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The Influence of Fear Arousal and Perceived Efficacy on the Acceptance and Rejection of Road Safety Advertising Messages

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Abstract

This paper examines the effects of fear arousal and perceived efficacy on the acceptance and rejection of road safety advertising messages that are typical in Australia and New Zealand. Our results suggest that the level of fear arousal could be lowered without a significant effect on the message acceptance rates but could result in a lower rate of message rejection. Our results also suggest that the inclusion of explicit coping strategies in the road safety messages has a significant positive effect on message acceptance. It is recognised that road safety campaigns often utilise a combination of advertisements featuring varying levels of threat and efficacy. Hence, we recommend that current campaigns be reviewed to assess the expected amount of fear aroused and to ensure that a variety of coping behaviours or strategies are explicitly incorporated into the advertisements.

Keywords: Road Safety, Fatigue, Advertising, Fear, Response Efficacy, Self Efficacy

Introduction

Over the last three decades, road safety advertisements, especially those televised in Australia and New Zealand, have increasingly relied on the appeal to the emotion of fear to deliver the message (Tay, [1],[2]). However, despite more than fifty years of research on the use of fear-based publicity campaigns, an unequivocal answer concerning their effectiveness is not possible (Keller & Block [3]; Tay, [4]). Nevertheless, many government agencies around the world continue to believe in and employ fear-based publicity campaigns, particularly in social marketing of public health.

One of the most frequently debated issues in fear-based publicity campaigns involves the relationship between the level of fear invoked by a communication and the degree of attitude and behaviour change induced in the audience (Burnett & Oliver [5]; Higbee [6]; LaTour & Zahra [7]; Quinn, Meenaghan & Brannick [8]; Ray & Wilkie [9]; Snipes, LaTour & Bliss [10]). Implicit in the use of fear appeals is the assumption that when emotional tension is aroused, the audience will become more highly motivated to accept the recommendations advocated by the communicator (Janis & Feshbach [11]; Tay, [4]). More importantly, it is assumed that the higher the level of fear aroused, the greater will be the persuasiveness of the communication (Higbee [6]).

Several early studies, however, challenged these assumptions and suggested instead that the relationship between fear arousal and persuasiveness was in fact negative, with a relatively low degree of fear arousal being optimal (Goldstein [12]; Haefner [13]; Janis & Feshbach, [11]). Subsequent studies, however, generally found a positive relationship between fear and persuasion (Insko, Arkoff & Insko [14]; Leventhal & Niles [15]; Leventhal & Watts [16]). These contrasting results led several researchers to hypothesize that the relationship between fear level and persuasion has an inverted-U shape (Janis [17]; McGuire [18]; Ray & Wilkie [9]). Since the inverted-U hypothesis is very difficult to test or refute [4], many researchers have instead concentrated on discovering other contributing factors that may influence the relationship.

One common explanation for the differing results is that high fear appeals elicit two common responses from the audience: fear control and danger control. Leventhal [19] developed the Parallel Response Model (PRM) to extended the Fear Drive Model [McGuire [18]) by relaxing the assumption that emotional arousal was an antecedent of adaptive behaviour. Instead, it stressed the correlational nature of the two elements of the model and introduced the fear-control process (maladaptive behaviour or message rejection) that may be independent from the danger control process (adaptive behaviour or message acceptance).

While offered as an alternative to Leventhal's dual process, the Protection Motivation Model (PMM) developed by Rogers [20] is only concerned with the danger control process. In its original form, it includes three cognitive processes: (a) appraisal of the severity of the threat; (b) the probability of occurrence; and (c) belief in the efficacy of the coping response (Tanner, Day & Crask [21]). The amount of protection motivation is postulated to be a monotonically increasing function of the product of these three cognitive variables (Sutton

[22]). The model was subsequently expanded to include self-efficacy as well as the efficacy of the recommended message (Maddux and Rogers [23]) and maladaptive behaviour (Rogers [24]).

Witte [25] developed the Extended Parallel Process Model (EPPM) by bringing together and expanding the PRM and the PMM. Specifically, the EPPM adopts the explanation of the danger control process in the PMM and defines and expands the fear control process that leads to message rejection. The EPPM hypothesise that when both the perceived threat and efficacy are high, danger control processes are initiated, resulting in adaptive behaviour. Conversely, when the perceived threat is high, but perceived efficacy is low, fear control processes are initiated, resulting in maladaptive behaviour.

Hence, the general consensus in the current literature on fear appeals is that increasing efficacy is crucial in increasing message acceptance (Leventhal [19]; Rogers, [20],[24]; Witte, [25]). The perceived efficacy of the message consists of two parts: perceived response efficacy and perceived self-efficacy. Perceived response efficacy refers to the audience's belief as to whether the recommended coping strategies presented in the message is effective in preventing or eliminating the threat while self efficacy refers to the audience's perceived ability to perform the recommended strategies.

The present study aims to explore the effects of fear arousal and efficacy on message acceptance or rejection in the context of road safety. Driver fatigue was chosen as the road safety issue for the present study due to the lack of extensive campaign coverage in Queensland compared with other road user behaviours. The present study aims to determine the effects of fear arousal and the perceived efficacy on message acceptance and rejection. More importantly, it will examine the effect of explicitly providing safety-enhancing coping strategies in the message on acceptance and rejection rates.

Methodology

Permission was sought from Victoria's Transport Accident Commission and Western Australia's Office of Road Safety to utilise various road safety television advertisements which delivered potentially fear-evoking messages about driver fatigue and messages containing strategies to avoid the negative consequences of driver fatigue. The advertisements selected were developed and aired on commercial television in Australian states other than Queensland, thus minimising any previous exposure effects to the advertisements. Some participants were shown only a highly threatening message whereas others were shown the same threatening message plus some suggested strategies to cope with the threat. No low threat advertisements were shown because they tend to be less often used in Australia and New Zealand.

Most participants were university students but some friends and work colleagues of the project team were included in the sample. The initial sample (first questionnaire) consisted of 165 people (45% males) and the final sample (follow-up questionnaire) consisted of 134 people. Of the total sample, 28% of the respondents were below the age of 20, 48% were in the twenties and the remaining 24% were above 30 years of age.

The participants in the study were administered two questionnaires. In the first questionnaire, the participants were initially asked to provide some demographic information and answer questions relating to their attitudes toward road safety and driver fatigue. Some road safety advertisements were then presented and the remaining items from the questionnaire were then completed. These items were design to assess the participants' reactions to the advertisement, and their attitudes and intentions towards driving while fatigued. A follow-up questionnaire was administered one-two weeks later to measure the same intentions and their subsequent self-reported driving behaviour.

The main explanatory variables of interest were fear arousal, response efficacy and self efficacy. Fear arousal was measured by asking the respondents to rate their reaction to the advertisement(s) in terms of various emotive adjectives like "frightened and tense", "anxious and worried", and "nauseous and uncomfortable". Since these items were highly correlated, their mean value was used as the aggregated measure of fear arousal. Response efficacy was measured by the question "I think that today's advertisement(s) were effective in providing a strategy (or strategies) to avoid unsafe situations involving driver fatigue." Self-efficacy was measured by the item "After viewing today's advertisements, I feel confident I could avoid unsafe situations involving driver fatigue." All these items were measured with a 7-point Likert scale and coded in ascending order of magnitude (1-7) from very strongly disagree to very strongly agree.

Message acceptance and message rejection were measured by items that addressed participants' intentions to use strategies to avoid driving when fatigued, and self-reported driving-when-fatigued behaviours. Adaptive behavioural intentions measured were "I intend not to drive when I am tired or drowsy", "I intend to plan to have optimal sleep before driving long distances" and "I intend to use various strategies to avoid the risks of driving when fatigued". These intentions were measured immediately after viewing the advertisements and one-two weeks later. Maladaptive behavioural intentions were measured by the items "I feel tempted to, or prefer to, switch channels whenever shocking road safety advertisements appear on television" and "I would prefer to forget all about these kinds of advertisements because they are just plain horrible". Maladaptive

behavioural intentions were measured only in the initial questionnaire. Both adaptive and maladaptive intentions were measured with a 7-point Likert scale and since they were highly correlated, their mean value was used as a composite measure of intention. Self-reported behaviour were measured by the items "Since viewing the advertisements, have you taken steps to avoid driving when tired or drowsy" and "Since viewing the advertisements, I have driven when I was tired or drowsy". The first behavioural measured was recorded as "Yes/No/No Need to" and the second item was recorded as "Never/Rarely/Occasionally/Few times/Often".

Results and Discussions

Despite the general consensus in the fear appeals literature regarding the importance of efficacy in message acceptance, road safety advertisements in Australia and New Zealand do not always feature explicit recommendations concerning ways to cope with or avoid the threat portrayed. In this study, about half (52.7%) the participants were shown only a high threat message while the others were shown the same high threat message plus some recommended strategies to deal with the threat. As shown in Table 1, there was no difference in fear arousal between the groups. Since they were both shown the same high threat message, this result was not surprising but it did indicate that providing the audience with coping strategies did not have a significant effect on fear arousal and as a consequence, appeared not to have a significant effect on maladaptive intentions or message rejection.

Table 1: Fear Arousal, Perceived Efficacy, Behavioural Intentions and Recommended Strategies

<u>Items</u>	<u>Threat Only Message</u>		<u>Threat plus Strategies</u>	
	<u>Mean</u>	<u>Std Dev</u>	<u>Mean</u>	<u>Std Dev</u>
Fear Arousal ^a	3.93	1.56	3.93	1.26
Response Efficacy ^{a, ***}	4.14	1.76	5.91	1.15
Self Efficacy ^{a, ***}	4.34	1.49	5.40	1.31
Adaptive Intentions (Immediate) ^{a, **}	5.37	0.96	5.69	1.01
Maladaptive Intentions (Immediate)	3.16	1.54	3.10	1.43
Adaptive Intentions (Follow up) ^{a, ***}	5.27	1.07	5.95	0.84
Taken steps to avoid fatigued driving (Follow up) ^{b, ***}	1.83	0.28	1.33	0.48
Frequency of fatigued driving ^{c, ***}	1.78	0.93	1.49	0.72

Notes: (1) Means and standard deviations calculations: (a) "very strong disagree" = 1 and "very strongly agree" = 7;

(b) "yes" = 1 and "No" = 2; (c) "never" = 1 and "Often" = 5.

(2) ** and *** denote statistically significant difference in the means at $\alpha = 0.05$ and 0.01 respectively.

As expected, participants who were shown additional messages that provided some useful strategies to cope with the threat shown in the advertisements reported higher levels of both response and self efficacy. As a consequence, these participants reported stronger intentions to take positive actions to avoid driving while fatigued. It is interesting to note that whereas the intentions to take positive actions falls over time for the group that was shown only the high threat message, these intentions actually increased for the group that was shown the recommended strategies to cope with the threat. Hence, it appears that the key to sustainable behavioural change lies more in providing the audience with good coping strategies and not simply relying on fear as a source of motivation.

In addition to behavioural intentions, the follow up questionnaire also collected information on the participants' self-reported behaviour. Ignoring participants who had no need to drive while fatigued, the percentage of participants who reported in the follow-up survey that they had taken steps to avoid driving while tired was significantly higher among the group that was shown the strategies to cope with the problem of driving when tired. Similarly, the group that was shown the coping strategies reported a relatively lower frequency of driving when tired. Therefore, in terms of both behavioural intentions and self-reported behaviour, the group that was shown the coping strategies significantly outperformed the group that was not, re-emphasising the importance of providing coping strategies in road safety messages.

To examine the effects of fear arousal and perceived efficacy on message acceptance and rejection, we estimated four regression models and part of the results are shown in Table 2. Since the composite measures for behavioural intentions were the averages of several items, they could be estimated using the standard ordinary least squares regression technique without posing significant problems. Adaptive behaviour, however, was measured as the positive response (yes = 1; otherwise = 0) to the item "Since viewing the advertisements, have you taken steps to avoid driving when tired or drowsy" and was thus estimated using the binary logit regression technique.

Table 2: Effects of Fear Arousal and Efficacy on Intentions and Behaviour

Variables	Adaptive Intentions (Immediate) ^a	Maladaptive Intent (Immediate) ^a	Adaptive Intentions (Follow-Up) ^a	Adaptive Behaviour (Follow-Up) ^b
Constant	4.1157 *** (0.2978)	2.9618 *** (0.4613)	3.7872 *** (0.3171)	-7.3116 *** (1.9505)
Fear	0.0088 (0.0506)	0.3394 *** (0.0783)	0.0732 (0.0534)	0.3357 (0.2111)
Response Efficacy	0.0999 ** (0.0505)	-0.1292 * (0.07823)	0.2351 *** (0.0522)	0.5575 ** (0.2591)
Self Efficacy	0.1818 *** (0.0598)	-0.1067 (0.0924)	0.0716 (0.0629)	0.1825 (0.2575)

Notes: (1) a = ordinary least squares regression; b = binary logit regression.

(2) *, ** and *** denote statistically significant at $\alpha = 0.10, 0.05$ and 0.01 respectively.

As evident from Table 2, the effects of fear arousal on message acceptance and rejection were quite interesting. Although fear arousal was positively related to message acceptance (in terms of both intentions and self-reported behaviour), this relationship was not statistically significant. In contrast, the effect of fear arousal on message rejection was highly significant. These results implied that the level of fear arousal could be lowered without decreasing the acceptance rates but could result in a significant decrease in the rejection rate. It should be noted that the level of fear aroused depends on the characteristics of both the audience and the advertisements shown. However, from a policy perspective, it would be easier to manipulate the advertisements to reduce the expected level of fear arousal.

The effects of perceived efficacy on message and rejection were also quite interesting. Perceived efficacy appeared to have a significant positive effect on message acceptance and a weak (low statistical significance) negative effect on message rejection. Note also that whereas the effects of fear arousal and self-efficacy on behavioural intentions decreased over time, the impact of response efficacy on adaptive intentions increased over time. One-two weeks after viewing the advertisements, the only significant influence that could explain the participants' intentions and behaviour was the perceived response efficacy of the advertisements. Hence from a policy perspective, road safety advertisements should strive to increase the perceived response efficacy by increasing the strength and variety of strategies provided to assist the audience in coping with the threat.

Concluding Remarks

Using a sample of fatigue-related road safety advertisements that have been televised in Australia and New Zealand, this study examined the influence of fear arousal and perceived efficacy on message acceptance and rejection. We found that the level of fear arousal did not have a significant effect on message acceptance but had a significant effect on message rejection. In contrast, perceived efficacy was found to have a significant positive influence on behavioural intentions and self-reported behaviours. In particular, the effect of response efficacy was the only influence that was found to be sustainable over time. It is recognised that road safety campaigns often utilise a combination of advertisements featuring varying levels of threat and efficacy. In some cases, threatening advertisements with relatively low efficacy may be complemented by other advertisements (being shown at the same time) where the efficacy content is very high. Hence, it is recommended that current road safety advertising campaigns be reviewed to assess the expected amount of fear aroused and to ensure that a variety of coping behaviours or strategies are explicitly incorporated into the advertisements.

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References

- [1] Tay R (1999). Effectiveness of anti-drink driving advertising campaign in New Zealand. *Road and Transport Research*, 8(4):3-15.
- [2] Tay R (2001). Methodological issues in evaluation models: the New Zealand road safety advertising campaign revisited. *Road and Transport Research*, 10(2):29-39.
- [3] Keller P & Block L (1996). Increasing the persuasiveness of fear appeals: the effect of arousal and elaboration. *Journal of Consumer Research*, 22:448-459.
- [4] Tay R (2000). Fear and Persuasiveness in Communication: Fifty Years of Research and Little Evidence. Working paper, Centre for Accident Research and Road Safety, Queensland University of Technology.
- [5] Burnett J & Oliver R (1979). Fear appeal effects in the field: a segmentation approach. *Journal of Marketing Research*, 16:181-90.
- [6] Higbee K (1969). Fifteen years of fear arousal: research on threat appeals: 1953-1968. *Psychological Bulletin*, 72(6):426-44.
- [7] LaTour M & Zahra S (1988). Fear appeal as advertising strategy: should they be used? *Journal of Services Marketing*, 2(4):5-14.
- [8] Quinn V, Meenaghan T & Brannick T (1992). Fear appeals: Segmentation is the way to go. *International Journal of Advertising*, 11:355-366.
- [9] Ray M & Wilkie W (1970). Fear: the potential of an appeal neglected by marketing. *Journal of Marketing*, 34:54-62.
- [10] Snipes R, LaTour M & Bliss S (1999). A model of the effects of self-efficacy on the perceived ethicality and performance of fear appeals in advertising. *Journal of Business Ethics*, 19:273-285.
- [11] Janis I & Feshbach S (1953). Effects of fear-arousing communications. *Journal of Abnormal and Social Psychology*, 48:78-92.
- [12] Goldstein M (1959). The relationship between coping and avoiding behaviour and response to fear arousing propaganda. *Journal of Abnormal and Social Psychology*, 59:247-52.
- [13] Haefner D (1956). Arousing fear in dental health education. *Journal of Public Health Dentistry*, 25:140-46.
- [14] Insko C, Arkoff A & Insko V (1965). Effects of high and low fear-arousing communications upon opinions toward smoking. *Journal of Experimental Social Psychology*, 1:256-266.
- [15] Leventhal H & Niles P (1964). A field experiment of fear-arousal with data on the validity of questionnaire measures," *Journal of Personality*, 32:459-79.
- [16] Leventhal H & Watts J (1966). Sources of resistance to fear-arousing communications on smoking and lung cancer. *Journal of Personality*, 34:155-175.
- [17] Janis I (1967). Effects of fear arousal on attitude change; recent developments in theory and experimental research. In *Advances in Experimental Social Psychology*, Berkowitz L (ed), New York: Academic Press, 166-224.
- [18] McGuire W (1968). Personality and susceptibility to social influence. In *Handbook of Personality Theory and Research*, Borgatta E & Lambert L (eds), Chicago: Rand McNally, 1130-1188.
- [19] Leventhal H (1970). Findings and theory in the study of fear communications. In Berkowitz L (Ed), *Advances in experimental social psychology. Volume 5*. pp. 119-186. New York: Academic Press.
- [20] Rogers R (1975). A Protection motivation theory of fear appeals and attitude change. *Journal of Psychology*, 91:93-114.
- [21] Tanner J, Day E & Crask M (1989). Protection motivation theory: an extension of fear appeals theory in communication. *Journal of Business Research*, 19:267-276.
- [22] Sutton (1982). Fear-arousing communications: a critical examination of theory and research. In Eiser R (ed), *Social Psychology and Behavioral Medicine*, New York: John Wiley & Sons Ltd.
- [23] Maddux J & Rogers R (1983). Protection motivation and self-efficacy: a revised theory of fear appeals and attitude change. *Journal of Experimental Social Psychology*, 19:469-479.
- [24] Rogers R (1983). Cognitive and physiological processes in fear appeals and attitude change: A revised theory of protection motivation. In Cacioppo, J & Petty R (Eds.), *Social Psychology*. pp. 153-176, New York: Guilford.
- [25] Witte, K. (1992). Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs*, 59(4):329-349.