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Response Efficacy: The Key to Minimizing Rejection and Maximizing Acceptance of Emotion-based Anti-Speeding Messages

Lewis, I. M., Watson, B., and White, K. M.
Abstract

This study sought to improve understanding of the persuasive process of emotion-based appeals not only in relation to negative, fear-based appeals but also for appeals based upon positive emotions. In particular, the study investigated whether response efficacy, as a cognitive construct, mediated outcome measures of message effectiveness in terms of both acceptance and rejection of negative and positive emotion-based messages. Licensed drivers (N = 406) participated via the completion of an on-line survey. Within the survey, participants received either a negative (fear-based) appeal or one of the two possible positive appeals (pride or humor-based). Overall, the study’s findings confirmed the importance of emotional and cognitive components of persuasive health messages and identified response efficacy as a key cognitive construct influencing the effectiveness of not only fear-based messages but also positive emotion-based messages. Interestingly, however, the results suggested that response efficacy’s influence on message effectiveness may differ for positive and negative emotion-based appeals such that significant indirect (and mediational) effects were found with both acceptance and rejection of the positive appeals yet only with rejection of the fear-based appeal. As such, the study’s findings provide an important extension to extant literature and may inform future advertising message design.

Keywords: road safety advertising, emotional appeals, anti-speeding messages, response efficacy, message acceptance, message rejection
Response Efficacy: The Key to Minimizing Rejection and Maximizing Acceptance of Emotion-based Anti-Speeding Messages

1.0 Introduction

Representing a significant public health problem, each year in Australia road crashes are associated with substantial social and economic costs estimated at approximately $15 billion (BTE, 2000). A major factor contributing to the frequency and severity of road crashes is speeding (Kloeden, McLean, & Glonek, 2002). Given the contribution of speeding as a human factor to road crashes, many improvements in health will ultimately be brought about by persuading individuals to not speed. Within the array of strategies implemented to reduce speeding, advertising countermeasures feature prominently and constitute a large portion of Australian governments’ expenditure on road safety initiatives (Donovan, Jalleh, & Henley, 1999). Advertising countermeasures aim to ultimately reduce speeding through persuading drivers to adopt safer attitudes, intentions, and behaviors.

Traditionally, road safety advertising campaigns have relied heavily upon the use of negative, fear-based approaches. A typical road safety message depicts some aversive consequence, often a road crash, as resulting from a driver’s engagement in an illegal and/or unsafe behavior such as drink driving or speeding. This reliance upon fear-based approaches remains despite calls from notable researchers in the field (e.g., Elliott, 2005), as well as members of the general driving public (see Lewis, Watson, White, & Tay, 2007), to trial more positive advertising approaches in road safety. For instance, a positive approach may be a message that models safe and/or legal behavior and the positive consequences (i.e., rewards) of engaging in such behavior (e.g., Sibley & Harré, 2009). These messages are also more likely to be associated with the elicitation of positive emotions such as pride or humor and, therefore, may
be regarded as positive emotion-based appeals (Lewis, Watson, White et al., 2007). Perhaps, most significantly, the calls for increasing the use of positive approaches in road safety have been supported by recent evidence. This evidence has demonstrated the heightened effectiveness (i.e., increased persuasiveness as measured by changes in self-reported attitudes, intentions or behavior) of positive approaches compared with negative, fear-based approaches for certain high risk road users such as males (Lewis, Watson, & White, 2008a; see also Goldenbeld, Twisk, & Houwing, 2008). Furthermore, Sibley and Harré (2009) demonstrated that positive messages are more effective than their negative counterparts at influencing explicit self-enhancement biases that underlie young drivers’ behavior.

Thus, despite growing support for the use of positive emotion-based appeals particularly for high risk road users, relative to the available evidence in relation to negative, fear-based appeals (which includes a number of meta-analytical studies, e.g., Boster & Mongeau, 1984; Floyd, Prentice-Dunn, & Rogers, 2000; Witte & Allen, 2000), much less is known about factors influencing the effectiveness of appeals based on positive emotion (Monahan, 1995; Nabi, 1999, 2002). This study aims to address this significant omission in extant literature by examining key affective and cognitive influences on message effectiveness for both fear-based as well as positive appeals based on the emotions of pride and humor. Theoretically, this study draws upon the Extended Parallel Process Model ([EPPM]; Witte, 1992) of fear-based persuasion. At the outset, it is important to note that this study is not intended to provide an empirical test of the full EPPM framework. Rather, this study draws upon this framework and the associated empirical evidence in the identification of the study’s key constructs, namely, response efficacy and emotion (in terms of positive and negative emotion appeals and the associated emotions such appeals evoke). The framework also informs the study’s conceptualization of message effectiveness in terms of both message acceptance and rejection.
1.1 Message effectiveness: message acceptance and message rejection

In health persuasion literature, message effectiveness or persuasiveness is often measured in terms of the degree of attitudinal, intentional, and, in some instances, behavioral change achieved (Elliott, 1993). Typically, and especially in relation to fear-based messages, message effectiveness is commonly referred to as message acceptance (Witte, 1992). Message acceptance is assessed in terms of the degree to which individuals report intention to adopt a message’s recommendations (Witte, 1992, 1994). In addition to message acceptance, theoretical (the EPPM; Witte, 1992) and empirical evidence (e.g., Tay & Watson, 2002) has supported the need to also assess message rejection. Relative to message acceptance, message rejection is seldom assessed. Message rejection, when assessed, is typically operationalised in terms of maladaptive responses such as the extent to which individuals report defensively avoiding, denying, minimising, and/or ignoring a message (Tay & Watson, 2002; Witte, 1992). Witte (1992, 1994) has distinguished between message acceptance and message rejection as representing the extent to which a message is successful and persuades or is unsuccessful and fails to persuade, respectively. Empirical evidence has shown that acceptance and rejection are not mutually exclusive outcomes and that different factors predict the extent to which individuals accept and reject a message (Lewis, Watson, & White, 2008b; Tay & Watson, 2002). Thus, message rejection constitutes an important element of a message’s overall effectiveness. It is, therefore, important to understand factors that predict when message rejection is likely to occur. Currently, however, the available evidence is based only upon rejection of fear-based messages, thus, resulting in a significant dearth in understanding regarding the extent that factors influence the persuasive process that leads to the rejection of different types of emotional appeals.

1.2 The EPPM, response efficacy, and emotion
Representing the most contemporary model of fear-based persuasion, the EPPM (Witte, 1992) posits that an individual’s response to a threat-based message involves two distinct cognitive appraisals. The first appraisal, threat appraisal, relates to the degree to which the message is perceived as threatening (i.e., how susceptible an individual believes they are to the threat and how severe the consequences would be should the threat occur). If the individual perceives that they are personally vulnerable and the threat is severe, a second appraisal, coping appraisal, occurs whereby the individual considers whether the message provides effective and useful strategies (i.e., termed ‘response efficacy’), and whether they believe that they possess the ability to enact such strategies (i.e., termed ‘message self-efficacy’) to help avoid/reduce the threat (Witte, 1992, 1994). In other words, the extent to which an individual feels fearful in response to the message’s threat (as a result of the first appraisal), determines whether they are motivated to continue processing the message. In turn, the coping appraisal determines the nature of an individual’s response to a message and whether they initiate adaptive or maladaptive processes which correspond to message acceptance and message rejection respectively (Witte, 1992, 1994). Empirical evidence has supported the EPPM with response efficacy found to be positively associated with message acceptance and negatively associated with message rejection (Tay & Watson, 2002; Witte, 1992). Also consistent with the EPPM, research based on fear-based messages, has identified response efficacy as a more important predictor of adaptive outcomes (i.e., message acceptance) than the emotion of fear (Floyd et al., 2000; Tay & Watson, 2002; Witte & Allen, 2000). Such findings provide support for the direct and important role of response efficacy relative to emotion which, in contrast, is posited to have an indirect impact (mediated by coping appraisal) on message outcomes.

Despite the important respective roles of response efficacy and emotion to message effectiveness, there remain gaps in what is currently known about the relationship between these
constructs. The main omission relates to the evidence being available only for negative, fear-based appeals as opposed to other types of emotion-based appeals and, most notably, positive emotion-based appeals. Although the EPPM was not intended for use in explaining the persuasive processes and outcomes of appeals other than those based on fear, recent evidence has indicated that response efficacy may influence the extent of message acceptance reported in response to positive (i.e., humorous) health messages (Lewis et al., 2008a; Lewis et al., 2007b). It follows that a key research question to be examined is whether response efficacy mediates the effects of emotional responses on the persuasive outcomes of different emotion-based appeals and, in particular, positive emotion-based appeals. To the extent that positive emotion-based appeals are less likely to be based upon (or incorporate) threatening stimuli, the persuasive process as posited within the EPPM is unlikely to generalize to the persuasive process underlying positive emotion-based appeals. Thus, there is a need to better understand the persuasive process of positive emotion-based appeals and, in particular, to determine whether response efficacy represents a key mediating factor of positive emotions on message effectiveness as it does for fear-based appeals.

A second gap in current understanding relates to the greater focus on message acceptance than message rejection as a measure of message effectiveness (Witte & Allen, 2000). Of the studies that are available, while a (to-be-expected) negative correlation between response efficacy and message rejection has been found (e.g., Tay & Watson, 2002) such studies have tended not to examine the theoretically proposed mediational relationship between emotions evoked, response efficacy, and message rejection. This omission is somewhat surprising given Witte’s (1992) suggestion that compared with its predecessors the EPPM affords a more significant role to emotion (fear) in persuasion. In addition, and not surprisingly, no research evidence is available in relation to the persuasive process that leads to the rejection of positive emotion-based appeals.
Similar to the evidence available for negative, fear-based appeals, while there is evidence of a negative correlation between response efficacy and the rejection of humor-based positive appeals (Lewis et al., 2008a), research is yet to establish whether response efficacy is the important cognitive mediator of the emotional responses to positive emotion-based appeals.

1.3 Response efficacy versus message self-efficacy

Of note, the current study focuses intentionally only upon the construct of response efficacy as the key mediating variable of the emotion-persuasion relationship and not the second component of the EPPM’s coping appraisal, message self-efficacy. In our view, it is response efficacy that has particularly significant practical implications for a persuasive message given its ability to be developed and inputted within a message and the subsequent direct influence it has upon the message’s effectiveness. That is, designers/practitioners can readily identify strategies that may be relevant and useful for a particular target audience and include such strategies within a persuasive message which, in turn, will likely heighten the message’s effectiveness. Message self-efficacy, in contrast, which shares much overlap with Bandura’s (1977, p. 193) conceptualization of self-efficacy as, “the conviction that one can successfully execute (a given) behavior”, may be considered as an aspect derived from within the individual and, as such, not largely amenable following a single exposure to a particular persuasive message as it may be following a brief intervention or campaign (e.g., Danaher, Smolkowski, Seely, & Sverson, 2008; but see Witte & Allen, 2000 for suggestion about how self-efficacy may be targeted within persuasive messages). As such, we persist with our focus on response efficacy for the important potential practical implications associated with future message design.

It is important to acknowledge that, within the EPPM, response efficacy represents both a message and individual characteristic. Thus, while a message can be designed to include strategies, ultimately, it is individuals’ perceptions of the extent to which a message’s strategies
are effective and useful that determine the ‘true’ level of response efficacy. Consistent with this acknowledgement, the study’s analyses are based upon measured response efficacy scores. Other researchers have identified the importance of assessing participants’ responses to particular message characteristics rather than relying upon researchers’ (and advertisement designers’) a priori assumptions of a message’s content (see Eveland & McLeod, 1999).

1.4 The current study and hypotheses

The main aim of the current study is to heighten understanding of the persuasive process of emotion-based appeals. As such, the three inter-related objectives of this study are to: (i) determine whether response efficacy mediates the effect of emotional responses on message effectiveness; (ii) examine this mediational hypothesis in terms of both message acceptance and message rejection; and (iii) examine this mediational hypotheses in relation to a traditional fear-based message as well as in relation to positive emotion-based appeals of pride and humor.

For the fear-based appeal, based on theoretical and empirical support, it is predicted that response efficacy will mediate the relation between the negative emotions evoked and message acceptance (Hypothesis 1a) and rejection (Hypothesis 1b). For the positive emotion-based appeals based on humor and pride, however, in the absence of a well-established, empirically validated theoretical framework of positive emotion-based appeals, the current hypotheses are based upon available empirical evidence which has indicated that response efficacy is as important to the effectiveness of positive emotion-based appeals as it is to fear-based appeals (Lewis et al., 2008a). As such, it is hypothesized that, similar to Hypotheses 1a and 1b, response efficacy will mediate the relationship between the respective positive emotions evoked by the pride- and humor-based appeals and acceptance (Hypothesis 2a) and rejection (Hypothesis 2b) of these messages.

2.0 Method
2.1 Participants

All participants (N = 406) were holders of a current driver’s license. The sample consisted of 268 females (66.0%; one participant did not specify) and had an age distribution as follows: 17-24 years (42.9%), 25-34 years (23.4%), 35-44 years (18.2%), 45-54 years (11.8%), 55-64 years (3.0%), and 60 years and over (0.7%). Participants completed the study via an on-line survey. The link to the survey was placed on the authors’ research centre’s homepage. Given that a longstanding criticism of much health advertising-based research has been the over-reliance on university student samples (see Hastings, Stead, & Webb, 2004), a specific aim of the current study’s recruitment strategy was to ensure that both non-university and university students were represented. Thus, to recruit participants for the survey in a manner that enabled the researchers to have some control over where and to whom the survey was promoted (i.e., a non-university student or university student participant), a formulated approach was undertaken. Specifically, emails advising of the study were forwarded at particular and distinct time intervals to student and staff lists of a large Australian university as well as staff of a multifaceted organisation involved in many aspects of motoring (i.e., the Royal Automobile Club of Queensland [RACQ]). The timing of responses received (in accordance with the timing of our promotional emails and flyers) suggests that the sample includes a representation of both student and non-student participants. Additionally, a link to the survey was placed on the RACQ’s homepage to increase the likelihood that drivers would find the study. All participants were offered a ticket in a raffle to win one of six $AUS50 shopping vouchers.

2.2 Materials

2.2.1 Emotional appeals. Table 1 details the three emotional appeals used within the current study. The appeals consisted of one negative, fear-based and two positive emotion-based messages, one a pride- and the other a humor-based appeal. In developing the content of the
appeals in relation to the key message or theme, the study’s authors drew upon existing theoretical evidence regarding, as well as their extensive knowledge of, factors and motivations underpinning speeding behavior (e.g., normative influences, deterrent effect of punitive sanctions). Theoretical evidence was also drawn upon in relation to the development of the emotional content (and expected emotional responses) of the messages. Theoretical evidence (e.g., the Rossiter-Percy Motivational model; see Donovan & Henley, 2003 for a review) has suggested that in order for an emotional appeal to be regarded as credible and, thus, more likely effective, the emotions evoked must be appropriate with the theme of the message. For example, a message incorporating a physical threat of death would lack credibility and most likely be ineffective if it were to evoke humor (see Donovan & Henley, 2003). The third column in Table 1 lists the expected emotional responses appropriate for each of the three appeals in the current study, which have been informed by and adapted from existing theory (Rossiter-Percy Motivational model, see Donovan & Henley, 2003; see also EPPM, Witte, 1992).

The messages were subsequently pre-tested with focus groups of drivers. Pre-testing examined both practical issues such as the clarity and understandability of the messages as well as message-related issues of relevance to the current study namely: (i) perceived effectiveness, (ii) emotional responses evoked, and (iii) the nature and effectiveness of strategies provided. The messages were subsequently voiced by a professional radio journalist. The choice to use audio-recorded messages has been supported in the advertising literature (e.g., Elliott, 1987) as providing the most direct test of message content given that other factors such as the quality of images (as with storyboards or video-based messages) will not confound judgments of message effectiveness for audio messages.

Table 1
Brief descriptions of the emotional-based appeals tested within the current study.

<table>
<thead>
<tr>
<th>Emotional</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional appeal</td>
<td>Brief description</td>
<td>Expected emotional responses</td>
<td>N (gender)</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------</td>
<td>----------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>1. Fear-based</td>
<td>A young male is driving and exceeding the posted speed limit. He hits a pedestrian who is described as being lifeless and covered in blood. The driver realises it is his friend.</td>
<td>1. Fear, anxious, relaxed</td>
<td>143 (female = 99; male= 44)</td>
</tr>
<tr>
<td>2. Pride-based</td>
<td>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.</td>
<td>2. Proud, flattered</td>
<td>126 (female = 86; male= 40)</td>
</tr>
<tr>
<td>3. Humor-based</td>
<td>A crash dummy is 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.</td>
<td>3. Competent, exciting, amusing</td>
<td>137 (female = 83; male= 53)</td>
</tr>
</tbody>
</table>

*One participant did not specify.

2.2.2 Measures and procedure. The survey first assessed demographics and some baseline measures and, once completed, the audio message (included within the online survey) was subsequently played. Participants were randomly assigned to a particular message condition (i.e., computer-generated selection). Once a message had been played, participant responses to the message were assessed. All items were assessed on 7-point likert scales (1 [Strongly disagree] to 7 [Strongly agree]) and higher scores indicated more of a particular construct.

2.2.2.1 Response efficacy. Based on previous studies (e.g., Lewis, Watson, & Tay, 2007), to assess response efficacy, a composite of three items was formed based on items that assessed
the effectiveness of the strategies and information provided in the message (i.e., “The advertisement was effective in providing a strategy (or strategies) to reduce speeding”; “Adopting the advertisement's recommendations would be effective in reducing speeding”; and “The advertisement included some useful information about how people can reduce their risk of speeding”).

2.2.2 Emotional responses. Appropriate emotions for particular message themes were identified (Rossiter-Percy Motivational Model; Donovan & Henley, 2003) and measured. For each emotional appeal, a composite was formed based on the relevant emotional responses as shown in Table 1. For instance, emotional responses representing the most appropriate emotions to be evoked by the fear-based appeal consisted of fear, anxious, and relaxed.

2.2.2.3 Message acceptance. To measure message acceptance, a composite measure of intentions, similar to measures used elsewhere (e.g., Witte, 1992), was created from four items: participants reported the extent that they intended to obey and monitor the speed limit as well as the extent that they intended not to exceed the speed limit by more 10km/hr on urban and open roads/highways. Higher scores on this scale indicated stronger intention to not speed.

2.2.2.4 Message rejection. Message rejection was measured by a composite of 5 items which assessed maladaptive responses including changing channels, leaving the room, thinking about something else, simply ignoring the advertisement, and watching the advertisement and thinking about the message it was conveying (reverse coded), if a message like the one heard was to appear on television. These items were adapted from previous studies (e.g., Tay & Watson, 2002; Witte, 1992).

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1 While initial inspection of these emotions in relation to a fear-based appeal may appear unusual, according to the Rossiter-Percy motivational framework, individuals should feel a number of and sequence of emotions following an emotional message. In the case of a fear-based appeal, if it is to be effective, it should evoke feelings of fear and anxiety as well as feelings of relaxation if individuals identify a means of avoiding/reduce the fear-evoking threat (Donovan & Henley, 2003).
3.0 Results

3.1 Manipulation check

A manipulation check was conducted to determine whether the emotions evoked by each of the appeals were as intended (as indicated in Table 1). A repeated measures MANOVA was conducted and, as predicted, the results indicated that each appeal evoked more of its composite scale of appropriate emotional responses than composite scales of emotions appropriate to the other appeals. Specifically, while significant main effects for appeal and lists of emotional responses were found, these effects were further clarified by a significant appeal x emotional responses interaction, $\lambda = .53, F(4,780) = 73.42, p < .001$, which revealed that each appeal evoked significantly more of its composite scale of appropriate emotional responses than any other of the composite scales of emotional responses. For emotional responses designated as 1, 2, and 3 in Table 1, the following means were found for each appeal: fear-based $M_s = 2.91, 1.34, 1.82$; pride-based appeal $M_s = 2.54, 3.22, 2.98$; and humor-based appeal $M_s = 2.26, 2.23, 3.08$ (note: the composite scale of emotions relevant to a specific appeal is bolded). Thus, the manipulation appears to have been successful.

3.2 Descriptive statistics

The means, standard deviations, bivariate correlations, and alpha coefficients are reported for the fear-, pride-, and humor-based appeals in Table 2, 3 and 4 respectively.

Table 2

<table>
<thead>
<tr>
<th>Variable $^a$</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Emotional responses $^b,c$</td>
<td>2.91</td>
<td>1.10</td>
<td>(.45)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Response efficacy</td>
<td>3.85</td>
<td>1.41</td>
<td>.34***</td>
<td>(.73)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Message acceptance</td>
<td>5.75</td>
<td>1.29</td>
<td>.18*</td>
<td>.21*</td>
<td>(.86)</td>
<td></td>
</tr>
<tr>
<td>4. Message rejection</td>
<td>3.24</td>
<td>1.50</td>
<td>-.21*</td>
<td>-.49***</td>
<td>-.11</td>
<td>(.84)</td>
</tr>
</tbody>
</table>
Table 3

Pride-based appeal: means, SDs, bivariate correlations and (alpha coefficients)

<table>
<thead>
<tr>
<th>Variable a</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Emotional responses b</td>
<td>3.23</td>
<td>1.48</td>
<td>(.58)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Response efficacy</td>
<td>4.35</td>
<td>1.21</td>
<td>.37**</td>
<td>(.68)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Message acceptance</td>
<td>5.85</td>
<td>1.25</td>
<td>.10</td>
<td>.26**</td>
<td>(.87)</td>
<td></td>
</tr>
<tr>
<td>4. Message rejection</td>
<td>3.18</td>
<td>1.38</td>
<td>-.40***</td>
<td>-.41***</td>
<td>-.14</td>
<td>(.86)</td>
</tr>
</tbody>
</table>

*aAll variables measured on a scale of 1-7 with 7 indicating more of the construct. bEmotional responses = fear, anxious, relaxed. c Scale includes reverse scoring of relaxed. *p<.05, ***p<.001.

Table 4

Humor-based appeal: means, SDs, bivariate correlations and (alpha coefficients)

<table>
<thead>
<tr>
<th>Variable a</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Emotional responses b</td>
<td>3.07</td>
<td>1.38</td>
<td>(.65)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Response efficacy</td>
<td>3.64</td>
<td>1.52</td>
<td>.45***</td>
<td>(.81)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Message acceptance</td>
<td>5.88</td>
<td>1.25</td>
<td>.03</td>
<td>.30***</td>
<td>(.83)</td>
<td></td>
</tr>
<tr>
<td>4. Message rejection</td>
<td>3.68</td>
<td>1.61</td>
<td>-.39***</td>
<td>-.54***</td>
<td>-.22**</td>
<td>(.87)</td>
</tr>
</tbody>
</table>

*aAll variables measured on a scale of 1-7 with 7 indicating more of the construct. bEmotional responses = proud, flattered. **p<.01, ***p<.001.

The results in Tables 2-4 were generally consistent with expectations. Response efficacy was significantly positively associated with message acceptance and significantly negatively associated with message rejection for all three of the appeals indicating that response efficacy functions to increase message acceptance and decrease message rejection. Message acceptance and message rejection were significantly negatively correlated in relation to the humor-based appeal with negative although non-significant trends found in relation to the remaining appeals.

While it was anticipated based on the EPPM that emotion would be a beneficial component of the persuasive process of emotion-based appeals, it was not anticipated (again, as based on the
EPPM) that emotion would necessarily relate directly with message outcomes. The bivariate correlations, however, indicated that the emotional responses for all three appeals were significantly negatively correlated with message rejection (i.e., the more emotion a message evoked, either positive or negative, the less rejection). In relation to message acceptance, only the positive correlation between emotional responses associated with the fear-based appeal and message acceptance was significant with positive, non-significant trends found between emotional responses and message acceptance in relation to the other appeals.

One issue to note is the poor scale reliabilities associated with the composite scales of emotional responses and, in particular, the first emotional response scale in relation to the fear-based appeal (α= .45). Inspection of the scale reliabilities if items were deleted revealed that Cronbach’s alpha could be improved to .80 if the item, “relax” was removed from the first emotion response scale. While the emotions comprising each of the lists were informed from a theoretical framework, the Rossiter-Percy motivational model, to exercise caution in light of the poor scale reliability, the study’s main mediational analyses were re-run with “relax” removed from the Emotions List 1 scale. The overall results obtained were the same as those obtained with the 3 item scale. As such, it was decided to retain “relax” within the Emotions List 1 scale for consistency with the underpinning theoretical framework.

3.3 Mediational analyses

To examine the mediational hypotheses, analyses were conducted using the bootstrapping procedures developed by Preacher and Hayes (2004; see also Shrout & Bolger, 2002). This approach is a nonparametric resampling procedure based on 5000 bootstrap resamples to describe the confidence intervals of indirect effects. The indirect effect is represented by the product of the
coefficients as shown in Figure 1. Significance of the indirect effect is indicated if zero is not contained within the 95% CIs (Danaher et al., 2008; Roelfs et al., 2008).

To determine whether response efficacy mediated the effects of the emotional responses associated with each message on the two outcome measures of message acceptance and message rejection, the emotional response scale for each appeal (IV) was entered simultaneously with the mediator variable of response efficacy and separate analyses were conducted for each of the two outcome measures (i.e., message acceptance and message rejection) and for each message. Mediation is shown if the path between two variables (path shown as $c'$ in Figure 1) is reduced to zero (or close to zero) when a third variable related to both is statistically controlled (Baron & Kenny, 1986).

![Figure 1. Mediational analyses involving emotional responses, response efficacy, and the message outcomes of message acceptance and message rejection.](image.png)

3.3.1 Mediational analyses predicting message acceptance

3.3.1.1 Fear-based appeal. The analysis revealed that the emotional responses appropriate for this appeal (IV) had a significant effect on acceptance (DV), $B = .21, SE = .10, p = .035$. Second, emotional responses had a significant effect on response efficacy (mediator), $B = .44, SE = .10, p < .001$. Thus, response efficacy was identified as potential mediator of the effect of emotional responses on message acceptance. Third, however, response efficacy was not predictive of message acceptance, $B = .15, SE = .08, p = .072$. Examination of the bootstrapped
indirect effects indicated that response efficacy did not significantly mediate the relationship between emotional responses and message acceptance \( B = .07, SE = .05, CI = -.022 \) to \(.158\).

3.3.1.2 Pride-based appeal. The analysis revealed that the emotional responses appropriate for this appeal (IV) did not have a significant effect on message acceptance (DV), \( B = .09, SE = .08, p = .244 \). In the assessment of indirect effects, as via the Preacher & Hayes’ approach, no assumption is made that the total effect of the IV on the DV was present initially (i.e., that the \( x \rightarrow y \) effect was significant; Preacher & Hayes, 2004). Indeed, within the literature there is support for the view that, under some conditions, such as where it is theoretically justified/expected, it may not be necessary for the IV and DV to be significantly correlated initially (Preacher & Hayes, 2004; Shrout & Bolger, 2002). To the extent that mediation represents a ‘special case’ of indirect effect, it is possible to have a significant indirect effect even when there is no evidence that the initial \( x \rightarrow y \) relationship is significant (Preacher & Hayes, 2004, p. 719). In this instance, there is theoretical justification to anticipate that emotions evoked (the IV) may not necessarily correlate directly with message outcomes (the DV). Consequently, the data were further scrutinized for the presence of the indirect effect of response efficacy on message acceptance. Emotional responses had a significant effect on response efficacy (mediator), \( B = .32, SE = .07, p < .001 \) and, thus, response efficacy was identified as having a potential indirect effect on the relationship between emotional responses and message acceptance. Third, response efficacy was predictive of message acceptance, \( B = .26, SE = .10, p = .008 \) such that more response efficacy was associated with increased message acceptance. Examination of the bootstrapped indirect effects indicated that response efficacy did have a significant indirect effect on the relationship between the emotional responses and message acceptance, \( B = .09, SE = .04, CI = .027 \) to \(.173\).
3.3.1.3 Humor-based appeal. Similar to the results with the pride-based appeal, the analysis revealed that the emotional responses appropriate for this appeal (IV) did not have a significant effect on acceptance (DV), \( B = .04, SE = .08, p = .634 \). Emotional responses did have a significant effect on response efficacy (mediator), \( B = .49, SE = .09, p < .001 \), however, and thus, response efficacy was identified as having a potential indirect effect on the relationship between emotional responses and message acceptance. Third, response efficacy was predictive of message acceptance, \( B = .30, SE = .08, p = .002 \) such that more response efficacy was associated with increased message acceptance. Examination of the bootstrapped indirect effects indicated that response efficacy did have a significant indirect effect on the relationship between emotional responses and message acceptance, \( B = .14, SE = .05, CI = .070 \) to \(.253\).

3.3.2 Meditacional analyses predicting message rejection

3.3.2.1 Fear-based appeal. The analysis revealed that emotional responses (IV) did have a significant effect on rejection (DV), \( B = -.29, SE = .11, p = .012 \). Second, the emotional responses had a significant effect on response efficacy (mediator), \( B = .44, SE = .10, p < .001 \). Thus, response efficacy was identified as potential mediator of the effect of emotional responses on message rejection. Third, response efficacy was predictive of message rejection, \( B = -.50, SE = .09, p < .001 \) with more response efficacy associated with less rejection. Examination of the bootstrapped indirect effects indicated that response efficacy did significantly mediate the relationship between emotional responses and message rejection \( B = -.22, SE = .07, CI = -.372 \) to -.114.

3.3.2.2 Pride-based appeal. The analysis revealed that emotional responses (IV) had a significant effect on rejection (DV), \( B = -.38, SE = .08, p < .001 \). Second, the emotional responses had a significant effect on response efficacy (mediator), \( B = .30, SE = .07, p < .001 \). Thus, response efficacy was identified as potential mediator of the effect of emotional responses on
message acceptance. Third, response efficacy was predictive of message rejection, $B = -.35$, $SE = .10$, $p < .001$ such that more response efficacy was associated with less message rejection. Examination of the bootstrapped indirect effects indicated that response efficacy did significantly mediate the relationship between emotional responses and message rejection, $B = -.11$, $SE = .04$, $CI = -.208$ to -.038.

3.3.2.3 Humor-based appeal. The analysis revealed that the emotional responses (IV) did have a significant effect on rejection (DV), $B = -.32$, $SE = .10$, $p = .002$. Second, the emotional responses had a significant effect on response efficacy (mediator), $B = .37$, $SE = .08$, $p < .001$. Thus, response efficacy was identified as potential mediator of the effect of emotional responses on message rejection. Third, response efficacy was predictive of message rejection, $B = -.42$, $SE = .10$, $p < .001$ with more response efficacy associated with less rejection. Examination of the bootstrapped indirect effects indicated that response efficacy did significantly mediate the relationship between emotional responses and message rejection $B = -.15$, $SE = .06$, $CI = -.290$ to -.058.

4.0 Discussion

The main aim of the current study was to improve understanding of the persuasive process of emotion-based appeals not only in relation to negative, fear-based appeals but, also for appeals based upon positive emotions. In particular, the study investigated whether response efficacy, as a cognitive construct, mediated outcome measures of message effectiveness in terms of both acceptance and rejection of negative and positive emotion-based messages. Overall, the study confirms the importance of emotional and cognitive components of persuasive health messages. The results indicated that response efficacy represents a key cognitive construct influencing the effectiveness of emotion-based messages. More particularly, the results
highlighted that response efficacy is an important determinant of the effectiveness of positive emotion-based messages and, as such, the study’s findings extend upon extant literature.

Interestingly, the results also indicated that response efficacy may actually be more important to determining the persuasiveness of positive emotion-based messages than negative, fear-based messages given that response efficacy mediated\(^2\) the effects of positive emotions on outcome measures of both acceptance and rejection; while, for the negative emotions, response efficacy only mediated the effects of negative emotions on message rejection. This finding represents a notable departure from contemporary theoretical evidence (the EPPM) from the fear appeal literature which has identified response efficacy as a key mediating variable for both acceptance and rejection of fear-based messages. The findings also highlight the role of response efficacy as an important component for a potential theoretical framework that explains the persuasive process of positive emotion-based appeals: an aspect of the literature currently lacking (Nabi, 2002). Overall, the findings indicate that response efficacy functions in different ways to enhance the persuasiveness of different emotional appeals; for positive emotion-based appeals it increases acceptance yet functions to also minimize rejection; while for negative, fear-based appeals, the current study’s results suggest that response efficacy’s main function is to reduce message rejection. As such, it is not simply about higher levels of response efficacy always minimizing rejection and maximizing acceptance rather, its function is contingent upon the type of emotional appeal.

4.1 The importance of response efficacy

The study’s findings support the need for greater focus on the important role of response efficacy and, in particular, the need to consider new and innovative ways to provide individuals

\(^2\) Significant indirect effects of response efficacy on emotional responses and message acceptance were found for the positive emotion-based appeals (Preacher & Hayes, 2004).
with coping strategies and information within health advertising messages. It has long been acknowledged that strategies are more readily able to be provided for some behaviors than others. For instance, there are various strategies that can be offered in relation to drink driving and fatigue (e.g., take a taxi or arrange a designated driver in the case of drink driving and, for fatigue, possible strategies would include pulling over at a rest stop or having a power nap) but, the provision of strategies to avoid speeding is perhaps more difficult (Tay, 2005). While this issue is not contested, what may be questioned is acceptance of the notion that there are simply no other strategies that may be promoted to assist drivers with not (or reducing) speeding. Of all the risky and/or illegal driving behaviors, speeding is typically regarded as one the most difficult behaviors for which to provide strategies because the primary strategy for avoiding speeding is not speeding. Nonetheless, there are strategies that can be provided to individuals to assist them not to speed. For example, drivers may be encouraged to pay greater attention to, and engage in more monitoring of, their speed when driving to avoid instances of unintentional speeding. In the case of more deliberative instances of speeding, there may be value in highlighting the ineffectiveness of speeding as a strategy for saving and/or making up time on the road (Regan et al., 2007).

### 4.2 Individuals’ perceptions of response efficacy

While there has been particular focus within this paper on response efficacy as a message characteristic that advertising designers/practitioners can incorporate into a message, as alluded to earlier, it is crucial that advertising researchers and practitioners acknowledge that response efficacy must also be conceptualized as an individual characteristic. It is, after all, individuals’ perceptions of response efficacy that determine the effectiveness of such strategies which, in turn, determines the effectiveness of the message. Acknowledging response efficacy as a message and individual construct has particular implications for both health advertising research and practice.
In the research context, it highlights the importance of conducting manipulation checks of all message characteristics to ensure that they are being perceived by members of the target audience in the way anticipated by the researchers (see Eveland & McLeod, 1999). In practice, there is an evident need to thoroughly pre-test message content with a particular focus on the perceived relevance and effectiveness of the strategies to be provided. While pre-testing and piloting of messages is already commonly undertaken in advertising practice, based on the findings of this study, there is an apparent need to dedicate specific focus to the nature and types of strategies that are considered relevant and effective by members of the target audience.

4.3 The importance of emotion

An interesting finding to emerge was the direct impact of emotions evoked (both positive and negative) upon message outcomes and, in particular, message rejection as indicated by the significant bivariate correlations. The subsequent mediational analyses did reveal, as predicted, that the effect of emotional responses on message rejection was mediated by response efficacy. The EPPM (Witte, 1992), which denotes the persuasive process and outcomes of fear-based appeals, does not assign a direct relationship between the emotion of fear and message outcomes. The results indicated that, for both the positive and negative emotion-based appeals, experiencing more of the relevant emotions for a particular message was associated with less rejection. This finding, consistent with previous research, highlights that emotion represents a key message component (and response) that should be assigned a role within potential frameworks to explain the persuasive processes and outcomes of emotion-based appeals. To the extent that the importance assigned to the emotion of fear has tended to wax and wane over time in the fear appeal literature (for a review, see Dillard, 1994; Witte & Allen, 2000), the current study’s findings highlight emotion as being a key determinant of the effectiveness of emotion-based messages and, thus, should be identified as such within future frameworks.
Moreover, similar to the distinction between response efficacy as a message and individual characteristic, it is also important to ensure that manipulation checks be conducted to ensure that the emotions evoked are consistent with the researchers’ a priori expectations. Previous research has found that even when appeals were identified by researchers as ‘fear appeals’, subsequent measurement of participants’ emotional responses to the messages indicated that such appeals do not always evoke fear (Dillard et al., 1996).

4.4 Strengths, limitations, and future research

The current study has a number of strengths. First, the selection of the study’s constructs was guided by the most contemporary theoretical framework of fear-based persuasion, the EPPM (Witte, 1992). From this framework and supporting empirical evidence, the message constructs of response efficacy and emotion were selected. The focus on emotion was supported by an emerging body of research that has identified positive emotion-based approaches as a persuasive alternative to fear-based approaches for high risk road users such as males. In addition, the focus on such constructs was in accordance with the view that they represented a relatively direct and tangible means for future advertising designers to improve the persuasiveness of health messages.

Second, to the authors’ knowledge, this study represents the first attempt to examine empirically the mediational hypotheses in relation to positive emotion-based appeals. As such, the study provides much needed insight into the persuasive process of positive emotion-based appeals which, in turn, may inform future theoretical frameworks. A third and related strength is the inclusion of two different types of positive appeals, humor- and pride-based, thus enabling exploration of the persuasive process across emotional valence (i.e., negative versus positive) as well as within valence (humor versus pride). Fourth, by including measures of both message acceptance and rejection, the study offered methodological improvement upon a number of
previous studies in the health advertising context which have tended to define message effectiveness only in terms of the extent to which individuals report acceptance of a message.

Nonetheless, while the study had a number of strengths, some limitations need to be acknowledged. While the study did base selection of the constructs upon theoretical and empirical evidence, numerous factors impact upon the effectiveness of emotion-based messages that were not examined in the current study. For instance, involvement with the issue and/or behavior has support derived from models of persuasion such as the Elaboration Likelihood Model (Petty & Cacioppo, 1986) as well as substantial empirical support including recent research based on anti-speeding messages which identified involvement as influencing message acceptance via two mediational pathways (Cauberghe, De Pelsmacker, Janssens, & Dens, 2009).

An additional limitation relates to the reliance upon self-reported measures. In this study, as with many studies of persuasive messages, there are likely to be issues associated with self-report measures due to the contrived viewing and response environment. Moreover, in such an applied context as road safety, it is especially important for advertising research to measure outcomes of practical significance (e.g., crash reduction). It is important to note, however, that evidence has suggested that self-report measures of speeding do provide an accurate reflection of covertly measured actual speeds (Hagland & Aberg, 2000) and that relatively large, significant positive correlations have been found between self-reported intentions to speed and actual speeding behavior (Elliott, Armitage, & Baughan, 2007).

Acknowledgement also needs to be made of the difficulties associated with self-reported, measures of individuals’ emotional responses. Closed-ended as well as open-ended free response measures where individuals respond to, or list, a particular type of emotion, requires considerable cognitive processing. Also, the possibility exists that the meaning of emotional words may vary from person to person (Morris, Woo, Geason, & Kim, 2002). This limitation notwithstanding, as
noted previously, it is necessary to conduct manipulation checks of such emotional responses to ensure that messages evoke the emotions that researchers anticipate they will evoke.

While not a limitation per se, but rather an important issue to consider, the discerning reader may have noted the confounding influence of message theme upon emotional appeal type (i.e., positive or negative). While all of the appeals were anti-speeding messages, it is evident that each of the appeals did incorporate different motivations as the message theme for reducing speeding behavior (e.g., avoiding a crash, avoiding a fine and being smarter than the average driver, and receiving social approval). Arguably, the confounding of emotional appeal type and message theme is difficult to avoid given that emotions must be appropriate for a particular message theme (see Donovan & Henley’s, 2003 review of the Rossiter-Percy Motivational model). As stated previously, a message incorporating as its theme a physical threat of death is unlikely to be effective if it was to evoke humor. However, in the current study, the humor-based message did actually include a social threat of being caught for speeding. As such, it appears that the use of humor for particular threats (e.g., social) may be appropriate. It is evident that much research is needed in the defining and designing of message content (themes and emotions) for positive approaches in health advertising.

There is also a need to further explore the response efficacy construct. Consistent with this need, in-depth qualitative research is recommended in the first instance to identify what types of strategies are most effective for which behaviors and for whom (i.e., target audience). Also, to validate the findings of the current study, there is a need to explore the mediational hypotheses of this study in relation to messages addressing other risky driving behaviors such as drink driving. Finally, with a growing body of evidence attesting to the influence of gender in determining the persuasive effects of emotional appeals (e.g., Lewis et al., 2008a,b; Goldenbeld et al., 2008),
future research should examine the meditational hypotheses of this study within a study in which sufficient numbers of males (relative to females) are available in each of the message conditions.

5.0 Conclusion

The study has provided insight into the persuasive process of emotion-based appeals, not only in relation to fear-based approaches but also positive appeals. In particular, the study has identified response efficacy as a key construct mediating the acceptance and rejection of positive and negative emotion-based appeals. The insight provided by the current study will potentially have significant implications for both theory development in the persuasion literature as well as future advertising message design.
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7.0 References


affective outcomes of AIDS PSAs: fear appeals do more than scare people.

*Communication Research, 23, 44-72.*


crashes involving young male drivers: are drink driving and speeding similar?

_Accident Analysis and Prevention, 37_(5), 922-929._


