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Judged effectiveness of threat and coping appraisal anti-speeding messages

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ABSTRACT

Purpose: Using a young driver sample, this experimental study sought to identify which combinations of threat-appraisal (TA) and coping-appraisal (CA) messages derived from protection motivation theory (PMT) participants would judge as most effective for themselves, and for other drivers.
Method: The criterion variable was reported intention to drive within a signed speed limit. All possible TA/CA combinations of 18 previously highly-rated anti-speeding messages were presented both simultaneously and sequentially. These represented PMT's three TA components: severity, vulnerability, and rewards, and three CA components: self-efficacy, response efficacy, and response costs. Eighty-eight young drivers (34 males) each rated 54 messages for perceived effectiveness for self and other drivers.
Results: Messages derived from the TA severity component were judged the most effective. Response cost messages were most effective for females. Reverse third-person effects were found for both females and males, which suggested that combining TA and CA components may increase the perceived relevance of anti-speeding messages for males.
Discussion: The findings have potential value for creating effective roadside anti-speeding messages, meriting further investigation in field studies.

1. Introduction

Young drivers consider speeding to be a low severity violation (Parker et al., 1996a). While some behaviors require premeditated prevention (e.g., not drinking before driving), vehicle speed can be instantly reduced – hence the importance of roadside anti-speeding messages (Chaurand et al., 2015). Other reasons include modest cost, extensive reach, and flexible placement and content (Glendon and Cernecca, 2003). However, further evaluation is required to maximize roadside message effectiveness (Algie, 2011; Tay and de Barros, 2008), which should be theoretically based (Stead et al., 2005; Tay and de Barros, 2008, 2010). While roadside signage may produce immediate change (Luoma et al., 2000), long-term effects may be small (Glendon and Cernecca, 2003; Hauer et al., 1982). Since unwanted outcomes of ineffective campaigns may include desensitization (Chaurand et al., 2015; Kaye et al., 2015; Tay and de Barros, 2008), wasted resources, and reduced belief in the efficacy of adaptive behaviors, effective campaigns are important for reducing risky driving behaviors (Glendon and Walker, 2013).

Anti-speeding messages derived from psychological theory can be more effective than typical roadside messages (Glendon and Walker, 2013; Parker et al., 1996b). Protection motivation theory (PMT), the theory of planned behavior (TPB), the health belief model, and the extended parallel process model (EPPM; Witte, 1992) have had some success in aiding uptake of adaptive behaviors (Delaney et al., 2004), with TPB being the most used (Glendon, 2011). However, while having explanatory utility (Connor and Armitage, 2006; Fylan and Stradling, 2014; Lewis et al., 2013b; Parker et al., 1996a,b; Stead et al., 2005), TPB assumes that responses and behavioral intentions are processed rationally (Glendon and Walker, 2013; Lewis et al., 2007b). Since speeding behaviors may be linked to emotion and personality as well as to cognitions (Harbeck and Glendon, 2013; Rhodes and Pivik, 2011), TPB may provide insufficient explanatory power.

Within Australia, fear appeals (and fear relief) have dominated anti-speeding advertising (Algie, 2011; Henly and Donovan, 1999). Differing from a PMT approach, fear pattern theory relies on fear relief (i.e., fear reduction), which does not depend entirely on efficacy messages or extensive coping strategies. Accounting for some of the emotive elements of speeding behavior, and by incorporating a coping component, PMT has demonstrated explanatory power for predicting risky driving behaviors, particularly speeding (Glendon and Walker, 2013; Lewis et al., 2007a; Tay, 2005). The current study

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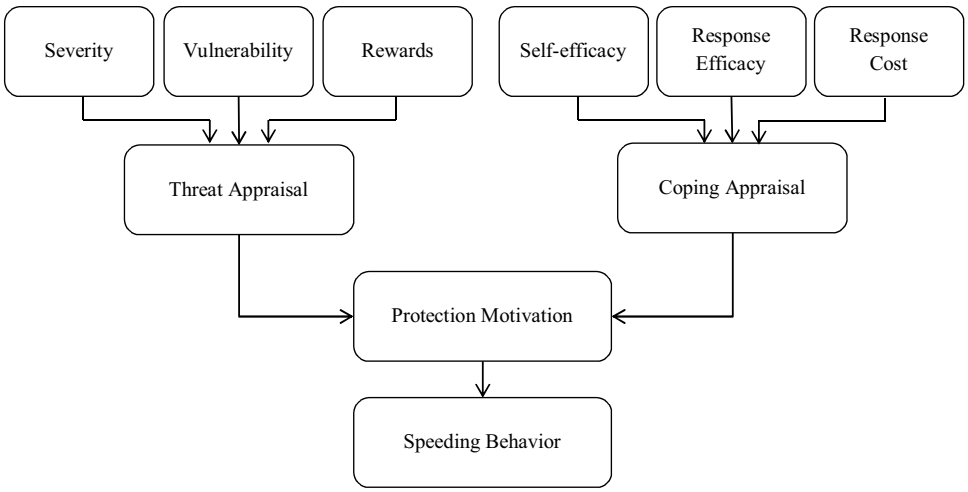

Fig. 1. Protection motivation theory and speeding behavior.

aimed to identify whether messages representing combinations of PMT components could be effective in influencing young drivers to drive within the speed limit. It also sought to identify how these potential relationships might be affected by presentation timing. These relationships were expected to be influenced by gender, and whether third-person effects could be detected.

1.1. Protection motivation theory

PMT explains motivation to adopt either adaptive or maladaptive behaviors in response to threats. It was partly derived from Lazarus' (1966) stress and coping model, which posited that primary and secondary appraisals determined stress response. In Lazarus' model, primary appraisal assessed threat. Secondary appraisal involved an individual assessing their capacity to cope with the threat to determine either: 1) an adaptive response – secondary appraisal determined that coping ability exceeded the threat, or 2) a maladaptive response – the individual decided that the threat exceeded their coping ability, in which case stress resulted (Lazarus, 1966). In PMT, the (primary) threat appraisal (TA) consists of: a) threat severity, b) perceived vulnerability to the threat, and c) perceived rewards associated with a maladaptive response. The (secondary) coping appraisal (CA) components are: a) perceived self-efficacy to adopt the adaptive behavior, b) response efficacy in controlling/minimizing the threat, and c) cost of the adaptive response, which would decrease the likelihood of adopting that response. Fig. 1 shows the generic PMT model related to speeding behavior.

Lazarus suggested that combining TA and CA messages would maximize the likelihood of adopting an adaptive behavior by making the threat salient and reducing threat-induced fear (Lazarus, 1966; Prentice-Dunn et al., 2001). However, while many messages aim to arouse a fear response to threat, few have incorporated coping elements (Henley and Donovan, 1999; Lewis et al., 2007a). Compared with phrases representing single PMT components, combined TA/CA messages might increase the likelihood of adaptive responses (Glendon and Walker, 2013). Messages have been shown to be most effective when CA phrases follow TA phrases (Prentice-Dunn et al., 2001) as this allows an individual to process the threat before assessing the coping resources that might enable them to adopt behaviors to counter it. Though it has been suggested that threat is not necessary for an adaptive response (e.g., Hall et al., 2006; Ruiter et al., 2003), from a PMT perspective this position has little theoretical credence, and weak empirical support.

The severity and vulnerability TA components increase threat perception. Perceived threat severity increases fear, while perceived vulnerability makes the threat more salient and relevant – both tending to decrease maladaptive behavior likelihood. The rewards component refers to perceived benefits of maladaptive behavior in response to threat. As rewards increase, unless countered by stimuli that reduce perceived benefits, maladaptive behavior likelihood also increases (Glendon and Walker, 2013). Of CA components, self-efficacy is an individual's perceived ability to perform the adaptive behavior, while response efficacy is the perceived effectiveness of the adaptive behavior in reducing threat – both increasing adaptive behavior likelihood. Response cost is the perceived cost of the adaptive behavior, which decreases its likelihood (Prentice-Dunn et al., 2001; Rogers and Mewborn, 1976). Like the rewards threat component, response cost can be countered by neutralizing messages.

Of PMT's TA components, severity has shown the strongest response in reducing self-reported intention to speed and other maladaptive behaviors (Glendon and Walker, 2013; Lewis et al., 2007b; Reeves et al., 1991). Of CA components, self- and response-efficacy provide the strongest response (Cauberghe et al., 2009; Glendon and Walker, 2013; Hall et al., 2006; Milne et al., 2000). Because of theorized multiplicative effects, combining the strongest TA phrases with the most effective CA phrases can be hypothesized to produce effects over and above those of individually-presented phrases (Prentice-Dunn et al., 2001).

1.2. Presentation

As combining TA and CA components involves two phrases in each message, presentation timing will be addressed. Presenting a TA and a CA phrase simultaneously creates a longer message, which might be read out of order, or might mitigate the fear-arousing threat appeal being fully attended to before the CA immediately reduces any fear produced by the threat. While one view was that messages should be displayed on a single frame (Mitchell, 2011), sequential presentation (TA then CA component) should provoke greater fear in response to the threat appeal, and a greater fear reduction on viewing the CA phrase (Reeves et al., 1991).

Also potentially contributing to the efficacy of simultaneous presentation of TA and CA components is the information load of each message. The amount of text in simultaneous presentation of both components might mean a higher likelihood of distraction. As suggested by memory and attention models of cognition (Lang et al., 1996; Lang et al., 2000; Reeves et al., 1991), individuals may not