# Predicting the Acceptance and Rejection of Emotion-based Anti-Speeding Messages: The role of attitudinal beliefs and personal involvement

Lewis, I. [1], Watson, B. [1], & White, K. M. [2]
[1] Centre for Accident Research and Road Safety – Queensland (CARRS-Q), Queensland University of Technology (QUT)
[2] School of Psychology and Counselling, Queensland University of Technology (QUT)

## Abstract

Limited evidence is available relating to the effectiveness of positive emotional appeals in road safety. Moreover, relative to measures of message acceptance, little is known about message rejection as an outcome measure of message effectiveness. The effectiveness of a range of negative and positive emotional appeals addressing speeding were examined with drivers ($N$ = 551). Hierarchical regressions examined the extent that measures of drivers' pre-existing attitudes and perceived involvement, as well as gender and age, predicted the acceptance and rejection of the appeals. The results indicated that measures of pre-existing attitudes and involvement were consistently significant predictors of acceptance and, to a lesser extent, rejection of all the appeals. However, these factors explained more variance in acceptance (i.e., 36.2% to 53.5%) rather than rejection (i.e., 3.7% to 10.9%). This finding highlights that, relative to measures of acceptance, less is known about the influences of message rejection. The research also highlights the importance of identifying the pre-existing attitudes and involvement levels of the intended target audience for the purpose of better targeting advertising countermeasures according to these key predictors of message effectiveness.

## Keywords

Emotional appeals, message acceptance, message rejection, pre-existing beliefs, gender, age.

## Introduction

In the promotion of health issues, advertising countermeasures feature prominently (Job, 1988). Such advertising aims to ultimately improve lives through encouraging individuals to adopt healthy as well as safer lifestyles and behaviours [1, 2]. Generally, health advertising has relied heavily upon fear-based messages and road safety advertising campaigns, in particular, are renowned for their use of graphic, fear-engendering advertisements [2]. A large body of evidence has amassed in relation to the effectiveness (i.e., persuasiveness) of fear-based appeals [3]. This evidence has revealed mixed findings as well a myriad of message-related and individual difference characteristics as influencing the fear-persuasion relationship [3, 4]. While it is beyond the scope of the current paper to review of all of these factors, of particular interest is the role of individual difference characteristics in predicting the persuasiveness of emotional messages. Of the characteristics examined, focus is upon pre-existing thoughts and beliefs that accompany individuals at any time that they are exposed to a health message and how such beliefs impact upon message effectiveness. Understanding which beliefs influence message effectiveness may assist in better aligning advertising messages to target the unique and/or specific needs of particular individuals (or groups of individuals) such as high risk road users [5, 6].

Beyond examining the effect of pre-existing beliefs upon fear-based appeals, the current study also investigates their impact in relation to a range of both positive and negative emotional messages. In contrast with fear-based appeals, much less evidence is available relating to the role and effectiveness of other emotional appeals and, in particular, positive emotional appeals, such as those based on pride and humour (for a review, see [7]). Specifically, the current study examines the extent that individuals' pre-existing attitudinal and involvement beliefs, in addition to demographic characteristics, predict the effectiveness of a range of emotion-based health messages.

*Message effectiveness: Message acceptance and message rejection*

In health persuasion literature, message effectiveness is often measured in terms of attitudinal or intentional change and, in some instances, the degree of behavioural change achieved [8]. Typically, and especially in relation to fear-based messages, message effectiveness is referred to as message acceptance [9]. Message acceptance is assessed in terms of the degree to which individuals report an *intention* to adopt a message's recommendations [9, 10]. In addition to message acceptance, theoretical (see Witte's (1992) Extended Parallel Process Model [EPPM]) and empirical evidence (e.g., [2]) has supported the need to also assess message rejection. Relative to message acceptance, message rejection is seldom assessed [9]. Message rejection tends to be operationalised in terms of maladaptive responses or intentions such as the extent to which individuals report defensively avoiding, denying, minimising, and/or ignoring a message [2, 9]. Essentially, message rejection is regarded as the extent to which an appeal is ineffective or fails to persuade [10]. Empirical evidence has shown that acceptance and rejection are not mutually exclusive outcomes [2]. Thus, message rejection contributes to the overall effectiveness of a message and, therefore, it is important to understand factors that predict when message rejection is likely to occur. Presently, there is a limited understanding of such factors. Message rejection has also not been examined with emotional appeals other than fear-based appeals, so it is unknown whether similar factors influence the rejection of different emotional appeals.

*Pre-existing attitudes*

The first belief likely to influence a health message's effectiveness is an individual's pre-existing attitude towards the specific health behaviour. As noted previously, inducing attitudinal change is a key focus of many advertising attempts with attitudinal change representing a common measure of message effectiveness [11, 12]. The reasoning underpinning this focus is the belief that, to ultimately bring about changes in behaviour, changes in attitudes must first occur [11]. However, early empirical evidence attested to a poor correspondence between attitudes and behaviour [13]. In the attempt to explain the attitudinal-behaviour gap, the Theory of Reasoned Action (TRA; [14]) and the Theory of Planned Behaviour (TPB; [15]) were developed. According to these models, the impact of attitudes on behaviour is mediated by intentions. A substantial body of evidence based on the prediction of a range of health-related behaviours has consistently identified attitudes as one of the most important and significant predictors of intentions [16, 17]. In relation to predicting driving behaviours more specifically, attitudes continually represent one of the strongest predictors of intentions [16, 18, 19]. A substantial body of evidence supports the notion that pre-existing attitudes that individuals hold towards speeding behaviour are likely to represent important predictors of speeding-related intentions that they report in response to an advertising message.

*Involvement with the issue*

The second pre-existing belief under investigation is involvement and, more specifically, perceived involvement with the issue of road safety. It should be noted that involvement has been conceptualised in a variety of ways in the literature (see [20]). Within the Elaboration Likelihood Model (ELM; [21]), involvement is considered in relation to the extent to which an individual regards an issue as having some direct impact upon their own life [22]. The current study adopts a similar conceptualisation of involvement such that it is considered the extent that the issue of road safety is relevant and personally important. Empirical evidence has suggested that involvement may influence persuasion through influencing the extent of message processing. Specifically, high involvement with an issue has been associated with more elaborate, central processing of a message [23] with such processing, in turn, being associated with stronger and more enduring persuasion [21, 24].

*Demographic characteristics*

The current study also incorporates the demographic characteristics of age and gender in the prediction of message effectiveness. Generally, evidence has suggested that negative emotional appeals based upon fear may be less effective for younger rather than older adults [25]; while, for positive emotional appeals, there is limited evidence available in relation to the effects of age on persuasiveness. Of these two demographic factors, a greater body of recent evidence has amassed in relation to the impact of gender on emotional appeal effectiveness. This evidence, based on road safety messages, has suggested that males,

unlike females, are less likely to be persuaded to modify their driving behaviour as a result of exposure to fear-based messages [26, 27]. This finding emerges despite males representing the intended target of most fear-based road safety messages [28]. While fear-based messages appear to have limited impact upon males, empirical research has shown that messages that incorporate positive emotions such as humour may be perceived as more persuasive by males than females. This gender effect in relation to humorous messages has been found for health messages addressing various issues including AIDS/HIV and sunscreen use [29] as well as drink driving [30]. While this research has highlighted the need to reconsider advertising approaches intending to target males, more needs to be known as to the underpinnings of this gender effect since gender is a variable not amenable to change. Consequently, it is important to determine whether other factors, that are more amenable to change, may account for the relationship between gender and persuasive outcomes [5]. The current study will examine the extent that pre-existing beliefs may represent examples of such factors.

**The current study**

The current study had three main aims: The first aim was to determine the extent to which individual difference characteristics influence the effectiveness of a health message. More specifically, the study aimed to determine whether pre-existing beliefs, namely, attitudes towards speeding and perceived involvement with the issue of road safety, were able to predict the extent that individuals report acceptance or rejection of a range of emotion-based anti-speeding messages and whether the influence of these beliefs is over and above the influence of demographic characteristics. The second aim of the study was to examine the extent to which message rejection, as an additional outcome measure of persuasion, predicts subsequent behaviour, over and above that of message acceptance. The third aim, proposed as more exploratory in nature, sought to examine the overall amount of variance explained in both message acceptance and rejection and to determine whether these individual difference characteristics were able to explain more variance in message acceptance or message rejection. Specific hypotheses of the current study are as follows:
Hypothesis 1: It was predicted that pre-existing attitudes and perceived involvement would significantly predict message acceptance over and above the influence of gender and age.
Hypothesis 2: It was predicted that pre-existing attitudes and perceived involvement would significantly predict message rejection over and above the influence of gender and age.
Hypothesis 3: It was predicted that, irrespective of emotional appeal type, message rejection will predict subsequent speeding behaviour, over and above message acceptance.

**Method**

**Participants**

All participants (**N** = 551) were holders of a current driver's licence. The sample consisted of 356 females (64.6%) and had 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 completed the study via an on-line survey. The link to the survey was placed on the authors' research centre's homepage. To recruit participants for the survey, emails were 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 (i.e., the Royal Automobile Club of Queensland [RACQ]). Additionally, a link to the survey was placed on the RACQ's homepage to increase the likelihood that drivers would find the study. Four weeks after completion of the first survey, participants were invited to participate in the second, follow-up survey. A total of 205 participants completed both surveys. Of these, 139 were females, 65 were males (1 respondent did not specify) and ages ranged from 17 to 59 years (M = 30.89; SD = 10.63). At each phase of data collection, participants were offered a ticket in a raffle to win one of six $AUS50 shopping vouchers.

**Materials**

**Advertising messages**

Audio-recorded messages were created for the study, based on the recommendations of a notable road safety advertising researcher [31]. These messages were voiced by a professional radio journalist. The

design of the messages' emotional content was guided by an existing theoretical framework, the Rossiter-Percy motivational model (for further details of the framework, see [32]). This model identifies a role for emotion in persuasive messages and it distinguishes between appeals to negative emotions, such as fear, and appeals to positive emotions, such as humour. Table 1 details the four emotional appeals utilised in the current study. Of note, manipulation checks were conducted on the emotions evoked by each of these appeals which indicated that the manipulation was successful in that the appeals did evoke emotions consistent with the researchers' expectations and each message evoked different emotions from the other messages.

**Measures**

The survey at Time 1 was divided into pre-existing measures of attitude and perceived involvement including demographics and immediate post-exposure measures. Unless otherwise stated, 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. At Time 2, the survey assessed speeding behaviour in the 4 weeks since being exposed to the advertising messages.

**Demographic measures.** Age in years was measured together with gender (1 = male, 2 = female). **Pre-existing attitude**. Consistent with previous research (e.g., [33]), attitude towards speeding was based on responses to speeding in relation to 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). Three items measuring how *wrong/right*; *unfavourable/favourable*; *unacceptable/acceptable* exceeding the speed limit would be in each context were assessed. A composite measure was created from the six items. Responses were reverse scored such that higher scores indicated a less favourable attitude towards speeding. **Perceived involvement**. A composite measure of 3 items, adapted from previous research (e.g., [34, 35], measured perceived involvement with the issue of road safety. Participants were asked to report the extent to which the issue of road safety is: (i) "…relevant to you"; (ii) "…important to you"; and (iii) "…of concern to you". **Message acceptance.** To measure message acceptance, a composite measure of adaptive intentions, similar to measures used elsewhere (e.g., [27]), was created from 4 items: participants reported the extent that they intended to obey and monitor the speed limit when driving 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 indicated stronger intention to not speed. **Message rejection.** Message rejection was measured by a composite scale of 5 items which assessed maladaptive responses. These items were adapted from previous studies (e.g., [2, 9]). Participants were asked to report how likely they would be to do each of the following if the advertising message was to appear on television: (i) "change channels"; (ii) "leave the room"; (iii) "think about something else while it was on"; (iv) "watch the ad and think about the message it was conveying" (reverse-scored); and (iv) "simply ignore the ad". **Speeding behaviour.** Three items assessed self-reported speeding behaviour: participants were asked to report the extent that they had (i) exceeded the posted speed limit by less than 10km/hr, (ii) had driven at 10km/hr or more over the speed limit and (iii) had driven at 20km/hr or more over the speed limit. As noted previously in relation to the attitudinal measures these items were assessed in terms of speeding on urban roads (i.e., 50 and 60km/hr roads) as well as on open roads/highways (i.e., 100 and 110km/hr roads). An overall measure of self-reported speeding behaviour was computed by averaging the responses to speeding behaviour reported on urban as well as open roads/highways. The measure was based on a 7-point likert scale of 1[*Never*] to 7[*Always*]. Higher scores indicated engagement in more speeding behaviour.

**Procedure**

Pre-existing measures of attitudes and perceived involvement were first assessed, together with demographic variables. One audio-recorded advertising message was then selected via random computer-generation and played once. Immediate post-exposure measures of acceptance and rejection were subsequently assessed. Four weeks later, participants were emailed the web address of the follow-up survey and completed the behavioural measure. The advertisements were not re-shown at Time 2. Responses to the two surveys were matched by a unique code.

**Results**

The means, standard deviations, bivariate correlations, and alpha coefficients of the variables are reported in Table 2. Table 2 indicates that pre-existing attitudes and perceived involvement were significantly positively correlated with message acceptance and negatively correlated with message rejection. Also, message acceptance and rejection were significantly negatively correlated. In relation to the demographic characteristics, gender was significantly positively related with pre-existing attitudes, perceived pre-involvement, and message acceptance (i.e., women were more likely to hold less favourable attitudes to speeding, perceive stronger involvement with the issue of road safety, and to report greater message acceptance). Age was significantly positively correlated with perceived involvement and was not significantly correlated with either message acceptance or rejection.

**Regression analyses predicting message acceptance and message rejection**

A series of hierarchical regressions were conducted to examine the extent to which pre-existing attitudes and perceived involvement, predicted message acceptance and message rejection of the advertising messages over and above age and gender. Age and gender were entered at step one. Pre-existing attitudes and perceived involvement were then entered together at step two. A separate analysis was conducted for each advertising message and for each of the two outcome variables (i.e., message acceptance and message rejection), thus, a total of 8 regression analyses were conducted. For each of the emotional appeals, Tables 3 to 6 inclusive provide the results in relation to the prediction of message acceptance while Tables 7 to 10 inclusive provide the results in relation to the prediction of message rejection (see Appendix).

**Negative emotional appeals and message acceptance.** As shown in Table 3, for the fear-based appeal, the overall model with all predictors included accounted for a significant 42.2% of the variance in message acceptance, $F(4, 133) = 23.51$, $p < .001$. At step one of the model, gender was the only significant predictor. The addition of pre-existing attitudes and perceived involvement at step two accounted for an additional significant 21.7% of the variance in message acceptance, $F\Delta(2, 129) = 24.25$, $p < .001$. At step two, all predictors were significant, yet the beta weight for pre-existing attitudes remained the largest.

As shown in Table 4, for the agitation-based appeal, the overall model with all predictors included accounted for a significant 53.5% of the variance in message acceptance, $F(4, 130) = 36.26$, $p < .001$. At step one of the model, age and gender were both significant predictors. The addition of pre-existing attitudes and perceived involvement at step two accounted for an additional significant 39.9% of the variance in message acceptance, $F\Delta(2, 126) = 54.10$, $p < .001$ . At step two, the only significant predictor was pre-existing attitudes.

**Positive emotional appeals and message acceptance.** As Table 5 shows, for the pride-based appeal, the overall model with all predictors included accounted for a significant 36.2% of the variance in message acceptance, $F(4, 121) = 16.61$, $p < .001$. At step one of the model, only gender was a significant predictor. The addition of pre-existing attitudes and perceived involvement at step two accounted for an additional significant 30.8% of the variance in message acceptance, $F\Delta(2, 117) = 28.28$, $p < .001$ . At step two, pre-existing attitudes and perceived involvement were the only significant predictors.

As Table 6 shows, for the humour-based appeal, the overall model with all predictors included accounted for a significant 50.3% of the variance in message acceptance, $F(4, 125) = 30.66$, $p < .001$. At step one of the model, only gender was a significant predictor. The addition of pre-existing attitudes and perceived involvement at step two accounted for a further significant 38.3% of the variance in message acceptance, $F\Delta(2, 121) = 46.65$, $p < .001$ . At step two, pre-existing attitudes and perceived involvement were the only significant predictors.

**Negative emotional appeals and message rejection.** For the fear-based appeal, the overall model with all predictors included did not account for a significant amount of variance in message rejection, $F(4, 132) = 1.22$, $p = .306$. Furthermore, at all steps of the model, none of the predictors were significant (see Table 7).

As shown in Table 8, for the agitation-based appeal, the overall model with all predictors included accounted for a significant 10.9% of the variance in message rejection, $F(4, 135) = 4.00$, $p = .004$. At step one of the model, only gender was a significant predictor[1]. The addition of pre-existing attitudes and perceived involvement at step two accounted for an additional significant 7.3% of the variance in message rejection, $F\Delta(2, 131) = 5.36$, $p =. 006$. At step two, the only significant predictor was pre-existing attitudes.

**Positive emotional appeals and message rejection.** As shown in Table 9, for the pride-based appeal, the overall model with all predictors included accounted for a significant 9.9% of the variance in message rejection, $F(4, 122) = 3.23$, $p =.015$. At step one of the model, neither gender or age were significant predictors. The addition of pre-existing attitudes and perceived involvement at step two accounted for an additional significant 8.8% of the variance in message rejection, $F\Delta(2, 118) = 5.74$, $p =. 004$. At step two, the only significant predictor was pre-existing attitudes.

As shown in Table 10, for the humour-based appeal, the overall model with all predictors included, accounted for a significant 9.5% of the variance in message rejection, $F(4, 127) = 3.24$, $p =.015$. At step one of the model, neither gender or age were significant predictors. The addition of pre-existing attitudes and perceived involvement at step two accounted for an additional significant 9.4% of the variance in message rejection, $F\Delta(2, 123) = 6.36$, $p =. 002$. At step two, pre-existing attitudes and perceived involvement were the only significant predictors of message rejection.

**Regression analyses predicting behaviour**

Table 11 provides the means, standard deviations, bivariate correlations, and alpha coefficients of the variables utilised in this analysis. Table 11 indicates that self-reported speeding behaviour was significantly negatively associated with message acceptance (i.e., stronger message acceptance was associated with less engagement in speeding behaviour) and significantly positively associated with message rejection (i.e., greater message rejection was associated with more engagement in speeding behaviour). A hierarchical regression was conducted to examine the extent to which, irrespective of emotional appeal type, message rejection predicted speeding behaviour reported 4 weeks after exposure to the advertising message, over and above message acceptance. The results are reported in Table 12. At the first step of the model, message acceptance was entered while at the second step, message rejection was added. Table 11 shows that, at step one of the regression model, message acceptance accounted for a significant 30.2% of the variance in self-reported speeding behaviour, $F(1, 197) = 84.83$, $p < .001$. With message rejection added at step 2, an additional 3.3% variance in speeding behaviour was accounted for, which was significant, $F\Delta(1, 195) = 9.77$, $p = .002$. At step 2, both message acceptance and message rejection were significant predictors. The results suggest that both message acceptance and message rejection are significant and important predictors of subsequent self-reported speeding behaviour.

**Discussion**

The current study had three main aims: The first aim was to determine whether pre-existing beliefs, namely, pre-existing attitudes towards speeding and perceived involvement with the issue of road safety, were able to predict the extent that individuals report acceptance and rejection of a range of emotion-based anti-speeding messages and whether the influence of these beliefs was over and above the influence of demographic characteristics. The second aim of the study was to examine the extent that message rejection predicted subsequent behaviour, over and above that of message acceptance. The third aim, which was proposed as more exploratory in nature, sought to examine whether these individual difference characteristics were able to explain more variance in message acceptance or message rejection. Overall, the study's predictions were mostly supported with pre-existing attitudes and involvement emerging frequently as significant predictors of message acceptance and message rejection. Of the demographic variables, while gender was typically significant at the first step of the analyses, it did not remain significant following the addition of the attitudinal and involvement beliefs to the analyses. Consistent with predictions, message rejection did influence subsequent speeding behaviour beyond the influence of message acceptance. Finally, in relation to the amount of variance explained in message acceptance and

[1] Of note, the bivariate correlation between gender and message rejection was non-significant, implying that this finding is a suppressor effect (see [36]).

message rejection, generally, all the variables had less predictive ability in relation to message rejection. The findings in relation to the specific hypotheses of the study will each be discussed in more detail.

*Message acceptance.* Consistent with Hypothesis 1, which predicted that for message acceptance, pre-existing attitudes and perceived involvement would explain additional variance over and above gender and age was supported by the results obtained in relation to three of the four appeals. Specifically, for the fear-based, pride-based, and humour-based appeals, pre-existing attitudes and perceived involvement were found to explain additional significant variance over and above that of attitudes and demographic variables combined.

In relation to the demographic variables, age was only a significant predictor at the first step of the analysis for the agitation-based appeal. However, consistent with available evidence, age was positively associated with acceptance indicating that older adults may report more persuasion in response to negative emotional appeals than younger adults [25]. In contrast, and consistent with previous research (e.g., [26, 27]), in the first step of the analyses, gender was a significant predictor of the acceptance of all four of the appeals. For all analyses, gender was significantly positively associated with message acceptance indicating that females, overall, reported more message acceptance than males irrespective of whether the emotional appeal was positive or negative. This finding attests to the complex task confronting practitioners of health persuasion in developing advertising countermeasures to target male road users. Of note, previous evidence has suggested that the persuasive effects of positive emotional appeals for males may not be detectable upon measures taken immediately after exposure to the message but, rather, emerge over time (see [30]). Given that the findings of the current study are based upon responses provided only immediately after exposure, it is possible that the persuasive effects of the positive emotional appeals were not demonstrated for males in the current study as they have been demonstrated elsewhere.

Perhaps more importantly, however, was the finding that, for three of the four appeals, the significant effect of gender did not remain on subsequent steps in the analyses; rather, it appears that the effect of gender on message acceptance was able to be explained by the relationship between the pre-existing beliefs and message acceptance. This finding is encouraging as, as noted previously, gender represents a variable that is not amenable to change; thus, it is important for research to establish additional variables that may account for the relationship between demographic characteristics and which may be more modifiable [5]. The current study suggests that a closer investigation of the pre-existing attitudes of males and females in relation to risky driving behaviours may be an important step towards elucidating some of the key differences between males and females which may be impacting upon the relative effectiveness of emotional appeals. Interestingly, however, the only appeal for which gender remained significant at both steps of the analysis was the fear-based appeal. While the lower beta-weight between step one and subsequent steps indicates that the effect of gender may have been partially mediated by pre-existing beliefs, the results do suggest that, in relation to fear-based messages, the gender difference is not able to be explained fully by differences in males' and females' pre-existing attitudes and perceived involvement. Given that fear-based approaches remain a frequently-utilised approach in road safety advertising campaigns, there is need to further explore the underpinnings of the gender effect with the view of elucidating factors that may be more amenable to change and able to be targeted within advertising countermeasures ([5]; see also [38]).

*Message rejection*. Generally, all the variables, including the demographic variables, demonstrated limited predictive capabilities in relation to predicting message rejection. Age did not significantly predict rejection of any of the appeals while gender was only a significant predictor at the first step of the analysis predicting the rejection of the agitation-based appeal. The significant negative association indicated that males were more likely to reject this message than females which supports previous evidence that has suggested negative (fear-based) emotional appeals are less persuasive for males than females (e.g., [27]). This finding also highlights that an alternative explanation for the failure of a message to persuade may be because it is associated with high levels of message rejection.

In relation to the belief-based variables, pre-existing attitudes tended to be the most consistent significant predictor over and above the demographic factors for three of the four appeals, thus supporting Hypothesis 2. The only appeal for which attitudes did not function as predicted was for the fear-based appeal. Interestingly, for the fear-based appeal, none of the individual difference variables examined were

significant at any stage of the analysis. In relation to perceived involvement, although it did provide additional variance over and above the demographic characteristics when combined with pre-existing attitudes, as was predicted by Hypothesis 2, it did so only for the humour-based appeal. Overall, the findings highlight the need for further research to understand the factors influencing the rejection of emotion-based health appeals.

*Message acceptance versus message rejection.* Representing one of the key findings to emerge, consistent with Hypothesis Three, was the finding that message rejection did contribute additional variance in subsequent speeding behaviour reported four weeks after exposure to the advertising message over and above that explained by message acceptance. This finding suggests that the effects of both message acceptance and message rejection may persist over time and may be detectable upon subsequent measures of behaviour.

In relation to the aim to explore the extent that the individual difference variables could predict message acceptance and rejection, the results highlighted a consistent finding across the emotional appeals; the variables explained more variance in message acceptance than message rejection. Specifically, while the variance explained for message acceptance ranged from 36.2% (for the pride-based appeal) through to 53.5% (for the agitation-based appeal), for message rejection, in contrast, the variance explained ranged from only 3.7% (for the fear-based appeal) through to 10.9% (for the agitation-based appeal). This finding highlights an apparent gap in the existing literature, namely that, relative to measures of message acceptance, much less is known about why and when individuals are likely to reject a message and its recommendations (Witte, 1992).

**Strengths and limitations**

The current study has highlighted the importance of pre-existing attitudes and involvement in the prediction of the effectiveness of emotional health messages and, in doing so, has highlighted the enhanced predictive ability that is afforded by combining constructs (in this instance, belief-based constructs) from different theoretical frameworks (see [5]). In identifying that such beliefs often account for the influence of gender on the effectiveness of emotional appeals, a finding which has been reported in some recent studies of road safety advertising (e.g., [26, 27]), the study has identified factors that may be more amenable to advertising countermeasures [5]. For instance, thorough pre-testing may reveal key differences in the salient beliefs underpinning the pre-existing attitudes of males and females which could help to explain the gender effects evidenced previously in the literature. By identifying these key belief-based differences, an advertising practitioner may more effectively align advertising messages to target the needs of particular individuals (or groups of individuals) such as males as high risk road users (see [5]). The predictive capabilities of the pre-existing beliefs examined were also tested in relation to a number of different emotional appeals including positive emotional appeals. This evidence suggests that, irrespective of the type of emotional appeal, its effectiveness, particularly in relation to whether an individual is likely to accept its recommendations, can largely be predicted by the beliefs that an individual already holds about the particular behaviour (e.g., speeding) and the broader issue (i.e., road safety). Finally, the study included a behavioural measure of speeding in order to examine the influence of both message acceptance and message rejection on behaviour. In contrast, few other persuasion studies have incorporated one or any combination of measures of message rejection, follow-up measures generally, or follow-up measures of behaviour more specifically [38, 10]. In incorporating all of these measures, the current study has provided important insight into the persuasive effects of emotional appeals over time.

There are also some limitations that need to be acknowledged. First, the effects of the unrealistic testing context and, in particular, the extent to which measures of message rejection reflect what would likely occur in a more realistic viewing context. Defined, message rejection refers to the extent that individuals would defensively avoid a particular message. In the current study, participants reported the extent that they would likely reject a message after having actually being exposed to it. In a realistic viewing environment, however, viewers presumably would not watch any or all of the advertisement; therefore, the rejection rates of messages may be much higher than a research study such as this could ever determine. Second, the study relates to the reliance upon self-reported measures of all constructs including behaviour. A final limitation relates to the sample and, in particular, the possible bias introduced due to the recruitment of the sample via the internet and via requests for staff from a road

safety organisation to take part in the study. It is possible that staff from a road safety organisation may be more amenable to road safety messages. Also, it is acknowledged that there may have been reduced access to certain demographic groups who do not frequent the internet. Although, it is important to note that recent evidence has indicated that a sample of drivers recruited via an internet survey were demographically more diverse yet produced equivalent data to a sample of drivers recruited via a more traditional survey approach of recruiting university students [39].

**Future research recommendations and directions**

Based on the current findings, future research studies would be advised to adhere to a number of important design recommendations in order to obtain a comprehensive understanding of a message's persuasive ability: first, to increase the time interval between exposure to advertising messages and the subsequent measurement of persuasion outcomes or at least, to ensure that follow-up measures are assessed in addition to immediate post-exposure measures; second, to include measures of both message acceptance and message rejection; and third, to ensure that measures of behaviour (change) are included.

The research also highlights some key issues requiring further investigation. First, the current findings suggest that individual difference characteristics based on pre-existing attitudes and perceived involvement are better predictors of acceptance than rejection which does not preclude the possibility that other individual difference characteristics not assessed may be better predictors of message rejection. Beyond individual difference characteristics, it is possible that message-related characteristics may be more predictive of subsequent rejection. Theoretical frameworks such as the EPPM [9] have posited that efficacy mediates outcomes of a fear-based appeal such that low levels of efficacy (when combined with a relevant threat) are more likely to lead to rejection. Given that the current study did not assess the effects of any message-related variables on message effectiveness, this issue is identified as a key issue for future studies examining the effectiveness of a range of emotional appeals. Such research would improve contemporary understanding of the factors predicting when a persuasive emotional message is likely to be ineffective. Second, the current findings indicated that the rejection of fear-based appeals was based upon factors other than the individual difference characteristics examined. While not empirically tested within the current study, given the focus upon individual difference characteristics, it would seem reasonable to suggest that the rejection of a fear-based message may be more contingent upon situational or message-related characteristics, a notion that should be examined in future studies.

**Conclusion**

The current study tested the extent that pre-existing beliefs an individual holds are likely to influence message effectiveness over and above the influence of demographic characteristics. The results indicated that such beliefs consistently accounted for the effects of gender and age particularly in relation to message acceptance; however, the same beliefs provided only limited insight into the likelihood that an individual will reject a message. The latter finding highlights the need for further understanding of the factors that predict message rejection, a need which is supported by the finding that both message acceptance and rejection contribute to the prediction of subsequent behaviour.

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## Appendix

Table 1
Participants and emotional appeal types within the current study

| Emotional appeal type | | N | Gender Male/Female | Age (years) M (SD) |
|---|---|---|---|---|
| Negative emotional appeals | Fear-based | 143 | 44/99 | 31 (11) [a] |
| | Agitation-based | 145 | 56/88[a] | 33 (12) |
| Positive emotional appeals | Pride-based | 126 | 40/86 | 31 (12) |
| | Humour-based | 137 | 53/83 [a] | 30 (10) [a] |

[a] One participant did not specify.

Table 2
Means, standard deviations, bivariate correlations and (alpha coefficients) based on the overall sample

| Variable | M | SD | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| 1. Age (years) | 31.25 | 11.52 | - | | | | | |
| 2. Gender | 1.65 | 0.48 | -.17*** | - | | | | |
| 3. Pre-existing attitudes | 5.97 | 1.10 | .05 | .34*** | (.91) | | | |
| 4. Perceived involvement | 6.09 | 1.15 | .10* | .09* | .23*** | (.92) | | |
| 5. Message acceptance | 5.84 | 1.25 | -.02 | .32*** | .63*** | .30*** | (.85) | |
| 6. Message rejection | 3.44 | 1.47 | -.01 | -.08 | -.23*** | -.18*** | -.17*** | (.84) |

Note. Mean scores are based on 7-point scales (1 to 7). Higher attitude scores indicate less accepting views of speeding. Higher message acceptance scores indicate stronger intention not to speed. Higher message rejection scores indicate stronger intention to avoid and/or deny the message.
***$p$<.001, *$p$<.05.

Table 3

*Hierarchical regression analysis predicting message acceptance for the fear-based appeal*

| Step and variable | B | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Step 1 | | | | |
| Age | -.02 | -.13 | .20*** | .20*** |
| Gender | 1.18 | .41*** | | |
| Step 2 | | | | |
| Age | -.02 | -.16* | .42*** | .22*** |
| Gender | .72 | .26** | | |
| Pre-existing attitudes | .49 | .42*** | | |
| Perceived involvement | .19 | .18** | | |

*** $p< .001$, ** $p< .01$, * $p< .05$

Table 4

*Hierarchical regression analysis predicting message acceptance for the agitation-based appeal*

| Step and variable | B | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Step 1 | | | | |
| Age | .02 | .19* | .14*** | .14*** |
| Gender | .93 | .37*** | | |
| Step 2 | | | | |
| Age | <.01 | .02 | .54*** | .40*** |
| Gender | .31 | .12 | | |
| Pre-existing attitudes | .70 | .65*** | | |
| Perceived involvement | .11 | .09 | | |

*** $p< .001$, * $p< .05$

Table 5

*Hierarchical regression analysis predicting message acceptance for the pride-based appeal*

| Step and variable | B | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Step 1 | | | | |
| Age | -.04 | -.04 | .05* | .05 |
| Gender | .60 | .22* | | |
| Step 2 | | | | |
| Age | <-.01 | -.09 | .36*** | .31*** |
| Gender | .11 | .04 | | |
| Pre-existing attitudes | .63 | .51*** | | |
| Perceived involvement | .18 | .17* | | |

*** $p< .001$, * $p< .05$

Table 6

*Hierarchical regression analysis predicting message acceptance for the humour-based appeal*

| Step and variable | B | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Step 1 | | | | |
| Age | .02 | .15 | .12*** | .12*** |
| Gender | .82 | .32*** | | |
| Step 2 | | | | |
| Age | <.01 | .07 | .50*** | .38*** |
| Gender | .06 | .02 | | |
| Pre-existing attitudes | .71 | .65*** | | |
| Perceived involvement | .17 | .14* | | |

*** $p< .001$, * $p< .05$

Table 7

*Hierarchical regression analysis predicting message rejection for the fear-based appeal*

| Step and variable | B | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Step 1 | | | | |
| Age | .02 | .20 | <.01 | <.01 |
| Gender | -.22 | -.07 | | |

| | | | | |
|---|---|---|---|---|
| Step 2 | | | | |
| Age | <.01 | .02 | .04 | .03 |
| Gender | -.04 | -.01 | | |
| Pre-existing attitudes | -.19 | -.14 | | |
| Perceived involvement | -.12 | -.10 | | |

*** $p$< .001, * $p$< .05

Table 8
*Hierarchical regression analysis predicting message rejection for the agitation-based appeal*

| Step and variable | B | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Step 1 | | | | |
| Age | <-.01 | -.11 | .04 | .04 |
| Gender | .51 | -.19* | | |
| Step 2 | | | | |
| Age | <-.01 | -.03 | .11** | .07** |
| Gender | -.23 | -.09 | | |
| Pre-existing attitudes | .26 | -.23* | | |
| Perceived involvement | -.16 | -.13 | | |

** $p$< .01, * $p$< .05

Table 9
*Hierarchical regression analysis predicting message rejection for the pride-based appeal*

| Step and variable | B | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Step 1 | | | | |
| Age | <-.01 | -.02 | .01 | .01 |
| Gender | -.32 | -.11 | | |
| Step 2 | | | | |
| Age | <.01 | <.01 | .10** | .09** |
| Gender | -.06 | -.02 | | |
| Pre-existing attitudes | .34 | -.25** | | |
| Perceived involvement | -.15 | -.13 | | |

** $p$< .01, * $p$< .05

Table 10
*Hierarchical regression analysis predicting message rejection for the humour-based appeal*

| Step and variable | B | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Step 1 | | | | |
| Age | <.01 | .02 | <.01 | <.01 |
| Gender | .11 | .03 | | |
| Step 2 | | | | |
| Age | .01 | .08 | .10* | .09** |
| Gender | .44 | .13 | | |
| Pre-existing attitudes | .28 | -.20* | | |
| Perceived involvement | -.35 | -.23* | | |

** $p$< .01, * $p$< .05

Table 11
Means, standard deviations, bivariate correlations and (alpha coefficients) based on the overall sample

| Variable | M | SD | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1. Message acceptance | 5.84 | 1.25 | (.85) | | |
| 2. Message rejection | 3.44 | 1.47 | -.17*** | (.84) | |
| 3. Self-reported speeding behaviour | 2.38 | 0.97 | -.55*** | .27*** | (.85) |

Note. Mean scores are based on 7-point scales (1 to 7). Higher message acceptance scores indicate stronger intention not to speed. Higher message rejection scores indicate stronger intention to avoid and/or deny the message. Higher speeding behaviour scores indicate more engagement in speeding behaviour.
***$p$<.001

Table 12
*Hierarchical regression analysis predicting speeding behaviour from message acceptance and message rejection*

| Step and variable | B | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Step 1 | | | | |
| Message acceptance | -.44 | -.55*** | .30*** | .30*** |
| Step 2 | | | | |
| Message acceptance | -.42 | -.52*** | .34*** | .03** |
| Message rejection | .13 | .19** | | |

*** $p < .001$, ** $p < .01$