, 2005b). The current results suggest that for messages addressing speeding on urban roads, positive messages may be a particularly effective way for targeting males in general, irrespective of involvement level.

Although the IM (humour-based) appeal was associated with the highest mean attitudinal (urban speeding) scores for individuals reporting either low or high involvement, the order of the effectiveness of the remaining appeals did differ depending on the level of reported involvement. In particular, the second positive emotional appeal, the SA (pride-based) appeal, was associated with the largest discrepancy in placement of relative effectiveness, performing least well in relation to individuals who reported lower involvement yet second best in relation to individuals who reported higher involvement. These results suggest an overall persuasive advantage for positive emotional appeals (and not just humorous appeals) for males who report higher involvement. In contrast, for individuals reporting lower involvement, this same overall advantage of positive emotion was not evidenced; rather, the traditional physical threat approach (i.e., the PA appeal) was rated second highest. An important applied implication of this finding is that health appeal designers, who may be considering the use of a positive emotional appeal, would need to conduct extensive and careful piloting to ensure that the appeal is functioning as intended. The current findings support previous evidence that has shown that discrete emotions of the same valence can have



very different effects on persuasion with some persuasive and other dissuasive (Dillard et al., 1996).

Whilst the effectiveness of the different appeals varied in relation to attitudes towards speeding on urban roads, no similar significant effect of appeal (main effect or interaction) was found for its open roads/highway counterpart. The only factors found to influence the latter attitude scores were the level of involvement and the level of response efficacy; specifically, higher levels of each construct were associated with higher attitude scores, thus providing support for Hypotheses 3 and 4. These results highlight again the importance of including coping strategies, irrespective of appeal type. Further, the findings highlight that attempts to motivate attitudinal change relating to speeding in this context may be difficult to achieve through persuasive messages. However, the absence of a significant effect of appeal type may not attest to the ineffectiveness of all appeals, but more to the greater social approval that exists in relation to speeding on open roads relative to urban roads (Mitchell-Taverner, 2002). It follows that it would be unlikely that significant improvements would be reported following one exposure and immediate responses to a single persuasive message given such social approval.

A lack of an effect for appeal type was also reported in relation to intentions not to speed on both urban and open roads. However, unlike the attitudinal measures, the intentional measures did share similar significant effects of gender and involvement. Males were less likely to report intention not to speed on either road type (i.e., more intention to speed) and highly involved individuals were more likely to report intention not to speed on either road type.

Whilst there is correspondence in the attitudinal and intentional measures relating to speeding on open roads (both have significant main effects for involvement and response efficacy), the results for urban roads show inconsistency between the two measures. The concern with this inconsistency is that intentions, as the more proximal predictor of behaviour than attitudes (Ajzen & Fishbein, 1980), would be more predictive of future driving behaviour. However, given that attitudes represent one of the key factors influencing intentions, they may assist to improve intentions and ultimately behaviour.

In relation to message rejection, although the findings revealed a main effect of appeal type, no significant pairwise differences were found and thus no direct support for Hypothesis 2. Inspection of the means indicated that the overall rate of rejection was low with even the highest score (the IM or humour-based appeal) situated around the mid-point of the scale (i.e., 3.64 on a 7-point scale). Also, the robustness of response efficacy effect was again found supporting Hypothesis 3; specifically, less rejection was associated with high rather than low levels of response efficacy.

#### *8.6.2 Follow-up outcomes*

As found in other studies, (Lammers et al., 1983; Lewis et al., in press), differences emerged in the reported attitudes of the participants at follow-up relative to their immediate post-exposure measures. For speeding on urban roads, no significant effect of appeal (main effect or interaction) was found. In contrast, attitude toward speeding on open roads and highway was influenced by the interaction of appeal type, response efficacy, and gender. Whilst subsequent follow-up tests revealed no significant effects, some interesting trends were evident. For instance, for males reporting higher levels of involvement, the PA appeal (the negative, fear-evoking appeal) was associated

with a lower mean score than any of the three other appeals. This finding (albeit only approaching significance) provides some support for Hypothesis 5, since a negative appeal (the typical approach utilised in appeals for threatening health issues including road safety) performed relatively less well for males than any of the other appeals including positive appeals. Moreover, it provides some support for the prediction that there would be evidence of greater persuasiveness of positive appeals at follow-up than negative appeals (H1b). The finding also highlights the differential persuasive effects of emotions of the same valence; in this instance, the negative, PR appeal which evoked the emotions of, annoyed, agitated, and relieved was more effective than its fear-based, negative appeal counterpart.

Similar to the attitudinal measures, a different pattern of results emerged for the follow-up intentional measures compared to those reported immediately after exposure. Unlike the immediate measures, the follow-up measure of intentions not to speed on urban roads evidenced among other significant effects, a main effect of appeal as well as an interaction between appeal and involvement. This interaction revealed that, for individuals of lower reported involvement, the IM appeal was associated with less intention not to exceed the speed limit than any of the three other appeals. This result suggests that when attempting to motivate intentional change in low involved individuals, it may be ill-advised for health messages to rely upon appeals to positive emotions such as humour.

For message rejection, the results revealed a main effect of appeal type highlighting that the effectiveness of the different appeals did vary. The IM (humour-based) appeal was associated with less message rejection than the PR (agitated/annoyed-based) appeal, supporting Hypotheses 1b and 2 that the effectiveness of positive appeals

will be evidenced more on follow-up measures and that positive appeals may be associated with less message rejection than negative appeals. The IM appeal did not significantly differ in message rejection than the PA (fear-based) appeal so it is not an overall greater effect of the IM appeal over all negative appeals. Moreover, it is not an overall significant effect of positive appeals, as the difference between the IM appeal and SA appeals (the second of the positive emotion appeals) approached significance. Thus, the findings relating to message rejection also highlight the fact that emotions of the same valence do have differential persuasive effects on health persuasion (e.g., Dillard et al., 1996). The message rejection findings when considered in relation to the results for the preceding intentional results whereby the IM appeal was associated with less intention not to speed, highlights that the two outcome measures of adaptive and maladaptive intentions are distinct responses. Additionally, consistent with predictions more efficacy was associated with less message rejection (H3).

### *8.6.3 Limitations and future research*

It is important to consider some limitations of the current study. First, whilst previous evidence had indicated an association between positive emotional appeals and the modelling of safe behaviour (Lewis et al., 2007b), the humour-based, IM appeal, although a positive motivational appeal, depicted both the main character engaging in safe behaviour as well as another driver engaging in unsafe behaviour. A similar tendency occurred with the PR (agitated/ annoyed-based) appeal. Although the emotional appeal type and the evoked message-relevant affect was the factor of interest in the current study, it is important to note this dual-depiction of the safe and unsafe health behaviours in the one message and the impact that this had upon the message's effectiveness. Future research should examine whether there is a persuasive advantage

for health appeals to incorporate the depiction of both the safe as well as the unsafe behaviours.

A second limitation relates to the possibility that other emotions, not measured, were evoked and had subsequent persuasive effects (see Dillard et al., 1996). A third limitation relates to the self-report nature of the measures collected. As an applied health advertising context, outcome measures that relate to practical (behavioural) outcomes are most desired. Of note, the original intention was to compare the effectiveness of the appeals at follow-up in terms of speeding fines received. However, only four respondents had received speeding fines in the interim period rendering any meaningful analysis impossible. Nevertheless, future research should attempt to utilise different methods of measuring subsequent behaviour. A final limitation that should be acknowledged relates to the sample attrition that occurred between Time 1 (pre-exposure and immediate post-exposure measures) and Time 2 (follow-up attitudes and intentions). Although the age and gender profiles of the two samples appeared similar, it is possible that the attrition may have introduced a potential bias. This issue should be considered in the design of future research in this area, given the importance of follow-up measures.

In summary, the current study demonstrates the potential utility of drawing upon the RP motivational model to develop emotional health messages. The extent to which these findings may assist the development of advertising campaigns for a range of health behaviours represents a key research endeavour for future studies. In particular, the RP motivational model may prove most beneficial when seeking innovative strategies to promote threatening health behaviours using positive emotions and motivations, traditionally, an underutilised strategy in health advertising.



## Chapter Nine: General Discussion

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### *9.1 Introduction*

This program of research has examined the respective roles and relative effectiveness of negative and positive emotional appeals. More specifically, it has examined the effectiveness (where effectiveness has been operationalised in the current program of research according to the extent of self-reported attitudinal, intentional, and, in some instances, behavioural change) of message-relevant affect in the applied health context of road safety advertising. This final chapter draws together the findings from the three stages of research and, in particular, identifies the contribution of each of the five papers comprising this PhD thesis by publication to the research aims. The chapter also discusses the strengths and limitations of the research as well as providing some recommendations for key directions for future research.

### *9.2 Integration of Key Findings According To Research Aims*

#### *9.2.1 Roles and relative effectiveness of positive and negative emotional appeals*

Paper One, within the first stage of the research program, elucidated the mixed findings in relation to the use of fear-based appeals and the extent that other key factors influence their effectiveness. Key factors identified included cognitive processing factors relating to the coping and threat appraisals of the EPPM (Witte, 1992a) and PMT (Rogers, 1983) frameworks. These factors included response and message self-efficacy (i.e., as noted previously, when referred to in terms of processing variables, response efficacy and message self-efficacy refer to individuals' perceptions of the extent to which a message incorporates coping strategies and information and the extent to which they believe they can enact such strategies) as well as personal relevance of, or vulnerability to, a threat. Also highlighted as a key factor moderating the effectiveness of such appeals, was an individual's gender. Previous evidence reported that males were

less influenced by threat-based messages relative to other drivers in general than females and less likely to report intentional change (see Lewis, Watson, & Tay, 2007a). Thus, despite representing an appeal type of choice within the road safety advertising context, the reviewed theoretical and empirical evidence highlighted the complexity of attempts to persuade by fear-based messages.

Extending upon the evidence reported in Paper One, Paper Two, an in-depth qualitative analysis, examined the potential role that positive emotional appeals may play in road safety television campaigns. Such appeals were identified as an efficacious means of promoting the message of prevention. The results indicated that participants associated positive emotional appeals with the notion of doing the right thing (or more specifically seeing the right thing being modelled) and the prevention of aversive outcomes and the subsequent positive feelings experienced. This finding suggested that some drivers may appreciate seeing more drivers being rewarded for safe behaviour, an approach not common in road safety advertising or initiatives more generally despite calls by some notable researchers in the area (see Elliott, 1992; 2003; 2005; Job, 1988). Although not perceived to be promoting the message of prevention, negative emotional appeals were considered an effective means of grabbing attention and providing the regular top-up of fear necessary to remind drivers that driving is dangerous. In other words, the evidence highlighted that positive emotional appeals could provide an important and unique role in the promotion of health behaviours.

Extending upon the findings of Stage One, Papers Three and Five (from research Stages Two and Three, respectively) provided empirical comparisons of the relative effectiveness of positive and negative appeals. Paper Three examined fear-evoking and humorous appeals in relation to global negative and positive message-relevant affect

whilst Paper Five examined a range of message-relevant affect: specifically, (i) a fear-based appeal; (ii) an annoyed/agitated-based appeal; (iii) a pride-based appeal; and (iv) a humour-based appeal. Paper Three was based upon anti-drink driving messages whilst Paper Five was based upon anti-speeding messages. Both empirical studies compared the effectiveness of the positive and negative appeals on a range of persuasion outcome measures (i.e., attitudinal, intentional, and behavioural change) immediately after exposure as well as after a time delay (i.e., from 2 to 4 weeks).

Overall, the results indicated that the relative effectiveness of the positive and negative appeals did vary according to the particular outcome measure examined and whether the measure was taken immediately after exposure or at follow-up. Of particular note, the evidence suggested that, if a persuasive advantage was to be found for negative appeals, it was immediately after exposure. In contrast, evidence of positive appeals' effectiveness was more likely to be found at follow-up. Although previous research had provided evidence of the persuasive effects of negative or positive appeals separately (e.g., Conway & Dubé, 2002; Evans et al., 1970; Lammers et al., 1983), few have provided direct empirical comparisons on the persuasive effects over time of positive and negative emotional health appeals addressing the same behaviour. In performing this comparison, the current program of research has addressed an important gap in extant literature. Informing this gap was important given that there had been a perception that relative to negative appeals, positive appeals would have shorter lasting persuasive effects (see Paper Two). The results also suggest that studies (comparing the relative effects of different persuasive messages) which base conclusions solely upon immediate outcome measures are unlikely to attain a complete understanding of the persuasive effects of their respective messages.

Stage Three of the research (see Paper Five) further extended on understanding of positive and negative emotional appeals by revealing that there was not an overall advantage of positive versus negative emotional but; rather, the type of positive versus the type of negative appeal. Whilst there was an overall persuasive advantage for positive appeals on an attitudinal measure for males reporting higher involvement, there was a specific persuasive advantage for the positive, humour-based appeal for the same measure for males reporting lower involvement (i.e., the second positive appeal, the pride-based appeal performed the least well of the appeals). This finding supports previous evidence relating to the discrete emotions perspective whereby the persuasive effects of specific emotions does vary (Dillard et al., 1996). An implication of this finding is that there is a need to thoroughly pre-test advertisements with members of the target audience and not assume that there is an overall persuasive advantage of positive or negative emotion. To ensure thorough pre-testing, the use of both qualitative (e.g., focus group discussions which enable open-ended reporting of the range of emotional responses experienced) and quantitative research methodologies (e.g., surveys that assess both the nature and intensity of a range of specific emotional responses directly in closed-ended questions) may prove beneficial.

In addition to the type and timing of the outcome measures, the results also highlighted the need to consider the impact of various other factors. First, the results affirmed the importance of other key constructs under examination in determining the relative effectiveness of the positive and negative appeals. The results revealed that appeal type often interacted with the level of perceived involvement and/or gender to influence the relative effectiveness of the different appeals. Generally, significant effects were associated with individuals who reported higher rather than lower levels of

involvement thus highlighting the difficulty in designing messages to target individuals who deem the issue of road safety as having limited relevance to them (see Paper Three) or as being at low risk for being detected for engaging in the behaviour or being in a road crash (see Paper Five). These two different operationalisations of involvement adopted in Papers Three and Five reflected the conceptualisations of the construct in the different theories underpinning each empirical study. The operationalisation in Paper Three was consistent with the ELM's traditional definition of personal relevance with the issue whilst it was defined according to the perceived risk dimension of the RP motivational model in Paper Five. In relation to gender, significant effects found in relation to appeal type and gender typically revealed evidence of a persuasive advantage of positive appeals for males. Arguably, finding any evidence of a persuasive approach having a favourable effect with males, given that males constitute a high risk road user group, is encouraging.

Second, the nature of the behaviour addressed in the message also influenced the relative effectiveness of the different appeal types over time. Specifically, with the anti-drink driving messages, all significant results reported immediately after exposure to the messages revealed a persuasive advantage for negative appeals; however, at follow-up, evidence of greater improvement of the positive appeals was found. In relation to the anti-speeding messages, some evidence of an overall persuasive advantage of positive appeals was found immediately after exposure on attitudinal measures relating to speeding on urban roads for males reporting higher involvement (i.e., the two positive appeals were associated with the first and second strongest attitude scores) as well as a persuasive advantage for the positive, humour-based message for males who reported lower involvement. These results are consistent with previous evidence that has

indicated the two behaviours are not the same and, thus, the countermeasures (advertising and otherwise) likely to address such behaviours are also likely to differ (Tay, 2005b). Additionally, the results may reflect the differing social perceptions regarding each of these behaviours; whilst drink driving is considered a criminal act and by no means humorous, speeding remains more socially acceptable making the use of humour more acceptable for speeding messages. The concern regarding the appropriateness of humour was raised in the first stage of the research program (see Paper Two) and the conclusions from this program of research suggest that whilst humour may be appropriate in some instances, in others it may not be.

Third, a key factor influencing the effectiveness of all appeals, irrespective of an appeal's valence (i.e., either positive or negative), was the robustness of the response efficacy construct. In the majority of instances, where a significant effect for response efficacy was found (either as a independent variable operationalised as a manipulated message characteristic in Chapter Six or as a measured individual difference variable in Chapter Eight), the effect was a main effect whereby high levels relative to low levels were associated with stronger attitudinal and intentional change. Further demonstrating the robustness of the construct, for measures of maladaptive change (i.e., message rejection), the means associated with main effect were reversed such that high efficacy was associated with less rejection.

Fourth, Stage Three of the research incorporated measures of effectiveness relating to message acceptance and rejection. This inclusion of both measures revealed that adaptive and maladaptive outcome measures are capturing distinct aspects of individuals' responses to appeals. As such, without including both measures, the potential of drawing erroneous results is heightened. For instance, results reported in

Paper Five revealed that, at follow-up, the humour-based appeal was associated with significantly less intention not to speed on urban roads (i.e., more intention to speed) yet was associated with less rejection than any of the three other appeals (albeit not significantly different from the fear-based appeal). Whilst the weaker intentional findings may have led to the conclusion that the humour-based appeal is ineffective, given the lower rejection rate, this message may be less avoided or ignored than other messages. With more attention paid to this message relative to others, persuasion may be heightened.

### *9.2.2 Relative influence of different emotional appeals*

To examine the relative impact of the different emotional appeals upon particular target audiences, the studies (see Papers Three and Five) included gender as an independent variable. Additionally, influence was assessed in terms of the operation of the TPE for males and females (see Paper Three). The results supported previous empirical evidence (i.e., Lewis et al., 2007a) with females demonstrating an attenuation of the classic TPE and males demonstrating a classic TPE, for negative appeals of both high and low response efficacy. However, the current research extended upon the previous TPE studies by examining the construct in relation to road safety appeals incorporating positive emotion. To the author's knowledge, few studies have examined the TPE in relation to humorous or positive emotional messages addressing a serious health topic (for an exception, see Duck et al., 1995 who examined a range of appeal types, including humour for health messages addressing AIDS/HIV). As predicted (based on previous empirical evidence not examining the TPE and positive messages but, positive messages and persuasion outcomes; e.g., Conway & Dubé, 2002; Struckman-Johnson et al., 1994) the results indicated that, for humorous appeals, males reported an

attenuation of the TPE whilst females reported a classic TPE. This finding represents a reversal of the perceived self and other influence ratings reported by males and females for negative, fear-based appeals. In other words, in relation to self and others influence, there appears to be a persuasive advantage for using positive appeals with males.

### *9.2.3 Emotion and response efficacy*

A key finding emerging consistently throughout the research was the importance of high levels of response efficacy in relation to message persuasiveness. Also, where response efficacy did interact with other constructs, the findings supported the importance of high response efficacy for positive appeals. For instance, Paper Three found that, for the outcome measure of immediate-post exposure intentions, there was a persuasive advantage for the negative, low response efficacy appeal relative to its positive counterpart for males of lower reported involvement. The TPE findings in Paper Three also highlighted the importance of high response efficacy for positive emotional appeals. Whilst males reported an attenuation of the classic TPE for the high response efficacy positive advertisement (yet classic TPE for the negative appeals), for the low response efficacy advertisement males reported a classic TPE. Thus, for males, there was a persuasive advantage associated with the high response efficacy positive appeal yet not for its low response efficacy counterpart.

There are two key implications of the findings relating to response efficacy. First, irrespective of emotional appeal type, high levels of response efficacy are important to message effectiveness. Although the finding in relation to negative, fear-based appeals is not surprising and is consistent with previous evidence, the finding in relation to positive emotional appeals provides an important extension to contemporary understanding of the factors influencing the persuasiveness of emotional messages. Second, making



people feel good with a positive emotional appeals is not sufficient to persuade even individuals of lower involvement where it was predicted that emotion would function as a peripheral cue in accordance with the “how do I feel about it?” heuristic (see Schwarz, 1990); rather, to increase effectiveness, high levels of response efficacy are necessary.

#### *9.2.4 Addressing methodological issues*

This program of research has addressed a number of key methodological weaknesses evident within contemporary fear-persuasion and emotion-persuasion research. With the exception of one issue (see Section 9.2.4.7) all methodological issues discussed in the subsequent sections were addressed through the careful and considered research designs implemented within the program of research.

*9.2.4.1 Measures of message acceptance and message rejection.* Although theoretical (see Witte’s EPPM, 1992) and empirical evidence (Tay & Watson, 2002; Tay et al., 2004) has shown that message acceptance and message rejection are not mutually exclusive outcomes of fear-based appeals, persuasion outcomes have been focused relatively more upon message acceptance than message rejection. Indeed, few empirical studies incorporate measures of both message acceptance and rejection. However, the current program of research, and specifically Paper Five, reaffirms the importance of, and the need to, include measures of both message rejection and acceptance by highlighting that the two measures capture distinct aspects of individuals’ responses to persuasive messages. Arguably, the findings suggest that health advertising research in general (not only that research examining emotional messages specifically) is likely to attain a more comprehensive understanding of message effectiveness by including measures of both acceptance and rejection. Given that both outcomes represent different

aspects of an individual's responses, measuring one outcome without the other is akin to explaining only one half of a story.

*9.2.4.2 Manipulation checks of emotional responses.* The current program of research has focused upon the impact of message-relevant affect on persuasive outcomes. As defined previously, message-relevant affect refers to affect that is evoked in direct response to an attitude object and is part of the communication itself (Dillard & Wilson, 1993). In acknowledging that an emotional message and its emotional effects are not isomorphic (Dillard & Meijnders, 2002), the current research (see Papers Three and Five) utilised manipulation checks to establish the subjective experience of emotion experienced by individual participants. These manipulation checks were conducted in relation to group-level responses to the messages rather than utilising each individual's emotional response as a covariate when measuring other outcome variables.

Surprisingly, research studies do not always conduct such manipulation checks rather relying upon a priori assumptions about a message's content (Eveland & McLeod, 1999; Hastings, Stead, & Webb, 2004). Previous research has suggested that emotional messages, particularly those that have been defined by researchers as fear-based appeals, may not always evoke fear and/or may evoke a number of additional emotions which confounds the interpretation of a specific emotion's effect on persuasion (see Dillard et al., 1996). Thus, in assuming what emotion a particular message may evoke rather than directly measuring affective responses, the possibility of drawing erroneous conclusions is heightened (see Elliott, 2005). As research on the effects of message-relevant affect extends and support for adoption of the discrete emotions perspective is evidenced in emotion-persuasion research, it will become increasingly important for studies to

demonstrate that the a priori assumptions of an emotional appeal's emotionality are consistent with viewers' subjective experience of emotion.

In addition, as is discussed in Section 9.3.4.1, the research program has highlighted the need to conduct manipulation checks of other manipulated message characteristic variables such as response efficacy.

*9.2.4.3 Collection of follow-up data.* Both Papers Three and Five included data collected on persuasive effects at least 2 weeks to 1 month after exposure to the advertising messages. The inclusion of follow-up data provided important insights into the persuasive effects of the different appeals over time. This provision was particularly important for demonstrating the improvement in persuasive effects of positive appeals after a time delay as has been suggested previously (e.g., Lammers et al., 1983). In the absence of such follow-up measures, the overall conclusions drawn from the immediate post-exposure measures would have provided limited support for the use of positive emotional appeals.

Although some previous studies that have examined the fear-persuasion and emotion-persuasion relationships have incorporated follow-up measures (e.g., Schoenbachler & Whittler, 1996), typically studies do not include such measures (see Hastings et al., 2004). However, the results of this program of research suggest that, similar to the need to measure both message acceptance and rejection, a complete understanding of the persuasive effects of different appeals is unlikely to be attained in the absence of follow-up measures.

Additionally, the provision of follow-up data enabled the collection of behavioural outcome data (see Paper Three) and, thus, demonstrated acknowledgement of the fact that intentions, although the most proximal predictors of behaviour, are not

perfect predictors of subsequent behaviour. The importance of behavioural measures is discussed further in Section 9.5.

*9.2.4.4 Examining behavioural outcomes in different contexts.* Recognising that different factors may influence speeding behaviour in different contexts (Forward, 2006), previous research into speeding behaviour has examined the behaviour in both urban and open roads/highways situations (Mitchell-Taverner 2002; Forward, 2006). Paper Five supported the need for this distinction to be maintained in the measurement of response to anti-speeding advertising messages. Although exceeding the posted speed limit irrespective of the speed zone constitutes speeding in the legal sense (and this was the definition of speeding provided to respondents on the survey materials), the results indicated that the relative impact of appeal type and other key constructs does vary according to the location of the speeding behaviour. The findings suggest that further investigation is needed into the impact that subtleties in driving context have for other behaviours such as when it is perceived by some individuals as acceptable and safe to utilise a mobile phone while driving (see Walsh, White, Watson, & Hyde, in press).

*9.2.4.5. Internet surveys and samples.* The frequent reliance upon university student samples has attracted criticism within health advertising research generally, as well as within road safety advertising context more specifically (see Elliott, 2005; Hastings et al., 2004). The current research program sought to address this criticism by examining the adequacy of different sampling methodologies for obtaining diverse samples of drivers for health persuasion research. Specifically, Paper Four empirically compared demographic characteristics and outcome data for measures of persuasion obtained from a university student sample of drivers who completed a paper-and-pencil

version of a survey with an internet sample of drivers who completed an internet version of the same survey.

In relation to the sample characteristics, the results of Paper Four indicated that the internet sample of drivers was more diverse than drivers recruited in a university-student based sample in terms of age. Additionally, the internet sample was found to provide a more equitable representation of males to females than the student sample (the latter contained 78.5% females). This finding provides evident benefit for road safety research, which aims to capture the responses of males as an important road user group. Moreover, comparisons of the demographic characteristics of the two samples with data available on the gender and age of the Australian general population (ABS, 2006) indicated that the internet sample was more representative than the university student sample in relation to these two characteristics. The view has been expressed that as internet use increases, the representativeness of the internet users may also increase (Rhodes et al., 2003). This research supports the use of the internet as a means of acquiring a more diverse and representative sample of respondents than the sample acquired via the more traditional approach of recruiting a university student sample.

The use of internet surveys in road safety research is not unique to this research program with such surveys having been used to address various road safety topics (e.g., Horswill & Coster, 2001 for a study on driver risk taking behaviours; Mulvihill & Haworth, 2005 for a study of motorcycle riders). However, there is a paucity of studies that have empirically compared results from drivers completing an internet and paper-and-pencil version of the same survey (see Horswill & Coster, 2001 for an exception). Further, the study presented in Paper Four is unique as it represents the only study, to the

author's knowledge, that provides an empirical comparison of the sample characteristics and results obtained from two different driver samples for an experimental study.

Paper Four also revealed that equivalent scores were obtained between the two samples on most of the persuasion outcomes assessed (see Section 9.2.4.7). This finding tends to confirm the validity and reliability of the results obtained via the two survey methodologies. Whilst internet surveys also represent a convenient sampling strategy and are not without their limitations, the findings suggests that, relative to university student samples, internet samples may be more diverse, more representative of the general population (with respect to characteristics such as gender and age) and provide equivalent data. In addition to providing justification for the choice of methodology adopted in the final empirical study of the current research program (see Chapter Eight), the findings of this paper also provide important insight into the nature of internet samples and the data they produce. This insight is significant to the extent that advertising research whereby individuals must be exposed to an advertising message prior to providing their responses, may be particularly well-suited to internet-based surveys (Birnbaum, 2004). Thus, researchers conducting future studies in health persuasion may more confidently rely upon the internet as a valid alternative for data collection. More broadly, the evidence provided in Paper Four supports the value of the internet for applied social psychological experiments and contributes to the identification of the types of studies and topics that may be particularly well-suited to administration via the internet.

*9.4.2.6 Equivalence testing versus NHST in psychological research.* The current research program also offered a methodological contribution in relation to the manner in which to test the equivalence of two sample means. Specifically, Paper Four highlighted

the value of formal tests of equivalence in place of null-hypothesis testing methods. As noted in Paper Four, reporting that two means are sufficiently similar to each other as to be deemed statistically equivalent is different to reporting that two means do not significantly differ. Whilst the use of equivalence testing within the current research was to establish the equivalence of results obtained from internet and student samples, it is important to note that formal equivalence tests may apply to any research hypothesis in psychology that seeks to establish equivalence rather than assume equivalence through the absence of a statistical difference.

*9.2.4.7 Testing of positive emotional appeals.* Whilst all the preceding methodological issues related to aspects of the research designs that were intentionally incorporated to address a particular methodological weakness, this final methodological issue represents a rather unanticipated finding. Specifically, Paper Four highlighted the importance of the testing environment for humorous appeals. The results indicated that attitudinal and intentional scores associated with humorous appeals were not equivalent between paper-and-pencil and internet testing conditions, despite the prediction that all comparisons would yield equivalent findings. Specifically, individuals who had responded to the humorous appeals via the paper-and-pencil survey reported stronger intentional scores than those who responded via the internet version of the same survey. Given that the paper-and-pencil survey was administered in group settings and there was a tendency for the humorous appeals to receive overt responses such as laughter, such laughter may have influenced individuals to presume that others had formed favourable impressions of the advertisements. Potentially, more valid responses may be gained by testing humorous appeals via the internet or at least via individually-administered paper-

and-pencil surveys. If the examination of positive message-relevant affect becomes more prominent, the testing condition used may represent an important design consideration.

### *9.3 Contributions to Theory*

#### *9.3.1 Message-relevant affect and persuasion*

Much of what is currently known about the role of emotion in relation to attitude change has been based upon affect conceptualised and measured in terms of mood. In such mood studies, manipulations to mood are made prior to exposure to a persuasive message and this methodology differs from assessing the impact of affective responses generated from the persuasive message itself. The current program of research provides a significant contribution by furthering understanding of message-relevant affect and persuasion. In particular, it extended beyond what is currently known and which has been based predominantly upon negative, fear-based message relevant affect by also examining the role of positive message-relevant affect. Traditionally, positive message-relevant affect has received minimal research attention (Nabi, 2002).

In addition, the findings reported in Paper Five that emotions of the same valence have differential effects on persuasion highlights that theoretical advancement in the area of message-relevant affect and persuasion will require explanation of how and when different emotions exert their persuasive (or dissuasive) effects. Models such as the Cognitive Functional Model proposed by Nabi (1999) may provide a sound foundation for the development of such future frameworks.

#### *9.3.2 Perceived influence of negative and positive appeals*

Paper Three's findings in relation to the TPE support previous evidence that has identified the TPE as an important factor moderating the effectiveness of fear-based appeals (Lewis et al., 2007a). Paper Three, consistent with previous evidence (Lewis et



al., 2007a), found that the TPE is moderated by gender such that males report classic TPEs whilst females report TPE reversals in response to fear-based messages. Recent meta-analytical research had suggested that gender had no impact upon the relative effectiveness of fear-based appeals (Witte & Allen, 2000). However, the growing body of evidence in relation to the TPE and gender, of which the current research findings contribute, challenges the conclusion of this meta-analytical research and, thus, provides an extension to the fear appeal literature (see Elliott, 2003). Paper Three also extends contemporary understanding by providing evidence that the TPE and gender moderate the effectiveness of positive, humour-based health messages. These TPE findings of different directions of the third-person perceptions provide one explanatory mechanism for why males and females differ in their reactions to fear- and humorous-based road safety advertisements. The findings also extend communication literature in relation to the type and content of messages for which the classic TPE, as well as TPE reversals and attenuations, may be found.

Moreover, the findings have implications for advancing theoretical explanations of the emotion-persuasion relationship. The findings highlight the need to consider the impact of demographic characteristics on persuasive outcomes. Given that recent meta-analytical research had suggested that demographical characteristics such as gender were likely not to influence the overall effectiveness of fear-based appeals (Witte & Allen, 2000), the current research program challenges this previous conclusion.

### *9.3.3 Explanation of the effects of positive and negative appeals*

Paper Three provided some important theoretical insight into potential explanations as to why positive and negative appeals may produce different persuasive outcome results immediately after exposure and at follow-up. Specifically, the affect-as-

input to fulfil role expectations view and the “how do I feel about it?” heuristic were examined as possible explanations of the function of affect. Paper Three examined whether individuals have become so accustomed to fear-based approaches in road safety advertising that such approaches had become regarded as *the* approach to promote the road safety message. The findings suggested that this may be the case, particularly in relation to immediate reactions to the advertisements. On immediate post-exposure measures, there was a clear persuasive advantage of negative (fear-evoking) appeals relative to positive (humour-based) appeals. The affect-as-input to fulfil role expectations view was posited as providing a reasonable explanation of this finding. According to this view, positive emotions would be inconsistent with the feelings that may be expected that a road safety message would evoke such as fear and sadness given that fear-based approaches have represented a long-standing, frequently utilised approach in road safety advertising campaigns. Given that all respondents were aware that they were going to view road safety advertisements, presumably some expectation of how they were going to feel (i.e., feeling negative emotions) following exposure to such messages had been created. Consequently, because positive messages evoked feelings that were not expected, such messages were reported as less effective than the traditional (and more expected) negative, fear-based approaches on measures taken immediately after exposure.

At post-exposure follow-up, however, both attitudinal and behavioural outcome measures in Paper Three provided evidence that the function of affect changes over time such that the relative effectiveness of positive and negative emotional appeals also varies over time. It was suggested that message-relevant affect, as a transient affective state, would likely inform judgments immediately after exposure to the message when it is

salient, however, after a time delay, would likely become a more diffused affective state consistent with a general mood (Schwarz, 1990). Consequently, in the case of positive emotional appeals, individuals may recall a more general sense of having felt good. This feeling good may be misattributed, leading them to believe that they had liked the message and had evaluated it favourably (i.e., the “how do I feel about it” heuristic). An applied implication of these findings was that by simply increasing the use of positive emotional campaigns, such appeals may be more consistent with expectations which in turn may heighten their perceived effectiveness.

#### *9.3.4 The importance of cognitive constructs*

*9.3.4.1 Response efficacy.* Consistent support for the importance of providing clear and concrete strategies about what drivers can do to be safe on the road was found. As such, the research program has identified response efficacy as an important message characteristic that advertisement designers can incorporate within a message. However, similar to other message characteristics such as emotion, it is individuals’ perceptions that determine whether or not the message functions as intended (i.e., whether it evokes the intended emotions, whether the perceived level of response efficacy corresponds with the intended level of response efficacy). As such, the program of research has highlighted the importance of considering and assessing individuals’ perceptions of particular message characteristics rather than assume the researchers’ a priori assumptions of such characteristics (Eveland & McLeod, 1999). In Paper Three, where response efficacy was included as a manipulated message characteristic, manipulation checks were conducted to ensure that the manipulations of low versus high response efficacy messages functioned as intended. Whilst in Paper Five, response efficacy, as an independent variable, was created from the measurement of individuals’ perceptions

which were subsequently divided into low and high response efficacy levels based on a median split of the response efficacy scale.

Moreover, this evidence attests to the robustness of the response efficacy construct across appeal type. Presently, limited evidence is presently available in relation to what types of emotional appeals response efficacy is important for and what types of information positive emotional appeals may require (Dillard & Nabi, 2006). By identifying the importance of response efficacy for positive emotional appeals, the current research program has provided an important extension to theories of emotion and persuasion.

*9.3.4.2 Involvement.* All theories of persuasion informing this program of research incorporated the construct of involvement including the Elaboration Likelihood Model (Petty & Cacioppo, 1986), the Rossiter-Percy motivational model (Rossiter & Percy, 1987, 1997) as well as the fear appeal models, the Protection Motivation theory and the Extended Parallel Process Model (Rogers, 1975, 1983; Witte, 1992a). With respect to the fear appeal models, the involvement construct is akin to the threat appraisal and this definition is consistent with the RP motivational model's conceptualisation of involvement as perceived risk (see Rossiter et al., 2000). The inclusion of this construct within these prominent theories attests to its importance which is also supported by the empirical evidence provided in the current program of research.

The broader implication of these findings as they relate to attitude and attitude-change research is that it highlights the importance of both emotional and cognitive components to persuasion. Indeed, as has been suggested the traditional research paradigm which sought to establish whether emotional appeals were more or less

effective than rational appeals (see Petty et al., 2001) is essentially redundant because, (i) appeals are seldom solely emotional or cognitive (rational) but typically are a combination of both components; and (ii) there is not a single function of emotion as highlighted by multi-process theories such as the ELM.

#### *9.4 Practical Implications*

This program of research offers some key findings of potential significance to road safety advertising practice. Each of these important practical implications emerging from the research program is now discussed.

##### *9.4.1 Gender and appeal effectiveness*

The research affirms previous evidence that males, as a high risk road user group, may not be being persuaded by current negative, fear-based appeals relying upon physical threats (i.e., TPE and persuasion outcome results in Paper Three). Beyond identifying that such approaches may not be as effective for males, the current program of research has identified a potentially effective, alternative approach. For both anti-speeding and anti-drink driving messages, evidence was found that males responded more effectively to humorous messages. The findings in relation to the anti-speeding message were particularly encouraging since a persuasive advantage of humorous messages (as measured in relation to attitudes to urban speeding) was found for males of both lower and higher levels of reported involvement. The findings in relation to the males who reported lower involvement is significant because it suggests that one of the most hard-to-reach road users groups, males who regard themselves as having a low chance of being caught speeding and being involved in a road crash (i.e., those reporting having lower levels of involvement), may respond better to humorous appeals. Also, a persuasive advantage of positive, humorous appeals was found for anti-drink driving

messages in relation to a behavioural measure relating to reductions in drink driving from pre- to follow-up post-exposure. Whilst the males for whom this effect was found had reported higher involvement and perhaps already less likely to engage in drinking and driving behaviour, the results do highlight the potential value of more positive approaches for males.

#### *9.4.2 Reaching low involvement audience members*

The research highlights a long-standing challenge for advertising practice, the difficulty with persuading individuals who do not regard themselves as being involved with the issue despite representing individuals who do need to adopt safer attitudes and behaviours. The findings in this program of research indicated that greater improvement (in attitudes, intentions, and behaviour) was typically found with individuals who perceived themselves as highly involved with the issue; analogous to the notion of appealing to the “converted” (Phau, 2000; Quinn et al., 1992). A notable exception to these findings was reported in Paper Five where one of the most hard-to-reach road users groups, males who regard themselves as having a low chance of being caught speeding and being involved in a road crash (i.e., those individuals reporting lower involvement), were found to respond better to humorous appeals. Together these findings highlight the important impact of the involvement construct and the need for practitioners to be aware of their target audience’s existing level of perceived involvement with the issue.

#### *9.4.3 The notion of “one-size fits all”*

The findings have provided support for market segmentation. Market segmentation suggests that different audiences are likely to respond more or less effectively to particular messages, thus, it is necessary to have a sound understanding of

who the target audience is intended to be and what approaches are likely to be effective for such an audience (LaTour & Rotfeld, 1997; Quinn, Meenaghan, & Brannick, 1992; Rotfeld, 1999). The implication of gender and low involvement, as audience characteristics have already been discussed in Sections 9.4.1 and 9.4.2.

Beyond characteristics of the target audience, however, the findings also support previous evidence that suggested different behaviours (i.e., speeding and drink driving) are likely to require different advertising approaches (see Elliott, 1992; Tay, 2005b). In addition, as well as differences between behaviours, the current program of research has also highlighted that there may be differences within particular behaviours. The findings in relation to speeding on urban and open roads/highways suggest that responses to appeals addressing these two behaviours do differ despite the fact that both represent speeding. The current findings affirm, consistent with the social marketing perspective, that one “size” of a message will not necessarily be appropriate for all individuals, behaviours, and situations. Whilst advertising and particularly wide-reaching mediums such as television and radio, offer a means to reach a vast number of the population, it is paradoxical to the extent that such advertising is unlikely to be effective with all or for all contexts.

#### *9.4.4 The importance of response efficacy*

The robustness of response efficacy in the current research findings has previously been discussed in Section 9.2.3. However, it is also important to note the significant implications that such findings have for the design of future advertising messages. To the extent that advertising designers can ensure that clear, concrete strategies are offered, they are likely to increase the perceived levels of response efficacy and, ultimately, the effectiveness of a broad range of emotional messages. An

interesting point to consider with positive emotional appeals that incorporate the modelling of safe behaviour and the associated positive consequences is that such appeals may represent the most parsimonious means of heightening perceptions of response efficacy. Such messages, rather than relying upon additional advertising devices including voice-overs and tag-lines at the end of the message, which may be missed by individuals who stop attending to the message before such information is provided, will include the information and strategies as part of the message itself with the depicted behaviour. Including information in voice-overs and tag-lines at the end of the message is a strategy often utilised by which negative, fear-based appeals.

#### *9.5 Strengths and Limitations of the Current Research*

The preceding discussion of the theoretical and applied implications of the research, as well as the range of methodological limitations addressed, has already identified a number of the key strengths of the program of research. However, there are a number of specific notable strengths that should be acknowledged. In providing empirical comparisons of positive and negative appeals for the same behaviour, the current research program has addressed a long-standing gap in existing road safety advertising research. According to Donovan, in 1995, no studies had provided such an empirical comparison. Whilst Paper Three provided an empirical comparison of fear-evoking and humorous appeals and the respective negative and positive message-relevant affect that each evoked, Paper Five extended further by comparing appeals evoking a range of message-relevant affect including fear-based, annoyed/agitated-based negative emotional appeals as well as pride-based, and humour-based positive emotional appeals. Broadening the scope of emotions examined in relation to persuasion represents a notable and unique strength of this research.



An additional strength was the adoption of a strong theoretical foundation. The focus and design of the research program (including the development of messages for Paper Five) was guided by a strong theoretical focus drawing upon theories derived from various disciplines including psychology, advertising, and communication. Although some international researchers (e.g., Stead et al., 2005) have provided empirical tests of campaigns designed upon the Theory of Planned Behaviour, generally there has been a paucity of Australian and international research that has examined the persuasiveness of road safety messages according to clear and measurable theoretical constructs. The research program highlighted the relative strengths of a range of theoretical frameworks and the manner in which key aspects of these different frameworks may function to complement each other (see Chapter Four). Thus, whilst direct measurement of all theoretical assumptions from each of the frameworks was not undertaken, the research program has highlighted the potential utility of adopting a multidimensional theoretical approach in understanding the persuasive effects of emotional health messages.

Similarly, in advertising practice, road safety campaign design is typically atheoretical and often based on approaches that have been utilised previously (Elliott, 1993). These tendencies have three significant implications; (i) it gives rise to the possibility that campaign development is haphazard and a case of trying something to see if it may work; (ii) if future campaigns are based upon what was done previously the possibility of trialling of alternative, potentially more effective approaches is impeded; and (iii) it renders subsequent campaign evaluation difficult. The current study, in adopting a strong theoretical framework, was able to justify the broadening of emotional appeals examined and to develop well-informed research hypotheses and to provide sound empirical investigations of the research hypotheses.

An additional strength relates to the applied focus of the research design. In collecting follow-up data which included behavioural measures, the research reflected acknowledgement of the applied context in which it is based. Also relating to strengths of the design, was the adoption of a fully-between groups design in Paper Five such that individuals were exposed to only one condition only (Elliott, 1987). The removal of the repeated-measures factor of appeal type (as used in Paper Three) increased the validity of the findings through reducing the tendency for individual respondents to base their responses on their own comparative judgments of different advertisements' relative effectiveness.

Finally, the current program of research utilised both qualitative and quantitative methods. The combination of such methodologies served to strengthen the overall research design by drawing upon the relative strengths of each method. The in-depth insight provided by the qualitative data afforded in the focus groups complemented the subsequent quantitative analyses (Morgan, 1998b).

Despite the strengths of the research program, some limitations also need to be acknowledged. First, in all studies there was reliance upon self-report data. There are three main issues to note with the use of such data: First, self-report data in health advertising research may be associated with questionnaire or, what has been referred to as, mere measurement effects (see Chapman, 2001; Grimes & Kitchen, 2007; Morwitz, Johnson, & Schmittlein, 1993). Such effects have been examined within marketing literature and, in particular, a stream of research examining the phenomenon of self-generated validity (Chandon, Morwitz, & Rinartz, 2005) This research has demonstrated that the very act of responding to surveys and questionnaires is likely to alter an individuals' subsequent judgments and behaviour (Chandon et al., 2005; Morwitz, 2005).

For instance, by assessing an individual's intention to engage in a certain behaviour, such as purchasing a particular product, the act of asking about one's intent is likely to increase the probability of the individual subsequently engaging in that behaviour. Thus, such mere measurement effects may have implications for the validity of the responses provided; (ii) the reliance upon self-report data may also limit the extent that the results between the studies within this program of research may be compared.

Whilst some support has been provided suggesting that self-report measures of speeding do provide an accurate reflection of covertly-measured actual speeds (Hagland & Aberg, 2000), drink driving and speeding differ in relation to the social acceptance of being detected for such behaviours. This difference is likely to influence the extent that individuals are likely to report engaging in drink driving relative to speeding and, thus, likely affects the comparability of results between the studies within this research program; and (iii) although the current program of research relied solely upon self-report outcome measures it is important to acknowledge that such measures do not represent the only manner in which to assess persuasion. For instance, as was discussed in Chapter Three, some previous studies have examined the effects of exposure to advertising messages on crash reduction (e.g., Tay, 2004, 2005a) as well as the impact of advertising messages on subsequent behaviour measured via a driving simulator (e.g., Ben-Ari et al., 2000; Griffeth & Rogers, 1976). Arguably, in such an applied context as road safety, it is especially important for advertising research to measure outcomes of practical significance.

Beyond the self-report nature of the outcome measures, an additional issue relating to the outcome measures utilised is the reliance upon measures of intentions. Although Paper Three included follow-up measures of (self-reported) drinking and

driving behaviour since exposure to the messages, intentions were still assessed. Moreover, Paper Five was unable to include a behavioural measure of speeding given that only four respondents had received speeding fines in the interim period, thus, not permitting any meaningful analysis to be conducted on such small numbers. It has been acknowledged elsewhere that intentions are not always good predictors of behaviour (Sniehotta, Scholz, & Schwarzer, 2004). Recent meta-analytical research has indicated that a medium to large intentional change ( $d = 0.66$ ) leads to a small-to-medium behavioural change ( $d = 0.36$ ) (Webb & Sheeran, 2006). Given that road safety advertising is implemented in an applied context where outcomes of practical significance are most important, it is necessary to acknowledge the existence of the intention-behaviour gap.

Second, the nature of the experimental settings utilised (see Chapters Six and Eight) whilst heightening internal validity does reduce external validity given that such a setting represents a rather artificial and contrived viewing and response environment. This limitation is not unique to this research program but, rather represents a criticism which has been directed at much of the past advertising and health advertising research (see Hastings et al., 2004). This rather unrealistic setting could have likely influenced results in a number of ways. For instance, it is possible that participants pay more attention to an advertisement which they know they will be asked subsequent questions about than a typical advertisement appearing on television in their own homes which they may even choose not to watch (Heath, 2001).

Third, the research examines messages addressing the risky, illegal behaviours of speeding and drink driving only. The growing prevalence of drug driving and mobile phone use while driving suggests that investigation of advertising countermeasures

addressing these behaviours as high risk, illegal driving behaviours is also necessary. Similarly, there is need to investigate advertising countermeasures for non-illegal high risk behaviours such as fatigue.

Fourth, a myriad of message and individual difference factors have been examined in relation to their impact upon the effectiveness of advertising messages (Witte & Allen, 2000). The current research program focused upon some of the key theoretical constructs identified in the extant literature; however, it is acknowledged that numerous other factors may also influence advertising effectiveness. The examination of all factors influencing advertising effectiveness was beyond the scope of this dissertation.

Fifth, the program of research utilised different communication mediums for the messages. Specifically, Stages One and Two were based on television advertisements and Stage Three was based on audio messages (although participants were instructed to listen to the audio messages and imagine what they would be seeing if it was a television advertisement). With the change in visual to audio stimuli there is potential for differential impact on the results reported especially given that television advertisements have been regarded as the most effective medium (see Elliott, 1993). However, the use of audio messages has been recommended as the best presentation medium for more preliminary testing of message effectiveness (Elliott, 1987). Moreover, the use of different mediums and, in particular, changing to audio messages enabled the examination of key factors under consideration and, thus, could be considered a more reliable and valid test of the study's hypotheses.

Sixth, the studies presented in Papers Three and Five included follow-up data collected 2 weeks to 1 month after initial participation and, thus, were associated with participant attrition between the data collection phases. Whilst some attrition is expected

when data is collected over time, it is possible that participants who continued with the follow-up phases may have been more motivated because they were already more involved with the issue of road safety. Although an incentive was offered to increase the likelihood of participation in both phases (see Paper Five), the introduction of this possible confound may have resulted in a higher proportion of highly involved persons in the follow-up phases.

Seventh, the nature of the samples utilised in the research program need to be acknowledged and, in particular, the extent to which they may be considered representative of the general driving population. All papers (with the exception of Paper One which was a theoretical paper only) incorporated university students within the total sample. The extent to which previous fear-based advertising research has been based on student samples has been criticised by some (e.g., Hastings et al., 2004). Similarly, much of what is known about threat appeals in road safety advertising has been based on studies conducted with student samples (Elliott, 2005; e.g., Dillard & Peck, 2000; King & Reid, 1990; Kohn et al., 1982; Rogers & Mewborn, 1976; Lewis et al., 2007a). Consequently, similar concerns surrounding the generalisability of findings to the general driving public exist (Elliott, 2005).

Attempts were made to examine the validity of internet-based samples as an alternative sampling strategy to more traditional university student samples (see Paper Four). The results indicated that the internet sample was more diverse than traditional student samples in relation to key demographic characteristics and provided equivalent outcome data. However, it is conceded that whilst the equivalence testing results reported were encouraging and supportive of the increased use of internet surveys for road safety-related research, such findings do not confirm how representative the sample

was and, thus, the extent that the findings were generalisable to the general driving population.

### *9.6 Future Directions*

With limited evidence available in relation to the persuasiveness of different emotional appeals addressing the same behaviour, the focus of the current program of research has been on persuasive outcomes. However, given evidence that there are differential effects with different appeal types and message-relevant affect there is a need to examine the persuasive process of these different appeals. Whilst the important role of response efficacy has been identified in the current research it remains unknown whether response efficacy functions to reduce the message acceptance or message rejection rates, or even perhaps both types of outcomes, for different appeals.

Ascertaining such information in relation to the persuasive process would assist in development of (or enhancement of existing) theoretical frameworks that may assist in the prediction and explanation of persuasive effects as well as, ultimately, to guide development of future emotion-based advertising campaigns.

Additionally, as was discussed previously in Section 9.2.4.1, the program of research has provided support for the need to distinguish between outcome measures of acceptance and rejection. As has been suggested, there is need to ascertain the extent to which different factors influence the respective outcomes so as to enhance understanding of the persuasive process. In addition to this suggestion, two important, related avenues for future research to address are: (i) to further understanding about the nature of the constructs as well as their relative and combined effects for determining overall message effectiveness and; (ii) to examine the relative influence of the two outcomes on future behaviour. This latter issue was unable to be examined in the current program of

research (see Section 9.5 for explanation as to why the behavioural measure was not able to be assessed in Stage Three of the research program), yet it is identified as having potentially significant implications for future advertising practice and, in particular, evaluations of advertising effectiveness. If it was determined that either message rejection or acceptance measures were more predictive of future driving behaviour there would be need to examine strategies that function most effectively to either heighten acceptance or lessen rejection.

Also, the results have highlighted need for the continued exploration of persuasive approaches for individuals reporting lower levels of involvement. As noted previously, the findings in relation to stronger attitude scores against urban speeding reported by males of low involvement following exposure to the humour-based message were particularly encouraging. Given that males represent a hard-to-reach road user group, any evidence that a persuasive approach has been effective, arguably, provides justification for further examination. This justification is supported further by the fact that the current research, examined only one humour-based anti-speeding message and two humour-based anti-drink driving messages.

Additionally, future health advertising literature may benefit from drawing upon extant marketing literature. Although an extensive review of marketing literature is beyond the scope of this dissertation, particular key issues for future consideration may include the issues of “indirect messages” and the number of advertisement exposures.

The issue of indirect messages highlights that, in advertising research an assumption is often made that participants can first view a stimulus (i.e., an advertisement) and can subsequently report accurately on their responses to such a stimulus (see Heath, 2001; Nisbett & Wilson, 1977). The current program of research



also relied upon such an assumption. There is evidence, however, to suggest that advertising may work at a level unconscious to the individual which enables messages to influence individuals without their realising it (see Heath, 2001). In such circumstances, it is questionable the extent to which individuals could be expected to accurately report on their responses to an advertisement. Consequently, there is a need for future health advertising research to be cognisant of this issue and to explore alternative strategies to ascertain individuals' responses to advertising. For instance, a recent study by Harré and Sibley (2007) demonstrated the efficaciousness of utilising an implicit measure of attitudes, the Implicit Association Test, to better understand drivers' self-enhancement biases. When compared with explicit (direct) self-report measures, the authors found the implicitly measured biases were stronger than those measured explicitly. Such evidence provides support for the potential utility of similar implicit attitudinal measures in health advertising research.

The issue of advertisement exposures represents an issue that has received considerable debate in the marketing literature and, in particular, the issue of single versus multiple exposures (see Jones, 1992; Naples, 1979; Weitz & Wensley, 2002). Furthermore, if multiple exposures are utilised the issue then becomes one of how many exposures are necessary (see Donovan et al., 1995 for a study utilising two advertisement exposures; see Krugman, 1972 for an example of three advertisement exposures). The current program of research, consistent with the current effects model of advertising effects, utilised a single exposure to each advertisement. This model maintains that if advertising is effective, its effects will be evident quickly and, thus, its effects will be detectable after one exposure (Weitz & Wensley, 2002). Empirical evidence is available to support this model and many previous empirical studies have

utilised single advertisement exposures within their research designs (see Weitz & Wensley, 2002).

In contrast, proponents of the cumulative effects model of advertising effects propose that the effects of advertising messages build over time and, thus, a single exposure may be insufficient to have a detectable effect on individuals (Weitz & Wensley, 2002). This model has also been supported by previous empirical evidence (see Jones, 1992; Weitz & Wensley, 2002). Given the mixed findings, some researchers have suggested that there simply may be some situations where single exposures may be sufficient but, others where multiple exposures are necessary (Applegate, 2005).

Arguably, however, future studies may benefit from incorporating multiple exposures into their research designs if for no other reason than to enhance the realism and external validity of the research findings. In everyday television viewing it is unlikely that individuals would be exposed to an advertising message once only. Thus, for research to ascertain an accurate understanding of the effects of advertisements there is a need to examine the effects of advertising over time and, thus, the impact of multiple exposures.

Finally, it is acknowledged that many factors have been explored in relation to the effectiveness of fear-based appeals (see Witte & Allen, 2000) and the current findings focused on specific ones; namely, response efficacy, involvement, and gender. However, two key factors requiring further investigation are message self-efficacy and age. In relation to message self-efficacy, as noted previously, both response efficacy and message self-efficacy represent important predictors of a fear-based message's effectiveness. Arguably, the important first step for research was to establish whether or not the provision of strategies and information (i.e., response efficacy) and the

perception of high levels of response efficacy within a message was a key construct influencing the persuasiveness of emotional appeals more generally. Given the current program of research has provided this evidence, the next important step is to determine whether the different emotional appeals also influence ratings of message self-efficacy.

In relation to age, meta-analytical evidence suggested that demographic characteristics including gender and age were unlikely to influence the effectiveness of fear-based messages (see Witte & Allen, 2000); however, the evidence relating to the TPE and gender provided justification for the current program to focus specifically upon gender effects in relation to emotional appeals. However, in addition to males, young drivers and young males also represent key high risk road user groups. Findings in Paper Two highlighted that positive appeals may represent a particularly effective approach for younger drivers and the need was advocated for further exploration of the potential effectiveness of positive appeals for this demographic.

### *9.7 Summary and Conclusion*

The first stage of the research program elucidated the roles and effectiveness of positive and negative emotional appeals. The relative strengths and weaknesses of both positive and negative approaches were highlighted and, in particular, positive emotion was identified as an additional persuasive strategy offering a unique role to that of negative, fear-based approaches in road safety advertising.

The second stage of the research program provided an empirical comparison of the broad positive-negative emotion dichotomy based on fear-evoking and humorous anti-drink driving messages. The results provided evidence of the greater persuasiveness of negative appeals immediately after exposure and greater improvement of positive appeals over time. Also, the results revealed that males reported significantly greater

overall influence both to themselves personally, as well as other drivers in general, than females for the humorous appeals. The importance of high levels of response efficacy, irrespective of emotional appeal type was also highlighted. Also, the second stage of the research program examined the extent that the internet functioned as an efficacious means of accessing drivers for road safety advertising research. Sample characteristics and results obtained from student and internet samples of drivers were compared. Findings supported the value of internet research with this internet sample found to be more diverse than the student sample and as having equivalent outcome data to the student sample.

The third stage of the research program further extended the scope of the research. First, it examined the effectiveness of a range of positive and negative emotional anti-speeding appeals and message-relevant affect rather than only fear-evoking and humorous appeals and the broad dichotomy of negative and positive feelings evoked. Second, it assessed adaptive (message acceptance) as well as maladaptive (message rejection) intentions. Third, based on evidence of the efficaciousness of the internet as a data collection strategy for research in this area, an internet sample of drivers was utilised. The results highlighted that appeals of the same valence (positive or negative) need not have the same persuasive effects and provided evidence of the effectiveness of humorous-based appeals for males. The results also supported the importance of response efficacy for all appeals and highlighted that a message's overall effectiveness requires consideration of both message acceptance and rejection rates.

Overall, the current program of research has provided results that challenge the persistent belief that persuading individuals to adopt safer driving attitudes and

behaviour(s) can only be achieved (or even attempted) through fear-evoking appeals.

The current research has broadened the scope of emotions examined and has ascertained some instances (e.g., for particular behaviours and road users) where positive emotional appeals may represent a more effective strategy than negative, fear-based appeals.

With road trauma representing one of the most significant threats to global public health of the 21<sup>st</sup> century, the WHO (2004) has called for the prevention of road trauma through a globally concerted effort to identify the most effective interventions and policies. Advertising plays an important role within the array of road safety strategies implemented in Australia. While advertising should not be seen as a panacea for achieving behavioural change (particularly in isolation), the current program of research represents an important step towards identifying the most effective advertising interventions and, as such, contributes significantly towards the greater goal of ultimately preventing the tragedy of road trauma.



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## Appendix A

### Background information relating to the selection of focus group methodology in

### Chapter Five

Focus groups are considered an effective means of generating a rich and in-depth understanding of participants' experiences and beliefs (Morgan, 1998). This explanation, however, relates to qualitative research methods more generally and does not distinguish between different approaches such as group discussions and individual interviews.

Individual interviews enable a researcher to learn considerable detail about a specific individual and their particular experiences and opinions (Morgan, 1998). In contrast, focus groups enable a researcher to learn from the range of experiences and opinions expressed by members involved in the group discussion (Morgan, 1998). Members of a focus group discussion are often recruited because they share similar backgrounds and experiences and are regarded as qualified or even as an 'expert' with respect to the specific topic of interest being explored by the researcher (Fischer, 2006). The importance placed upon the group dynamics within focus group discussions has been regarded as the key difference between focus groups and individual interviews. Focus group discussions bring together a group of qualified individuals who generate, discuss, affirm, and challenge ideas and comments raised by fellow group members. These group processes function to provide a researcher with richer and deeper levels of insight (Fischer, 2006).

Thus, in the current research program, focus group discussions were considered the most appropriate qualitative research method because the aim was not to gain an in-depth understanding of how a specific individual (licenced driver) may respond to different emotion-based road safety messages but, rather, draw upon the unique group

dynamics offered by focus group discussions to gain rich insight into as many reactions and thoughts about different advertising messages as possible from groups of drivers. To the extent that road safety advertisements are often targeted at changing driver attitudes and behaviour, members of the general driving public were considered 'experts' in relation to the topic under exploration. The group discussions enabled individual group members to raise, affirm, and challenge the comments of fellow members which provided extensive insight into various aspects of road safety advertising messages.

## Appendix B

### Participant Information Sheets for Study One (Paper Two)

B.1 Information sheet and consent form for participants from the general public

B.2 Information sheet and consent form for university student participants

Appendix B.1

Chief investigator: Ms Ioni Lewis  
Telephone: 3864 4685  
E-mail: [i.lewis@qut.edu.au](mailto:i.lewis@qut.edu.au)



**Factors Influencing the Effectiveness of Advertising Countermeasures  
in Road Safety  
Information Sheet and Consent Form**

You are invited to participate in a research project examining the effectiveness of different road safety advertisements. If you agree to participate in the study you will be asked to view some road safety advertisements, complete a questionnaire, and participate in a group discussion about your thoughts and feelings regarding the advertisements. You are most welcome and indeed encouraged to express your personal views. It is possible that you may not always agree with other group members. However, should this occur, it will not be considered a concern as it is hoped that these sessions will reveal a variety of perspectives. Although your participation may have no direct benefit to you, it is hoped that the findings will be useful in understanding how drivers respond to road safety advertising.

Your participation is voluntary and you are able to withdraw from the study at any time without explanation or penalty. There is a possibility that you may feel a bit uncomfortable particularly about aspects of the advertisements. If you do find the advertisements or any aspect of the study distressing and feel that you may require counselling, please feel free to contact the Chief Investigator, Ms Ioni Lewis, who can suggest some local counselling services.

It is anticipated that this discussion will be audio-taped. However, your confidentiality will be preserved and no identifying information will be made public. Similarly, your written responses on the questionnaire will also be confidential and anonymous.

It is anticipated that watching the advertisements, completing the questionnaire, and participating in the discussion will take approximately two hours.

This study is being conducted as part of a PhD research program being conducted by the Chief Investigator. You may contact the chief investigator on the phone number given above if any matter of concern arises. You may also contact the secretary of the QUT Research Human Ethics Committee by phoning 3864 2902, if you have any further concerns about the ethical conduct of this research.

Your signature below will indicate that you:

- have read the information provided above and have had the opportunity to ask questions;
- understand that the group discussion will be audio-recorded;
- understand that you are able to withdraw from this study at any time without explanation;
- understand that any information you provide will be treated as confidential;
- understand that the study is for research purposes only; and
- consent to participate in the research described above.

---

Participant's Name

---

Signature of Participant

---

Date

## Appendix B.2

Chief investigator: Ms Ioni Lewis  
Telephone: 3864 4685  
E-mail: [i.lewis@qut.edu.au](mailto:i.lewis@qut.edu.au)



### **Factors Influencing the Effectiveness of Advertising Countermeasures in Road Safety Information Sheet and Consent Form**

You are invited to participate in a research project examining the effectiveness of different road safety advertisements. If you agree to participate in the study you will be asked to view some road safety advertisements, complete a questionnaire, and participate in a group discussion about your thoughts and feelings regarding the advertisements. You are most welcome and indeed encouraged to express your personal views. It is possible that you may not always agree with other group members. However, should this occur, it will not be considered a concern as it is hoped that these sessions will reveal a variety of perspectives. Although your participation may have no direct benefit to you, it is hoped that the findings will be useful in understanding how drivers respond to road safety advertising.

Your participation is voluntary and you are able to withdraw from the study at any time without explanation or penalty. There is a possibility that you may feel a bit uncomfortable particularly about aspects of the advertisements. If you do find the advertisements or any aspect of the study distressing and feel that you may require counselling, please contact QUT Counselling and Health Services who may provide you with counselling, free of charge as you are a student of QUT.

It is anticipated that this discussion will be audio-taped. However, your confidentiality will be preserved and no identifying information will be made public. Similarly, your written responses on the questionnaire will also be confidential and anonymous.

It is anticipated that watching the advertisements, completing the questionnaire, and participating in the discussion will take approximately two hours.

This study is being conducted as part of a PhD research program being conducted by the Chief Investigator. You may contact the chief investigator on the phone number given above if any matter of concern arises. You may also contact the secretary of the QUT Research Human Ethics Committee by phoning 3864 2902, if you have any further concerns about the ethical conduct of this research.



Your signature below will indicate that you:

- have read the information provided above and have had the opportunity to ask questions;
- understand that the group discussion will be audio-recorded;
- understand that you are able to withdraw from this study at any time without explanation;
- understand that any information you provide will be treated as confidential;
- understand that the study is for research purposes only; and
- consent to participate in the research described above.

---

Participant's Name

---

Signature of Participant

---

Date



## Appendix C

### Participant Information Sheet and Consent form for Study Two (Paper Three)



Chief investigator: Ms Ioni Lewis  
Telephone: 3864 4685  
E-mail: i.lewis@qut.edu.au

**Factors Influencing the Effectiveness of Advertising  
Countermeasures in Road Safety**

**Information sheet**

You are invited to participate in a research project examining the effectiveness of different road safety advertisements. If you agree to participate in the study today, you will be asked to view some road safety advertisements and complete a questionnaire asking about your driving attitudes, intentions, and behaviour, your perceptions of the advertisement, and some demographic details. This represents the first of two (2) questionnaires that will be required to complete in this project. The second questionnaire you will be required to complete two (2) weeks from today. **First year psychology students who are participating for course credit are advised that one hour participation credit will be provided following completion of the second session in two weeks time.**

Your participation in this study is voluntary and you are able to withdraw from the study at any time without explanation or penalty. Your confidentiality will be preserved and no identifying information will be made public. Any information you provide in this study will be used for aggregating purposes only. You are advised that you will be required to watch some road safety television advertisements, some of which, you may find distressing. If you have concerns about viewing such material you are encouraged to consider whether you feel comfortable participating in this study.

It is anticipated that Questionnaire One and viewing the advertisements will take approximately 30 minutes. Questionnaire Two, which will be conducted two (2) weeks from today, will take approximately 5 minutes to complete.

Participants are assured that their anonymity will be protected and their responses from the two completed questionnaires will be matched by a code.

Although your participation may have no direct benefit to you, it is hoped that the findings will be useful in understanding how drivers respond to road safety television advertising. This will assist in the development of more effective advertising campaigns.

This study is being conducted as part of a PhD research program being conducted by the Chief Investigator. You may contact the chief investigator on the phone number given above if any matter of concern arises. You may also contact Queensland University of Technology's Research Ethics Officer on 3864 2340, if you have any further concerns about the ethical conduct of this research.

Your signature below will indicate that you:

- have read the information provided above and have had the opportunity to ask questions;
- understand that you are able to withdraw from this study at any time without explanation;
- understand that any information you provide will be treated as confidential;
- understand that the study is for research purposes only; and
- consent to participate in the research described above.

---

Participant's Name

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Signature of Participant

---

Date



## Appendix D

### Participant Information Sheets for Study Three (Paper Five)

**Welcome to the Road Safety Advertising Study**  
**QUT Human Research Ethics Committee Project Number: 2649H**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Study Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>The purpose of this study is to explore factors that influence the effectiveness of road safety advertising. If you participate, you will be asked to listen to an audio recorded road safety advertisement and complete a survey. To thank you for your participation, you will receive a ticket in the draw to win <b>1 of 6 Coles/Myer shopping vouchers each worth \$50.00</b>. You may indicate your agreement to be included in the draw at the end of the survey. Also, if you agree to participate today, you will be invited to participate in a follow-up study to be conducted approximately four weeks from today. Participation in the follow-up study will require you to complete a brief survey and the researchers will contact you with the link to the follow-up survey in about a month's time. To thank you for participation in the follow-up study, should you agree to accept, <b>you will receive an <u>additional</u> ticket in the draw to win 1 of the 6 Coles/Myer shopping vouchers each worth \$50.00</b>.</p> <p><b>Please Note:</b> To participate, it is required that you are the holder of a current Australian drivers' or motorcyclists' licence.</p> |
| <b>Voluntary Participation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>Your participation is voluntary and you are able to withdraw from the study at any time without explanation or penalty. Participation in the follow-up study will also be voluntary. You may indicate your interest in participating in the follow-up study at the end of today's survey.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Confidentiality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p>Your confidentiality will be preserved and no identifying information will be made public. Any information you provide will be used for aggregating purposes only so that no single participant will be identifiable.</p> <p>Should you wish to participate in the follow-up survey, you will be asked to provide your email address. The researchers will use this email address to forward you the link to the follow-up survey. Your email address WILL NOT be used for any other purpose and will not be retained by the researchers once the study is complete. If you agree to participate in the follow-up survey, your two completed surveys will be matched via a code to ensure your anonymity. Should you agree to be included in the prize draw, your contact details will be kept in a file separate from your survey responses to ensure your confidentiality. At the conclusion of all the prize draws, this file will be deleted and your contact details will not be retained by the researchers.</p>                                                                                                                                                                      |
| <b>Expected Benefits</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>Although your participation may have no direct benefit to you, it is hoped that the findings will be useful in understanding how drivers respond to road safety advertising. This will assist in the development of more effective advertising campaigns.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Feedback</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>No automatic feedback will be given to you about the results of this study.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Risks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p>While there are no known risks with your participation in this project, you are encouraged to consider whether you feel comfortable continuing with this survey if you have concerns about listening to a road safety advertisement and/or completing the related material.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Concerns/complaints</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>The Chief Investigator of the study, Ms Ioni Lewis, is conducting the study as part of her PhD research at the Centre for Accident Research and Road Safety - Queensland (CARRS-Q) at QUT. Please contact the Chief Investigator either via Email: <a href="mailto:i.lewis@qut.edu.au">i.lewis@qut.edu.au</a> or Phone: (07) 3138 8440 should you have any questions and/or concerns about the study.</p> <p>QUT is committed to researcher integrity and the ethical conduct of research projects. However, if you do have any concerns or complaints about the ethical conduct of the project you may contact the QUT Research Ethics Officer on 3864 2340 or <a href="mailto:ethicscontact@qut.edu.au">ethicscontact@qut.edu.au</a>. The Researcher Ethics Officer is not connected with the research project and can facilitate a resolution to your concern in an impartial manner.</p>                                                                                                                                                                                                                                                                                                |
| <b>Informed Consent</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p>Completion and submission of the survey will be accepted as informed consent to participate.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |



**Welcome to the Road Safety Advertising FOLLOW-UP Survey.**  
**QUT Human Research Ethics Committee Project Number: 2649H**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| <b>Study Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p>The purpose of this study is to explore factors that influence the effectiveness of road safety advertising. If you have received an email from us advising you of the link to this follow-up survey it would mean that, approximately one month ago you participated in the first road safety advertising survey and indicated interest in participating in this follow-up survey.</p> <p>It is anticipated that this follow-up survey will take <b>no longer than 10 minutes</b> to complete.</p> <p>To thank you for participation in the follow-up study, should you agree to accept, <b>you will receive a ticket in the draw to win 1 of the 6 Coles/Myer shopping vouchers each worth \$50.00 (Please Note: this ticket will be in addition to the one you received for completing the first survey).</b></p> <p><b>Please Note:</b> To participate, it is required that you are the holder of a current Australian drivers' or motorcyclists' licence and that you have not previously completed this follow-up survey.</p> |
| <b>Voluntary Participation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Your participation is voluntary and you are able to withdraw from the study at any time without explanation or penalty.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Confidentiality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>Your confidentiality will be preserved and no identifying information will be made public. Any information you provide will be used for aggregating purposes only so that no single participant will be identifiable.</p> <p>The email address that you provided for us to forward you the details of the follow-up survey WILL NOT be used for any other purpose and will not be retained by the researchers once the study is complete.</p> <p>Your responses to the follow-up survey and the first survey will be matched via a code to ensure your anonymity.</p> <p>Should you agree to be included in the prize draw, your contact details will be kept in a file separate from your survey responses to ensure your confidentiality. At the conclusion of the prize draws, this file will be deleted and your contact details will not be retained.</p>                                                                                                                                                                      |
| <b>Expected Benefits</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Although your participation may have no direct benefit to you, it is hoped that the findings will be useful in understanding how drivers respond to road safety advertising. This will assist in the development of more effective advertising campaigns.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Feedback</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| No automatic feedback will be given to you about the results of this study.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Risks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| There are no known risks with your participation in this survey.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Concerns/complaints</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p>The Chief Investigator of the study, Ms Ioni Lewis, is conducting the study as part of her PhD research at the Centre for Accident Research and Road Safety - Queensland (CARRS-Q) at QUT.</p> <p>Please contact the Chief Investigator either via Email: <a href="mailto:i.lewis@qut.edu.au">i.lewis@qut.edu.au</a> or Phone: (07) 3138 8440 should you have any questions and/or concerns about the study.</p> <p>QUT is committed to researcher integrity and the ethical conduct of research projects. However, if you do have any concerns or complaints about the ethical conduct of the project you may contact the QUT Research Ethics Officer on 3138 2340 or <a href="mailto:ethicscontact@qut.edu.au">ethicscontact@qut.edu.au</a>. The Research Ethics Officer is not connected with the research project and can facilitate a resolution to your concern in an impartial manner.</p>                                                                                                                                   |
| <b>Informed Consent</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Completion and submission of the survey will be accepted as informed consent to participate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## Appendix E

### Outlines of Audio Messages for Study Three (Paper Five)

| Appeal Type<br>Motivation/Emotion                           | Advertisement Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Problem Avoidance/<br>Fear-based appeal                     | <p><b>First scene</b> focuses on the young male driver. He is shown getting his car out of the garage, reversing out of his driveway, and then driving off. He is shown to be concentrating and watching the road (i.e., not distracted). He does not appear agitated or in a hurry. <b>Second scene</b> shows the posted speed zone (e.g., a 60km/hr speed sign is shown). <b>Third scene</b> shows the young male driver's speedo which indicates that he is speeding (e.g., he is doing 10-15km/hr over the posted limit shown in the previous scene). <b>Fourth scene</b> shows a young male pedestrian of similar age to the driver step out onto the road from between some parked vehicles. <b>Fifth scene</b> shows inside the vehicle and the driver's braking heavily and bracing himself. <b>Sixth scene</b> shows outside the vehicle and its braking heavily (braking noises are heard) The car fails to stop in time and the pedestrian is hit on the front bonnet. Screen goes black for a second. <b>Seventh scene</b> shows the driver of the car running to the pedestrian who is shown lying on the road, all covered in blood and lifeless. Now that he is closer to the pedestrian, the driver realises that it is one of his mates, Matthew. He collapses beside his friend and cries out over and over, "Oh my god, oh my god, Matt, Matt.... The driver's cries fade and the screen goes black as the voice-over plays: <b>The voiceover says:</b> "When a car hits a pedestrian, the pedestrian's odds of survival are never good. The faster you drive the worse those odds become". <b>The tag-line appears on the screen.</b> It reads: Slow down. The pedestrian you hit may not be your friend but they <u>will</u> be someone else's.</p> |
| Problem Removal/<br>Agitated and<br>annoyed-based<br>appeal | <p><b>First scene</b> shows a young male and female walking towards a parked car. They both appear to be hurrying. <b>Second scene</b> shows the young male getting into the driver's seat and the female getting into the passenger seat. As he is getting into the car the young male says, "There's no way we can make it on time now – I'll have to make up some time on the road". The young female (who is in the process of doing up her seatbelt), responds, "Go ahead, it's your money and points if you get caught". The young male sighs, sits back, and runs his hands through his hair. He has not yet started the car. He replies, "You know I really can't afford to get another ticket right now, and besides, if I get pulled over by a radar like last time, we'll be <u>even</u> later". <b>Third scene</b> shows him reaching into his pocket for his mobile phone. He begins dialing. He is heard saying, "Yeah mate, we're running a bit late, I guess we'll be there in about 20 minutes....ok". <b>Fourth scene</b> shows a black screen and the voice-over plays. It says, "Expecting to make up time on the road? Get caught speeding by a radar and you not only get fined – you'll run even later." <b>The tag-line appears on the screen.</b> It reads, Avoid the fine. Call ahead, make new plans - remove your need to speed.</p>                                                                                                                                                                                                                                                                                                                                                                                                         |

### Outlines of Audio Messages for Study Three (Paper Five) continued...

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|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p style="text-align: center;">Social Approval/<br/>Pride-based appeal</p>            | <p>A young male is driving a car. He has two friends, one male and one female, who are of similar age to himself, as passengers in the car. The female passenger is in the front seat and the male passenger is in the backseat. <b>First scene</b> focuses on the young male driver. He is shown to be concentrating and watching the road (i.e., not distracted). He does not appear agitated or in a hurry. His friends are talking about a movie that they have all just come back from seeing. <b>Second scene</b> shows the posted speed zone (e.g., 70km/hr speed sign is shown). <b>Third scene</b> shows the driver's speedo which indicates that he is driving at the correct speed limit (i.e., he is NOT speeding). <b>Fourth scene</b> shows another posted speed zone (i.e., 60km/hr sign is shown) which is lower than the previous posted speed limit shown. <b>Fifth scene</b> shows the driver's speedo and the driver has lowered his speed accordingly and again is shown to be driving at the correct speed limit (i.e., he is NOT speeding). <b>Sixth scene</b> – The male passenger says to the driver, "C'mon man, I feel like I could walk faster than this." The female passenger rolls her eyes and says to the male passenger, "He's doing the speed limit so just give it a rest. Unlike you it seems he cares about getting us home safely". The driver doesn't say anything and is shown to be still concentrating and watching the road. <b>Seventh scene</b> - An indicator is heard and the car is shown turning into a driveway. The female passenger walks up to the driver and gives him a kiss. The driver smiles and asks, "What's that for?" The female passenger replies, "No reason, I'm just lucky to be with you". <b>Eighth scene shows</b> a black screen and a voice-over plays. It says: "Like it or not, how you drive says a lot to your friends about what you think of them". <b>The tag-line appears on the screen. It reads:</b> So what does your driving say?</p> |
| <p style="text-align: center;">Intellectual<br/>Mastery/ Humour-<br/>based appeal</p> | <p><b>First scene</b> begins with the outside view of a car. As the view pans up along the driver's side of the vehicle, a crash dummy is shown to be driving. <b>Second scene</b> shows inside the car being driven by the crash dummy. The crash dummy is shown to be indicating correctly and performing shoulder checks as it changes lanes (the advertisement is set on at least a dual-carriageway). <b>Third scene</b> shows the posted speed limit (e.g., a speed sign is shown). <b>Fourth scene</b> shows the speedo of the car being driven by the crash dummy which indicates the dummy is driving at the posted speed limit (i.e., is NOT speeding). <b>Fifth scene</b> shows a second car being driven by a young male. This car overtakes the car being driven by the crash dummy (it is evident that the driver of the second car is speeding). <b>Sixth scene</b> shows a speed camera. As the car being driven by the young male passes the speed camera, a flash is seen, indicating that the driver who sped past the crash dummy has just been booked for speeding. When the crash dummy drives past the speed camera, no flash appears and the dummy is shown smiling. <b>Seventh scene</b> shows the screen fade to black. <b>A tag-line appears on the screen.</b> It reads: "So who's the real dummy?"</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

