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# **DOCTOR OF PHILOSOPHY**

## **AN EMPIRICAL EXAMINATION OF EMOTIONAL AND COGNITIVE RESPONSES TO THREAT APPEALS**

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2015

Aston University

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THREAT APPEALS

Laura M. Chamberlain, 2015, Doctor of Philosophy

**THESIS SUMMARY**

Advertising and other forms of communications are often used by government bodies, non-government organisations, and other institutions to try to influence the population to either a) reduce some form of harmful behaviour (e.g. smoking, drunk-driving) or b) increase some more healthy behaviour (e.g. eating healthily). It is common for these messages to be predicated on the chances of some negative event occurring if the individual does not either a) stop the harmful behaviour, or b) start / increase the healthy behaviour. This design of communication is referred to by many names in the relevant literature, but for the purposes of this thesis, will be termed a 'threat appeal'. Despite their widespread use in the public sphere, and concerted academic interest since the 1950s, the effectiveness of threat appeals in delivering their objective remains unclear in many ways. In a detailed, chronological and thematic examination of the literature, two assumptions are uncovered that have either been upheld despite little evidence to support them, or received limited attention at all, in the literature. Specifically, a) that threat appeal characteristics can be conflated with their intended responses, and b) that a threat appeal always and necessarily evokes a fear response in the subject. A detailed examination of these assumptions underpins this thesis. The intention is to take as a point of departure the equivocality of empirical results, and deliver a novel approach with the objective of reducing the confusion that is evident in existing work. More specifically, the present thesis frames cognitive and emotional responses to threat appeals as part of a decision about future behaviour.

To further develop theory, a conceptual framework is presented that outlines the role of anticipated and anticipatory emotions, alongside subjective probabilities, elaboration and immediate visceral emotions, resultant from manipulation of the intrinsic message characteristics of a threat appeal (namely, message direction, message frame and graphic image). In doing so, the spectrum of relevant literature is surveyed, and used to develop a theoretical model which serves to integrate key strands of theory into a coherent model. In particular, the emotional and cognitive responses to the threat appeal manipulations are hypothesised to influence behaviour intentions and expectations pertaining to future behaviour.

Using data from a randomised experiment with a sample of 681 participants, the conceptual model was tested using analysis of covariance. The results for the conceptual framework were encouraging overall, and also with regard to the individual hypotheses. In particular, empirical results showed clearly that emotional responses to the intrinsic message characteristics are not restricted to fear, and that different responses to threat appeals were clearly attributed to specific intrinsic message characteristics. In addition, the inclusion of anticipated emotions alongside cognitive appraisals in the framework generated interesting results. Specifically, immediate emotions did not influence key response variables related to future behaviour, in support of questioning the assumption of the prominent role of fear in the response process that is so prevalent in existing literature. The findings, theoretical and practical implications, limitations and directions for future research are discussed.

**KEYWORDS**

Advertising, Social Marketing, Threat Appeals, Fear, Consumer Psychology, Decision Making

## For Gemma Silk

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# Chapter 1 - Introduction

The general public are regularly exposed to advertising campaigns that encourage the adoption of behaviours that will benefit their health or well-being (e.g. eating more vegetables, wearing a seatbelt whilst driving or driving within the speed limit) or to discourage risky or unhealthy behaviours (e.g. stopping smoking, stopping binge drinking or advising against breaking the speed limit). The issues of health and well-being have become an important agenda in many countries, including the UK. The publication of the HM Government Department of Health (2004) white paper "Choosing Health" formed the keystone of government policy for communicating with the public regarding health and lifestyle issues (e.g. stopping smoking, eating more healthy food or not using a mobile phone when driving). Indeed "Choosing Health" (Department of Health, 2004) was positioned as the "start, not the end of a journey" (Department of Health, 2004, p7). The white paper identifies means by which government agencies can provide more of the information the public need to make healthy decisions and "aims to inform and encourage people as individuals, and to help shape the commercial and cultural environment we live in so that it is easier to choose a healthy lifestyle" (Department of Health, 2004, p4).

The integral influence of advertising messages are acknowledged in the latter white paper, both in terms of the influence of the advertising of products that are linked with risky behaviours (e.g. tobacco) as well as of campaigns that encourage individuals to make more healthy decisions (e.g. stop smoking). Indeed, guidelines for how to utilise a wide variety of marketing and advertising techniques to communicate with the public to encourage better decision making (e.g. to give up smoking) are clearly set out by the Health Development Agency (2004). The guidelines include a range of activities such as, community based interventions, mass media campaigns and the promotion of solutions (e.g. condom use, opposed to informing people of what not to do). In the academic literature, the activities and campaigns intended to dissuade individuals from partaking in risky behaviours, or to encourage individuals to adopt behaviours that are beneficial to health or well-being are studied particularly in the social marketing domain, which attracts researchers from a number of disciplines (e.g. marketing, consumer behaviour and psychology, to name a few). Moving forward 11 years from the Department of Health (2004) white paper, it can be seen that the journey of encouraging the public to make decisions that enhance their health or well-being is ongoing. Indeed, according to government information the UK National Health Service (NHS) has planned a wide variety of marketing campaigns for 2015 which either have been, or will be, implemented over the course of the year. These campaigns are

targeted at issues such as reducing alcohol intake, obesity awareness, issues associated with ovarian cancer, stopping smoking, the importance of nutrition and hydration, issues associated with bowel cancer, allergies, sun awareness, mental health awareness and stress (NHS, 2015).

The variety of campaigns identified above, utilise numerous methods to communicate with the public (for example, community interventions, warnings on cigarette packaging, or information leaflets). The academic field of social marketing also reflects this breadth and tackles whether generic marketing principles can be used to deal with health, welfare and social issues. Indeed, scholars in social marketing explore a wide variety of issues from marine conservation (Hayden and Dills, 2015), to understanding women's pre-conception health goals (Lynch et al, 2014), to student alcohol consumption behaviours (Thompson et al, 2013), and utilise a wide variety of research approaches and techniques.

Social marketing advertising campaigns require significant financial investments by government, charitable bodies and / or third sector organisations. For example, the 2007 THINK 'moment of doubt' campaign which focussed on asking men to think carefully about what they drink before they drive, cost £3 million. The 2009 THINK 'kill your speed or live with it' campaign, which focussed on the guilt and regret that will stay with a driver who kills someone while speeding, cost £3.2 million (Angle et al, 2009). The focus of the 2015 THINK campaign is the issue of drug driving based on the change in legislation on 2<sup>nd</sup> March 2015 to make it easier for police to catch and convict individuals driving under the influence of drugs (THINK, 2015).

With this in mind, it is vital for those providing funding to ascertain the success of such campaigns. It is thus unsurprising to discover that THINK conducts a wide variety of research ranging from annual reports about driver and non-driver perceptions of pertinent issues, to pre- and post-campaign evaluations. According to post-campaign research by Angle et al (2008, p5) the 2007 'moment of doubt' campaign was successful because "A third (36%) of respondents stated that the advert stuck in their mind, which is a core measure of its cut through. This is in line with January 2008 (35%) which was an increase from September 2007 (28%). Another measure of cut through is how much the ad is enjoyed. This had slipped back between September 2007 (21%) and January 2008 (17%), but recovered to 22% in July 2008" (THINK, 2015). Similarly, the THINK annual survey from 2009 showed that dropping litter was considered more unacceptable (82% of people) than driving at 40mph on a 30mph road (71%) and the department for transport report that "A combination of engineering and enforcement measures alongside the education campaigns

have seen some improvements in speeding behaviours. For example, in 1999 67% of cars exceeded the speed limit on 30mph roads; by 2009 this had reduced to 48%” (THINK, 2015). THINK attribute the decline in speeding behaviour, at least in part, to the influence of their campaigns and take this evidence to mean that the campaigns are effective in achieving their objective. Considering the sheer number of advertising campaigns the public are exposed to, this would appear to be an impressive result, and it is even more so when one considers that research has shown that health-promoting information can create defensive responses in individuals, where they are motivated to dismiss or disregard the message (van ‘t Riet and Ruiter, 2013).

Research that focusses on the use of threats or warnings to encourage individuals to adopt healthy or positive behaviours, or to deter from engaging in risky or unhealthy behaviours is extensive (e.g. Johnston et al 2015; Rhodes, 2015; Haljelskvik and Rise, 2015; Nabi, 2015; Faseur et al, 2015). Whilst there are many different means by which to communicate messages to the general public concerning behaviour change to benefit health and well-being (as evidenced above), the use of threats as a communication device have been widely used in practise. However, academic research examining the effectiveness of the use of threats as a means to persuade individuals to change behaviour has been varied and remains “a matter of ongoing debate and investigation” (Morales et al, 2012, p383). This thesis focuses specifically on the use of *threat appeals* in advertising, which is part of a smaller domain within the social marketing field; social advertising. As will be discussed in section 1.1, there are numerous terms used to name the use of threats in advertising, such as “threat appeals” (e.g. Carey et al, 2013) “fear appeals” (e.g. Ruiter et al, 2014) and “fear arousal” (e.g. La Tour and Tanner, 2003). However, this thesis presents a justification for why threat appeal is the most appropriate term, enabling clarity and consistency in future work. Of course, throughout the thesis, original authors’ terminology will be acknowledged, however the use of threat to communicate the negative consequences of the health, welfare or social issue that is the focus of the advertisement is referred to as a threat appeal, and is the specific focus of the present study.

For the last six decades, scholars from a wide variety of disciplines, including Information systems (e.g. Johnson et al, 2015), health psychology (e.g. Peters et al (2012), marketing (e.g. Morales et al, 2012), communication (e.g. O’Keefe, 2003), transportation (e.g. Lewis et al, 2007), and psychology (e.g. Carey et al, 2013), have examined individuals’ responses to threat appeals. However, despite the widespread use of, and investment in, social advertising campaigns such as those referred to above, and their apparent positive reception by policy makers and practitioners, it is clear that academic research has been

more equivocal in its support. Indeed, the “effectiveness [of threat appeals] as a form of communication has been questioned” by scholars (Carey et al, 2013, p 1). Such questioning is partly attributed to the notably inconsistent findings in existing empirical research (examined in more detail in section 1.1 and Chapter 2). In addition, there are practical grounds for controversy in the field. For example, Guttman and Salmon (2004) raise concerns about the possibility of unintended adverse effects, in terms of a possible negative influence on individuals’ psychological well-being or cultural beliefs. Specifically Guttman and Salmon (2004) raise the issue of the use of graphic images of injury, which while designed to capture the attention of the audience, that may, in fact, amplify perceptions of risk. Such a technique “may fail to meet stipulations for truthfulness and sincerity, as well as correctness and accuracy” (Guttman and Salmon, 2004, p 539). Hastings et al (2004) also raise concerns about the potential for heightened chronic anxiety in individuals who engage in the particular behaviour being warned against, and highlight the areas for potential “collateral damage” (Hastings et al, 2004, p 972) caused by such campaigns. In addition, Hastings et al (2004) emphasise that research has demonstrated that individuals with high self-efficacy (an individual’s belief in their own ability to complete tasks) are more persuaded by this type of message, because such individuals are better psychologically and socially equipped to act upon the message. However, individuals who have low self-efficacy may actually feel worse as a result of exposure to such messages, generating anger or defensive feelings and perhaps increasing the individual’s risk and vulnerability (Hastings et al, 2004).

Based on their concerns, Hastings et al (2004) propose that the use of humour or positive reinforcement is a more ethically sound approach than the use of threat appeals to delivering social advertising information. Equally, O’Neill and Nicholson-Cole (2009) acknowledge that while the use of threats or warnings may serve to gain the attention of an audience, such an approach does not lead to genuine audience engagement with issues such as climate change. Given the complex nature of the issues addressed by social marketers –for example, persuading people to drink less alcohol (Szmigin et al, 2009), or reduce smoking (Hassan et al, 2008) – the type of appeal used is very important in terms of credibility of message, capturing attention, ensuring information processing and, perhaps most importantly, increasing the likelihood of behaviour change. Indeed, when considered in conjunction with the questioning of the effectiveness of threat appeals (e.g. Carey et al, 2013) these concerns highlight the need for further examination of consumer responses to threat appeals to ascertain whether they are effective and create the intended response.

As evidenced above, threat appeals are widely used to communicate with the public. Certainly there are many examples of other methods of communication (e.g. the positive reinforcement of the NHS 'change 4 life' campaign), however, the prevalence of the use of threat appeals suggests that it is assumed (which is not proven in the academic literature) to be the effective and appropriate method of communication. Indeed, as Ruiters et al (2014, p63) state "members of the general population and health promoters who design these messages tend to believe in the persuasive power of fear arousal". This is evidenced by the THINK campaigns and NHS initiatives described above, as well as the numerous threat appeal campaigns implemented (e.g. The 2010 Department of Children, Schools and Families campaign to encourage parents to talk to children about underage drinking; The 2014 SmokeFree campaign showing a decaying roll-up cigarette with the claim that smoking rots the body from within; The DoE 2013 speeding campaign that depicts an entire class of primary children been killed by a car that rolls off the road because it was speeding. The intended message is that the class of children represents the number of children who have died as a direct result of speeding since 2000.) In light of the widespread use of threat appeals, and the aforementioned questioning of the effectiveness of threat appeals (e.g. Carey et al, 2013), it is imperative that research is conducted to establish a more detailed understanding of how individuals respond to threats in advertising. Indeed, the equivocal findings require examination and further research to establish whether or not threat appeals are effective. Firstly, establishing the effectiveness of threat appeals will ensure that practitioners are not investing poorly, but also that the public are not being unnecessarily exposed to threat appeals.

The consequences of the risky behaviours that are the focus of threat appeals research (e.g. use of graphic pictures to persuade people to stop smoking (Gallopel-Morvan et al, 2009) or warning against distracted driving (Lennon et al, 2010) are significant and ultimately, potentially fatal. As such, research that examines threat appeals and establishes whether they are indeed, effective or not, has significant consequences. It is acknowledged though, that both the practical and ethical concerns and differences between research results, make this a difficult academic area to engage with. However this does not mean the issue should be shied away from. Quite to the contrary, these are the exact reasons why there is a pressing need for research in the area, alongside the fact that these methods are employed by government, charities and third sector organisations and comprise a significant financial investment from those organisations. The purpose of this thesis is to untangle a number of issues that have developed over time and move thinking forward with a new approach, albeit one that is grounded in the extant literature.

It is widely acknowledged that the intention behind the use of threat appeals; to ultimately discourage unhealthy or risky behaviour, or conversely, encourage healthy, or beneficial behaviour is positive (e.g. Department of Health, 2004). As evidenced above, the financial investments in such campaigns are significant. Moreover, these campaigns often use public financial resources as a funding source (e.g. NHS and THINK). As such, it is imperative to understand responses to such campaigns, to ensure public finances are well utilised. Indeed, practitioners widely use threat appeals, and present research findings to evidence their effectiveness (e.g. THINK, 2015). However, the concept of effectiveness is not upheld in the academic literature. Indeed there is a distinct dichotomy in approach between practitioners who employ threat appeals, and academics who examine their effectiveness. This will be discussed in more detail in section 1.1. Nevertheless, the academic empirical findings are equivocal, as is evidenced in chapter 2. The academic domain is fragmented, and, as a result some researchers (e.g. Hastings et al 2004) call for the discontinued use of threat appeals. However, whilst there is equivocal empirical evidence regarding the effectiveness of threat appeals, this thesis examines assumptions that have been upheld within the literature and re-conceptualises consumer responses to threat appeals, in order to develop a platform for future research.

This thesis examines the theoretical development of academic understanding regarding individuals' responses to threat appeals. This is scrutinised in detail, using a chronological and thematic approach, in chapter 2. Nevertheless, building on empirical research and theoretical advancements, this thesis employs a different approach, to that adopted by most studies, which comprise the main body of research in this area. The intention is to depart from the equivocality of empirical results and take a fresh approach. Namely, to frame cognitive and emotional responses to threat appeals as part of a decision. More precisely, given that the exposure to a threat appeal in this context (i.e. the intended reduction of some negative behaviour) usually occurs at a different time to the behaviour the advertisement is designed to warn against, the response process generally involves a decision about *future* behaviour. As such, the present study specifically focuses on this decision process, allowing for a more detailed examination of the cognitions and emotions generated as a result of exposure to a threat advertisement.

## **1.1 Domain of research**

According to prior literature, threat appeals are widely defined according to four elements. First, a threat is presented using vivid or personalised language and pictures (Witte, 1992) and depicts "a personally relevant and significant threat" (Witte, 1994, p114). Second,

emphasis is placed upon the consequences of that threat. A threat appeal “is a means of persuasion that threatens the audience with a negative physical, psychological, or social consequence that is likely to occur if they engage in a particular behaviour” (Algie and Rossiter, 2010, p264-265). It is important to note that the negative consequence can be presented as something that can be avoided if individuals do not engage in the specified behaviour. Third is an assumption (which as will be discussed throughout the thesis is problematic) that the audience will experience fear (Witte, 1994), as the messages are “designed to scare people” (Witte, 1992, p329). Fourth, a recommendation regarding how to reduce or eliminate the consequences of the threat is outlined. Threat appeals are used to “stimulate anxiety in an audience with the expectation that the audience will attempt to reduce this anxiety by adopting, continuing, discontinuing, or avoiding a specified course of thought or action” (Spence and Moinpour, 1972, p28).

### **1.1.1 Identification of gaps in the literature**

The ability of scholars to offer reliable insights into the most effective use of threat appeals is particularly hampered by a number of specific gaps and areas of lack of clarity in the literature. These range from questioning the science behind the use of graphic warnings on cigarette packaging (Ruiter et al, 2014), to concerns regarding the effectiveness of using distressing images in advertisements (Brown and West, 2015), to the interactions between concepts such as perceived threat and efficacy (Peters et al, 2013). Indeed, as Leshner et al (2011, p77) state “while extensive research has explored the impact of fear based health messages on persuasion ... there are still significant gaps in understanding how individuals process such messages.” As previously identified these gaps in understanding, alongside the questioning by scholars and inconsistent findings in existing empirical research require further examination.

Ruiter et al (2014) summarised the current state of research in the threat appeals field and identified key problems with current knowledge based on the existing empirical evidence. Importantly, Ruiter et al (2014) review what they consider to be the two dominant theories in the field, protection motivation theory and the extended parallel process model (which will be discussed in section 2.2 of this thesis) and the findings of six meta-analytic studies. Ruiter et al (2014) concluded from the review that the information provided by an advertisement regarding how to cope with the identified threat is more important than the threat itself, or the perception of risk from that threat. This finding highlights two issues. First, results show that severity of threat is often the most prominent component of a threat appeal, but is conversely seemingly the least persuasive. Second, based on their review of

the evidence Ruiter et al (2014, p63) conclude (emphasis added) “that the choice of *fear appeals* is often a poor choice because of the limited and even sometimes counterproductive effects of *fear arousal* and the extensive knowledge base available on more effective methods of behaviour change”.

Whilst research has shown mixed results and inconclusive findings, and researchers (e.g. Hastings et al, 2004) call for the use of alternative message strategies in place of threat appeals, this is not a justification to move away from research into the effects of threat appeals. Given the position taken in this thesis, as described in the introduction above, there is a pressing need for research in the area *because* results are mixed and there are “gaps” (Leshner et al, 2011, p77) in understanding. Also given that threat appeals are employed by government, charities and third sector organisations and require significant financial investment, as evidenced in the previous section, the public are regularly exposed to threat appeals. Therefore, whilst suggesting other methods of communication may be more effective (Ruiter et al, 2014) this should not be interpreted as a signal to cease attempts to understand the effects of threat appeals.

To elaborate, a significant gap in understanding is the role of emotional responses to threat appeals. Indeed, a noteworthy assumption that underpins the theoretical foundations of the entire six decades of research is that threat appeals contain a threat that generates an instinctive fear response. As is demonstrated in chapter 2, little research has focused on emotions as part of responses to threat appeals, and the assumption that fear is the emotion generated has never been questioned. A re-examination of the fundamental cognitive and emotional response variables and inclusion of a wider consideration of emotional responses will reduce the fragmentation between approaches, draw together prior research and reduce the equivocality in the field. Chapter 2 details the theories and models developed to explain consumer responses to threat appeals and identifies the assumption that has permeated through the literature; that fear is the emotional response to a threat appeal. This assumption is examined in more detail in Chapter 3. The need for research regarding emotional responses to threat appeals has been proposed in different ways. For example, in a meta-analysis Carey et al (2013, p6) specifically identify that the findings of their study “suggest a disconnect between emotion (i.e. fear) and behaviour (i.e. driving) – a disconnect that is reflected in the inconsistent findings in the threat appeal driving literature.” In fact, over a quarter of a century ago, Rotfeld (1988, p24) argued that confusion has been caused by a “failure to distinguish between the threats that aim to engender a fear response, and the actual fear arousal subjects might experience.” However, it is clear that this lack of distinction between the threats contained in stimulus

variables and the emotional responses they cause, continues throughout more modern literature, as seen when researchers commonly consider the 'level of fear' or 'level of fear appeal' depicted in stimuli (e.g. Keller and Block, 1996; LaTour et al 1996; Steenkamp et al, 1996; Ruiter et al, 2003; Janssens and De Pelsmacker, 2007; Leshner et al, 2010; Terblanche-Smit and Terblanche, 2010). More specifically, such an approach confounds the *inherent features* of a stimulus (threats) with the *potential emotional response* (fear) generated by that stimulus, and as such makes the tacit assumption that all people will respond to a threat appeal with the emotion of fear. Within this broad assumption are in turn embedded a large number of further assumptions, including that a threat will be perceived by all subjects as such, and that this can be encoded into an advertisement as a level of fear, when in fact fear is the theoretically desired response, not an objective characteristic of the stimulus that can somehow be designed into it.

Distinguishing between characteristics (such as threats) contained *within* advertising stimuli, and individual emotional *responses* to those advertising stimuli, clarifies the difference between those things which can be directly and consistently manipulated by researchers / practitioners (i.e. stimulus characteristics), and the emotional responses experienced by subjects / consumers resulting from exposure to the stimulus. While the stimulus is *intended* to influence some form of response (e.g. fear), it cannot be guaranteed that all consumers will respond in the same way to the same stimulus on every occasion. As previously mentioned, Rotfeld (1988) noted the confusion generated in the literature and attributed this partly due to the interchangeable terminology used to describe stimuli, such as "threat appeals" (e.g. Carey et al, 2013) "fear appeals" (e.g. Ruiter et al, 2014) and "fear arousal" (e.g. La Tour and Tanner, 2003). In echo of this sentiment, Donovan and Henley (1997, p57) note that such terms are "used rather loosely and interchangeably" in existing literature on social advertising. The position taken in this research study is that a threat appeal consists of intrinsic message characteristics that are not to be conflated with response variables, such as fear.

Furthermore, LaTour and Rotfeld (1997) identified that in many cases, stimuli used in research studies on social advertising have been categorised according to 'levels of fear', with the categorisation often based upon different degrees of harm portrayed or types of threats. The 'level' has thus referred to the degree of potential risk or consumer harm portrayed in the stimulus, with the assumption that all respondents would perceive the stimulus in the same way, and respond with a specified 'level' of fear. Tao and Bucy (2007, p398) refer to this idea as an "effect-labelled media attribute" where message properties are assumed to vary reliably along psychological dimensions, for example fear. Thus, stimuli

are classified into groups according to media attributes (such as fear appeals e.g. Haljelskvik and Rise, 2015; or hope appeals e.g. Chadwick, 2015), but the groupings are identified by the emotions which are evoked in subjects by those attributes, for example a 'high fear appeal'. This is a conceptual issue that translates into a methodological issue. In particular, using levels of fear assumes that all individuals perceive the same level to be in the advertisement. This conceptual issue therefore causes a problem when comparing results of studies across the field. Chapters 2 and 3 identify the many cases where research studies present differing or even conflicting findings. One possible cause of this are the varied manipulations of 'levels of fear' in the advertisements that mean the independent variables are not comparable.

### **1.1.2 Examining threat appeals**

While it can be seen above that scholars have repeatedly identified the confound between stimuli characteristics and their intended effects, for six decades, even recent research investigating the effects of threat appeals adopts such an approach. For example, Mukherjee and Dube (2012) conducted a 2x2 experimental design which had the independent variables of 'fear tension arousal' at either moderate or high levels and humour which was either absent or present. Further, Leshner et al (2011) investigate the interaction between 'high and low fear appeals' and 'high and low disgust images'. Other examples include Morales et al (2012), who used a neutral appeal, a fear appeal and a fear and disgust appeal, and Lee and Shin (2011) who used fear appeals and humour appeals. These studies assume that stimuli themselves can vary in terms of some level of fear, when fear is clearly an individual emotional response to some stimulus. As discussed above, the idea that a particular emotional response to a stimulus can be considered as an inherent feature that a stimulus can have – such as an inherent 'level of fear' – can cause confusion (Rotfeld, 1988, Leshner et al, 2011) and is a gap in the understanding of responses to threat appeals.

Tao and Bucy (2007) discuss the conflation of media attributes and psychological states in communication research, particularly with reference to the stimuli that are constructed or used for experimental studies. Tao and Bucy (2007) state that effect-labelled media attributes (e.g. a so-called 'fear appeal') assume the properties of a message or advertisement reliably vary according to a specific psychological dimension. Messages are defined according to the experimental participants' response to the psychological dimension and is named accordingly (e.g. fear appeal). This is problematic as the message characteristics that cause the response and the response itself are combined. Indeed,

O’Keefe (2003, p268) states “when message variables are defined in terms of effects rather than intrinsic properties, researchers forfeit the ability to speak to questions of the relationship between message properties and persuasive outcomes” Tao and Bucy (2007, p404) recommend; “media stimuli, serving as an independent variable, should be defined in terms of media attributes or intrinsic message properties rather than psychological states”. Research that confounds media attributes with their effects exemplifies the confusion between the independent variables in the stimuli that can be manipulated and the emotional reactions to that manipulation, which should in fact be considered mediating or dependent variables.

Drawing from the above, evidence shows that distinctions between stimuli and emotional responses have not been consistently made in prior research (e.g. Janssens and De Pelsmacker, 2007; Leshner et al, 2010; Terblanche-Smit and Terblanche, 2010). This is echoed by O’Keefe (2003, p251) who indicates that variables which are defined in terms of their effects on psychological states, such as the aforementioned variations in ‘fear appeals’ that are defined on the basis of aroused fear, “impede progress in understanding persuasion processes and effects and hence should be avoided in favour of definitions expressed in terms of intrinsic message features.” Similarly, Kay (1972, p16) observed that contradictions have occurred in research concerning ‘fear appeals’ due to a failure to explicitly define the nature of the specific factor, or intrinsic message features to be measured. This has meant that researchers “whose findings were at variance with each other appeared to believe they were all measuring the same thing, but in likelihood were not.”

Despite Kay’s (1972) criticism, when looking across the subsequent four decades or more of research that have explored the use of threats in stimuli, from advertising to consumer behaviour, social marketing and psychology, there remains little consistency across and within disciplines in terms of the variables manipulated (or claimed to be manipulated) in the stimuli. For example, it has already been shown that a number of researchers have claimed to look at the ‘level of fear’ encoded in stimuli, usually comparing low versus high (Keller, 1999; LaTour et al 1996; Janssens and De Pelsmacker, 2007). Alternatively ‘level of fear’ has been combined with other variables, a brief list of which would include humour and ‘level of involvement’ (Cochrane and Quester, 2005); direction of message to self or others (Block, 2002), imagery or objective processing (Keller and Block 1996); presence or absence of disgust (Leshner et al, 2010); and action framing of loss or gain (Ruiter et al, 2003). However, rather than a clear cumulative body of knowledge developing over many

years of research, the overall picture painted by such research is rather one of confusion, and lack of coherence.

While there remains much inconsistency in general across research regarding threats appeals, Rotfeld's (1988) work does appear to have heralded at least something of a shift in thinking, with some recent researchers quite clearly making efforts to distinguish between the threat in a stimuli and the response of the consumer. In such cases, the stimulus variables are referred to as 'level of threat' (Wauters and Brengmen, 2013; Jones and Owen, 2006; Lewis et al, 2007), usually comparing high v low (Cauberghe et al, 2009; Chabat et al, 1995; Vincent and Dubinsky, 2005; Schmitt and Blass, 2009). Again, 'level of threat' has been combined with other variables such as coping (Eppright et al, 2002); presence of 'young' or 'old' models (Jones and Owens, 2006); or presence of high efficacy or no efficacy (Muthusamy et al 2009).

However, while a move towards the use of 'threat' rather than 'fear' as a stimulus variable is positive, a key issue with the use of both 'fear' and 'threat' in this regard is that both variables, particularly when presented as a 'level' of fear or threat, can be construed as "effect-labelled media attributes" (Tao and Bucy 2007, p398), and are thus both somewhat open to individuals' perception. Specifically, in such research, the 'level of threat' variable generally refers to the degree of potential risk or consumer harm portrayed in the stimulus, with the assumption that all respondents would perceive the stimulus in the same way, and respond with a specified level of fear (e.g Panic et al, 2014). Yet, there is no guarantee that every individual will perceive the same stimulus in the same way. For example, what may be highly threatening to one individual may not be threatening at all to another, and may generate a range of different emotional responses, not just fear (Donovan and Henley, 1997). As Janssens and De Pelsmacker (2007, p175) state "The same threat can evoke different levels of fear in different people, and different threats can also evoke different levels of fear." Variables that are open to interpretation by respondents do not allow for the consistency across stimulus variables which would enable researchers to move away from the problem identified by Kay (1972) – which remains evident in even contemporary research (e.g. Brown and West, 2015; Janssens and De Pelsmacker, 2007) – and to create a platform from which a consistent body of knowledge can develop regarding consumer responses to comparable variables. A move toward the use of variables could be considered as 'concrete' attributes as intrinsic message characteristics would be welcome in this regard. Concrete attributes are those that "nearly everyone ... describes ... identically" (Rossiter, 2002, p. 310), and using such variables allows for a clearer identification of the relationships between stimuli and responses, where differing individual

perceptions of the stimulus does not confound the understanding of cause and effect. Examples of concrete variables include gender of the individual portrayed in the advertisement (male or female), use of a graphic image or a non-graphic image (a discussion of graphic images is presented in Chapter 3), scenes that either do or do not include the presence of the emergency services, or the number of visual images contained in a print advertisement.

As well as a move towards the use of intrinsic message characteristics, the use of more complex models has been presented as a way to further address the need to distinguish between intrinsic message characteristics and responses (Tao and Bucy, 2007). Three principles underpin the use of such models in this context. First, independent variables are (as previously discussed) defined in terms of intrinsic message characteristics (and not their assumed effects on psychological states, for example fear). Second, psychological states (for example, emotions and cognitive responses) serve as intervening variable(s) between intrinsic message characteristics and intended responses (e.g. behavioural intention or change). Third, testing of hypotheses must necessarily include both intrinsic message characteristics and psychological states “to capture a more complete picture of media influence and increase explanatory power” (Tao and Bucy, 2007, p404). Such a model avoids the problematic conflation of two different classes of media variables (intrinsic message characteristics and psychological states) and “allows the analysis to proceed without erroneously assuming uniform responses to messages or other media stimuli” (Tao and Bucy, 2007, p 404).

While much research continues to conflate intrinsic message characteristics with response states, a number of researchers have indeed made welcome steps toward identifying intrinsic message features for manipulation in threat-based stimuli. In an anti-smoking context, Smith and Stutts (2003) looked at the difference between short term cosmetic messages and long term health messages; Arthur and Quester (2004), and Dickinson and Holmes (2008), distinguished between physical threats and social threats; Dillard et al (2007) identified threats to health and threats to freedom as stimulus variables; while Hunt and Shehryar (2002) considered death-related and non-death-related variables. Further, a complementary research stream has begun to look at what can be called the direction of messages, or whether they are directed to the self or others (Basil et al, 2008; Block, 2005; Miller et al, 2007). The direction of the message has concrete attributes and, as with the type of message variables identified above such as cosmetic or health messages, is not open to misinterpretation by individuals. In other words, a ‘threat to health’ versus a ‘threat to freedom’ will almost certainly be perceived in a common manner by all respondents (see

Rossiter 2002). That is not to say that individuals may not avoid the message, or that the cognitive or emotional processing of the message may differ from that intended by the sender of course. Rather, the use of concrete variable attributes at least allows for a consistency across stimulus variables.

A more detailed review of stimulus variables used in prior research will be presented later in this thesis (see Chapter 3). However, a key motivator for the present study concerns the move away from the problematic use of 'fear' as a stimulus variable, and a corresponding move toward the examination of intrinsic message characteristics (such as direction of message). In particular, the move away from fear as a stimulus variable has occurred in concert with a rise in the use of the term 'threat appeal' in the literature. According to Donovan and Henley (1997, p57), rather than the use of 'fear', "the term 'threat appeal' encourages a broader study of potentially important mediating emotions and cognitive responses... [and] demands a greater focus on stimulus factors (i.e. message content and how this is communicated), and simultaneously demands a separate and sharper focus on response factors (i.e. audience emotional and cognitive reactions to the message)." The differentiation between the concepts of threat and fear has been discussed above, but it is also necessary to consider the idea of whether it is possible to conceptualize differing 'levels' of these concepts as stimuli characteristics. In fact, 'levels', by definition, are based on subjective interpretation of the subject and are therefore not intrinsic to the stimulus. In other words, different subjects will interpret the same message as being more or less of a threat for example, and this distinction helps to clarify the difference between variables that can be manipulated by researchers and practitioners (which should not be subjectively interpreted), and the emotional responses experienced by subjects resulting from exposure to the intended threatening stimuli. Of course, these are not one and the same.

### **1.1.3 Responses to threat appeals**

Having emphasised the need for greater clarity around the independent variables or "intrinsic message features" (Tao and Bucy, 2007, p398) of threat appeals, it is imperative to examine the mediating and dependent variables. In particular, in keeping with the aforementioned emphasis on the importance of separating intrinsic message characteristics from emotional responses, this study re-examines the often-neglected role of emotion. Whilst the foundations of the threat appeals field (as will be discussed in chapter 2) are based on the assumption that simply the presentation of a supposedly threatening stimulus automatically causes a consistent fear response in subjects, detailed discussion of emotional responses beyond this appears far less frequently. Indeed, with the development

of the field of psychology towards a cognitive focus in the 1970s, the consideration of the effects of this advertising technique followed accordingly, and cognitive responses such as perceptions of severity and efficacy were the focus of theoretical development (This is discussed in detail in Chapter 2). Whilst there is nothing inherently wrong with considering cognitive factors, the overwhelming focus on cognition has led to the threat – fear relationship seemingly becoming a truism, and an assumption, which has seemingly become accepted with little detailed scrutiny for many years.

That said, in more recent years, a return to focus on the importance of emotional responses to threatening messages has occurred (e.g. Morales et al, 2012; Agrawal and Duhacheck, 2010; Passyn and Sujon, 2006; de Hooge, 2007). Interestingly however, this body of research does not critically examine the threat-fear relationship assumption, but rather extends the model to include other emotions as well as fear. For example, Morales et al (2012) examine the combination of ‘fear appeals’ with or without disgust on persuasion, while Passyn and Sujon (2006) look at the influence of adding hope, challenge, guilt and regret to ‘fear appeals’, and the influence of this on behavioural intention. In the context of argument presented above, it can be seen that both these studies fall prey to conflating the message characteristics with emotional responses. Even so, the widening of consideration to a range of emotions beyond fear is beneficial because it more accurately reflects reality. In other words, it seems somewhat naïve to assume that the only possible emotion one experiences as a result of viewing a threatening advertisement is fear. As such, studies that only measure fear are somewhat restricted by design (a recent example of this is the study by Wauters and Brengman, 2013). The move to examining a range of emotional responses, for example the effects of guilt and shame in response to anti-binge drinking advertisements (Agrawal and Duhacheck, 2010), widens consideration of emotional responses to threat appeals. Of course, it could be argued that adding to the field in this way creates a new body of research that will further the confusion in exactly what are the individuals responses to threat appeals. In this sense then, the mediating role of the interplay between cognitions and emotions in response to threat appeals requires further examination, which is the focus of this thesis.

## **1.2 Research objectives and research design**

Drawing from the previous discussion, the broad objectives of this research are:

1. *To develop a theoretical model that incorporates emotional, cognitive, and conative (e.g. behavioural intention and expectation) responses to threat appeals.*

2. *To provide empirical evidence of the impact of intrinsic message characteristics of threat appeals on consumer response variables (as identified in the theoretical model from objective 1).*

In order to achieve these broad objectives, a number of more specific tasks need to be completed, which together comprise the beginnings of the overall research design:

1. *Conduct a detailed review of the literature and identify areas of conceptual and methodological equivocality.*
2. *Identify gaps in the literature that require further empirical investigation in order to develop theory explaining consumer responses to threat appeals.*
3. *Conduct rigorous data collection to explore the gaps identified and proposed theoretical developments.*

In more detail, one aim of this research is to unpick the areas of equivocality regarding cognitive, emotional and conative responses to threat appeals, in a detailed review of the extant literature (This is presented in chapters 2, 3 and 4). The literature suggests that prior research has returned confusing results that have hindered rather than helped the development of a coherent and empirically sound understanding of threat appeals and the responses to these appeals. In order to reduce confusion between scholars or empirical findings, it is first necessary to clearly identify where the confusion lies. Identification of areas of confusion reveals a number of assumptions that have been upheld in the literature which are closely examined. As mentioned above, examples of such assumptions are the conflation of message characteristics and emotional response and the assumption that upon exposure to a threat advertisement, an individual will experience fear and fear drives responses such as persuasion or behaviour change.

The present study adopts a different approach to that adopted by most studies which comprise the main body of research in this area, by framing the response process to exposure to a threat advertisement as a decision. More precisely, given that the exposure to an advertisement in this present context (i.e. the intended reduction of some negative behaviour) usually occurs at a different time to the behaviour the advertisement is designed to warn against, the response process generally involves a decision about *future* behaviour. As such, the present study specifically focuses on this decision process, allowing for a

greater examination of the cognitions and emotions generated as a result of exposure to a threat advertisement. This also enables the consideration of different types of emotion that have received recent attention in other fields, namely anticipatory and anticipated emotions (e.g. Baumgartner et al, 2008), alongside the immediate emotional responses (e.g. fear) traditionally examined in the field. In addition, the influence of cognitions and emotions on intended and expected future behaviour is examined. Changing individuals' future behaviour is arguably the fundamental objective of threat appeals and as such, is the most appropriate way to measure whether the advertisements are 'effective' or not.

The definition and manipulation of intrinsic message characteristics further allows for the identification of the precise elements of the advertisement that influence the cognitive and emotional responses in subjects, as a result of exposure to the advertisement. This is in contrast to (as previously discussed) much existing research, which has confounded message characteristics with responses. Indeed, the aim of this research is to develop a model that describes the relationship between intrinsic message characteristics and emotional and cognitive responses, and in turn the influence of those responses on intended and expected behaviour (this is presented in chapter 3). This model will then be empirically tested and the results presented (chapters 5 and 6). In order to test the hypothesised relationships in the model, a web based experiment was conducted. The full details of the research design are presented in chapter 4. Advertisements with intrinsic message characteristics, manipulated according to the hypothesised constructs were created and rigorously tested. The web experiment was pre-tested and then conducted with a sample of 681 participants.

### **1.3 Structure of the thesis**

The thesis is structured into nine chapters, including the present chapter. The present Chapter 1 is an introductory chapter which introduces the topic of research, justification of the need for research and outlines the contribution of the thesis. Research objectives are identified. Chapter 2 presents a thematic and chronological review and analysis of theory pertaining to individuals responses to threat appeals. The existing research is categorised according to the primary focus of the theories that have been developed, which are either emotional or cognitive. This review of the literature examines the theoretical frameworks utilised to examine responses to threat appeals and identifies a number of assumptions that have been upheld in the literature.

Chapter 3 reviews in depth the results of empirical research concerning intrinsic message characteristics and responses to those characteristics. The assumptions identified in Chapter 2 are further examined in Chapter 3 and shown to require empirical investigation. To this end, a new theoretical approach to re-examine consumer responses to threat appeals is developed in Chapter 4.

In Chapter 4, the field of judgement and decision making is drawn upon to assist with the creation of a framework regarding how best to understand consumer responses to threat appeals. Indeed, this effort allows for the clear acknowledgement that the response to a threat appeal message is usually not at the time of the behaviour in question. In other words an individual is usually exposed to a threat appeal at a time when they are not engaging in the behaviour in question (e.g. when exposed to a print advertisement about the negative consequences of speeding the individual is not driving at the point of exposure). As such, it is argued that the consideration of anticipatory and anticipated emotions, alongside immediate emotions and cognitions, is needed. While anticipated and anticipatory emotions have been explored before (as will be discussed in depth in Chapter 4), the incorporation of these concepts into a model of threat appeals is novel. Drawing from the theoretical and empirical reviews Chapter 4 develops and presents the theoretical framework of this present study, and formally states the hypotheses to be tested.

Chapter 5 presents the philosophical and methodological underpinnings of the empirical study employed to test the hypotheses developed in earlier chapters, and details the design of the advertising materials and the web experiment, including the measures to be used to test the constructs and hypotheses. Chapter 6 presents the descriptive analysis of the data collected, a description of the sample of participants and the exploration of the measures by means of exploratory factor analyses.

Chapter 7 presents the results of the manipulation checks and web experiments. A number of factorial Analyses of Covariance (ANCOVAs) are conducted and reported to test the hypotheses generated in Chapter 4. Chapter 8 elaborates on the main findings of the research and highlights how the results make a contribution to the research domain. Additionally, the conclusions, research contributions, and implications are presented. The limitations of the study are outlined, and following on from this, a number of recommendations for future research are presented.

## 1.4 Summary

This chapter has presented a detailed explanation and justification for the need for this research. In brief, threats are commonly used by government, charities and third sector organisations across the world, in advertisements to promote behaviour change concerning well-being and social issues. Given, the vast body of literature from many different fields and the identified confusion in this literature, it is important that research continues to investigate the effectiveness of threat appeals. In particular, it is not uncommon to find a lamentation at the beginning of articles that focus on the use of threats in advertising, regarding the confusion in the field. For example Peters et al (2012, p1) state “despite decades of research, consensus regarding the dynamics of fear appeals remains elusive.” Johnston et al (2015, p113) identify that “empirical assessments of the effectiveness of fear appeals have yielded mixed results” and Morales et al (2012, p383) suggests that “the question of exactly how fear appeals work is still a matter of ongoing debate and investigation”. The position taken in this thesis is that the confusion itself needs to be addressed in order to move the field forward. In fact, it could be argued that many researchers are guilty of acknowledging the confusion and then adding to it.

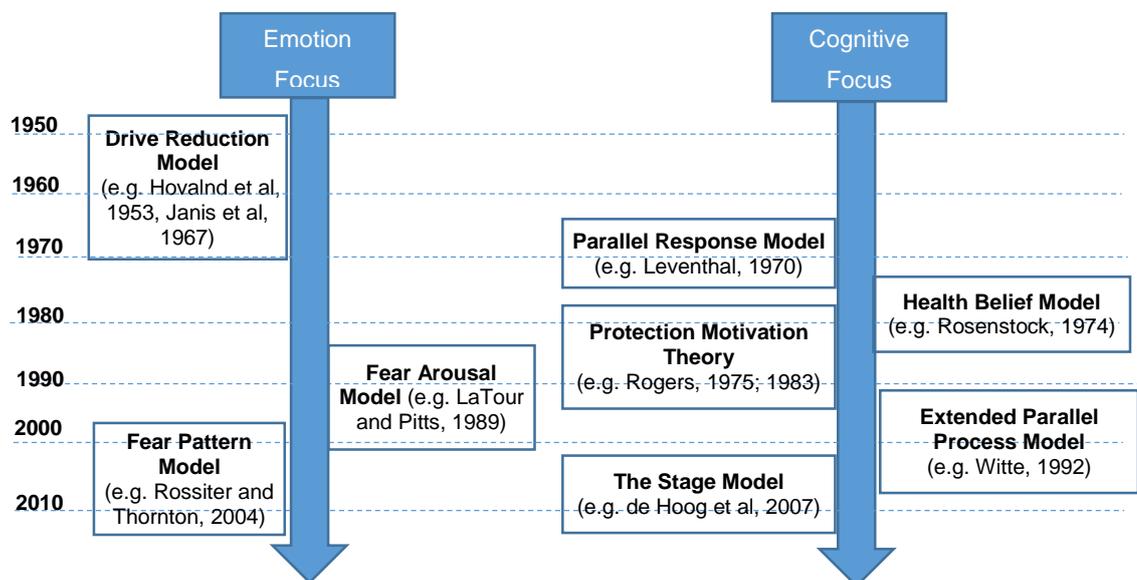
The review of the literature conducted in the next chapter will outline the main theoretical approaches utilised by researchers over the last six decades. This analysis of key theories will identify and expand upon a number of assumptions that have been identified above in section 1.1. These will be addressed in more detail in Chapter 2 and developed further in Chapter 3. By addressing the confusion and clearly identifying intrinsic message characteristics and the mediating role of cognitions and emotions on decision making about future behaviour the hypotheses developed in Chapter 4 alongside the conceptual framework, are grounded in the literature and are a step toward reducing the confusion in the field.

## **Chapter 2 - A review of the models and theories developed and used to explain responses to threat appeals**

This chapter presents a review of the models and theories developed and used by scholars to understand the cognitive, emotional and conative responses to threat appeals. This review of the literature will highlight a number of assumptions that have been made in the literature and compare the theoretical approaches taken to understanding consumer responses to threat appeals. Following on from the discussion regarding the variables manipulated in threat appeals in section 1.1 of chapter 1, the evaluation of the literature presented in this chapter examines the theoretical approaches taken by scholars to cognitive and emotional responses to threat appeals, before a more detailed review of the literature concerning the specific variables of interest is provided in Chapter 3. As identified in chapter 1, a vast range of research from scholars in numerous disciplines has been conducted and there is consensus that 'confusion' exists in the field (Rotfeld, 1997; Leshner et al, 2011, Morales et al, 2012). Indeed, precisely *because* the threat appeals field is varied and attracts scholars from a wide variety of disciplines, (e.g. marketing, consumer behaviour, psychology, health psychology, communication, information systems and medicine) a restrictive approach to identifying literature to review is not appropriate.

When standing back and viewing the vast body of research that has explored threat appeals, it is necessary to create a structure or framework to assist with understanding how the field has developed and where the most critical areas of confusion lie. Such a framework allows a clearer picture of the field, and helps chart the course of theoretical development over time. In particular, when reading articles concerning the use of threat appeals, often reference is made to the very first theories that were employed to explain consumer responses to those appeals; specifically, the drive reduction models (e.g. Hovland et al, 1953; Janis, 1967). These are emotion focused models (which will be discussed in more detail in section 2.1 of this chapter) which centre on the mechanism of the threat – fear relationship. Whilst these theories were never empirically supported (as discussed in section 2.1.1.) it is important to acknowledge them as they 'set the tone' for the field, and more importantly instigated a set of assumptions that have been upheld, until recently.

As previously, stated in Chapter 1, a shift in thinking within the general field of threat appeals research occurred in the 1970s, alongside a similar shift in the field of psychology, to a more cognitive focused approach. In line with this, the present chapter examines the theories and models used in the vast extant literature thematically, according to their emotional or cognitive focus. That said, identifying the focus of a theory does not imply that there are not, for example, emotional elements to a cognitively focused theory (and vice versa). Rather, the categorization of the focus of a theory refers to the idea that the rationale for the development of the theory or model focuses on the importance of either emotions or cognitions. Section 2.1 will examine emotional focussed theories, section and 2.2 will examine cognition focussed theories. Figure 1 below is a pictorial representation of the two foci of the theories and models and their chronological introduction to the field. Figure 1 also notes which focus corresponds to the relevant section of this chapter in the diagram. It can be seen through charting the chronology of the two different focal approaches not only how the field has developed but also insights regarding why, for example, the cognitive focussed theories have received sustained research attention, and the emotion focussed theories have not. Such issues will be discussed in the balance of this chapter, beginning with a detailed exposition of emotion-focused theories.



**Figure 1 - Overview of the themes and chronology of the theories and models developed**

## 2.1 Emotion focused theories

As previously stated, this section of the literature review will examine theoretical models and theories that have been developed and employed to examine responses to threat appeals, which have an emotional focus. That is not to say there are not cognitive or behavioural elements to the models rather that the theoretical underpinnings of the theories and models focus on the emotional response as the primary result of exposure to threat appeals. The underpinnings of the field are based on the psychological relationship between the presentations of a threat, which subsequently generates a fear response. First, the very early drive reduction models will be examined in section 2.1.1. These models set the foundations of the field as they were the first to be developed for this context. The use of fear arousal models is analysed in section 2.1.2 and then fear pattern models are examined in section 2.1.3. It is important to acknowledge that much of the work cited in this section is rather old. However, it is imperative to consider how the foundations of the field were laid in order to then follow how the field developed. Indeed, the move away from, and then return to, a focus on the role of emotion is charted.

### 2.1.1 Drive Reduction Model

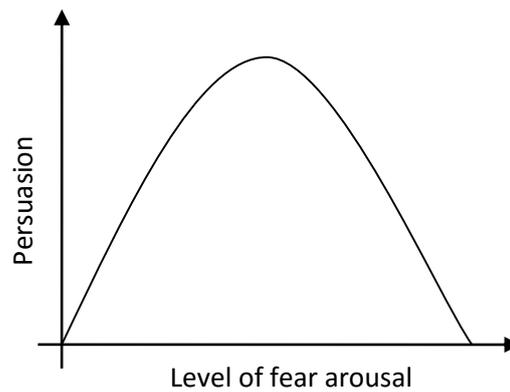
Early research, on what were then uniformly called 'fear appeals' in the 1950s and 1960s, was guided by the assumptions of the drive reduction model (Hovland et al, 1953; Janis, 1967). The main tenet of the drive reduction model is that the emotion of fear has the properties of a drive, which in turn, is a motivator for action. This model proposes that when the drive (or fear) is stronger, greater motivation occurs. As such, when individuals are presented with a threat they are motivated to reduce that threat (e.g. Hovland et al, 1953). Essentially, the emotion of fear serves as a motivator to remove or reduce the threat, and increased fear will result in increased likelihood of action. The implication therefore is that a 'stronger' threat will create a 'stronger' emotional fear response which will result in an increased likelihood of action. If the action taken is then successful at removing the threat then the action is reinforced and therefore is likely to be repeated (as per learning theory at the time e.g. Dollard and Miller, 1950; Mowrer, 1950).

A key component of the application of the drive reduction model is that the *action* to reduce the threat can be presented as a recommendation component of an advertisement. Theoretically, when fear is aroused enough to constitute a drive state, the silent rehearsal of the recommendation is followed by a reduction in fear. However, the recommendation can fail to reduce the fear because it is perceived as either irrelevant to the threat, or impossible

to carry out. In this situation the fear is not reduced and the recommendation is not reinforced. Based on this reasoning the drive reduction model proposes that generating fear from exposure to a threat, will result in increased persuasion. However, this is conditional upon the action recommendation being perceived as effective in preventing or reducing the threat. (Hovland et al, 1953). Essentially this theoretical perspective posits that if an advertisement can generate 'just the right amount of fear' then individuals will pay attention to the action recommendations and adopt the suggested behaviour accordingly. However, if too much fear is generated and it isn't reduced by the recommendation presented, the emotion of fear will dominate, and the recommendation will not be followed.

Indeed, according to this theoretical paradigm, when the action recommendation is *not* effective in reducing the aroused fear, the drive reduction model (Hovland et al, 1953; Janis and Feshbach, 1953) describes several defensive reactions to a threat appeal. These may also serve to reduce the influence of the fear response in a given individual. The first is defined as inattention to message content, which results either from avoidance of thinking about the threat or reduced concentration due to increased fear. Second, individuals could react to threat appeals with aggression toward the communicator, demonstrating rejection of the message content or a derogation of the message source (which is the discrediting of the source of the message). Third, when no defensive reactions occur, individuals actively avoid subsequent cognition regarding the threat or reduce the importance of the threat in relation to themselves. In addition, high levels of fear are proposed to evoke defensive reactions that undermine persuasion. As such, this model outlines the specific mechanisms by which exposure to a threat could be 'ineffective' or in other words generate avoidance or defensive reactions.

According to this early paradigm, the potential introduction of defensive reactions is considered to alter the relationship between the level of aroused fear and persuasion. Although an increasing level of fear, should lead to increased persuasion, the theory suggests that at some point the emotional tension will reach a level at which the reassuring recommendation will not sufficiently reduce the tension. Residual emotional tension might then give rise to defensive avoidance, causing a *decrease* in persuasion. As such a curvilinear relationship between fear arousal and persuasion is hypothesised (figure 2), where low to moderate levels of fear arousal increase persuasion but high levels of fear arousal decrease persuasion (Hovland et al, 1953; Janis, 1967).



**Figure 2 - Curvilinear relationship between fear and persuasion as explained by drive reduction models**

Extensions of the drive reduction model were developed by Janis (1967) in the 'family of curves' model and McGuire (1968) with the 'reception-yielding' model. These extensions use the same basic principles of the drive model (as described above) but introduce mediating variables to the relationship. Janis (1967) proposed that if an individual has an increased awareness this mediates the fear and persuasion relationship. Accordingly, increased awareness will generate increased attention to the threat, which in turn will increase cognitions concerning the removal of the threat. This theory also proposed that the relationship between fear and persuasion is mediated by an individual's need for reassurance, as higher need for reassurance increases an individual's readiness to accept the action recommendation. In addition, defensive avoidance reactions were identified as factors that could interfere with the relationship between fear and persuasion. Nonetheless, Janis' (1967) theory sticks to the principle that beyond a certain level of fear, persuasion will decrease. McGuire's reception-yielding model (1968) is very similar to the model developed by Janis (1967) but adds the dimension of the fear response acting as a cue. So whilst fear can be a motivator and act as a drive, the emotion can also act as a cue that generates habitual responses associated with that emotion which interfere with the relationship between fear and persuasion. Again the curvilinear relationship between fear and persuasion is proposed and moderate amounts of fear posited as the most effective (McGuire, 1968).

This early research is fundamentally based on the notion that a threatening advert will create a fear response that can vary in terms of strength. Too much fear will mean that individuals are unable to follow the recommended action (like being scared stiff in popular

terminology). However, moderate or lower levels of fear will be motivating and individuals will carry out the recommended action, which if successful is more likely to be repeated. Janis and Feshbach (1953) conducted research that confirmed the curvilinear relationship as they found that mild rather than strong fear appeals about dental hygiene created increased attitude and behaviour change. Another contribution of the drive reduction model and its extensions (Hovland et al, 1953; Janis 1967; McGuire, 1968) has been the focus on defensive reactions that individuals may display in response to a threat appeal. Arguably these models form the foundations on which subsequent work are based and this can be evidenced by the recurrence of similar issues addressed in later models, as will be discussed in more depth in due course.

Despite these early predictions from drive reduction models though, the majority of experiments examining threat appeals have found that – in contrast to predictions made by the drive reduction models - higher levels of fear in general lead to more persuasion than lower levels (see meta analyses by Boster and Mongeau, 1984; Sutton, 1982; Witte and Allen, 2000), rather than the curvilinear effect posited by drive reduction models. More specifically, Rotfeld (1988) reviewed the literature concerning fear arousal and concluded that the notion of a so-called ‘optimal level’ of fear stimulation, central to drive reduction theories, has not been upheld by research. He stated that “extensive literature reviews and meta-analysis of past data have repeatedly failed to find the inverted-U as a potentially meaningful or valid explanation for why high fear treatment was not always most persuasive” (Rotfeld, 1988, p28) Meta analytic studies (see Witte and Allen, 2000) have in fact identified the opposite effect to that postulated by drive theories; that high fear arousal conditions lead to increased persuasion in comparison to low fear arousal, and most studies have been unable to find significant fear-efficacy interactions on persuasion (Maddux and Rogers, 1983; Rogers and Mewborn, 1976). Thus, research has resulted in only limited (at best) support for the predictions of the drive reduction model.

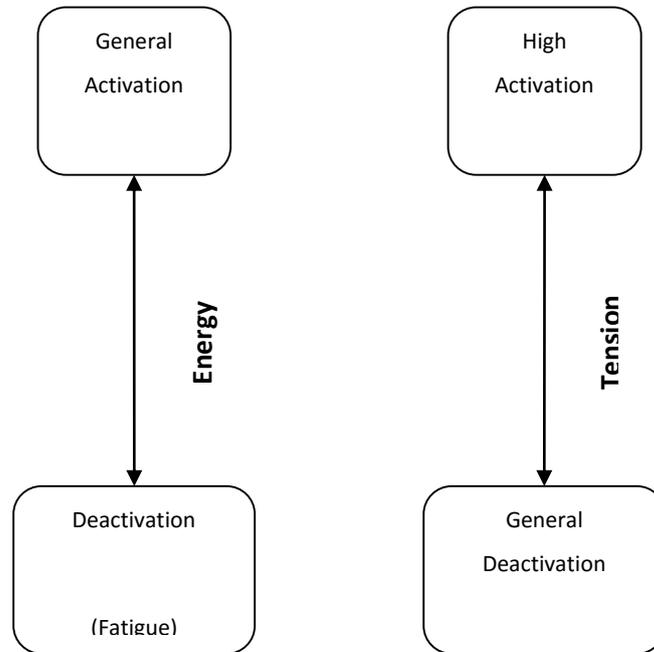
Despite the varied criticisms of the central tenet of the drive reduction models though, “consumer researchers have repeatedly sought to validate it or explain it...[and] It has become a mainstay of textbooks” (LaTour and Rotfeld, 1997, p46). That said, this quote is from 1997 and, of course, thinking has inevitably advanced since, indeed it is now generally accepted that there is no empirical evidence to support the drive reduction models. However, these models do leave an important legacy of two very important assumptions that run through the literature, as will be demonstrated throughout this chapter. First, that threat appeals, or ‘fear appeals’ as they were referred to in the 1950s and 1960s, inherently generate fear (in fact, as will be shown later, other emotional responses received little

examination by academics until the turn of the millennium). In addition, the 'fear appeals' examined as part of this body of research conflate the stimulus variable and the emotional response (as discussed in section 1.1).

It can be seen then, that despite their contribution, drive reduction models are somewhat problematic, although they have had a major influence on the development of threat appeals research. Chronologically speaking, at this point in the field's evolution (around the 1970s), alongside a corresponding move in general psychology, researchers studying threat appeals moved to a cognitive focus in the 1970s, which will be discussed in chapter 2.2. In terms of emotion focused research though, it was not until the late 1980s and 1990s that scholars revisited the place of emotion, and focused on the role of fear arousal as the response to threat appeals, which will be discussed in section 2.1.2 below.

### **2.1.2 Fear Arousal Models**

The role of fear, or more specifically the construct of 'fear arousal', was re-examined by a group of researchers in the context of individuals' responses to threat appeals in the late 1980s and 1990s (e.g. Henthorne et al, 1993; LaTour and Rotfeld, 1997; Tanner, Hunt and Eppright, 1991). According to LaTour and Pitts (1989), the Model of Arousal developed by Thayer (1967; 1978) explains the mediating role of fear arousal between a threat appeal and cognition. Whilst Thayer's (1967; 1978) work was not specifically developed to explain individuals' responses to threat appeals, researchers (e.g. LaTour and Pitts, 1989) applied it to this context. Thayer (1978) puts forward the notion that arousal is a key factor in the generation of feelings and thoughts, and that it is a complex multidimensional phenomenon. The model of arousal developed by Thayer (1967; 1978) thus identifies two dimensions, which interact and create four factors of activation (see figure 3). The first dimension is energy, which ranges from feelings of high energy to feelings of fatigue. This dimension is associated with positive cognitions. The second dimension, tension, ranges from high inner tension to inner calm. This dimension relates to negative cognitions (LaTour and Zahra, 1988).



**Figure 3 - Thayer's arousal model (adapted from LaTour and Pitts, 1989)**

Taken together, according to Thayer (1978), the four activation factors are known as general activation (energy), deactivation (fatigue), high activation (tension) and general deactivation (calmness). To summarise, general activation is associated with positive affective responses whereas high activation is associated with negative affective responses. To put this into context, according to this theory, an advertisement could generate mainly energy in certain individuals, which would result in a positive emotion. However, another advertisement could generate tension arousal as the dominant factor, which would result in negative feelings. The dimension that is dominant (tension or energy) will determine the positive or negative nature of arousal experienced. Thayer (1978) however states that if tension does not increase beyond moderate levels it does not have a detectable impact, and high levels of tension are required to generate negative emotions ( see also LaTour and Pitts, 1989).

In the context of the application of the arousal model to individuals responses to threat appeals, the theoretical process begins with a deliberate attempt to elicit tension in individuals (through exposure to an advertisement). According to the application of the model, if the individual is not excessively stimulated, or the level of tension is not high enough to suppress the energy response, energy is generated and the individual experiences a positive feeling towards the advertisement. However, if tension surpasses the threshold point, it is proposed that the individual will experience anxiety that will have a

negative impact on the individual's feeling towards the advertisement (LaTour and Zahra 1989). LaTour and Pitts (1989) therefore posits that if the 'level of fear' contained in the advertisement is too low, then the emotional response generated by the advertisement and experienced by the individual, will not be forthcoming. If this is the case, then the threat appeal will not be successful in gaining an individual's attention. LaTour and Zahra (1988) note that the Thayer model of arousal suggests that individual differences are accounted for, as an arousing advertisement may evoke predominantly energy in some individuals and tension in others. Clements et al (1976) argue that the two dimensions of the model proposed by Thayer provide a more accurate reflection of the total body arousal experienced by an individual as opposed to the measurement of separate physiological systems.

LaTour and Pitts (1989) support the model of arousal, and state that the dimension that dominates in an individual's reaction to an advertisement varies in accordance with the complex psychological and physiological make-up of the individual. As such, their study is founded on Thayer's model of arousal, and based on the proposition that arousal is unique to an individual, or idiosyncratic. LaTour and Pitts (1989) contend that the idiosyncratic nature of arousal has been the missing element of other research and models, and suggest that tension and energy may result from the same advertisement, but that certain individuals would experience greater energy and other individuals would experience greater tension. The study tested whether advertisements concerning the issue of AIDS prevention provoked reactions of tension, which would suppress reactions of energy. The results from this study indicated that an advertisement designed to stimulate high levels of fear did generate more tension arousal, yet did not pass the threshold. In summary, this research suggests that threat appeals can produce a reaction of energy without generating excessive levels of tension, resulting in generalised positive feelings towards the advertisement.

Furthermore, LaTour, Snipes and Bliss (1996) conducted a mall intercept study with 'fear appeals' designed to advertise stun guns. This research found that the 'stronger' fear appeal generated significantly more tension, and that it had more of a positive effect on consumers' attitudes toward the ad and purchase intention" (LaTour, Snipes and Bliss, 1996, p65) in comparison to the effects of the 'milder' fear appeal. In support of this LaTour and Rotfeld (1997) found empirical evidence that tension consistently generated energy and thus positively influenced brand and purchase intention (again, of a stun gun). They describe the relationship between tension and response variables as being indirect, as energy directly influenced response variables and results did not find a direct effect between tension and response variables. In support of this finding, Henthorne, LaTour and

Natarajan (1993) and Strong and Dubas (1993) also found that the level of tension did not cross the proposed hypothetical threshold. It was concluded from this study that a print advertisement containing a strong threat did produce increased tension and energy responses in individuals and performed better than an advertisement containing mild threats. However, it is possible to conclude that the theoretical premise that high levels of tension will suppress energy arousal has not been supported by either study.

More recently LaTour and Tanner (2003) also found no evidence to indicate that a tension threshold was reached, leading to the suggestion that few stimuli are capable of reaching or exceeding such a threshold. Indeed, they conclude that “researchers have yet to find that threshold, even though there have been many studies that attempted to do so” (LaTour and Tanner, 2003, p378) and refined their approach by combining the application of the arousal model with protection motivation theory (LaTour and Tanner, 2003, p380). Protection motivation theory (Rogers, 1975; 1983) is a cognitive focussed theory (which will be discussed in section 2.2). The ‘fear appeals’ concerned the dangers of Radon, and were categorised according to whether they contained a ‘moderate’ threat or an ‘explicit’ threat. It was hypothesised that both tension and energy would be higher in the group exposed to the explicit threat, which was partially upheld. The group exposed to the explicit threat reported significantly more tension, yet there was no difference in reported energy between the moderate and explicit threat groups. LaTour and Tanner (2003) also reported that the explicit threat condition activated protection motivation processes.

It can be seen that scholars developed a strong theoretical justification for applying Thayers (1967; 1978) model of arousal, and tested its application over a number of years (mainly in the 1990s). However, there is little empirical evidence to suggest that a tension threshold can be reached with the use of a threat appeal (e.g. LaTour and Rotfeld, 1997; LaTour and Tanner, 2003; LaTour and Pitts, 1989). As such, interest in the application of this theory and investigating the role of fear arousal in response to threat appeals appears to have somewhat fizzled out. This may be because other theoretical approaches (to be identified in this chapter) were generating more interesting and insightful results about individuals’ responses to threat appeals at the time.

An important conclusion that can be drawn from a review of the arousal model however, is that (aside from LaTour and Tanner, 2003 which demonstrates the shift in thinking in the field) researchers in the area consistently exhibited the problematic issues identified in section 1.1 of this thesis. First, researchers often conflated the stimulus and response variables of fear. In addition, researchers applied a model with a focus on fear arousal,

assuming that fear is the only emotional response to such and appeal. These characteristics seem to clearly uphold the assumptions made by the researchers who focused on the drive reduction models discussed in section 2.1.1. Therefore, given the prevalence of cognitive theories at the time (as discussed in the introduction to this chapter) it is unsurprising that after what were generally unfruitful attempts by threat appeal researchers to apply the arousal model to the field, there was somewhat of a dearth of emotion focussed research until the millennium, with primary focus moving to cognitive based theories (see section 2,2). However, a contemporary refocussing on emotions as a key component of the responses to threat appeals has occurred from the year 2000. First, with the development of fear pattern models which will be described in section 2.1.3, and then with a more generalised approach which will be discussed in section 2.1.4.

### **2.1.3 Fear Pattern Model**

Interestingly, Rossiter and Thornton (2004) brought a reconsideration of the drive reduction paradigm to the fore, almost six decades after its introduction. Considering the generally consistent evidence against this theoretical approach, as described in section 2.1.1, this may seem surprising. However, Rossiter and Thornton (2004) depart from the conceptualisation of fear responses in terms of 'levels of fear' (which in itself is a subjective construct as discussed in section 1.1.) and move towards a consideration of *patterns of fear*. They offer the following definition: "A pattern of fear refers to the sequence of *fear* and *relief* felt by the audience during the advertisement, if indeed there is any relief to be felt." (Rossiter and Thornton, 2004, p946) Indeed, the fear drive paradigm identifies fear arousal, and then relief, as central constructs which is reflected in this approach (as described in the curvilinear relationship between fear and persuasion discussed in section 2.1.1).

According to the Rossiter and Thornton (2004) theory, the constructs of fear and relief have *not* been tested accurately because post exposure measures of fear arousal "cannot capture the essential drive-reduction, negative reinforcement process that is the central mechanism of the fear-drive model." (Rossiter and Thornton, 2004, p947). Moment to moment ratings of fear and relief (central to the fear drive paradigm) were measured for the duration of exposure to a television based threat appeal. Results for fear-relief stimuli showed a curvilinear pattern; "during the middle or middle-to-late phase of the ad, peak fear is reached, and then the fear is reduced toward the end of the ad, where the recommendation is placed, resulting in relief felt by the viewer." (Rossiter and Thornton, 2004, p950). Whilst this approach presents a significant enhancement to the field, there are temporal issues that require further consideration. These will be explored in more detail in

chapter 3 but to summarise here, whilst measuring emotional responses during exposure to a threat appeal captures the immediate responses to the advertisement but does not account for the fact that often there is a time delay between exposure to the threat appeal and engaging in the behaviour that is the subject of that appeal.

That is not to say that Rossiter and Thornton (2004) do not provide a line worthy of further enquiry. Indeed, Nabi (2015) examines the 'emotional flow' of persuasive health messages and posits that it "might prove valuable to explore the flow, or evolution, of emotional experience over the course of exposure to a health message." (Nabi, 2015, p114). Hence whilst considering emotional responses to threat appeals, there is some evidence to suggest that a temporal element is relevant. Whilst Rossiter and Thornton (2004) focus on the variety of responses that occur during exposure to the threat appeals, Nabi (2015) theorises, but unfortunately does not empirically test, the idea that mixed emotions may be a result of exposure to a threat appeal and indeed, that there is an order to emotional responses. Whilst this may seem a small step forward, this represents a major shift in the field which will be explored in more detail in section 2.1.4.

#### **2.1.4 Summary**

The previous three sections have outlined the theories and models which focus on emotional responses in order to attempt to understand individuals' reactions to threat appeals. It can be seen that over time, emotion focused approaches have risen and declined in popularity, as shown in figure 1. The use of drive reduction models and fear arousal models yielded mixed results (as previously discussed) and the use of the fear pattern model is currently in its relative infancy. However, a wider shift towards a re-focusing on the role of emotions has occurred more recently. Importantly, these studies do not specifically employ emotion based theories or models, hence they are not included in the above discussion. Rather, the approach taken in these more recent studies is to widen the consideration of the emotional element of cognitive focussed models (and are therefore discussed in Section 2.2). As stated in the introduction to this chapter and in section 2.1, the categorisation of the theories and models according to their 'focus' does not mean that other relevant variables are neglected.

The cognitive focused theories and models will be discussed in detail in section 2.2. In brief though, there are a number of examples of research with a cognitive focus, but which has also widened the consideration of the role of emotions. Passyn and Sujan (2006) build on appraisal based research and consider the effects of 'adding' emotions that are either high

or low in self-accountability to the appeal. The study uses protection motivation theory variables (to be discussed in detail in section 2.2.3) which is a cognitive focused model. The threat appeals were designed to be a 'fear appeal' or a 'fear with hope appeal', 'fear with regret appeal', 'fear with guilt appeal' or 'fear with challenge appeal'. Hope is defined as a low self-accountability emotion, whilst regret, guilt and challenge are high accountability emotions. Results showed that the high self-accountability emotions were more effective. Whilst this study conflates stimulus variables and emotional responses as discussed in section 1.1, the notion of examining emotions and their differing properties is welcomed.

Indeed, So (2013) expands the cognitive focused extended parallel process model (to be discussed in section 2.2.5) to include anxiety as well as fear. Lewis et al (2013) also expanded the extended parallel process model and added annoyance/ agitation, pride and humour alongside fear. In differing approaches Leshner et al (2010) examine the role of disgust alongside fear and Agrawal and Duhachek (2010) examine shame and guilt in an anti-binge drinking context. These research studies will be examined in more detail in section 2.2 below and also in Chapter 3. While many of these studies fall prey to the problematic conflation of stimulus variables and responses (as can be seen with Passyn and Sujana, 2006 above), the move away from purely considering fear to be the only possible response to a threat appeal is welcome. The shift towards re-focusing on the role of emotions is gathering momentum and the move away from the long held assumption that the 'threat causes fear' mechanism is applicable in this context, which may liberate researchers to more accurately understand individuals' responses to threat appeals. Indeed, the results of research studies that focused on the drive reduction model and fear arousal model generated mixed and inconclusive results. This confusion was not only a factor that has generated the reported confusion in the field but also calls into question the fundamental assumption of the role of fear as a response to threat appeals. Attention will now turn to cognition focused theories as indicated in figure 1.

## **2.2 Cognition focused theories**

As previously identified in the introduction to this chapter, cognitive focused theories used to explain responses to threat appeals gained popularity in the 1970s. This was alongside the shift towards a cognitive focus in the field of psychology. As shown in figure 1, cognitive focused theories are the most numerous and have received sustained research attention. While, as discussed in section 2.1.4 above, researchers have started to widen the emotional component of cognition focused theories (e.g. Passyn and Sujana, 2006; Agrawal and Duhachek 2010; Lewis et al, 2013), in order to better grasp how these developments

have occurred, it is first necessary to examine more specifically cognition focused theories. The cognition focused theories focus on cognitions that individuals utilise to understand and evaluate a threat appeal. Some approaches include an emotion component to the theory or model, however the core focus is the understanding of cognitive responses and how they influence whether the threat appeal is 'effective' or not.

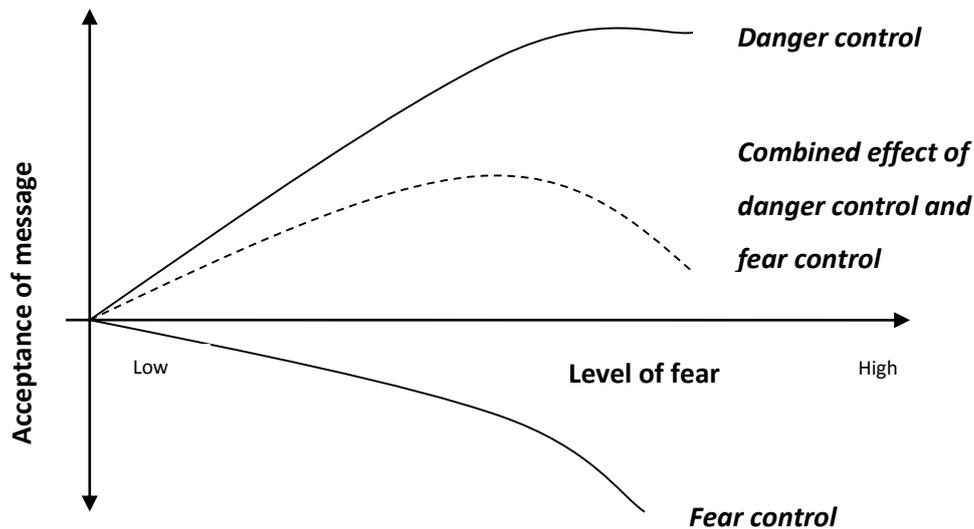
The first cognitive focused model, the parallel response model (Leventhal, 1970, see section 2.2.1) has received a variety of criticism and has not been subject to empirical testing. However, despite such weaknesses it serves (in the same way to the drive reduction model discussed in section 2.1.1) as an important platform for subsequent cognitive focused models and theories because principles and elements of the proposed theory were re-examined and adapted by other researchers. Indeed, later theoretical models of 'fear appeals' all built on the danger control process described in the parallel response model (this will be explained in more detail in section 2.2.1). Researchers who theorised about cognitive responses to threat appeals in the context of danger control processes also introduced the expectancy-value principle (e.g. Leventhal, 1970). This proposes that behaviour is a function of its expected consequences and the perceived value of these consequences. As such, expectancy-value models assume that decisions between different courses of action are based on two types of cognition: the subjective probability that a given action will lead to an expected outcome, and the evaluation of these action outcomes. Individuals will choose among alternative courses of action that one that will be most likely to lead to positive consequences or avoid negative consequences. Rosenstock's (1974) health belief model (to be discussed in section 2.2.2), and Roger's (1975, 1983) protection motivation theory (to be discussed in section 2.2.3), all assess the cognitions that motivate individuals to engage in health enhancing behaviour. In comparison to the emotion focused theories discussed in section 2.1, the cognition focused theories and associated research present a lot more explanation about understanding responses to threat appeals.

In a similar manner to section 2.1, this section will examine the key cognitive focused models in turn. Section 2.2.1 discusses parallel response models, section 2.2.2 details health belief models and section 2.2.3 discusses protection motivation theory. Section 2.2.4 will then examine the extended parallel process model, section 2.2.5 will discuss the stage model and section 2.2.6 presents an overview of the cognitive approach.

### 2.2.1 Parallel Response Model

One of the first cognition focussed theoretical developments to examine individuals responses to threat appeals is the parallel response model (Leventhal, 1970). In this model, threat appraisal (i.e. the cognitive perception of a threat) acts as a mediator between a threat appeal and behaviour. According to this theoretical perspective, the cognitive evaluation of a threat leads to two parallel processes, namely fear control and danger control. Despite having an emotion in its name (which can be misleading) fear control as a construct in this context is a cognitive coping response. Fear control represents the cognitions associated with reducing the felt emotion of fear through the denial of a threat or avoidance of the message to generate reassurance (e.g. an individual may think 'this message is not relevant to me'). On the other hand, danger control focuses on reducing or eliminating the threat through cognitive appraisal. It differs from fear control as the danger control construct concerns engaging with the threat appeal message. The cognitions resultant from the engagement regard how to cope with the threat presented and adopt the recommended action that usually forms part of the message, instructing individuals how to avoid or reduce the threat.

The model is based on the contention that "a cognitive response, the belief that harm is likely to occur, is evoked in addition to the emotional (fear) response" (Batra, Aaker and Myers, 1996, p56). Fear control and danger control are conceptualised as two distinct processes that may interact (Leventhal, 1970) and occur in parallel (as opposed to sequentially, which is a feature of other cognitive models such as protection motivation theory which will be discussed in section 2.2.3). Given that fear control occurs in parallel to danger control, the two constructs are not dependent on each other. So, whilst fear control is directly linked to reducing the felt emotion of fear through cognitive appraisals, the process of danger control has no link with emotion and therefore may occur whether fear is generated or not. It is theorised that the fear and danger control processes influence the choice and direction actions taken by an individual. The fear control process focuses on reducing the felt emotion of fear and may have little or no effect on coping with the presented threat. Coping with the presented threat is determined by the danger control process and influences the acceptance (or not) of recommended action presented in the stimuli. Figure 4, outlines the parallel response model and indicates the combined effects of danger control and fear control indicated by middle curve in the diagram. According to LaTour and Zahra (1988) the shape of the curve is determined by the dominating element, either fear control or danger control.



**Figure 4 - The Parallel Response Model (adapted from LaTour and Zahra, 1988)**

Unfortunately the parallel response model has been criticised for its lack of empirical testing and has been described as solely an illustrative device (e.g. Sutton, 1982). Witte and Allen, (2000) go further and critique the model as untestable, due to a lack of specificity. More precisely the lack of specificity is described in terms of how the theory “fails to specify the conditions that lead to each of the two processes of fear and danger control. It also does not tell us when and how these two processes interact or how people switch from one to the other. The model only broadly categorises emotional and cognitive responding as two distinct reactions to a health risk” (de Hoog et al, 2007, p259). Without these specifics, the model is impossible to empirically test. In addition, conceptually, no distinction is made between the threat appeal and the cognitive and emotional responses, instead the model assumes that exposure will occur and only examines the cognitions and link to the emotion of fear. In addition, the model does not consider “the moderating effect of individuals’ unique patterns of feeling and thinking upon responses to fear appeals” (LaTour and Zahra, 1988, p7). However, despite these criticisms, the parallel response model (akin to the drive theories discussed in section 2.1.1) set an important foundation for the cognitive focussed approach by examining the cognitions and emotion of fear and considering *how* this process occurs. It also moved scholars away from fear as a central explanatory concept, particularly with regard to the fear – persuasion relationship. The principles and components of the model were apparently worth of further consideration and were revisited and reconceptualised by Witte (1992) in the development of the extended parallel process model (which will be discussed in section 2.2.5). Indeed some of the principles of the

danger control process were developed as part of the health belief model which will be examined in section 2.2.2.

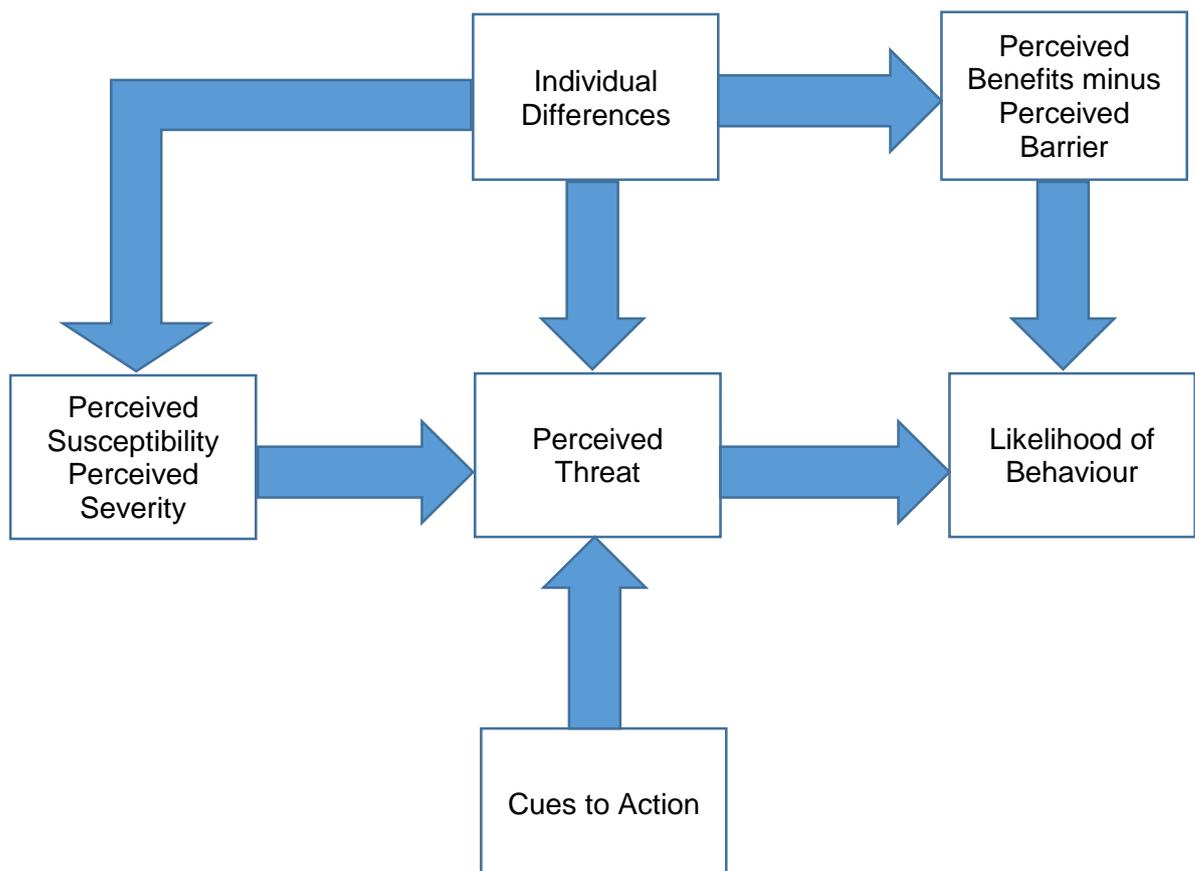
### **2.2.2 Health Belief Model**

The health belief model (Rosenstock, 1974) was not developed specifically to aid understanding of responses to threat appeals, rather it is a more general model to explain why and when individuals engage in health enhancing behaviours. The model has rarely been applied to the threat appeals context (e.g. Becker et al, 1977). However, combined with the parallel process model, some of the core constructs of the health belief model form later theories designed to model responses to threat appeals, for example protection motivation theory (to be discussed in section 2.2.3) and the extended parallel process model (to be examined in section 2.2.5). The health belief model (Janz and Becker, 1984; Rosenstock, 1974) assumes that the likelihood that individuals engage in a health enhancing behaviour (e.g. getting a flu vaccination or stopping smoking) depends on the extent to which individuals believe that they are personally susceptible to a particular disease/health issue and their perceptions of the severity of the consequences of that disease/ health issue. The fundamental theory behind the health belief model (Rosenstock, 1966) is that behaviour is determined by individual's perceptions of a health issue itself and then the perceptions of strategies available to decrease the likelihood of occurrence of the health issue. Additionally perceived benefits to adopting the behaviour and perceived barriers to adopting the behaviour influence the likelihood of the behaviour in question occurring. These perceptions are, of course, cognitions (Rosenstock, 1974).

Individuals cognitions, in the form of perceptions about susceptibility and severity combined are assumed to determine the perceived threat of the disease/ health issue. Perceptions of susceptibility are essentially cognitions about personal risk. The more an individual believes themselves to be vulnerable to the health issue, the more likely they are to engage in behaviours to reduce the risk (e.g. de Wit et al, 2005; Chen et al, 2007). Conversely, research has shown that when individuals perceive low susceptibility and believe themselves to be not at risk from the health issue, in fact unhealthy behaviours are more likely to occur (Maes and Louis, 2003). Perceived severity refers to the perceptions of the severity of the health issue, usually informed by thinking about the consequences of that issue. If the health issue is perceived to be serious and the individual perceives themselves to be at risk from the issue, the perception of threat will be larger, which in turn increases the likelihood of behaviour change (Stretcher and Rosenstock, 1997).

When individuals perceive a threat of contracting a disease/ health issue, the likelihood of engaging in the behaviour will depend on the extent to which individuals believe that the health behaviour will result in certain benefits that outweigh the barriers associated with the health behaviour. Perceived benefits are an individual opinion of the value of a new behaviour in it's effectiveness of decreasing the risk of the health issue. On the other hand, perceived barriers to change are individuals' evaluations of obstacles that would prevent adopting the new behaviour. In order for behaviour change to occur, the benefits of the new behaviour must outweigh the perceived barriers (Janz and Becker, 1984).

The health belief model (Rosenstock, 1974) also proposes that certain cues to action influence perceptions of threat, which in turn will affect the likelihood of behaviour. Cues to action is a vague term that encompasses events, people or things that move people to change behaviour. These can include threat appeal advertisements but also warning labels on cigarette packaging, media reports or illness of a family member (Graham, 2002). The variables and the relationship between the variables as proposed by the health belief model are presented in figure 5.



**Figure 5 - The health belief model (adapted from Janz and Becker, 1984)**

Research on the impact of the components specified by the health belief model on protective health behaviour has found support for the model in a wide variety of contexts, for example child vaccinations (Smith et al, 2011), papillomavirus vaccination (Gerend and Shephers, 2012), HIV and AIDS prevention behaviour (Yep, 1993). Indeed, it is generally seen to be a strong explanatory framework (Jones, et al 2015). However, the cues to action are varied and while they may include threat appeals (e.g. Becker et al, 1977), can also include many other forms of communication or intervention (e.g. the H1N1 vaccination campaign, Jones et al, 2015). Whilst this theoretical approach does not allow for a specific examination of responses to threat appeals, or consider the role of any emotional response, the constructs of perceived threat, perceived severity and perceived susceptibility are of great importance. These constructs were developed in a threat appeals context by Rogers (1975) who proposed protection motivation theory, which will now be discussed in section 2.2.3.

### **2.2.3 Protection Motivation Theory**

Rogers (1975, 1983) developed protection motivation theory which, as identified above in sections 2.2.1 and 2.2.2) draws upon elements of both the parallel response model (Leventhal, 1970) and the health belief model (Rosenstock, 1974). Protection motivation theory is based on the principle that an individual's motivation toward protection of the self, results from the perception of a threat and a desire to avert the negative outcome, both depicted in a threat appeal. Protection motivation is proposed as the variable that encourages the adoption of the suggested behaviour to avert the threat presented in a threat appeal. Thus, when protective motivation does not occur, the suggested behaviour presented as the recommendation to avert the threat, has been deemed to be ineffective or impossible to carry out and therefore no intention to act results from the cognitive processing.

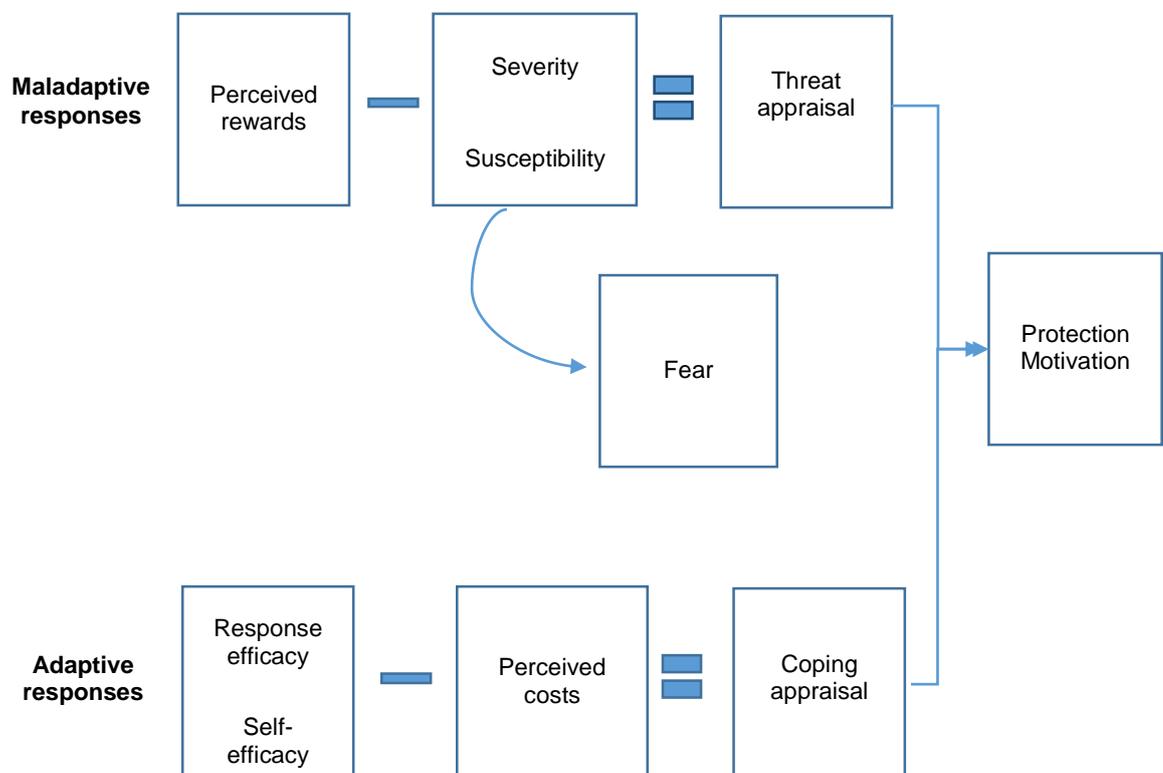
Rogers (1975) identified two core appraisal processes in protection motivation theory that dictate behaviour responses, namely threat appraisal and coping appraisal. Threat appraisal is the process by which individuals judge factors that increase or decrease the probability of maladaptive behaviour (e.g. avoiding the message or inaction). Coping appraisal on the other hand refers to an individual's evaluation of their ability to cope with and avert the negative consequences depicted in the advertisement. These two appraisal processes expand the danger control process identified by Leventhal (1970) in the parallel response model. As described in section 2.2.1, the parallel response model theorises the cognitive appraisals that occur in response to exposure to a threat appeal, where danger

control, represents cognitive appraisals to identify how an individual can cope with the threat presented and influences the acceptance (or not) of recommended action presented in a threat appeal.

Indeed, Rogers (1975; 1983) elaborated on the parallel response model's process of danger control by specifying in more detail the actual processes of cognitive appraisal. This occurred in two stages. First, Rogers (1975) identified three elements that comprise the threat appraisal and the coping appraisal processes. Perception of severity of the threat and perception of susceptibility to the threat underpin the threat appraisal process. This is akin to the role of perceived severity and perceived susceptibility presented by Rosenstock (1974) in the health belief model as discussed in section 2.2.2. An individual's belief that the recommended response is effective in averting the threat (response efficacy) underpins the coping appraisal process. Rogers (1975) proposed a three-way interaction between severity, susceptibility and response efficacy, which was not supported by empirical research (e.g. Rogers and Mewborn, 1976; Kleinot and Rogers, 1982; Maddux and Rogers, 1983). Based on this evidence Rogers (1983) reviewed protection motivation theory and added further variables to the model. The first of these variables was self-efficacy which is defined as an individual's belief in their ability to perform that recommended response was added to the coping appraisal process (Rogers, 1975). Additionally, Rogers (1983) introduced response costs (perceived costs of engaging in adaptive behaviour) and perceived rewards (benefits of maladaptive responses) to protection motivation theory. These constructs reflect those of perceived benefits and perceived barriers proposed in the health belief model (Rosenstock, 1974) as discussed in section 2.2.2.

Rogers (1983) proposed that threat appraisals specifically evaluate the threat and the factors that increase or decrease the likelihood of a maladaptive response (e.g. avoidance or denial). The perceived severity and susceptibility to the threat (e.g. the perceived severity of lung cancer and likelihood of developing the disease from smoking), and any fear associated with this appraisal, serve to reduce the likelihood of maladaptive responses. Rogers (1983, p96) identified that "fear may be considered a relational construct, aroused in response to a situation that is judged as dangerous and toward which protective action is taken". However, it is important to note that here fear is treated as an incidental construct (to be discussed later in this section). These evaluations are weighed against the perceived rewards of engaging in maladaptive behaviour (e.g. the belief that smoking prevents weight gain or facilitates social interaction) and a threat appraisal is reached. Alternatively, coping appraisal processes refer to the resources available to an individual to avert the threat which will increase or decrease the likelihood of adaptive responses (e.g. undertaking the

recommendation for action presented in a threat appeal such as stop smoking). The individual's belief that the recommended action is capable of averting the threat is response efficacy (e.g. giving up smoking will reduce the risk of lung cancer) and belief that the individual can undertake the recommended action is self-efficacy (e.g. I have the ability to give up smoking). These appraisals are weighed against perceived costs of engaging in the adaptive behaviour (e.g. if I give up smoking I will gain weight and be miserable) to form the coping appraisal. In order for protection motivation (i.e. the intention to perform a recommended behaviour) to occur, the perceptions of severity and vulnerability should outweigh the perceived rewards of engaging in the maladaptive behaviour and the response efficacy and self-efficacy should outweigh the costs of engaging in the adaptive behaviour. Figure 6 below depicts the cognitive mediating processes of protection motivation theory, as described.



**Figure 6 - Cognitive mediating processes of protection motivation theory (adapted from Floyd et al, 2000)**

Both versions of the model are intended to operationalise the components of what was called in the relevant research a 'fear appeal'. As Milne et al (2000, p 107) state "It was assumed that each component of a fear appeal would initiate a corresponding cognitive

mediating process. These processes would, in turn, influence protection motivation.” Thus, Rogers (1975) proposed that the variables of severity, susceptibility, response efficacy (and then in 1983 self-efficacy) could be included in the so-called fear appeal and would therefore be received as intended by individuals and as such underpin the threat appraisal and coping appraisal processes. As previously discussed in section 1.1, this clearly conflates the stimulus variables and cognitive responses to those variables, but nonetheless the cognitive threat and coping appraisals are grounded in theory (as described above) and were subject to empirical testing (to be discussed later in this section). Rogers (1983, p96) identified that “fear may be considered a relational construct, aroused in response to a situation that is judged as dangerous and toward which protective action is taken”. Thus an emotional response was included in protection motivation theory but it was viewed as incidental. Indeed, Rogers (1983) suggests that the emotion of fear may occur but not as a necessary factor to influence behaviour. The appraisal process outlined in protection motivation theory concentrates upon the cognitive appraisals to the threat appeal and not any emotional response.

As previously indicated, protection motivation theory has been subject to empirical testing which has generated mixed results. Interestingly, while little support was observed for the three-way interaction proposed in Rogers (1975) original protection motivation theory (severity, susceptibility and response efficacy), more support has been found for the two-way threat appraisal by coping appraisal interaction predicted by Rogers’ (1983) revised protection motivation theory. In fact, many early studies have found two-way interactions between one of the threat appraisal variables (severity or susceptibility) and one of the coping appraisal variables (response efficacy or self- efficacy) on outcome measures such as attitudes, intention, and behaviour (e.g. Maddux and Rogers, 1983; Mulilis and Lippa, 1990; Wurtele and Maddux, 1987). However, the specific variables which interact have been inconsistent across studies. For example, whereas some studies have found that susceptibility interacts with response efficacy (e.g. Mulilis and Lippa, 1990), others have found instead that severity interacts with self-efficacy to change attitudes, intentions or behaviour (e.g., Maddux and Rogers, 1983; Wurtele and Maddux, 1987). Indeed, even though a large number of studies have found at least some interaction-effects between threat appraisal and coping appraisal variables, an equally large number of studies have been unable to find any of these interaction-effects (see Rogers and Prentice-Dunn, 1997).

These inconsistencies in results have been observed since the early studies that empirically tested protection motivation theory (as described above). However, a number of meta-analyses have been conducted which generate a more consistent synopsis of empirical

findings. Floyd et al (2000) conducted a meta-analysis of studies that used protection motivation theory variables and behaviour intention or behaviour as a dependent measure. Results showed that the threat appraisal variables (severity and susceptibility) and the coping appraisal variables (response efficacy and self-efficacy) all facilitated adaptive behaviour across the studies, although coping appraisal variables were found to have more impact on adaptive responses. Indeed, decreases in maladaptive response rewards and adaptive response costs, increased adaptive intentions or behaviours. Milne et al (2000) also conducted a meta-analysis which demonstrated that both threat appraisal and coping appraisal variables were found to predict health related behaviour intentions. Milne et al (2000) also found that the coping appraisal variables, specifically self-efficacy, were found to have greater predictive ability on behavioural intention than the threat appraisal variables, which is in line with the finding by Floyd et al (2000). Moreover, they suggested that threat appraisal (severity and susceptibility) variables are poor predictors of behaviour intention in comparison to self-efficacy (Milne et al, 2000). Interestingly Milne et al (2000) found that protection motivation theory was more useful when the dependent variables concerned concurrent behaviour (i.e. behaviour that was occurring at the time of exposure to the threat appeal) in comparison to measures of behaviour intention which measure future behaviour. Indeed, other studies report the success of protection motivation variables in predicting behaviour (e.g. Pechmann et al, 2003 and Beck, 1994).

Protection motivation theory (Rogers, 1983) has been criticised on the basis that more research is needed regarding the impact of fear generated by threat appeals (e.g. Henthorne et al, 1993). Indeed, Tanner et al (1991) highlighted that a weakness of protection motivation theory is a lack of recognition concerning the importance of emotional responses to threats. It is their contention that emotional responses are important to cognitive appraisal and that they are indirectly linked to behavioural intentions through cognitive appraisal. Another limitation of the theory identified by Tanner et al (1991) is the assumption that individuals have not already adopted a coping response to the threat, either in terms of removal of the threat or reducing the fear associated with the threat. In light of these criticisms Tanner et al (1991) proposed four amendments to the protection motivation theory which were intended to include additional variables that may influence behaviour. The first amendment was an emphasis placed on the emotional aspects of the model as the authors surmised that this had been ignored. Second, the authors suggested that the appraisal processes of the theory were sequential or ordered, rather than parallel or unordered as Rogers (1983) had indicated. Third, a consideration was given to maladaptive coping behaviours. These were defined as behaviour of individuals, when faced with a threat, to employ a coping response that reduces the emotion of fear experienced but not

reduce the threat or danger (the cause of the emotional response of fear.) The authors cite that such maladaptive coping responses are greatly influenced by past experience. Fourth, the social context of danger was introduced into the model on the basis that many adaptive behaviours are influenced by normative components.

Tanner et al (1991) empirically tested the adapted protection motivation theory and found support for the ordering of the variables. However, Hall et al (2006) could not replicate this finding. Tanner et al (1991) found evidence that fear response has an impact on the threat appraisal variables and is not necessarily merely a consequence of the threat appraisal process. However, Schoenbachler and Whittler (1996) found that fear had no impact on persuasion but rather sensation seeking moderated the relationship between threat appeal and protection motivation variables. In addition, Tanner et al (1991) found prior maladaptive behaviours were found to influence the perceptions of probability of occurrence. In support of this, Eppright et al (1994) found that prior knowledge or past experience increased self-efficacy and susceptibility which increased adaptive behaviour intention. However, in this study, susceptibility also increased maladaptive behaviour intention. Tanner et al (1991) found no support for the introduction of the social danger context to protection motivation theory.

As can be seen, modifications to protection motivation theory have also generated mixed results. Nevertheless, protection motivation theory is utilised in many contemporary studies (e.g. Ritland and Rodriguez, 2014; Cismaru et al, 2011; Nelson et al, 2011). Indeed, Dickinson-Delaporte and Holmes (2011) focus solely on the coping appraisal process and examine how coping appraisal and health resistance responses to threat appeals impact attitude to behaviour (in this case, smoking). Dickinson-Delaporte and Holmes (2011) compared the effect of social compared to physical threat appeals and found that social threat appeals resulted in more adaptive coping responses than psychical threat appeals. In other words, social threat appeals encouraged more participants in the study to have increased response efficacy and self-efficacy, which resulted in increased negative attitudes toward smoking behaviour. Passyn and Sujun (2006) also focus on the coping appraisal process in response to 'fear appeals' that add high accountability (regret, guilt or challenge) or low accountability emotions (hope) to the appeal. As identified in section 2.1.4 this study conflates stimulus variables and emotional responses (see also section 1.1). However, Passyn and Sujun (2006) identified two different levels of coping (abstract and specific) and found that the high accountability emotions (regret, guilt and challenge) when added to fear, resulted in the generation of specific and concrete coping strategies that are representative of a readiness for action. Interestingly, no differences were found in perceptions of severity,

susceptibility, response efficacy or self-efficacy, which protection motivation theory suggests are the key variables that influence behaviour. The findings of the study by Passyn and Sujan (2006) therefore suggest that self-efficacy and self-accountability are separate constructs, and that accountability (or obligation) is more important than self-efficacy (an individual's belief they can carry out an action) in determining behaviour responses.

Studies that have empirically tested protection motivation theory have generated mixed results (see Rogers and Prentice-Dunn, 1997; Floyd et al, 2000; Milne et al, 2000). Arguably more recent studies (e.g. Dickinson-Delaporte and Holmes, 2011; Passyn and Sujan, 2006) have actually split the theory according to the two original processes (threat appraisal processes and coping appraisal; Rogers, 1975) and focused primarily on coping appraisal processes. This is not surprising, because the results of the meta-analyses (e.g. Floyd, 2000 and Milne et al, 2000) identify that coping appraisal processes, particularly the variable of self-efficacy, are most effective in generating behaviour intention or behaviour change. Despite the equivocal empirical support, the development of protection motivation theory (Rogers 1975; 1983) heralded a significant shift in the field. Whilst the parallel response model (Leventhal, 1970) was not empirically tested and the health belief model concerned generalised health behaviour, they both laid the foundations for the development of protection motivation theory. Specifically, protection motivation theory made a significant contribution by attempting to identify the relationship between stimulus variables and cognitive responses in the specific context of responses to threat appeals. Whilst, as discussed in section 1.1 a retrospective view allows the identification of flaws in the approach taken (e.g. conflation of stimulus and response variables) this was at the time a very novel approach (as opposed to the assumptions of the fear and persuasion relationship as identified in sections 2.1.1 and 2.1.2).

However, the mixed findings (e.g. Rogers and Prentice-Dunn, 1997; Floyd et al, 2000; Milne et al, 2000) serve to add to the identified confusion in the field (as described in chapter 1). Indeed, a number of specific criticisms are presented by Witte (1992), which in hindsight can be seen to have instigated another development in the cognitive focussed approach, namely the introduction of the extended parallel process model. Specifically, Witte (1992) identifies logical flaws regarding the variables in protection motivation theory (e.g. an absence of explanation regarding *how* threat appraisal and coping appraisal work *together* to result in protection motivation). This is evidenced, in part, by researchers to focusing on coping appraisals and neglecting threat appraisals as outlined above. Interestingly, it could be argued that this split actually highlights that indeed, the two processes were never theorised to interact. Additionally, Witte (1992) identifies a failure of protection motivation

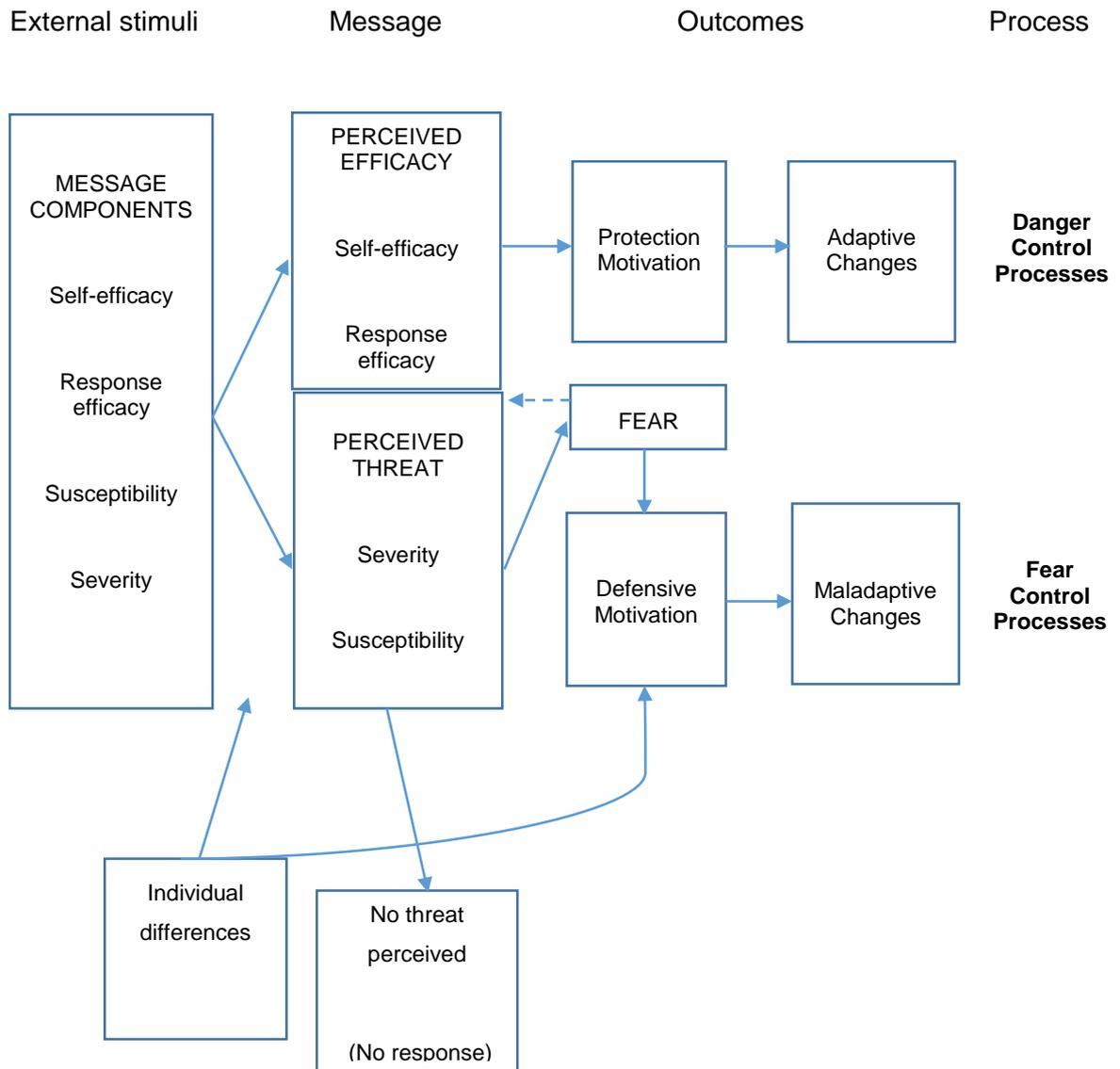
theory to offer an explanation of what happens when threat appeals do *not* work, in other words how and when they may fail to generate a behavioural response. Indeed (as reported above) Eppright et al (1994), found in their examination of the adapted protection motivation theory (Tanner et al, 1991) that susceptibility increased both adaptive and maladaptive behaviour intentions. Whilst Witte (1992) presents strong criticisms of the adapted and developed protection motivation theory (e.g. Tanner et al, 1991) it is acknowledged that the original constructs of the protection motivation theory (severity, susceptibility, response efficacy and self-efficacy) have explanatory power as mediators between exposure to a threat appeal and message acceptance (Witte, 1992). Based on the criticism and acknowledgement of the positives of protection motivation theory, Witte (1992) re-examined the cognitive processes that underpin the responses to threat appeals and developed the extended parallel process model which will be discussed in section 2.2.4.

#### **2.2.4 Extended Parallel Process Model**

The extended parallel process model (Witte, 1992; 1994) can be seen to combine and elaborate on concepts and constructs from the parallel response model (Leventhal, 1970), protection motivation theory (Rogers, 1975; 1983), as well as the drive-reduction model (Hovland et al, 1953). As previously identified, Witte (1992) set out some strong criticisms (whilst acknowledging what were viewed to be positives) of protection motivation theory (Rogers 1975; 1983). As such, a new model was developed that addressed some of the criticism of protection motivation theory and the developments in the field in general (as cited to this point in this chapter). According to the extended parallel process model exposure to a threat appeal creates two appraisal processes; threat appraisal and coping appraisal (Witte, 1992). The more that individuals believe they are susceptible to a serious threat (i.e. high perceptions of susceptibility to threat), the more motivated those individuals are to engage in coping appraisal. However, if the threat is perceived as irrelevant or insignificant (i.e. low perceptions of susceptibility to threat), the extended parallel process model indicates there should be no motivation to process the threat appeal any further, and individuals will simply ignore the remainder of the message. This implies the importance identifying the process that occurs when a threat appeal is ineffective (see above). In contrast, when a threat is believed to be severe and individuals feel susceptible, and response and self-efficacy are low, the extended parallel process model assumes that individuals will experience fear (Witte, 1992; 1994). It can be seen then, that the consideration of a fear response is a return to the fundamental assumption that underpins so much of threat appeals research, that threats generate fear which in turn effects persuasion or action (see sections 2.1.1 and 2.1.2).

According to the extended parallel process model, the fear generated is caused by perceptions of severity and susceptibility. The efficacy responses serve to determine the magnitude of fear experienced. If efficacy is low (In other words the individual does not believe they can carry out the recommended action or that the recommended action would be effective) then fear increases. Increases in fear are suggested to increase defensive motivation responses, leading to maladaptive behaviours. However, if efficacy is high, it is proposed that threat and associated fear are perceived to be manageable and therefore the fear motivates individuals to take some action that is intended to reduce fear, such as a recommended course of action from an advertisement (e.g. reduce speeding or stop smoking; fear control). The perceived efficacy of the recommended action (a combination of the response efficacy and self-efficacy) will determine whether those individuals who believe that they are susceptible to a serious threat, will engage in either danger or fear control. More specifically, Witte (1992, 1994) assumes that individuals will mainly engage in danger control when they perceive the recommended action as effective in reducing the threat, and they will mainly engage in fear control when they perceive the recommended action as ineffective in reducing the threat, or when they feel unable to perform the recommended action. In the latter case (high perceived threat and low perceived efficacy), a defence motivation is elicited, which the extended parallel process model defines as an individual focusing on eliminating their fear through denial or defensive avoidance.

Whereas as seen above, perceived efficacy determines the *direction* of the response (danger or fear control), the extended parallel process model suggests that perceived threat determines the actual *magnitude* of the response to a threat appeal. As such, the extended parallel process model integrates ideas of both protection motivation theory (Rogers, 1983) and the parallel response model (Leventhal, 1970), and extends these ideas by identifying *how* threat appraisal and coping appraisal relate to each other, as well as specifying the role of perceived fear in threat and coping appraisal. A feedback loop is presented (see figure 7) whereby an individual may first experience fear but, as explained above, if perceptions of efficacy are high the fear does not lead to fear control processes, rather danger control processes occur. Indeed this suggests that initial maladaptive responses may indirectly affect adaptive responses as mediated by the perceived threat and efficacy. Additionally, the extended parallel process model acknowledges the role of individual differences upon coping and threat appraisals. The extended parallel process model is represented in figure 7.



**Figure 7 - The extended parallel process model (adapted from Witte, 1992)**

The extended parallel process model presents a departure from prior theory in the cognitive focussed category, as it emphasises the role of fear in processing and acceptance of threat appeals. The parallel response model (Leventhal, 1970) forms the basis of the extended parallel process model, with central constructs from protection motivation theory explaining danger and fear control processes (Rogers, 1975; 1983). This synthesis of theoretical constructs attempts to explain *how*, through danger processes, threat appeals can be effective in changing attitudes, intention and behaviours, and how, through fear control processes, they can instead, be ineffective. Research that has empirically tested the extended parallel process model has been somewhat supportive (e.g. Lewis et al, 2013; Witte, 1994; Witte and Morrison, 2000), but overall, findings have been mixed (e.g. Witte and Allen, 2000; Lewis et al, 2010).

As can be seen in figure 7 above, the message characteristics, precisely reflect the perceived threat and perceived efficacy variables. Again, this is an example where the message features are conflated with the intended response. Possibly, this is the reason some studies have generated results that rest on an assumption that these effects occur. For example, Smalec and Klinge (2000) manipulated 'levels' of threat and efficacy in the threat appeal and identified that in high efficacy conditions the perception of threat correlated with message acceptance, yet they did not measure perceived threat. Unfortunately the explanatory power of studies that do not measure the mediating role of perceptions is weakened. Indeed, it could be argued that the fundamental objective of the extended parallel process model is to assist understanding regarding *how* the responses occur and as such making assumptions about responses less appropriate.

However, a number of the proposed relationships between variables in the extended parallel process model (Witte, 1992) have been supported in the literature. Tay and Watson (2002), found that increased fear served to increase message rejection, which is an indicator of defensive motivation and fear control processes which lead to maladaptive responses. Indeed, in a meta-analysis Witte and Allen (2000) found that as fear responses increased or intensified, the fear control responses (as shown in figure 7) increased accordingly. These results suggest that intense fear responses create defensive avoidance, and suggest that increased fear therefore facilitates maladaptive responses. However, Lewis et al (2010) found that when individuals experience high fear responses and high efficacy responses, message rejection is actually reduced. In other words, these results indicate that although the threat appeal has generated intense fear, the action recommendation is deemed to be appropriate and therefore the message is *not* rejected. Thus, fear control processes are not engaged, rather that danger control processes are facilitated. In further support of the role of efficacy in facilitating danger control processes and specifically not fear control processes, Witte (1994) and Tay and Watson (2002) found no relationship between perceived efficacy and defensive avoidance measures, which was also supported by the meta-analysis conducted by Witte and Allen (2000).

The extended parallel process model states that high perceptions of threat lead to cognitive appraisal responses, yet when the threat is perceived to be low the message is not processed. Results from Witte and Allen's (2000) meta-analysis support the idea that perceptions of low threat do not lead to further message processing. Witte and Allen (2000) also identified that high threat perceptions (severity or susceptibility), combined with high efficacy perceptions (response efficacy and self-efficacy) had the most persuasive impact, which is as hypothesised. This finding is replicated across the literature (e.g. Roberto and

Goddall (2009); Wong and Cappella (2009). However, Witte and Allen (2000) found that perceptions of high threat and low efficacy were more persuasive than low threat, low efficacy perceptions. This would suggest that high perceptions of threat encourage processing due to severity and susceptibility and low efficacy does not influence message processing. In support of this, Allahverdi-pour et al (2007) found that cognitions about perceived severity were significantly correlated with antidrug attitudes and intentions to avoid drug abuse.

In contrast, results from other research studies have identified efficacy to have an impact on persuasion but not severity. Witte (1994) found that perceptions of efficacy were significantly correlated with attitudes, intentions, and behaviour changes in use of condoms to prevent AIDS. In addition, Witte et al (1993) found individuals with high efficacy perceptions had higher attitudes, intentions, and behaviour regarding tractor safety. In another study, Witte (1994) found that for people with high perceived efficacy, neither fear nor perceived threat was related to attitude changes. However, fear both directly and indirectly affected behavioural intentions and only indirectly. In a similar result Lewis et al (2010) found a significant direct effect of fear on message acceptance. However, despite these evidently mixed results, it is claimed that the extended parallel process model is a good explanatory model because in a broad sense threat appeals produce both danger and fear control responses and the stronger the threat appeal, the more motivated individuals are to process the message (Witte and Allen, 2000). Indeed, Witte and Allen (2000, p604) concluded that threat appeals are “effective when they depict a significant and relevant threat, and when they outline effective responses that appear easy to accomplish.”

Based on the explanatory power of the extended parallel process model, scholars have begun to examine the use of the model in different contexts (e.g. So, 2013). Basil et al (2008) used extended parallel process model constructs to examine responses to guilt (rather than threat) appeals. Specifically, Basil et al (2008) found that self-efficacy and empathy generated as a result of exposure to a guilt appeal increased intention to donate to charity and decreased maladaptive responses. Lewis et al (2013) employ a similar technique used by Passyn and Sujon (as described in section 2.1.4 and section 2.2.3) where emotions are ‘added’ to threat appeals. Lewis et al (2013) examine a fear appeal, an annoyance/agitation appeal, a pride appeal and a humour appeal using the extended parallel process model in the context of speeding. Lewis et al (2013) found that perceptions of threat and efficacy influenced message acceptance for the annoyance/ agitation, pride and humour appeals but not the fear appeal. Low perceived efficacy as a result of exposure to the fear appeal condition influenced message rejection, yet high perceived threat in this

condition decreased message rejection, which was an unexpected result. The annoyance/agitation, pride and humour appeals generated message rejection when perceived efficacy was low, as expected. Lewis et al (2013) suggest that the explanatory power of the extended parallel process model is not restricted to a threat appeals context and can be widened to consider the relationship between other types of emotional appeals and persuasion.

Whilst there are mixed findings regarding empirical testing of the extended parallel process model (Witte, 1992), which arguably could add to the confusion outlined in section 1.1, it appears to be generally accepted that the extended parallel process model has marked a positive shift in advancing understanding of responses to threat appeals (de Hoog et al, 2007). Indeed, whereas marked criticism of prior theoretical approaches has been outlined in this chapter, contemporary scholars continue to use the extended parallel process model as a platform to explore improvements in the model (e.g. Basil et al, 2008; Lewis et al, 2013). Stroebe et al (2000) and Das et al (2003) developed a theory to improve the extended parallel processing model named the stage model of processing of fear arousing communications. Whilst the empirical testing of this model is limited, section 2.2.5 will give a brief description of the model and relevant empirical results to outline the latest theoretical development of cognitive focused models and theories.

### **2.2.5 The Stage Model of Processing of Fear-Arousing Communications**

The stage model of information processing (Stroebe, 2000; Das et al, 2003; de Hoog et al, 2005) is largely based on the theoretical constructs of the extended parallel process model (Witte, 1992) and integrates constructs from dual process theories of persuasion (e.g. Chaiken et al, 1989) which have been developed as general theories about persuasion in an advertising context, not specifically in a threat appeals context. As the stage model (de Hoog et al, 2005) is more recent than the others cited in this chapter, studies that test the model are few (Das et al, 2003 and de Hoog et al, 2005) and as such the field of research examining its theoretical proposition is in its infancy. The stage model proposes that the cognitive appraisals in response to exposure to a threat appeal occur in two distinct stages. The first stage is the cognitive processing of the 'fear appeal' and the second stage is the cognitive processing of the action recommendation.

Stage one, or processing of the 'fear appeal', occurs as perceptions of severity and susceptibility. How the 'fear appeal' is processed determines the processing mode (depth of processing) and goal of processing (accuracy of information or defensive processing). This

approach moves away from the proposition in the extended parallel process model, that high perceptions of severity generate avoidance. The stage model by contrast posits that high perceptions of severity generate deep processing of the message (opposed to shallow processing). The impact of severity of susceptibility perceptions on processing mode and goal are show in figure 8.

	Severity	
Susceptibility	Low	High
Low	Shallow processing Accuracy motivation	Deep processing Accuracy motivation
High	Deep processing Accuracy motivation	Deep processing Defence motivation

**Figure 8 - The impact of severity and susceptibility on processing mode and goal (adapted from de Hoog et al, 2005, p26)**

When individuals experience both high susceptibility and high severity, deep processing and defence motivation occurs. Prior research (e.g. Witte, 1992) has identified high perceptions of severity and high perceptions of efficacy to be effective in generating fear coping responses. Conversely, according to the stage model, these responses (high severity and susceptibility) represent a threat to an individual's self –belief which will generate defensive processing, however, given the high severity and susceptibility an individual is also motivated to carefully scrutinise the information presented (de Hoog et al, 2005). The assumption is made (according to dual process theories of persuasion e.g. Chaiken et al, 1989) that processing will be systematic rather than heuristic. In other words, because the information makes an individual feel susceptible to a severe threat they will undertake a detailed cognitive examination rather than rely on rules on thumb.

According to the stage model, defence motivation can be an avoidance reaction, as proposed by extended parallel process model (Witte, 1992) or alternatively part of biased systematic processing, where the bias is negative in the appraisal of a threat and positive in appraisal of coping strategies. When appraising the threat, defence motivated individuals will be motivated to reduce the threat through a thorough examination of the message. Information may be minimised (e.g. by downplaying the information) or inconsistencies or

errors of logic highlighted as evidence to criticise the message. Conclusions drawn will therefore be biased in the direction of an individual's preferred conclusion. However, if this strategy is unsuccessful and biased processing is constrained by evidence, individuals will have to accept they are at risk from the threat presented. If this occurs, subsequent cognitive processing of the information at the second stage will also be biased but in the opposite direction. Therefore if an individual is defence motivated and has identified themselves to be at risk in stage one, they will then maximise any action recommendation because the recommendation will offer a solution to the threat. This can then moderate negative emotional responses and cognitions generated as a result of exposure to the threat appeal (de Hoog et al, 2005).

If the threat is perceived to be trivial and individuals feel they are not susceptible to the threat (low perceptions of severity and susceptibility) little effort will be invested in cognitions, and instead heuristic processing modes are adopted. Alternatively, if an individual feels susceptible to the threat presented but perceives it to be a minor threat (i.e. high susceptibility and low severity perceptions) the heightened susceptibility should encourage systematic processing of the message. This is in line with the assumption from dual-process theories that personal relevance, which is a similar concept to perceived vulnerability, is an important motivator for systematic processing (e.g. Eagly and Chaiken, 1993). Equally, if an individual does not perceive themselves to be susceptible to the threat but that the threat is severe (i.e. low perceptions of susceptibility and high perceptions of severity) individuals are likely to invest effort in processing the contents of the message because it is useful to be well informed about a serious health risk, even if the individual does not feel susceptible to the threat.

As described in section 2.2.4 prior theories such as the extended parallel process model assume an interaction between perceptions of threat (susceptibility and severity) and perceptions of efficacy (self- efficacy and response efficacy) (Witte, 1992). The extended parallel process model proposes that high perceptions of threat will only lead to persuasion if the recommended action is effective. The stage model, however, assumes that defence motivated individuals will be motivated to perceive any recommendation as effective, as long as it is at least somewhat plausible, because engaging in a recommended action will reduce the threat. Two empirical studies have been conducted to test the propositions of the stage model. Das et al (2003) found a positive bias in the processing at the second stage (action recommendation processing) when individuals had perceived high susceptibility. Susceptibility was found to be the only determinant of engaging in the recommended action: susceptible respondents had higher behavioural intentions. In support of this, de Hoog et al

(2005) also found that susceptibility influenced behavioural intention. However, de Hoog et al (2005) found no evidence that perceptions of susceptibility modify the effect of argument quality on attitude, which had been identified by both Das et al (2003).

As previously stated, the stage theory is relatively new and the purpose for its inclusion here is to demonstrate the continuation and development of thought concerning individuals' responses to threat appeals. The stage model particularly looks at the properties of susceptibility which is a fresh approach. Whilst there is a need for more empirical research to test the theory, the initial insights regarding the importance of susceptibility are in line with those presented as part of the extended parallel process model. The stage model particularly introduces a temporal dimension with the consideration of different stages of individuals' cognitive evaluation of threat appeals. This will be explored in more detail in Chapter 4.

### **2.2.6 Summary**

The previous five sections have outlined the theories and models which focus on cognitive responses in order to attempt to understand individuals' reactions to threat appeals. There has been sustained interest in understanding the cognitions resulting from exposure to a threat appeal and how they drive persuasion and behaviour change. As theories have been developed, from the health belief model (section 2.2.2) onwards, the roles of perceived severity and susceptibility have remained as central appraisal cognitions. Protection motivation theory (Rogers, 1983; as discussed in section 2.2.3) added the variables of response efficacy and self-efficacy to the cognitive appraisal. These four variables have since served as the cornerstone of cognitive approaches. Yet, there is little consistency between research findings as evidenced throughout this chapter. There is little question that these are conceptually sound cognitive responses, however empirical testing of their role has generated mixed results. Whilst severity was previously assumed to be the cognitive variable that links a threat and the emotional response (e.g. protection motivation theory and extended parallel process model) results suggest that perceived susceptibility has more effect on persuasion.

There are a number of examples of research that has a cognitive focus that has widened the consideration of the role of emotions. Passyn and Sujon (2006) build on appraisal based research and consider the effects of 'adding' emotions that are either high or low in self-accountability to the appeal but in the main if cognition focussed theories have included an emotion (as the extended parallel process model does) it is assumed this emotion is fear.

## 2.3 Discussion and chapter summary

This chapter has charted the course of theoretical development of responses to threat appeals, firstly examining theories with an emotion focus and then those with a cognitive focus. It can be seen that the origins of the field are firmly rooted in the emotion focused drive models which are based on the fear-persuasion relationship. Dillard (1992, p13) noted that in the drive models, "fear was at the centre of the theoretical stage". Whilst the curvilinear relationship was not empirically upheld, the assumption that fear is the inherent response to threat appeals has been generally upheld for six decades. As previously stated the rise in popularity of cognitive approaches in psychology also occurred in the threat appeals field and indeed heralded a decline in the role of fear. Dillard, (1992, p 13) stated "Fear was virtually excluded from the study of fear appeals. In the most recent investigations based strongly on the cognitive perspective, fear has been treated as a control variable, if it is measured at all (e.g., Rogers, 1985; Self & Rogers, 1990)". Arguably, it was precisely because the role of fear was neglected until Witte (1992) re-examined its role in the extended parallel process model that the fear-persuasion relationship has been upheld and the assumption continued.

Whilst more recent studies (e.g. So, 2013) expand the cognitive focused extended parallel process model to include emotions other than fear, these emotions are conceptualised as part of the threat appeal, and not a response to it. This is an example of the conflation of message and response as outlined in section 1.1. Of course, the notion that fear is the only emotional response generated from exposure to a threat has been criticised, specifically by Tanner (2006, p414) who states "fear may be one of several emotional responses to a threat; others could include disgust, anger, or some combination of these and other emotions." This idea has been built upon, and research has begun to expand beyond the consideration of fear as the only emotional response to threats in this context. Dickenson and Holmes (2008, p253) acknowledge that it is important to "determine the broader roles that emotions... play in eliciting a coping response." However, in that study the authors limit their consideration and measurement of emotional responses to the discrete emotions of distress, anger, disgust, shame and guilt. Passyn and Sujun (2006), in contrast, study the emotions of fear, hope, regret, guilt and challenge. The authors categorise hope and challenge as positive emotions, which implicitly acknowledges that when considering consumer responses to threats positive emotions should be acknowledged as well as negative emotions. It thus seems important to widen this research arena and consider a broad spectrum of emotional responses to properly understand consumers' emotional responses to threats. Prior research has been limited because it has remained wedded to

the assumptions that fear is the only response to a threat or that negative emotions are the only responses to threats.

Nevertheless, it can be seen that the work cited above which has attempted to widen the scope of emotions considered as responses to threat appeals remains wedded to the idea of immediate emotional responses, as well as incorporating a somewhat arbitrary selection of which emotions to add to their models. There appears to be a lack of coherence in which specific emotions to add to the typical 'fear', and little strong theoretical base for the selection of different emotions to incorporate. However, a reliance on immediate emotional response misses the key fact that – typically – threat appeals are seen by respondents at a time *prior* to their engagement in the potentially-harmful behaviour. As such, and building upon the work by Passyn and Sujun (2006), this research will explore a wider range of emotional responses to threats allowing for a more comprehensive understanding of emotional responses both positive and negative. The following two chapters will cover in depth the development of a theoretical model of consumer responses to threat appeals which is aimed specifically at the research gaps uncovered herein. Specifically, Chapter 3 will examine intrinsic message characteristics and the problematic assumptions that have been uncovered in Chapter 2. Chapter 4 will then move on to examine emotional and cognitive variables to develop a coherent conceptual model of consumer responses to threat appeals, with the objective of moving beyond the tacit assumptions that have proven to be problematic in prior research (as discussed above), and presenting a path to resolving the confusion and contradiction that currently exists in the threat appeals literature.

## **Chapter 3 - A re-examination of threat appeals and identification of intrinsic message characteristics**

The previous chapter reviewed emotion focussed and cognitive focussed theories and models that have been developed to explain consumer responses to threat appeals. The assumption that threat appeals generate a fear response has been widely upheld throughout the literature (e.g. Witte, 1992). Indeed, not all theories developed have included an emotional component (e.g. de Hoog et al, 2007), and focus on a variety of emotional responses to threat appeals has only recently been a subject of attention (e.g. Passyn and Sujan, 2006; Morales et al, 2012; Basil et al, 2008). Building on the first two chapters of this thesis, the present chapter re-examines the intrinsic message components of threat appeals (as proposed in section 1.1) and consumer responses to threat appeals with a focus on the role of emotion alongside cognition. Building on prior research a new conceptual framework is developed in chapter 4 to explain consumer responses to threat appeals, which will be empirically tested (results are presented in Chapter 7).

Empirical tests of theoretical models designed to explain consumer responses to threat appeals have produced equivocal results (e.g. Floyd et al, 2000; Milne et al, 2000), which is a reasonably consistent theme throughout the literature (as charted in Chapter 2). Indeed, Johnston et al (2015, p113) identify that “empirical assessments of the effectiveness of fear appeals have yielded mixed results”. Scholars (e.g. Morales et al, 2012) interpret the mixed results to be a signifier of the long-standing confusion about consumer responses to threat appeals as first identified by Rotfeld (1997) and discussed in Chapter 1. However, theoretical developments have been significant, particularly the extended parallel process model (Witte 1992) which presents the most robust explanation of consumer responses to threat appeals to date (see section 2.2.4). This chapter builds upon prior research and addresses the two assumptions that have been uncovered in the previous chapters. First, the assumption that message characteristics can be conflated with responses, which is resolved by the examination of intrinsic message characteristics as discussed in Chapter 1 and discussed in more detail in this chapter. Second, the assumption that threat appeals generate a fear response as identified in Chapter 2. Based on theoretical developments concerning the role of cognitions as responses to threat appeals (e.g. Witte, 1992) this thesis identifies the different roles of immediate, anticipatory and anticipated emotions that form consumer responses to threat appeals, alongside cognitions. This is examined in detail in chapter 4.

Whilst it is necessary to understand the antecedents to behaviour change, the end goal of threat appeals (for example, the viewer giving up smoking, or otherwise changing their behaviour in the intended way) is often neglected as a measured variable (Peters et al 2013). Of course, empirical work on behaviour change is time consuming and costly and as such, having a body of work that has laid foundations for a rigorous understanding of the *antecedents* to behaviour change in this context is valuable. Peters et al (2013) conducted a meta-analysis with the inclusion criteria being the study had to contain manipulations of threat, and efficacy and measurement of behaviour as an outcome. Only thirteen studies satisfied the inclusion criteria dating from 1965 – a time span of almost half a century. Thus, if behaviour change is particularly difficult to study, then in order to move scholarly understanding of the field forward, relationships between stimuli features and cognitive and emotional responses that precede actual behaviour change must be understood in order to create foundations for understanding behaviour change. Indeed the conceptual model presented in chapter 4 presents behaviour intention and expectation as dependent variables.

Overall then, the literature review presented in Chapter 2 shows that the effectiveness of threat appeals has received intermittent research attention, relying on a number of assumptions that are re-examined in this present chapter. Focussing on such assumptions will allow for clearer identification of independent variables and clarify the fundamentals of the relationships between stimulus and response in this context. As such, the intention of this chapter is to build a platform for empirical work, which will in turn allow for better recommendations to be made to practitioners concerning the effectiveness of stimulus variables. Section 3.1 presents an overview of threat appeal variables, which are then examined in more detail in section 3.1.1 from the perspective of argumentation theory, and from the perspective of the psychology literature in section 3.1.2. From these discussions it is concluded that intrinsic message characteristics are required to allow for theoretical development, which are discussed in detail in section 3.2. More specifically, the variables of direction of message, use of graphic images, and message frame, are identified as the characteristics most appropriate for the present study. Finally section 3.3 presents a summary of the discussion before moving on the presentation of the conceptual model and hypotheses in chapter 4.

### **3.1 Threat appeal variables**

Numerous scholars have examined the influence of threat appeal stimuli on cognitive processing (e.g. Witte, 1992; de Hoog et al, 2007) with the objective of understanding

generalisable relationships between threat appeals and consumer responses to those appeals. Achieving generalisable recommendations is difficult as the same stimulus can feasibly create different responses in individuals, which are also often confounded by individual differences and situational influences (Donovan and Henley, 1997). This is not a phenomenon unique to the threat appeals context; however, the body of threat appeals research is built upon studies that have utilised many different approaches and theoretical frameworks, with very little consistency between the variables tested. In order to develop this body of research there is a need, as identified in the previous chapter, to build solid foundations upon which the understanding of consumer responses to threat appeals can develop. In order to achieve this, this study examines and identifies independent variables contained in stimuli, which can be consistently used across studies and contexts in order to test relationships and compare results across studies. Cauberghe et al (2009, p272) reflect this point and state that “one of the least studied aspects of threat appeals is the question which message and context elements lead to higher or lower levels of perceived threat, efficacy and evoked fear.” Previously, threat appeal stimuli and variables that can be manipulated within those stimuli, have been subject to little scrutiny. From this perspective it is imperative to be clear about the definition of a threat appeal and generate a detailed understanding of its components, prior to examining the causal relationship between stimulus and response (Tao and Bucy, 2007).

In order to clarify whether the assumption that a threat appeal generates a fear response is valid the threat component of a threat appeal is examined. First the argumentation literature is presented in section 3.2, which examines the type of argument presented as a threat appeal. Second, the psychology literature is presented in section 3.3 to further investigate whether the threat contained in a threat appeal is akin to a threat that creates a fear response. Third, section 3.4 identifies and examines intrinsic message characteristics that do not conflate the stimulus variables that can be manipulated, with responses to those variables.

### **3.1.1 Threats from an argumentation perspective**

Because of the evident inconsistency in the threat appeals literature over exactly what constitutes a ‘threat’, it is logical to return to first principles, and examine the concept of a threat in light of the basic concepts of language and rhetoric. In this sense, the argumentation literature has much to offer. Argumentation is the interdisciplinary study of how conclusions are reached through logical reasoning and how claims are based, soundly or not, on premises. The field studies rules of inference, logic, reasoning and persuasion in

both artificial and real world settings, and here threat appeals have been treated as a type of argumentum ad baculum (argument to the club or stick), whereby a force, coercion or threat of force provides the justification for a conclusion (Walton, 1996). There are two types of argumentum ad baculum; traditional and non-fallacious. Traditional argumentum ad baculum are widely recognised as fallacies, where incorrect reasoning results in a misconception or a presumption. For example;

*Employee: 'I do not think the company should invest money into this project'*

*Employer: 'Be quiet or you will be fired'*

This is considered a fallacy (and thus an invalid inference) because the employer ended the argument with a threat of force without refuting the employee's contention, in other words, the punishment is not logically related to the conclusion being drawn. Conversely, in a non-fallacious ad baculum, the inference made is valid because the mere existence of a punishment is not used to draw conclusions about the statement or activity. For example;

*'If you drive whilst drunk, you will be put in jail.'*

*'You want to avoid going to jail.'*

*'Therefore you should not drive whilst drunk.'*

It can be seen that existence of the punishment itself is not used to draw conclusions about the nature of drunk driving itself, but about people to whom the punishment applies.

Although threat appeals have been classified as examples of argumentum ad baculum, this has been called into question as they do not meet the criteria that define a speech act of making a threat (Walton 1996; 2000). Despite a number of slightly differing definitions of argumentum ad baculum as demonstrated above, the commonality between them is that a threat is presented by the speaker (Walton, 1996) which can be malicious or not (Kimball, 2006). Walton (1996, p302) states that the speech act of making a threat has three essential conditions. First, the preparatory condition, where the recipient of the threat believes the speaker (i.e. the giver of the threat) themselves has the power to instigate the event in question (thus, without the intervention of the speaker it can be assumed by both that the event won't occur). Second, the sincerity condition in which the occurrence of an event will not be in the recipient's interests and as such, the recipient would want to avoid

its occurrence if possible. Third, the essential condition in which the speaker makes a commitment to ensure the event will occur, unless the recipient carries out a particular action designated by the speaker.

When applying these conditions to a threat appeal as defined in section 1.1 (e.g. Witte, 1992; 1994), the essential condition, and in many (if not most) applications the preparatory condition, are clearly not present. In a threat appeal “the advertiser is not making a threat to actually carry out the bad outcome” (Walton, 2000, p129). To use the previously stated example of drunk driving, the advertiser (speaker) clearly links the behaviour of drunk driving to going to jail, but it is not the advertiser or source specifically threatening to send the recipient of the message to jail (e.g. Donovan and Henley, 1997). Thus no commitment to ensure the event will occur (going to jail) is made by the speaker. In addition, the preparatory condition relies upon the recipient of the threat believing that the sender can instigate the event in question (going to jail for drunk driving) which is unlikely given the advertiser is in this case a remote entity. It is important to note that if the advertised message has been developed by the government or the police, these organisations do have the authority to send people to jail, however, the likelihood of a commitment to ensure the event (going to jail) will occur is unlikely as the context of a message in an advertisement. Therefore, most threat appeals – while they may be examples of *argumentum ad baculum* – do not actually make a threat. Whilst the issue of whether *argumentum ad baculum* should have a narrow definition, or a broader one to include threat appeals, is debated in the argumentation literature (Walton, 1996) it is not pertinent to this present study. Rather, the important issue is the notion that most threat appeals do not actually contain threats as defined by the conditions presented above.

That said, whilst a threat may not actually be made in a threat appeal, a threatening situation is certainly presented. Walton distinguishes between a threat, as discussed above, and a threatening situation, which is “something that poses a danger or harm to safety or self-preservation” (Walton 1996, p306). This ties in with the definition of a threat presented by Witte (1994, p114) who indicates a threat is presented to the audience and this can be “a danger or harm that exists in the environment whether individuals know it or not”. In essence, to issue a threat of ‘I am going to send you to jail’ is different from something that is simply threatening, such as ‘drunk driving could send you to jail’. The key to this difference lies in the perception of the threatening situation. In this context, The conditions that Witte’s (1994) considers necessary for threat appeals to be effective are relevant, specifically; a) that the threatening situation is credible and the danger presented is perceived as relevant to the recipient, and b) that the recommended action to reduce the

danger must be feasible for the recipient. Interestingly, these conditions are similar to the sincerity and essential conditions identified earlier as fundamental to the act of making a threat. However, it is clear that individuals will perceive a given potentially-threatening message in different ways. Some may find it relevant and feasible therefore depicting a threatening situation, and some may not. The classification of the threatening situation in the message is therefore dependent upon the individual recipients' response, and not on the message characteristics.

Drawing from the above, threat appeals as used in advertising do not generally contain actual threats in argumentation terms, but they do present a situation that *could potentially* be perceived as threatening – depending on situational and individual differences. Thus, referring back to the argument that intrinsic message characteristics and responses to messages need to be conceptually distinct, this leads to the question of whether it can be considered that the typical threat appeals used in relevant research actually contain a genuine threat variable that is able to be consistently manipulated across subjects. More specifically, if a threat must be perceived as such by individuals then it is possible that a threat in the true sense of the word is not feasible as an intrinsic message characteristic. Or in other words, the 'level of threat' will be inconsistent across individuals.

In line with this argument Walton (2000, p1, emphasis added) states that threat appeals do “not involve a threat, but instead have only the form of a *warning* that some bad or scary outcome will occur if the respondent does not carry out a recommended action.” A warning is characterised by an indirect speech act which may covertly *imply* a threat, but overtly is a warning and as such has plausible deniability. Walton (1996, p303) thus moves away from considering threat appeals as examples of *argumentum ad baculum* and identifies that threat appeals are structured according to a type of argumentation called *argumentum ad consequentiam* (argument from consequences) which is defined as “the argument for accepting (or rejecting) the truth of a proposition by citing the consequences (for the respondent) of accepting (or rejecting) that proposition”. To use the drunk driving example, the consequence of going to jail if drunk driving behaviour occurs is clear. As a warning is not dependent upon personal relevance it can be recognised as such by recipients of the message even to whom it does not apply. A recipient may never drive drunk but will still see the message as a warning against drunk driving and the consequences of that action independent of personal relevance. Therefore, in this context, a so-called threat appeal, as defined in the relevant advertising literature to date, does not actually contain a direct threat. Instead, whether the situation in the appeal is threatening or not is down to the perception of the recipient, even though the *warning* in that appeal is universally acknowledged. The

specific features of the warning therefore may be considered to be intrinsic message characteristics, but not the individual perception of that warning as a threat.

The assumption that threat appeals cause fear was developed as part of the early drive models (e.g. Hovland et al, 1953; see section 2.11) and has been widely upheld in the literature (e.g. Witte, 1992; Lewis et al, 2013). However, this review of the argumentation literature calls this assumption into question because the threat contained in a threat appeal is only a threat if an individual perceives it as such. Indeed, from this perspective there is no guarantee that individuals will find a threat appeal threatening. To further explore this notion, the next section examines the psychology literature to assist with identifying what constitutes a threat and whether these features are a component of the threat appeals typically used in relevant literature.

### **3.1.2 The psychology of threats**

To further illuminate the exploration of whether threat appeals do contain actual threats, the definitions of threat, and distinctions between threat and response, are now considered from a psychological perspective. As seen above, the argumentation literature suggests that threat appeals rarely if ever consist of actual threats. Rather, from the argumentation perspective, the threat must be perceived by each individual, and as such is not guaranteed to be experienced by every individual who sees a given advertisement. However, the psychology literature also has much to say on threats. Indeed, psychological research has indicated that there are in fact certain specific threats that are commonly perceived as threats by all individuals. If these threats were used in advertising stimuli, then it would be justifiable to consider the threat as an inherent stimuli feature.

Evolutionary psychologists have identified that mammals have an innate need to protect themselves and to preserve their genealogy (Ohman and Mineka, 2001; Brosch et al, 2010). This need leads to either approach behaviours, for example finding food sources and mates for procreation, or avoidance behaviours, for example adapting to environmental occurrences that may present a threat to survival (for example, floods, storms and falling objects) and the avoidance of predators (Brosch et al, 2010). The stimuli that inform of either a) opportunities for growth and expansion, or b) impending danger, are thus of great importance, since survival may depend on the gathering and processing of this information. Considering the large amount of stimulus information perceived in the environment, individuals rapidly integrate this into categories in order to simplify the information and help guide understanding of the world. The categories are groupings of similar objects or

concepts which create order and meaning (Brosch et al, 2010). Categories that are linked to survival and individual well-being require rapid adaptive responses, for example evading a predator or approaching food, and are given prioritised perceptual processing that allows for appraisal and appropriate behavioural response. In everyday terms; “smiling people, cute babies, erotic scenes, but also poisonous snakes or scenes of war and mutilations... catch one’s eye more easily than emotionally ‘neutral’ stimuli” (Brosch et al, 2010, p378).

Threats have been assumed to be at the core of threat appeal stimuli, as identified previously, and as such it is important to understand what constitutes a threat on a psychological level, and also to consider the role of the perceptual processing of threats. At a basic level mammals “require a perceptual system to identify threats and a reflexively wired motor system to move the organism away from the danger.” (Ohman and Mineka, 2001, p483) Central to this is the ability to identify threats and engage in a behavioural response to protect the organism. The central motive state, typically characterised by fight or flight mechanisms, is what is commonly identified as *fear*.

Ohman (2010, p713) developed a theoretical perspective on the generation of emotion that argues that “many perceptual channels can be automatically and simultaneously monitored for potential threat. When stimulus events implying threat are located by the automatic system, attention is drawn to the stimulus, as the control for its further analysis is transferred to the strategic level of information processing.” This identifies a feature detection perceptual system (Ohman et al, 2001) which gives preference to stimulus features that are evolutionarily derived as threatening, for example snakes, spiders and angry faces. Once a threatening stimulus is perceived through this system, arousal (emotion) and further information processing of the stimulus occurs, and a threat is *consciously* perceived. In sum, unconscious systems identify threats and automatic processing occurs, leading to the conscious perception of threats. Underpinning this is the notion that there are certain types of stimuli that we are ‘hard-wired’ to perceive as threats. Such stimuli are those that have posed a consistent threat to survival and are therefore “biologically prepared” (Anderson 2006, p259).

Research in this area has focussed on the detection and processing of such biologically prepared stimuli, also referred to as *phylogenetically* fear relevant stimuli, for example snakes, spiders and angry faces (Anderson, 2006). A number of scholars have distinguished between evolutionary threats such as these, and modern threats, the latter of which can also be referred to as *ontogenetically* fear relevant stimuli (Fox et al, 2007), for example guns or knives. Empirical work has demonstrated that rapid perceptual processing

occurs for evolutionary threat stimuli (Ohman and Mineka, 2001), an effect that has also been shown for modern threat stimuli (Blanchette, 2006; Fox et al, 2007). Given that rapid perceptual processing is not confined to evolutionary threat stimuli, it is possible to explore the idea that threats contained in threat appeal advertisements may also access rapid perceptual processing. However, the categories of phylogenetically and ontogenetically fear-relevant stimuli are very specific. If pictures of spiders, snakes, angry faces, guns and knives are included in advertising stimuli it is possible to hypothesise that they will automatically be perceived as threats and provoke an automatic fear response. However, the visual images typically used in threat appeal advertisements do not fall into these specific categories, (for example a picture of a diseased lung from smoking, or a car crash scene as a result of drunk driving) which do not fall into phylogenetically and ontogenetically fear relevant stimuli categories. Even though they may be unpleasant images, whether they are psychologically perceived as 'threats', specifically in terms of the perception of danger and experience of fear as a central motive state, remains in question.

Studies have shown that individuals are quick to identify actual threats from a variety of stimuli. Experiments by Ohman et al (2001) showed an automatic shift of attention to stimuli involving a threat. Participants were consistently faster at finding threats (snakes or spiders) than non-threats (flowers or mushrooms). These results indicate that "humans share a predisposition to preferentially direct attention toward potentially threatening animal stimuli" (Ohman et al, 2001, p474). Similar results are reported by Fox et al (2007) who found that the detection time for snakes did not differ to that of guns, indicating that the type of threat, evolutionary based or modern, did not influence the detection of threats. This pattern of results has also been established for the faster detection of angry faces compared to neutral or friendly faces (Hansen and Hansen, 1988). The preferential attention to threat stimuli has been widely characterised as a "threat superiority effect" (Fox et al 2007, p692).

Given that attention is the mechanism where information is selected or rejected for further perceptual processing (Anderson, 2006) and there is an attentional bias towards processing threat stimuli (Mayer et al, 2006; Ohman et al , 2001) the use of threats in advertising appeals will direct attention toward that stimulus. This would allow threat appeals to "break through the clutter of competing ads" (Pieters et al, 2002, p765). Whilst attention itself is not the focus of the present study, attention is a gatekeeper to further processing. The focus of this study is to understand how individuals respond to threat appeals; specifically how emotional and cognitive responses mediate the relationship between stimulus and response and as such, further processing once attention has been paid to the stimulus is a key component.

Ohman and Mineka (2001) developed the theory of an evolved 'fear module' in the brain; a system specifically devoted to solving problems associated with threats to survival. The fear module is located in the amygdala and enables both the experience of fear for an individual and also the perception of fear in others (Fox et al, 2007). It is assumed that the fear module has been shaped by evolution and therefore is preferentially activated by evolutionary based threats, however the theory does not exclude modern threats and indicates that "threat-relevant stimuli with a strong ontogenetic history (e.g. guns) can also gain access to the fear module" (Fox et al, 2007, p691). The fear module can generate emotional feelings to threatening stimuli, psychophysiological responses, and activate defensive behaviour, for example fight or flight (See Ohman and Mineka (2001) for a review). The fear generated by the fear module cannot be controlled by conscious cognitions (Ohman and Mineka, 2001) and supports preparedness theory (Seligman, 1971). This identifies preferential associations between evolutionary threat stimuli and negative outcomes, associations which underpin the development of specific phobias. Such phobias are unable to be controlled by cognition (Ohman and Mineka, 2001).

Conversely, Sander et al, (2003) view the amygdala and related structures as a more general system evolved to detect relevance. They link this to appraisal theories of emotion where "the specificity and the differentiation of an emotion mostly relies upon the cognitive evaluation of the meaning and the consequences of a relevant external event, within a specific context and relationship to one's own goals. The detection of relevance can be considered as the essential phase of this evaluative process" (Sander et al, 2003, p310-311). According to this perspective, stimuli with phylogenetic origins are likely to be appraised as relevant, but the appraisals for these would not be expected to be different for more contemporary stimuli. In a threat appeals context it would be logical, given the topics the appeals are designed to highlight, that contemporary stimuli (such as guns) may be more relevant than phylogenetic stimuli (such as snakes). An appraisal of a stimulus as highly relevant would increase the likelihood of attentional processing to that stimulus (Fox et al, 2007). If the fear module is better characterised by relevance, then *any* stimuli (threatening or not) that is relevant to an individual's current goals will activate the processing system. If the latter is the case, then a negative consequence presented as part of a threat appeal may access the perceptual processing system as long as it is perceived to be relevant to the individual's current goals.

This theoretical perspective treats fear as a special emotional state, compatible with discrete theories of emotion (Fox et al, 2007). When exposed to an evolutionary threat, for example a snake or a spider, or a modern threat, for example a gun or a knife, individuals

have an automatic fear response and are motivated to take some action to remove, or move away from, the threat source (often referred to as the fight or flight response). Reflecting upon the four elements of threat appeal definitions as presented in section 1.1, it is possible to see a similarity between these elements and the process outlined here. As alluded to above though, it is questionable as to whether the so-called 'threats' typically used in threat appeals (e.g. a diseased lung from smoking or a car crash scene caused by drunk driving) are equivalent to those that have been shown above to generate fear responses (i.e. spiders, guns, etc.). Specifically, if a threat appeal contained a picture of a gun or a spider then the application of psychological threat research to the threat appeals context is clear. However, the topic of threat appeal messages often concerns health issues such as smoking or obesity, or safety, for example deterring people from driving whilst under the influence of alcohol or wearing a seatbelt. In these examples a picture of a cigarette or a car crash is obviously more often used than a spider or a gun. Therefore, it is impossible to simply assume that the 'threats' presented by such campaigns will activate threat detection mechanisms, and consequently the fear module in the brain – or in other words to actually cause genuine 'fear', as understood from a psychological perspective.

The International Affective Picture System (IAPS) is widely used in psychology research. This is a database of pictures that are designed to elicit the spectrum of emotional responses. The original authors (Lang et al, 1999) measured responses to pictures using the PAD measurement (pleasure, arousal, dominance) to categorise each picture. They characterise the emotional space according to these three dimensions and state that the pictures in IAPS cover all of the affective space. (A detailed discussion of the theoretical perspectives on emotion will be presented in chapter 4). Even so, whilst the PAD measure provides useful information, it does not show how people categorise such images in terms of discrete emotions, and the labels people attribute to them (e.g. 'fear', or 'anger' etc.). Mikels et al (2005) took a subset of IAPS and asked people to categorise them according to predetermined emotional terms – for the negative pictures these were fear, sadness, anger, disgust and undifferentiated. The pictures identified as eliciting fear (alone or with another emotion) were; snakes, angry faces, spiders, predatory animals, snarling dogs, dentists, tornadoes, masked attackers and sinking ships. These threats are generally in line with those identified as evolutionary or modern threats in the threat detection literature. However, concerning the aforementioned examples (typical to the threat appeals literature) of car accident and physical injury, Mikels et al's (2005) results were particularly interesting. Specifically, all pictures of car crashes were categorised under sadness, while pictures of bloody bodies and extreme injuries were all categorised as disgust, or both disgust and sadness. Because disgust and sadness are distinct emotions from fear (e.g. Ekman, 1999),

these results would suggest that the kind of images used in threat appeal advertisements may not consistently (or perhaps at all) elicit fear responses. Again, the conclusion may be drawn that it could be misleading to consider fear as the only emotional response to threat appeals based on the type of image typically used in those appeals. Indeed, a number of more recent studies about responses to threat appeals have considered 'disgust images' (e.g. Leshner et al 2011; Morales et al 2012; Dens et al, 2008), arguing that disgust has been identified as a neglected emotion in the study of threat appeals and as such, and Dens et al (2008, p251) define a disgust appeal as "incongruent, unusual and distinctive." However, in line with the previous discussion, it is clear that as with a 'fear appeal', a 'disgust appeal' also conflates the intrinsic stimulus characteristics with the emotional response intended to occur as a result of exposure to those characteristics (which will be examined in more detail later in this chapter).

Nevertheless, the concept of widening the considerations of emotional responses to such stimuli, beyond fear, is an important advancement to the field. Leshner et al (2011) specifically distinguish between disgust images (defined as negative graphic images) and 'fear appeals' (defined as audio-visual information about a threat to one's health, notwithstanding the aforementioned issues regarding threat definitions). They conduct a study that looks at the level of fear appeal and level of disgust image and the interactions of these on cognitive and emotional processes. In addition, Morales et al (2012) found that adding a 'disgust image' to a 'fear appeal' increased message persuasion and compliance. A complementary body of research specifically looks at the effectiveness of graphic warnings placed on cigarette packaging and how these influence persuasion and intention to stop smoking (e.g. Andrews et al, 2014; Erceg-Hurn and Steed, 2011; Schneider et al, 2012). Whilst the addition of images that elicit disgust are found to be more persuasive (Dahl et al, 2003; Sabbane et al, 2009; Miller et al, 2009), in the context of the argument developed here, it is possible to question whether by definition, a message with a graphic image (as opposed to a message without a graphic image) will influence an individual's perception of the severity of the consequence portrayed. For example, a drink driving advert showing a picture of a bloody face may be perceived to be more severe than the same advert showing a picture of a minor car accident. This suggests a possible confound between disgust and perceived severity of consequence in such research. In addition, the differentiation between types of pictures and the emotional responses they are likely to elicit (e.g. disgust and sadness) may mean that individuals' responses are driven by the different properties of those emotions. This will be discussed in more detail later in chapter 4. Nevertheless, evidence suggests that the inclusion of images intended to cause disgust or

sadness responses are not the same as those that individuals are hard wired to recognise as a threat, and therefore the processing mechanism for the images will differ.

To summarise the previous discussion; humans have evolved to detect certain stimuli as threats, however if the 'threats' used in threat appeals are not those that humans are hard wired to appreciate as such, then (similar to the issues arising from the argumentation literature) it is only the individual's perception of the stimulus as threatening that determines whether a given stimulus contains a threat. The perception of the message as a warning may be more or less universal, however, the perception of a threat, including its severity and relevance to an individual (perceptions of severity and susceptibility as outlined in section 2.2.3 and section 2.2.4), is part of the cognitive response to stimuli rather than an inherent component of the stimuli itself. This means that it is likely that not all individuals would experience fear in response to a given stimulus, and instead a variety of responses could be elicited by the same stimulus across subjects. In particular, the picture used in the stimuli, the context, and individual differences, are all factors that may influence the elicitation of an emotional response.

Existing literature typically has a number of common features to what is called a 'threat appeal', a) something that is assumed to be a 'threat' is presented, b) the consequences of that so-called threat are identified, c) an implicit assumption that fear is experienced by the individual is made, and finally d) a recommendation to reduce or eliminate that threat is offered (see section 1.1). Importantly though, genuine threats that have been found by psychological research to activate threat detection mechanisms, and thus the fear module, are those that pose a *general* danger to survival (see e.g. Ohman and Mineka, 2001; Fox et al, 2007). However, threats used in threat appeals tend to be associated with a *specific* topic, for example the threat of physical injury from a drink driving accident or the threat of cancer from smoking (e.g. THINK campaigns and NHS campaigns). Whilst a car accident or cancer may also be seen as *specific* threats to the survival of a *given individual*, it is impossible to assume that such situations are perceived the same as the general evolutionary (phylogenetic) and modern (ontogenetic) threats identified and tested in the psychology literature for a number of reasons, each of which will be discussed below.

Whilst cancer and injury from a car accident are threats to physical health, (a threat of damage to an individual's body) similar to say, snakes and knives, they differ in terms of the control or choices associated with the threats. Specifically, an individual has no control over a snake or a knife once they are presented with the threat. Individuals may make a choice to avoid situations where snakes or knives are likely to be present, but a snake is an

independent entity, as is an attacker holding a knife, meaning that when in a threatening situation with a snake or a knife an individual has relatively little direct control over the threat. In contrast to this the threats used in threat appeals are such that – almost by definition – there is an element of choice or control over a situation. Indeed, the very point of such appeals is to somehow influence the individual *to* control the situation to reduce the likelihood of the undesirable outcome. To use the car crash example, whilst one cannot control the actions of another driver, individuals can account for their own actions and the decisions behind those actions. Individuals can make a decision not to drink and drive (as recommended in the threat appeal) therefore there is an element of choice associated with the threat, which translates into a decision. If an individual chooses or decides to drink and drive and they are aware of the threat, there is a choice associated with this. In both these examples the choice is highlighted emphasising that the onus is on the individual in terms of whether or not they expose themselves to the threat of physical injury.

Findings suggest that perceived control is important in perceptions of threat severity and susceptibility. Rapee (1997, p460) found that fear of “physical danger situations” is caused by perceived threat and perceived likelihood of occurrence. The issue of control and personal responsibility highlights the need to investigate the direction of threat (towards self or other) which will be examined in more detail in section 3.4.2. Given that perceived control may be what differentiates the evolutionary or modern threats identified in the psychology literature that access the fear module in the brain (e.g. snakes or guns) from the threats presented in typical threat appeals (e.g. car crashes, smoking) it is possible that individuals will perceive threats differently if threats are directed towards the self or towards others. As previously stated, an individual has little control when presented with an evolutionary or modern threat as defined in the psychology literature, however, with the type of threats used in the relevant advertising literature (e.g. smoking, speeding etc.), there is an element of choice or control over a situation. Indeed, the very point of such appeals is to somehow influence the individual to control (i.e. change) the situation to reduce the likelihood of the undesirable outcome. Donovan and Henley (1997) take an even wider view of the degree of perceived control individuals may have over the negative outcomes occurrence by distinguishing between natural disasters and lifestyle diseases/injuries. Natural disasters (e.g. earthquakes and floods) will occur regardless of an individual’s actions, whereas lifestyle diseases and injuries (e.g. smoking and car accidents) are, at least, partially under an individual’s control. Messages that refer to natural disasters focus on minimising the consequences of an event, whereas messages that refer to lifestyle diseases or injuries attempt to minimise or prevent them occurring prior to the event through behaviour modifications, or by influencing an early intervention (e.g. screening programs).

This discussion leads to the notion of a re-framing of the conceptualisation of responses to threat appeals. Indeed, the distinction between threats that human beings are predisposed to acknowledge, compared to warnings that may be perceived as a threat, are conceptually distinct. In addition, the topics of threat appeals (e.g. stopping smoking, obeying the speed limit, or reducing binge drinking) are, by definition, not those that human beings are predisposed to consider as 'danger' and as such will not elicit a fear mechanism response. This is in direct contrast to the fundamental assumption that underpins the threat appeals field, which has been upheld since the first research in the area (e.g. Hovland et al, 1953 as discussed in chapter 2). It cannot be assumed that the 'threats' or warnings used in threat appeals are perceived as such and as such it equally cannot be assumed that they will generate fear as a motivating drive (Hovland et al, 1953; Witte, 1992). In line with this, whilst the models and theories developed to explain responses to threat appeals (as examined in chapter 2) consider the immediate response to threat appeals and as such rely on the 'threat causes fear' assumption, this is no longer an assumption that can be upheld without further investigation. The present thesis acknowledges that this assumption is not grounded in the extant literature and therefore re-frames individual responses to threat appeals as a decision based on the widely held, yet implicit, assumption that the objective of threat appeals is to influence the individual to control the situation to reduce the likelihood of the undesirable outcome.

Drawing the strands of literature together and in the context of the development of the theoretical field as outlined in chapter 2, the present thesis is a logical step forward in clarifying the intrinsic message characteristics that comprise a threat appeal and the responses to those intrinsic message characteristics. In chapter 2 the theoretical advancements made by protection motivation theory (section 2.2.3), the extended parallel process model (section 2.2.4) and the fear pattern model (section 2.1.3) are discussed. These models and theories each contribute to understanding individuals responses to threat appeals, but focus on the immediate responses to those threat appeals. Given the evidence, as presented above, immediate or instinctive responses to threat appeals appear to be, in fact, redundant because it cannot be assumed that a direct threat is perceived, and as a consequence activates the fear response. Rather, as outlined above, the perception of threat in question forms a part of a decision making process about future behaviour. Indeed, as identified in section 1.1 often an individual is exposed to a threat appeal at a time when they are not engaging in the behaviour in question, which will be examined in more detail in chapter 4.

Given the different perspectives presented from argumentation and psychological perspectives above, and the argument that it cannot be assumed that threat appeals generate a fear response, the focus will now turn to the uncovered assumptions in the threat appeals field that underpin scholarly works. A discussion of these assumptions is necessary to better understand the inconsistencies in research results that have been identified continuously over the last six decades. More specifically, as Algie and Rossiter (2010, p265) state; “studies of fear appeals have produced conflicting results. Research papers examining fear appeals often begin with a discussion about the contradictory and paradoxical findings of past experimental results in this field of research.”

While many of these inconsistencies have been examined in chapter 2, the present chapter focuses in on a number of critical issues of particular relevance. Importantly, a key inconsistency between existing findings regards whether such appeals are an effective form of communication. As summarised by Nestler and Egloff (2012, p94); “even though threat appeals are widely used, empirical evidence concerning their effectiveness has been inconsistent: Whereas some research has demonstrated that they are effective, other researchers found that they often fail to change an individual’s attitudes and intentions”. In the next section, this inconsistency will be explained in reference to the assumptions that have developed in the field, and arguments will be made regarding why it is important to move away from these assumptions. Of particular relevance herein is an examination of the intrinsic message characteristics that have been studied in prior work. That said, considering that Kay (1972) stated that that contradictions have occurred in research concerning ‘fear appeals’ due to a failure to explicitly define the nature of the specific factor, or intrinsic message features to be measured which has meant that researchers “whose findings were at variance with each other appeared to believe they were all measuring the same thing, but in likelihood were not.” (Kay 1972, p16), this is not a new issue. However, despite a number of notable studies referring to this and similar issues, it remains a key problem in extant literature, as demonstrated in the preceding sections of this thesis.

As stated above, the intention of this thesis is to re-conceptualise responses to threat appeals, and develop an approach that does not conflate message characteristics with response, or indeed, assume that threat appeals, in their common form, automatically generate a true fear response. That is not to say that prior research has necessarily been ineffective or flawed. Quite to the contrary, this research rather provides a different perspective that allows researchers to find more meaning in prior results and accordingly dispel the confusion identified herein, and by prior scholars. To this end, the following sections will examine research that has utilised intrinsic message characteristics in threat

appeals. This serves as the first stage in identifying how message characteristics generate specific responses.

### **3.2 Identifying and examining intrinsic message characteristics of threat appeals**

Drawing from the above discussion, it can certainly be seen that the lack of consideration of intrinsic message characteristics, and inconsistencies in their definition, has at least in part caused the lack of clarity that has according to scholars' hindered development in the field (e.g. Keller and Lehman 2008). The assumption that threat appeals and fear are the same, and that fear itself can be encoded into a stimulus, does not allow for the rigorous investigation of the relationships between intrinsic message features and cognitive and emotional responses to those features. In a move away from the assumption that appeals can be designed according to their effect, an examination of what constitutes a threat (see above) reveals that the information in threat appeals is more consistent with a warning than a threat, and that the perception of them as threats is in fact reliant on individual perceptions. Of course, if the warning is perceived as a threat then it is possible that fear will be an emotional response, as suggested in the fear module and threat detection literature. However, the assumption in the threat appeals literature that fear is the *only* possible emotional response elicited, and is experienced by every individual who views the stimulus, requires further examination (see Section 1.1). That said, as already alluded to, a number of researchers have made tentative steps toward identifying intrinsic message features for manipulation in threat-based stimuli, which will now be reviewed in more detail.

#### **3.2.1 Types of consequence**

As previously discussed, a threat appeal, as defined in sections 3.2 and 3.3 may not actually contain a direct threat, according to either the argumentation or the psychology literature. Instead, whether the situation in the appeal is threatening or not is down to the perception of the recipient, even though the *warning* in that appeal is universally acknowledged. The features of the warning therefore may be considered to be intrinsic message characteristics. Nevertheless, a negative outcome (Donovan and Henley, 1997) or negative consequence (Rapee, 1997) is a feature that is common in the threat appeals. Whilst the 'level of threat' has been used as a stimulus variable by numerous researchers (e.g. Nestler and Egloff, 2012; Cauberghe et al, 2009; Dillard and Anderson, 2004; Jones and Owen, 2006) this is problematic. The 'level' of threat is based on perception, which, by

definition, is an individual's response to a stimulus. In essence, it seems common that researchers attempt to use the perception of severity of threat as an intrinsic message feature.

A clear contrast is provided by other scholars have moved away from this approach, preferring to consider the *type* of threat presented (e.g. Dickenson et al, 2011), which is not open to interpretation. While a universal categorisation of types of threat in this context has not been developed, Donovan and Henley (1997, p59) identified four different types of negative outcomes, each of which can be presented individually or combined. The basic four outcomes are "physical (e.g., disease; disfigurement), social (e.g., ostracism; rejection), psychological (e.g., sense of failure; loss of self-esteem) and financial (e.g., property loss or damage; loss of job or income source)". An example of a combination of these outcomes is the primary consequence of physical injury from a car crash which leads to loss of employment and depression.

The most common distinction between types of consequences is between physical consequences, and social consequences (Dickenson et al, 2011). For example, Arthur and Quester (2004) used stimuli that either depicted the physical consequence of blindness from smoking accompanied by a picture of an eye or stimuli showing a social consequence illustrating the isolation caused by smoking demonstrated in a picture showing a small group of men and women being forced to smoke outside. Also, Dickenson and Holmes (2008) defined physical threats as those that relate to an individual's body, health and life and social threats as those that relate to the intensity of social rejection. The findings of studies using physical and social threats have been mixed. For example, Schoenbachler and Whittler (1996) found drug prevention advertisements that highlighted social consequences to be more persuasive than advertisements portraying physical consequences of drug use. In contrast, LaTour and Pitts (1989) concluded that advertisements that place emphasis on the deadly consequences of AIDS generate both tension and energy elements of fear arousal, which generates persuasion. Smith and Stutts (2003) concluded that long-term health appeals were more effective than short term cosmetic appeals with regard to an overall decline in smoking among the experimental groups, and further that males responded more favourably to social threat messages, whereas females responded more favourably to physical threat messages. Similarly, Michaelidou et al (2007) developed an anti-smoking intervention programme using long term health messages and short term cosmetic messages, and found that for adolescents short term cosmetic (e.g. yellow teeth) and short term fitness (e.g. ability to play sports) messages were most effective in terms of impact on adolescents beliefs about smoking.

This result has been replicated by Dickenson-Delaporte and Holmes, 2011) who suggest that social threats are perceived to be more immediate and therefore relevant to adolescents than time delayed physical outcomes such as cancer from smoking.

Whilst these results are interesting and have clear practical implications, particularly regarding how best to communicate with adolescents, there would appear to be a methodological issue that needs to be addressed. Specifically, the distinction between a physical threat and a social threat (as described above) is clear and meets the criteria for an intrinsic message characteristic which has attributes that “nearly everyone ... describes ... identically” (Rossiter, 2002, p. 310) as identified in section 1.1. However, the execution of the different type of threats in threat appeals does not lend itself to rigorous empirical testing as part of randomised experiments. As outlined in chapter 4 when examining consumer responses to intrinsic message characteristics of threat appeals, the variables of interest are manipulated, but all other message features are held constant. This is to ensure that differences in responses can be attributed to variations of a specific message characteristic or interaction between message characteristics. However, when presenting a physical or social threat there are actually *many* variables that are changed. To re-visit the study by Arthur and Quester (2004) the threat appeals used depicted either the physical consequence of blindness from smoking accompanied by a picture of an eye, or stimuli showing a social consequence illustrating the isolation caused by smoking, demonstrated in a picture showing a small group of men and women being forced to smoke outside. The images and text used were entirely different in these threat appeals. Whilst this may be closer to reality, in terms of the different types of threat appeals used in the public sphere, given the confusion in the literature an incremental approach is required to establish the relationships between threat appeal variables and responses. In other words, it is hard to determine whether any effect differences across the two stimuli were caused by the changed direction of threat, or the changes in other parts of the stimuli (e.g. picture of an eye versus people, changes in text, and so forth) The position taken in the present thesis is that a solid platform for understanding relationships between threat appeals variables and responses must be built by isolating key variables as much as possible, before embarking on examining a complex interaction of many intrinsic message characteristics (see Chapter 5 for more details on stimuli design and testing).

### **3.2.2 Direction of message**

A common distinction in the general advertising literature is that made between messages that are made with respect to the viewer of the advertisement (self-relevant), and those that

are not (other-relevant in general). A large body of empirical evidence suggests that advertising messages found to be self-relevant are more persuasive and generate higher recall than those that are not, and therefore that are unable to access individuals' self-schema (Hamami et al, 2011; Burnkrant and Unnava, 1995; Debevec and Iyer, 1988; Rogers, Kuiper and Kirker, 1977). According to Keller and Block (1996), information about the self includes a vast array of knowledge (e.g. physical appearance, past experiences, behaviour patterns, attitudinal likes and dislikes, and relationships towards others), and it is this knowledge that makes the self one of the most elaborate networks in memory. On this basis, many researchers have proposed that an individual's knowledge about themselves is superior to their knowledge about others; therefore, elaboration is more likely to occur when events in an advertisement are encoded with respect to the self than events encoded with relevance to others, (e.g. Hamami et al, 2011; Burnkrant and Unnava 1995; Rogers et al 1997).

Given the empirical evidence concerning the effectiveness of self-referencing in advertisements it is unsurprising that researchers have applied this theory to threat appeals. However, in a threat appeal context this effect can be questioned (Block, 2005) because when individuals are threatened, defence mechanisms have been found to activate in order to protect individuals' sense of self (Sherman et al, 2000; Keller and Block, 1999; Liberman and Chaiken, 1992). This links to the fear control processes identified in the extended parallel process model (see section 2.2.4) which serve as a defensive response when an individual experiences fear. Indeed, as outlined in section 3.3, if fear is a response to a threat then fight or flight mechanisms will be activated in order to protect the individual and their sense of self. However, given that threat appeals may not contain a threat in the truest sense (as identified in sections 3.2 and 3.3) it cannot be assumed that the threat causes fear mechanism will operate accordingly.

A small body of research has considered the influence of the direction of a threat towards the self ('you') or another person ('other') (e.g. Block, 2005; Block and Williams, 2000; Adams et al, 2011) as intrinsic message characteristics. Self-referencing "occurs when information is processed by relating it to aspects of oneself" (Burnkrant and Unnava, 1995, p17). Self-referencing enhances information processing because "the self is an extremely active and powerful agent in the organisation of the person's world" (Rogers et al, 1977, p677). Block (2005, p2291) identifies the "unique properties" of self-referenced information, namely that it is "highly elaborative, highly organised and frequently accessed" and attributes these to increases in persuasion and recall, often referred to as the self-reference effect (SRE). The encoding of an advertisement with cues to encourage self-referencing

does not guarantee that the SRE will occur in all individuals. Debevec and Iyer (1988) found that individuals who engaged in low levels of self-referencing in response to stimulus materials had less positive attitudes and cognitive responses than those who had high levels of self-referencing. Indeed, Polman (2012) found that when individuals were asked to make choices for others in a gambling task, less loss aversion (the preference for avoiding losses as opposed to acquiring gains) occurred than when individuals were making choices for themselves.

Self-referencing is encouraged by the use of internal and external requests as message cues (Chang, 2011). Internal requests use second-person pronouns in the written or verbal components of the message, for example addressing the audience directly using 'you'. This increases audience attention to the message as the psychological distance between the message itself and the audience is reduced (Chang, 2011). External requests "are statements that explicitly or implicitly ask the audience to increase their attention" (Chang, 2011, p148), for example 'pay attention to what's coming next', or rhetorical questions such as 'smoking causes lung cancer, who knew?' Chang (2011) found that the use of internal and external request tactics increased self-referencing but only for people who were already concerned about the health issue (in their case hepatitis B). "Self-referencing prompts are implicit and more subtle than are other message tactics" (Chang 2011, p148) which may explain why these types of cue are motivating for people who already have an interest in the issue presented. Debevec and Romeo (1992) compared the use of second person pronouns ('you') with third person terms ('most people' or 'they') and found that the use of second person pronouns in advertising messages were more personally relevant to the audience and the product was perceived to be of more use to individuals than when third person terms were used. Chang (2006) also found that magazine articles written using second person pronouns rather than third person terms directed attention to the self and increased self-consciousness. Thus, as logic would suggest, the use of second person pronouns, as opposed to third person pronouns, is more likely to encourage self-referencing.

Self-referencing has been studied in a wide range of contexts and has been shown to increase the recall of messages (Hamami et al, 2011; Klein and Loftus, 1988; Rogers et al ,1977), persuasion (Bull et al , 2001; Burnkrant and Unnava, 1995; Debevec and Iyer, 1988), positive affect (Chang, 2005; Hull et al, 1988), attitudes and intentions (Ahn and Bailenson, 2011; Krishnamurthy and Sujjan, 1999; Debevec and Romeo, 1992) and brand evaluations (Escalas, 2007). The use of second person terms and third person terms in advertising messages to generate self and other directed messages has also been used in

a threat appeals context. In a study focussed on charity appeals and the role of guilt in shaping donation intentions, Basil et al (2008) used second person pronouns as a high empathy condition and third person terms as a low empathy condition. The results demonstrate that the high empathy condition (second person pronouns) increased anticipated guilt, reduced maladaptive responses and increased donation intention, demonstrating “an egoistic motivation for the empathy-prosocial behaviour relationship.” (Basil et al, 2008, p17) Keller and Block (1996) used second and third person wording to differentiate self and other conditions respectively, finding that self-referencing conditions enhanced the persuasiveness of a ‘low’ fear appeal by causing individuals to elaborate upon the negative consequences of smoking. Conversely, other-referenced conditions increased the persuasiveness of a ‘high’ fear appeal, by decreasing the extent to which individuals denied the harmful consequences portrayed. Unfortunately, Keller and Block’s (1996) study conflates the stimulus variable and response as discussed earlier (by assuming fear can be a message characteristic), even so the results do suggest to some extent that the direction of message underpins the persuasion and elaboration processes individuals experience in response to threat appeals.

The manipulation of intrinsic message characteristics to create self or other directed messages is employed to encourage differential elaborative processing of the message. Elaborative processing, where conscious cognitive activities occur, has been shown to lead to increases in message persuasion (Keller and Block, 1996). More specifically when a message is related to an individual’s personal experience, self-referencing has been found to increase message persuasion (Burnkrant and Unnava, 1995). Whilst the focus of the present study is on understanding emotional and cognitive responses to threat appeals, it is important to recognise that these responses are linked. As Bagozzi et al (1999, p185) state “emotions arise in response to appraisals one makes for something of relevance to one’s well-being.” An appraisal is a cognitive response and is defined as an evaluative judgement and its interpretation (Lerner and Keltner, 2010). The object being appraised must be found to be relevant to the individual before cognitive processing can occur, which in turn leads to emotional responses. According to this perspective, relevance is therefore a necessity to enable further processing. In a threat appeals context, the messages are designed (according to the definitions of threat appeals presented in section 1.1) to persuade individuals that a threat is present, that the consequences of that threat are serious, and to encourage the adoption of the recommendation in the message. Therefore, elaborative processing of a threat appeal must occur in order for the message recommendation to be taken up by the audience.

Self-construal is an individual's consideration of their sense of self in relation to others, which can be independent or interdependent (Block, 2005). Individuals with independent self-construal perceive the self to be stable and distinct from the social context, and value uniqueness and autonomy (Markus and Kitayama, 1991). Individuals who have an interdependent self-construal perceive the self to be interconnected to the social context and social relationships within which they operate, and value group acceptance and harmony (Singelis, 1994; Markus and Kitayama, 1991). Block (2005) expanded on this in a threat appeals context and found that when the direction of the message meant the 'self' or 'other' was the *victim* of a drink driving accident in a threat appeal, the SRE was reversed when individuals with an independent self-construal were exposed to the stimuli. In other words, individuals with independent self-construal had greater recall and more favourable attitudes to the 'other' appeal. For individuals with interdependent self-construal the SRE was neither confirmed nor reversed. A second study by Block (2005) found that when the 'self' or 'other' was the *driver* of a car causing an accident in a guilt appeal, individuals with an independent self-construal reported greater recall and more favourable attitudes, as predicted by the SRE. These results are attributed to the nature of the emotion experienced; whereas guilt has an element of accountability and therefore the 'self' condition was most associated with the SRE, in the fear condition the SRE effect was reversed - suggesting the superiority of 'other' over 'self' in such cases.

The positive relationship between self-referencing and persuasion has been shown to reverse when the direction of message in the advertisement is accompanied by other self-referent message characteristics, for example pictures or rhetorical questions. Burnkrant and Unnava (1995, p23) found that more complex messages generated increased elaboration which "lead to more critical argumentation", which in turn "undermine[s] or reverse[s] the positive effects of elaboration on persuasion." These results suggest that increased elaboration and associated increased cognition can reduce the self-reference effect, because counter arguments to the relevance of the message are created by the audience. Whilst this research suggests that simple messages are more likely to generate the self-referencing effect, Meyers-Levy and Peracchio (1996) indicate that the subtle nature of internal or external request cues are attended to only by highly motivated individuals (i.e. those that have prior involvement with the message or product). The results from the study by Meyers-Levy and Peracchio (1996), indicate that when individuals have low motivation to elaborate on a message they do not respond to self-referent stimulus cues. Whilst more complex messages may reverse the self-reference effect, research suggests that simple messages will only receive elaboration when an individual has prior concerns or involvement with the subject of the message.

In a threat appeals context, second person pronouns have been found to increase elaboration. Chang (2011) identified an elaboration threshold that must be reached in order for elaboration to occur, caused by sufficient attention to be paid to message cues. The use of third person cues did not increase elaboration (regardless of individuals' prior concern with the content of the message), and as such advertising effectiveness did not increase. The use of second person pronouns did however mean that the elaboration threshold was reached, and a corresponding increase in advertising effectiveness was observed. The use of rhetorical questions in the advertising copy was found to be more effective than statements (Chang, 2011), which is attributed to the notion that in order to respond to rhetorical questions, individuals must retrieve relevant personal experiences from their memory.

The valence of the message has also been shown to influence the self-referencing effect (Sedikides and Green, 2000). Recall is higher for self-referenced positive messages (for example 'I would help a friend in need'), than for self-referenced negative messages (for example 'I don't care about hurting people to get what I want'). Individuals are motivated to process positive information rather than negative information about themselves due to self enhancement goals. The emphasis on positive information and avoidance of negative information serves to protect individuals' positive self-concept, particularly as individuals do not want to think badly of themselves (Sedikides and Green, 2000). Hence, the differences in elaboration or memory encoding for positive and negative self-referent information may be the reason for differences in recall (D'Argembeau, et al, 2005). This phenomenon was expanded on by Green et al (2008) who proposed that this effect could be explained by mnemonic neglect. The mnemonic neglect model rests on the idea that individuals are strongly motivated to believe they are 'good' and to protect this belief. The model makes three distinctions between types of feedback. Firstly, the valence of the feedback; either positive or negative. Second, the traits involved in feedback; either central or peripheral. Third, the direction of the feedback; towards the self or others. Therefore, feedback that is threatening to the self receives less processing and therefore elaboration, resulting in poorer recall. Self-affirming feedback on the other hand will receive deeper processing, resulting in more elaboration and better recall (Green et al, 2008). Positively valenced feedback that refers to central traits (e.g. trustworthiness or kindness) receives deeper processing and elaboration regardless of whether it is directed towards the self or other. In addition, feedback concerning peripheral traits (e.g. modesty or a tendency to complain) will receive shallow processing and elaboration regardless of valence or direction of the feedback (Green et al, 2008).

As such, empirical evidence suggests that a message presenting a threat to an individual's self-concept will receive low processing and elaboration which is a reversal of the self-referencing effect. Indeed, as the mnemonic neglect model (Green et al, 2008) suggests, threat appeals which by definition employ a negative valence, will generate less processing and therefore elaboration, resulting in poorer recall. The direction of message (towards self or other) has been shown to influence persuasiveness of a threat appeal (Keller and Block, 1996) where the self-condition enhanced the persuasiveness of a 'low' fear appeal by causing individuals to elaborate upon the negative consequences of smoking. Conversely, other-referenced conditions increased the persuasiveness of a 'high' fear appeal, by decreasing the extent to which individuals denied the harmful consequences portrayed. Despite the fact this study conflates message characteristics with intended responses by using a low and a high fear appeal, the results suggest that when individuals experience less fear associated with a self-directed message, the cognitive processes associated with the severity of the consequence are dominant and when individuals experience a higher level of fear as a result of an other-directed message defensive processing is reduced (Keller and Block, 1996).

Building on this, Block (2005) found that self-directed guilt messages which position the self as a driver of a car causing an accident, created greater recall and favourable attitudes among individuals with an independent self-construal. This is as predicted by the SRE. However other-directed fear messages, where a friend is the driver of a car causing an accident, created greater recall, which is a reversal of the SRE effect. Block (2005) attributes the results for self-directed guilt messages and other-directed fear messages to be explained by the type of emotion experienced. Guilt is an emotion with accountability characteristics which are proposed to drive the effectiveness of the self-direction of the message. Whilst this study conflates message characteristics and responses in terms of assuming the differences between a guilt appeal and a fear appeal, the direction of message is clearly an intrinsic message characteristic. In addition the idea that the direction of message will be more effective as a message characteristic when paired with different emotional responses is a significant development. Given that, as argued above, it cannot be assumed that the threat causes fear mechanism operates in its truest sense, the consideration of other emotional responses such as guilt is logical. This will be explored further in chapter 4.

If messages that present a threat to an individual's self-concept receive low processing and elaboration, and thus a reversal of the self-reference effect, the implication is that threat appeals may receive low processing and elaboration. Indeed, defence motivation, whereby

individuals are motivated to protect attitudes or beliefs that are a) related to a central self-concept and b) reaching a preferred conclusion, overrides the motivation to form the more accurate attitude or belief (Giner-Sorolila and Chaiken, 1997). Threat appeals often address issues concerning individuals' central self-concept, for example health, therefore individuals will be motivated to reach a preferred conclusion, thus selectively attending to and processing information to support their own beliefs or actions. For example, a smoker who views an anti-smoking message may selectively process and elaborate on the message in order to reduce the threat of smoking because continuing smoking is the preferred conclusion for that individual. As Chang (2011, p160) states "It is common for people exposed to health promotion messages to ignore them, in the belief that they themselves are not susceptible". Based on this, if individuals avoid a message or do not process the message as relevant to the self, then other-directed messages that present threatening information may receive more elaboration and as a result be more effective. However, it is necessary to consider the properties of potential emotional responses in relation to the direction of message and build on the work by Block (2005) to further understand how the SRE and the reversal of SRE may operate in conjunction with the generation of different emotions. The constructs of emotion and associated cognitions to the SRE will be discussed in more detail in chapter 4.

### **3.2.3 Vividness and graphic Images**

As part of the re-examination of threat appeals and the identification of intrinsic message characteristics, it is important to return to the definition of threat appeals as presented in section 1.1. The first common element of a threat appeal is the presentation of a threat using vivid or personalised language and pictures (Witte, 1992) that depict "a personally relevant and significant threat" (Witte, 1994, p114). Given the previously identified objective of identifying intrinsic message characteristics and questioning the assumption that a threat appeal will generate a fear response, the role of vivid pictures and language require further examination as they form an integral component of a threat appeal. Generally speaking there is much, long-established empirical evidence that identifies the information processing of visual images, or pictures, as superior to that of verbal information, or words (e.g. MacInnis and Price, 1987; Cautela and McCullough, 1978). Indeed, vivid (also referred to as graphic) images are often used to capture attention (e.g. Dahl et al, 2003). As stated in section 3.1.2, "poisonous snakes or scenes of war and mutilations... catch one's eye more easily than emotionally 'neutral' stimuli" (Brosch et al, 2010, p378). Whilst the examples given by Brosch et al (2010) of poisonous snakes, war and mutilations may not be entirely relevant to the threat appeals context, the use of vivid or graphic images is. Vivid or graphic

images are used to not only capture audience attention, but also present information concerning the severity of the threat in the threat appeal.

As discussed in section 1.1, scholars who conflate message characteristics with the intended response (e.g. by examining levels of fear in an advertisement) often also conflate perceptions of threat, with the experienced emotion of fear. Perceptions of threat are a cognitive response to a threat appeal, and fear is one possible emotional response to a threat appeal, as outlined in the extended parallel process model (Witte, 1992) presented in section 2.2.4. The intrinsic message characteristic that is intended to generate cognitions concerning severity of threat and susceptibility to threat in a threat appeal, is the use of a vivid or graphic pictures and/or language. Indeed, research has shown that the inclusion of vivid or graphic images with a threat appeal increases perceptions of threat (e.g. Cauberghe et al, 2009; Sabanne et al, 2009).

The construct of vividness utilised in advertisements has been conceptualised as message characteristics that are “emotionally interesting, concrete, image-provoking and proximate in a sensory, temporal or spatial way.” (Nisbett and Ross, 1980, p45). While such a definition does tend to conflate a number of different specific ideas, it can be seen that vividness in advertisements is achieved through the use of concrete rather than abstract illustrations, and further that the effect of vividness is considered to be present when “pictures, specific examples, or TV presentations are more persuasive than text-only messages, abstract arguments, or print presentations” (Block and Keller, 1997, p32). While intuition suggests that vivid stimuli should be more persuasive than non-vivid stimuli (Fennis et al, 2012), previous research on the impact of vivid content of stimuli is actually somewhat equivocal (Taylor and Thompson, 1982). Results from various studies have shown that vivid stimuli can have a positive effect on persuasion (e.g. Fortin and Dholakia, 2005; Bone and Ellen, 1992 Mitchell and Olson, 1981); no effect (e.g. Sullivan and Macklin, 1988); or even a negative effect (e.g. Kisielius and Sternthal, 1986). Nevertheless, in a threat appeals context, Potter et al (2006) and Sabanne et al (2009) found that adding relevant visual vividness to a threat appeal increased the perception of perceived threat. Block and Keller (1997) also demonstrated that individuals had a preference for vivid stimuli when they had high self-efficacy (the belief an individual can carry out the recommended action). While the exact role of vivid imagery remains somewhat unclear, these results at least demonstrate that a vivid or graphic picture plays a role in influencing the perception of a threat in a threat appeals context.

Perhaps because of the diverse results cited above, a differing perspective has more recently emerged in the threat appeals literature. This more recent work moves away from the apparently elusive vividness concept (Fennis et al, 2012) and focuses specifically on the role of images that are intended to elicit disgust. Of course, in relation to the prior discussion in this chapter, such literature perpetuates the problematic conflation of intrinsic message features and emotional response (in this case disgust). Nonetheless the findings of this stream of work do have some utility when considering the intrinsic message characteristics of such images. For example, Leshner et al (2011) demonstrated that a combination of a high disgust appeal and a high fear appeal caused respondents to engage in aversive motivational activation and defensive responses, which together are likely to reduce processing of the message. In other words, the combination of fear and disgust inducing elements of the stimuli were too much for individuals to cope with, and thus further processing is inhibited. Conversely, Morales et al (2012) found that adding a 'disgust image' to a 'fear appeal' increased message persuasion and compliance in comparison to a 'fear only' condition, and attribute the unique features of disgust as responsible for increasing message acceptance. This demonstrates that not all 'disgusting images' are created equal. Indeed, Pelsmacker et al (2011) found that including a graphic image in a fear appeal had a greater effect on the perceived severity of the threat for an unfamiliar rather than a familiar issue (demonstrating the habituation effect). Thus, whilst graphic images can vary, and therefore create differing responses, individuals can become desensitised to such images due to repeated exposure, which can reduce likelihood of intended emotional or cognitive response.

Andrews et al (2014) have also examined the graphicness of a threat appeal which in this case specifically refers to the perceived level of intensity or vividness of the graphic image. Andrews et al (2014, p167) cite "it is important to study the *graphic level of the warning* to more fully understand the role of evoked fear and the underlying effects from the graphic visual exposure"(emphasis as original). Unfortunately this position conflates the intrinsic message characteristic with responses as a level is a subjective perception. As with levels of fear or threat, a level of graphicness is also defined by an individual's perception, not an intrinsic message characteristic. This conflation is replicated in studies that examine the effectiveness of graphic images positioned on cigarette packaging. In this research stream, the graphic images are measured in terms of how they influence persuasion and intention to stop smoking (e.g. White et al (2008); Miller et al (2009); Gallopel-Morvan et al (2009); Schneider et al, 2012). Kees et al (2010) found that 'highly' graphic images strengthened smokers intention to stop smoking which was mediated by a fear response, however, recall of specific messages was lower than for 'low' or graphic absent conditions. In line with this,

Andrews et al (2014) found that graphic warnings and smoking frequency influenced fear, which in turn generated negative health beliefs about smoking and increased intentions to stop smoking. Studies have also considered execution variations in warning messages on cigarette packets, using text only and text with picture conditions. Veer and Rank (2012) and Schneider et al 2011 found that compared with text-only labels, graphic visual warning labels on cigarette packets are able to significantly increase the level of cognitive processing and increase the intentions to quit (or not start smoking). However, Erceg-Hurn and Steed (2011) found that smokers who were exposed to graphic warnings were more likely to experience elevated and extreme levels of reactance (maladaptive responses).

In line with the arguments presented herein regarding the need to identify intrinsic message characteristics, a consideration of graphic or disgust inducing images beyond the simple concept of 'high' and 'low' is crucial. Indeed, it is necessary to clearly define what constitutes a graphic image and what does not. Dens et al (2008) define a disgust appeal (conflating the emotion of disgust with the message characteristic) as "incongruent, unusual and distinctive" (Dens et al, 2008, p251). This is a broad definition, open to interpretation and difficult to operationalise. Indeed, an image that may be unusual or distinctive to one individual may be interpreted entirely differently by another individual (as an extreme example, a picture of open heart surgery is unlikely to be considered particularly disgusting to a cardiothoracic specialist). Kees et al (2010) take an equally broad approach and identify graphic images to be those which are perceived to be vivid, powerful and intense, which again, does not allow for the identification of precise intrinsic message characteristics that can be manipulated accordingly. However, Dahl et al (2003, p270) define graphic images as "references to blood, body parts or secretions, orifices, especially urinary/faecal, gases, odours, disease, parasites, bodily harm (e.g. dismemberment), death and decay" which is a useful categorisation of the types of image that are universally considered to be graphic. Nabi (2002) further reduces the categories of graphic images to blood, vomit, faeces, inappropriate sexual acts, rodents or bugs. Such a precise definition allows for the operationalisation of a graphic image, for example in order to contrast the effects of a graphic image and a non-graphic image that represent the consequences of a car accident, the graphic image would include blood and the non-graphic image would not.

This is aligned with the findings by Mikels et al (2005) (as described in Section 3.3) who asked individuals to categorise subsets of the IAPS according to predetermined emotional terms – for the negative pictures these were fear, sadness, anger, disgust and undifferentiated. All pictures of car crashes (just showing the car wreckage) were categorised under sadness, while pictures of bloody bodies and extreme injuries were all

categorised as disgust inducing images, or both disgust and sadness inducing images. Because disgust and sadness are distinct emotions from fear (e.g. Ekman, 1999), these results would suggest that the kind of images used in threat appeal advertisements may not consistently (or perhaps at all) elicit fear responses. Indeed, whilst Mikels et al (2005) asked participants to categorise the images according to the emotion they generated, the images that were categorised as disgust inducing were those that meet the graphic image definitions presented above (e.g. Dahl et al, 2003; Nabi, 2002). As discussed in section 3.3 the images that were categorised as fear inducing (Mikels et al, 2005) were in fact those that can be categorised as evolutionary or modern threats. This therefore calls into question the widely held assumption that the graphic images used in threat appeals will evoke the emotional response of fear, where higher levels of fear experienced increase persuasion (e.g. Witte and Allen, 2000). Again, the conclusion may be drawn that it could be misleading to consider fear as the only emotional response to threat appeals based on the type of image typically used in such appeals.

Indeed, more recent studies that use 'disgust images' or graphic images (e.g. Leshner et al 2011; Morales et al 2012; Dens et al, 2008), argue that disgust has been a neglected emotion in the study of threat appeals. Whilst the addition of images that elicit disgust are found to be more persuasive (Dahl et al, 2003; Sabbane et al, 2009; Miller et al, 2009), in the context of the argument developed here, it is possible to question whether by definition, a message with a graphic image (as opposed to a message with a non-graphic image) will influence an individual's perception of the severity of the consequence portrayed. For example, a drink driving advert showing a picture of a bloody face may be perceived to be more severe than the same advert showing a picture of a minor car accident. This suggests a possible confound between disgust and perceived severity of consequence in such research. In addition, the differentiation between types of pictures and the emotional responses they are likely to elicit (e.g. disgust and sadness) may mean that individuals' responses are driven by the different properties of those emotions. Indeed, evidence suggests that the inclusion of images intended to cause disgust or sadness responses are not the same as those that individuals are hard wired to recognise as a threat, and therefore the processing mechanism for the images will differ.

That said, research has demonstrated that graphic images generate discrete emotional responses (e.g. disgust), which contribute to message effectiveness (e.g. Stephenson, 2002, 2003; Niederdeppe et al, 2007). For instance, Biener et al. (2005) concluded that visual images that graphically depict death and disease caused by smoking increase emotional response to messages (in particular, fear, anger and sadness). Whilst the

position in this thesis is to question the assumption that graphic images create a fear response (Witte and Allen, 2000), it is also the intention to include a wider consideration of negative emotions alongside fear as the possible emotional responses to a graphic image in threat appeals. Indeed, (as will be discussed in more detail in chapter 4) theories of emotion that consider emotions to have differing properties often examine basic fundamental human emotions (e.g. Izard 1977; Plutchik 1980) and often include at least fear, disgust and sadness. In order to advance understanding of cognitive and emotional responses to threat appeals, the influence of graphic or non-graphic images (as intrinsic message characteristics) on cognitions and a wider range of emotions will enable a more accurate identification of emotional responses, rather than assuming fear is the response and measuring only that emotion. The constructs of emotion and associated cognitions in response to graphic images will be discussed in more detail in chapter 4.

### **3.2.4 Message frame**

The above discussion identifies two specific intrinsic message characteristics of threat appeals that do not conflate the stimulus with intended response, namely *direction of threat* and use (or not) of a *graphic image*. These message characteristics manipulate the threat in terms of the individual who is subject to the threat, and the type of image used to grab attention and communicate the threat (e.g. Witte, 1992), respectively. Re-examining the components of threat appeals as outlined in section 1.1, attention now turns to the remaining component of a threat appeal; the recommendation regarding how to reduce or eliminate the consequences of the threat. Whilst most definitions of threat appeals focus on the presentation of a negative consequence, which can be removed or reduced by engaging with the recommendation presented as part of the threat appeal (e.g. Dickenson and Holmes, 2008) the positioning and communication of the recommendation has important implications. Indeed, message framing techniques place either a positive or negative emphasis on the recommended behaviour whereby “the emphasis in the message [is] on the positive or negative consequences of adopting or failing to adopt a particular... behaviour” (Salovey et al, 2002, p 392).

The positive or negative consequences included in threat appeals have been presented in terms of gain or loss framed messages (e.g. Edwards et al, 2001). Gain framed messages emphasise the advantages of adopting the recommendation (e.g. advantages, or the avoidance of disadvantages, are presented) whereas loss framed messages emphasise the disadvantages of failing to adopt the recommendation (e.g. disadvantages, or failure to benefit from advantages). The general tenet of message framing research is that individuals

exposed to a gain framed message will respond differently in terms of cognitive evaluations (e.g. persuasion) to individuals exposed to a loss framed message (Rothman et al, 1999). Whilst a number of studies have demonstrated that gain framed messages are more effective (e.g., Cox et al, 2006; Reinhart et al, 2007) these results have not been upheld across the literature. Indeed, empirical research has also shown that in some cases loss framed messages are more effective than gain framed messages (e.g. Rivers et al, 2005; Schneider et al, 2001). Equally, a number of research studies have reported no difference between gain framed and loss framed messages in terms of their effectiveness (e.g. Brug et al, 2003; Jones et al, 2004; O'Keefe and Jensen, 2006). Indeed, in line with the recurrent theme of the review of the pertinent literature, empirical results regarding message framing effects are, again, equivocal.

To consider this in more detail, it is necessary to re-examine the origins of the message framing as a means of communication. Message framing techniques are grounded in prospect theory (Kahneman and Tversky, 1979; 1984; Tversky and Kahneman, 1981). Prospect theory states that individuals will make different decisions dependent on their cognitive evaluation of their perceptions of the risk associated with potential outcomes (Tversky and Kahneman, 1981). In other words, an individual will evaluate the potential outcomes as certain or uncertain and make a decision based upon this evaluation. In a seminal study, Tversky and Kahneman (1981) presented participants with information about a hypothetical disease that would kill 600 people. Participants were requested to select one of two plans in order to address the situation. Plan A was presented as a certainty in either a loss framed or a gain framed manner (e.g. if plan A is adopted, 400 people will die (loss framed) or 200 people will be saved (gain framed)). Plan B on the other hand presented an uncertain outcome which was either loss framed or gain framed (e.g. if plan B is adopted, there is a one-third probability that nobody will die and a two-thirds probability that 600 people will die (loss framed) or there is a one-third probability that 600 people will be saved and a two-thirds probability that no people will be saved (gain framed)). The ultimate outcome of the messages, whether gain or loss framed or with a certain or uncertain outcome, is exactly the same, i.e. 200 people will be saved but 400 people will not be saved. However, the manner in which the information was presented, generated different evaluations and therefore decisions. Indeed, in this study, participants preferred the gain framed message when the outcome is certain (plan A) but the loss framed option when the outcome is uncertain (plan B).

The results from Tversky and Kahneman's (1981) study indicate that decision making depends on the perception of the risk associated with the presented outcomes. In other

words, if individuals predict gains from a decision, based on exposure to a gain framed message, risks will be avoided and a more certain outcome perceived to be more persuasive. However, when exposed to messages that outline a loss framed perspective, individuals are persuaded to decide to adopt uncertain, or risky behaviours to alleviate the loss (Steward et al, 2003). This finding has been replicated by Malenka et al (1993) who demonstrated a difference in risk perception dependent on the manner in which the same factual information was presented, and Schwartz (1997) who found that the same medical treatment is perceived to be more beneficial to respondents if subject to a gain frame (95% survive) rather than a loss frame (5% die). Whilst Tversky and Kahneman (1981) examine the use of gain and loss framed messages in a general decision making context, researchers have applied the theory to the broad area of health education messages (which also falls under the social marketing field, as outlined in chapter 1), and more specifically threat appeals.

To be clear, health education messages fall under the general domain of social marketing (as outlined in Chapter 1) and can be used to attempt to persuade people to engage with a particular behaviour or avoid or reduce a behaviour. Whilst threat appeals specifically use a threat (or warning) to generate emotional and cognitive responses that will result in behaviour change; health education messages more broadly frame messages according to the specific health issue under consideration (e.g. Banks et al, 1995; Rothman and Salovey, 1997; Rothman et al, 1993). In other words, in health education messages, the health issue itself determines how the message is presented, not the type of advertising appeal used, as with a threat appeal. In particular there is a distinction in the health education literature between behaviours that serve to *prevent* a health issue (e.g. using sunscreen, eating more vegetables, drinking more water or exercising) from behaviours that serve to *detect* a health problem (e.g. skin, breast or testicular self-examination, observations regarding stress or mental health issues or evidence of dehydration). In line with prospect theory (Tversky and Kahneman, 1981), prevention behaviours are presented as low risk because, by definition, they reduce the risk of illness. As such, gain framed messages are most appropriate, as gain framed information motivates individuals to adopt lower risk (or more certain) options (Gallagher and Updegraff, 2012). Conversely, detection behaviours have been identified to be associated with a higher perception of risk because engaging with those behaviours could lead to finding out an individual is unwell (Meyerowitz and Chaiken, 1987). Indeed, as individuals have been shown to be risk seeking when considering losses, as a result of exposure to loss framed information individuals are more likely to engage in uncertain or more risky behaviours (e.g. Rothman and Salovey, 1997; Rothman et al, 1993).

Whilst there is empirical support for prospect theory applied in a health education context (e.g. Rothman and Salovey, 1997; Banks et al, 1995; Meyerowitz and Chaiken, 1987) a number of scholars have criticised the application of prospect theory in this context. The assumption that detection behaviours are generally perceived as potentially risky because they may identify negative outcomes, in comparison to prevention behaviours, has been questioned (e.g. Cox et al, 2006; Kuhberger, 1998). Cox et al, 2006 argue that whilst in the short term, individuals may perceive detection behaviours as potentially the cause of unfavourable outcomes (e.g. a diagnosis of an illness), the long term benefits (e.g. early diagnosis of an illness that may translate into increased chance of survival) should outweigh the short term unfavourable outcome. Meta-analysis findings (e.g. O'Keefe and Jensen, 2006; 2007) support this and identify that gain and loss framed messages do not have a differential effect in the context of messages that promote detection of health issues.

In an alternate line of study, Latimer et al, (2007) argue in support of the fundamental propositions of prospect theory. Latimer et al (2007) posit that the focus of research should shift away from the *prevention* or *detection* of illness, rather the perception of the recommended behaviour is of significance. Schneider et al, (2001) have suggested that, in the context of giving up smoking (which is a prevention behaviour), individuals may in fact perceive costs associated with the prevention behaviour opposed to benefits (e.g. weight gain, social acceptance or a lack of enjoyment). In such a situation, where individuals attribute costs to the adoption of the recommended prevention behaviour, individuals may be more persuaded by loss framed messages as a mechanism by which to address the barriers or costs, opposed to gain framed messages. Empirical research has found that when individuals perceive the recommended behaviour (e.g. giving up smoking) to entail more risk or uncertainty (e.g. weight gain or lack of social acceptance) than continuing with the behaviour (e.g. smoking), loss framed messages are more effective (e.g. Apanovitch et al, 2003; Kiene et al, 2005).

However, it is important to acknowledge that there is a divergence in thinking between the health education field and the threat appeals field. In a health education context, risk is an important concept and is associated with a danger or negative consequence (e.g. Cox et al, 2006; O'Keefe and Jensen, 2006). This effectively translates to the perception of threat, in a threat appeals context (e.g. Witte, 1992). Whilst the onus on perception is similar, the distinction between the certainty and uncertainty of outcome (Kahneman and Tversky, 1981) refers to the element of risk and indeed, conceptualises the colloquial understanding of risk, in different ways. Specifically, the threat appeals literature identifies that perceptions of threat and perceptions of susceptibility to threat are the cognitive evaluative processes

that identify perceptions of risk. This could be an explanation for the equivocal findings in the message framing literature as identified above. However, in the threat appeals field, the role of an individual's perceived efficacy (both self-efficacy and response efficacy) is also a cognitive evaluation specifically associated with the examination of the action recommendation presented as part of the threat appeal (e.g. Ruiter et al, 2001; Witte, 1992).

In the threat appeals context, response efficacy is an individual's belief that the recommended action will avert or reduce the threat (Ruiter et al, 2001) and self-efficacy is the belief that an individual is capable of adopting the recommended response (Witte, 1992). Perceived efficacy has been shown to moderate the effects of gain and loss framed messages, where loss framed messages generate a greater perception of threat than gain framed messages (Cox and Cox, 2001; Shen and Dillard, 2007). According to the assumption that increased perception of threat translates into increased persuasion (e.g. Witte and Allen, 2000) this would indicate that loss framed messages are more effective in this context. However, empirical findings indicate there are other factors that influence this dynamic, and indeed as evidenced above, it cannot be assumed that the threat to persuasion relationship, mediated by a fear response, is upheld.

Further, research has identified that the valence of language used (positive or negative) in message framing will influence emotional responses accordingly (positive or negative) and influence decision making (Nabi, 2003). Druckman and McDermott (2008) found that specific negative emotions have an influence on the effectiveness of message framing. When individuals experienced distress as a result of exposure to a message the effect of the gain or loss frame was enhanced, yet if an individual experienced anger the message framing effects were reduced. This suggests that emotional responses to messages interact with evaluative cognitions concerning the message content which drive decision making. This further suggests the need to re-examine emotional and cognitive responses to threat appeals, particularly in light of the effects of message framing. Indeed, Van T'Riet et al (2010) examined the effectiveness of message frame as mediated by generalised positive or negative affect. When exposed to a gain framed message, participants reported experiencing positive affect which correlated with increased acceptance of message and favourable attitude toward the behaviour. In addition, participants who were exposed to a loss framed message, reported increased negative affect and an increased intention to engage in the recommended behaviour. These results indicate that whilst gain framed messages and resultant positive affect influence cognitions, loss framed messages and resultant negative affect influence cognitions *and* behaviour intention. Van T'Riet et al

(2010) specify that the emotional mechanisms identified in their study (generalised positive or negative affect) are separate and as such gain framed messages can influence information acceptance and attitude, indicating persuasion; whereas loss framed messages effect persuasion and behavioural intention which indicates motivation.

Whilst the general empirical evidence regarding the effects of loss and gain framed messages is equivocal, the latest research exploring the differing emotional and cognitive responses to message framing have a direct application in a threat appeals context. Indeed, evidence suggests that as an intrinsic message characteristic the manipulation of message frame will subsequently have differing effects on emotional and cognitive responses, which in turn will influence behaviour intention. In addition, research has included a consideration of a temporal dimension in terms of distinguishing between short term and long term consequences of engaging (or not) in the recommended behaviour (e.g. Gerrend and Cullen, 2008; Apanovitch et al, 2003; Kiene et al, 2005). This is particularly relevant to a threat appeal context because it firstly suggests that responses to threat appeals are not necessarily immediate spontaneous responses (as per the instinctive threat fear mechanism examined in section 3.1.2) but that instead the emotional and cognitive responses form an evaluation, which corresponds to a decision making process. This will be explored in more detail in chapter 4, but it is important to note that this conceptual shift allows for the consideration of a temporal dimension regarding exposure to a threat appeal and an individual using emotional and cognitive responses to make a decision about *future* behaviour. In practical terms the behaviour forming the action recommendation as part of the threat appeal is not usually immediately actionable. In other words, an individual may be exposed to a print advertisement about safe driving at a point in time where they will not drive a car in the immediate time period and therefore responses to the threat appeal form influence future behavioural intentions.

### **3.3 Summary**

The re-examination of threat appeal variables presented above has argued for a questioning of a fundamental assumption made in threat appeals literature; namely that responses to threat appeals are underpinned by an instinctive mechanism whereby upon exposure to a threat, an individual experiences fear, which in turn, motivates action (e.g. Ohman and Mineka, 2001). The presented discussions based on the argumentation and psychology literature both call into question whether a threat contained in a threat appeal can even be considered to be a true threat in this sense. Both streams of literature acknowledge that a warning is certainly a component of a threat appeal (O'Keefe, 2003) but

it cannot be assumed that the warning in a threat appeal is a threat because it must be perceived as a threat by an individual. There is thus a clear distinction between threats that human beings are predisposed to acknowledge, compared to warnings that may be perceived as a threat, but are not necessarily. Thus, perception of threat is a response variable and not a message characteristic. Of course, that is not to say a threat appeal will never be perceived as a threat, rather that it cannot be assumed that all individuals at all times experience the same instinctive mechanism when presented with a threat appeal, i.e. that they experience fear, which motivates action. Unfortunately, it is this very assumption that underpins the threat appeals literature from the early theoretical developments in the field (e.g. Hovland et al, 1953) as discussed in section 2.1. It is the questioning of this assumption (undertaken in the prior sections of this thesis) which leads to a re-examination of the components of a threat appeal that influence cognitive and emotional responses, specifically with regard to intrinsic message characteristics.

As argued in section 1.1 the equivocal empirical results that pervade the threat appeals literature (e.g. Floyd et al, 2000, Witte and Allen, 2000), which is charted in Chapter 2, are in part caused by the conflation of message characteristics and the intended response. This has historically occurred through the operationalisation of constructs such as 'levels of fear' as a message characteristic of a threat appeal. In a move away from this approach, section 3.4 discusses intrinsic message characteristics, grounded in the extant literature and that can be manipulated, allowing for observations of correlations between message characteristics and emotional and cognitive responses. This approach does not conflate the message characteristic with individuals' responses. Indeed, the discussion of the direction of message, use of graphic images and message frame, are linked directly to the defined common components of threat appeals as outlined in Chapter 2 (e.g. Witte, 1992). The identified intrinsic message characteristics (message direction, use of graphic image and message frame) and discussion presented above identify that these variables have empirically (in complementary streams of research) been shown to influence cognitive and emotional variables identified in prominent threat appeal models (e.g. extended parallel process model, Witte, 1992).

The questioning of the fundamental assumption that a threat appeal causes an instinctive fear response, alongside the discussion of intrinsic message characteristics of threat appeals, leads to a new angle for consideration when examining individuals' responses to threat appeals. As previously identified it cannot be assumed that responses to threat appeals are entirely based on an instinctive mechanism. Whilst a graphic image may cause an instinctive emotional reaction such as disgust or fear, the message frame and message

direction literature suggests that responses to these intrinsic message characteristics form part of an evaluative decision making process.

This conceptual shift allows for the consideration of a temporal dimension regarding exposure to a threat appeal, and the incorporation of an understanding of an individual utilising emotional and cognitive responses as an evaluative process to make a decision about *future* behaviour. Indeed, as Algie and Rossiter (2010, p265) state “arousal of the emotion... is thought by many practitioners to be necessary to motivate and persuade people to undertake an activity from which they may not anticipate an immediate benefit.” In practical terms, the behaviour forming the action recommendation as part of the threat appeal is not usually immediately actionable. In other words, an individual may be exposed to a print advertisement about safe driving at a point in time where they will not drive a car in the immediate future and therefore responses to the threat appeal influence future behavioural intentions. In order to examine this further, a closer examination of emotional and cognitive responses to threat appeals is presented chapter 4, followed by the development of a set of theoretical hypotheses to be tested empirically.

## **Chapter 4 - Re-examining emotional and cognitive responses to threat appeals; the development of a literature based framework**

This chapter builds on chapters 2 and 3, in order to develop a conceptual model and an associated set of testable hypotheses, to be tested through the collection and analysis of quantitative data (as detailed in chapters 5 to 8). This present chapter integrates existing knowledge about threat appeals with the fields of psychology and judgement and decision making (among other fields) to generate a theoretical framework regarding the influence of intrinsic message characteristics on cognitive and emotional responses, and the influence of those cognitive and emotional responses upon behaviour intention and expectation. The conceptual framework is presented in section 4.3 and the hypotheses are presented in section 4.4.

The conceptual framework outlines the role of anticipated and anticipatory emotions, alongside subjective probabilities, elaboration and immediate emotions resultant from manipulation of the intrinsic message characteristics of message direction, message frame and graphic image. The emotional and cognitive responses to the threat appeal manipulations are expected to influence behaviour intention and expectation. While further discussion is presented in section 4.3, the basic rationale for this approach is based on the review of the literature presented in chapters 2 and 3. Specifically, the re-examination of threat appeal variables presented in chapter 3 argues for a questioning of a fundamental assumption made in threat appeals literature, which is also identified in chapter 2. The assumption is that responses to threat appeals are underpinned by an instinctive mechanism whereby upon exposure to a threat, an individual experiences fear, which in turn, motivates action (e.g. Ohman and Mineka, 2001). As argued in section 1.1 the equivocal empirical results that pervade the threat appeals literature charted in Chapter 2 (e.g. Floyd et al, 2000, Witte and Allen, 2000), are in part caused by the conflation of message characteristics with the intended response. This has historically occurred through the operationalisation of constructs such as 'levels of fear' as a message characteristic of a threat appeal. In a move away from this approach, section 3.4 discussed various intrinsic message characteristics, grounded in the extant literature, which can be manipulated, thus allowing for observations of correlations between message characteristics and emotional and cognitive responses. This approach does not conflate the message characteristic with individuals' responses.

The intrinsic message characteristics are the *direction of message*, *use of graphic images* and *message frame*, and they link directly to the defined common components of threat appeals as outlined in Chapter 2. The direction of message (towards self or other) relates to the positioning of the threat, the use of a graphic image is defined as a fundamental feature of a threat appeal (e.g. Witte, 1992) and the message frame (gain/loss avoidance or loss) relates to the presentation of the threat and the action recommendation. The intrinsic message characteristics (message direction, use of graphic image and message frame) and have empirically been shown to influence cognitive and emotional variables identified in prominent threat appeal models. More specifically, the variables of perceived severity of threat, perceived susceptibility, response efficacy, self-efficacy and the emotion of fear as proposed by the extended parallel process model (Witte, 1992).

Of particular importance is that this present research reframes responses to threat appeals as a decision about *future* behaviour. As such the extended parallel process model is re-examined and pertinent constructs are retained as part of the new conceptual framework, which adopts a decision making approach. As such, the role of anticipated and anticipatory (future oriented emotions) are included to further explain the underlying appraisal mechanisms that influence behaviour intention and behaviour expectation. The wider consideration of immediate, anticipatory and anticipated emotions is important, because it cannot be assumed that responses to threat appeals are entirely based on a fear instinct mechanism. Indeed, as identified in chapter 3, whilst a graphic image may cause an instinctive emotional reaction such as disgust or fear, the message frame and message direction literature suggests that responses to these intrinsic message characteristics form part of an evaluative decision making process, which involves making a decision about future behaviour.

To build upon the discussion of theories and models developed to explain consumer responses to threat appeals as charted in chapter 2, and the re-examination of threat appeals as presented in chapter 3, focus will now turn to a detailed examination of cognitive responses and then emotional responses to threat appeals. This analysis will form the basis of hypothesised relationships between variables as presented in the new conceptual model in section 4.3, which is to be empirically tested (results are presented in chapter 7). In an examination of the chronological and thematic evolution of threat appeals research (as presented in chapter 2) the main focus of prior research has had a cognitive focus. That is not to say emotion focussed theories have not been presented. To the contrary, three specific areas of theoretical development are identified in Chapter 2, ranging from the drive models (e.g. Janis et al, 1967), the fear arousal model (e.g. LaTour and Pitts, 1989) and

most recently the fear pattern model (Rossiter and Thornton, 2004). All these emotion focussed theories assume that fear is the emotional response to a threat appeal. This crosses over to cognitive focused models, where, if emotion is considered at all, fear is also considered to be the *only* emotional response (e.g. extended parallel process model, Witte, 1992) that is conceptualised and measured.

In order to explore this further, the cognitive and emotional responses to threat appeals are reviewed in this chapter. First, consideration will be given to cognitive responses to threat appeals in section 4.1 through a re-examination of the extended parallel process model (Witte, 1992). The discussion will then move towards a wider consideration of emotional responses to threat appeals in section 4.2. An overview of prominent schools of thought regarding emotion theory are presented to acknowledge the different ways in which emotions can be conceptualised, and a discussion of the role of emotion in theories of judgement and decisions making is provided. This presents the justification for the re-framing of responses to threat appeals to include a decision making approach. The new conceptual framework is presented in section 4.3 and the hypotheses developed to test the framework are presented in section 4.4. Finally, a summary of the chapter is presented in section 4.5.

## **4.1 Re-examining the extended parallel process model and cognitive responses to threat appeals**

The case for questioning the assumption that threat appeals generate an instinctive fear response that motivates action has been made in chapters 2 and 3. Also, the need for manipulation of intrinsic message characteristics in threat appeal research has been identified and explored in chapters 2 and 3. As such, the development of a new conceptual framework is necessary to examine individuals' responses to threat appeals. In the review of literature presented in chapter 2 the models and theories developed to explain responses to threat appeals were examined and equivocal empirical results identified, which look likely to be in some way at least a cause of the confusion in the threat appeals field as outlined in chapter 1. However, in order to develop a new conceptual framework it is necessary to ground development in the pertinent literature. Whilst empirical tests of the extended parallel process model (Witte, 1992) have produced some equivocal results (e.g. Witte and Allen, 2000; Lewis et al, 2010), as presented in chapter 2, this model has been evidenced to have the most robust explanation of responses to threat appeals to date (e.g. Lewis et al, 2013; Witte, 1994; Witte and Morrison, 2000). The extended parallel process model (Witte, 1992) draws on prior research to present a conceptualisation of individuals' responses to

threat appeals including the parallel response model (Leventhal, 1970), protection motivation theory (Rogers, 1975; 1983), as well as the drive-reduction model (Hovland et al, 1953). As such, the extended parallel process model will be used as a point of departure for the theoretical framework in the present thesis.

To recap, according to the extended parallel process model, exposure to a threat appeal creates two appraisal processes; threat appraisal and coping appraisal (Witte, 1992). The more that individuals believe they are susceptible to a serious threat (i.e. high perceptions of susceptibility to threat), the more motivated those individuals are to engage in coping appraisal. However, if the threat is perceived as irrelevant or insignificant (i.e. low perceptions of susceptibility to threat), the extended parallel process model indicates there should be no motivation to process the threat appeal any further, and individuals will simply ignore the remainder of the message. In contrast, when a threat is believed to be severe and individuals feel susceptible, and response and self-efficacy are low, the extended parallel process model assumes that individuals will experience fear (Witte, 1992; 1994). The fear generated is caused by perceptions of severity and susceptibility. The efficacy responses serve to determine the magnitude of fear experienced. If efficacy is low (In other words the individual does not believe they can carry out the recommended action or that the recommended action would be effective) then fear increases. Increases in fear are suggested to increase defensive motivation responses, leading to maladaptive behaviours. However, if efficacy is high, it is proposed that threat and associated fear are perceived to be manageable and therefore the fear motivates individuals to take some action that is intended to reduce fear, such as a recommended course of action from an advertisement (e.g. reduce speeding or stop smoking; fear control). The perceived efficacy of the recommended action (a combination of the response efficacy and self-efficacy) will determine whether those individuals who believe that they are susceptible to a serious threat, will engage in either danger or fear control.

More specifically, Witte (1992, 1994) assumes that individuals will mainly engage in danger control when they perceive the recommended action as effective in reducing the threat, and they will mainly engage in fear control when they perceive the recommended action as ineffective in reducing the threat, or when they feel unable to perform the recommended action. In the latter case (high perceived threat and low perceived efficacy), a defence motivation is elicited, which the extended parallel process model defines as an individual focusing on eliminating their fear through denial or defensive avoidance. Whereas perceived efficacy determines the direction of the response (danger or fear control), the extended parallel process model suggests that perceived threat determines the magnitude

of the response to a threat appeal. As such, the extended parallel process model integrates ideas of both protection motivation theory (Rogers, 1983) and the parallel response model (Leventhal, 1970), and extends these ideas by identifying how threat appraisal and coping appraisal relate to each other, as well as specifying the role of perceived fear in threat and coping appraisal.

The extended parallel process model presents a synthesis of theoretical constructs to explain how, through danger processes, threat appeals can be effective in changing attitudes, intention and behaviours, and how, through fear control processes, they can instead, be ineffective. Whilst research that has empirically tested the extended parallel process model has been somewhat supportive (e.g. Lewis et al, 2013; Witte, 1994; Witte and Morrison, 2000), overall, findings have been mixed (e.g. Witte and Allen, 2000) as discussed in section 2.2.4. Unfortunately, the extended parallel process model (Witte, 1992) falls prey to both the assumption that threat appeals generate an instinctive fear response and that message characteristics can be conflated with intended responses. To be more specific, the identified fear control process hinges on the assumption that threat appeals generate fear and this is an integral part of the overall appraisal process. In addition, as presented in figure 7 the threat appeals stimulus characteristics are identified as self-efficacy, response efficacy, susceptibility and severity which precisely mirror the same response variables. This conflates message characteristics and intended responses which is further complicated by the operationalisation of the stimulus variables by researchers which are manipulated according to 'levels of threat' and/or 'levels of efficacy' (e.g. Smalec and Klinge; 2000; Lewis et al. 2010; Tay and Watson, 2002).

Whilst, these two issues present a significant weaknesses of the extended parallel process model (Witte, 1992), a number of the proposed relationships between response variables in the model have been supported in the literature, as outlined in section 2.2.4. Whilst support for the specific fear control and danger control mechanisms is not concrete (e.g. Witte and Allen, 2000), the four cognitive appraisal variables of perceived severity, perceived susceptibility, response efficacy and self-efficacy have generated more consistent empirical results. Witte and Allen (2000) identified that high threat perceptions (severity and susceptibility), combined with high efficacy perceptions (response efficacy and self-efficacy) have the most persuasive impact. This finding is replicated across the literature (e.g. Roberto and Goddall, 2009; Wong and Cappella, 2009). Research studies have also found that perceptions of high threat and low efficacy were more persuasive than low threat, low efficacy perceptions (Witte and Allen, 2000). Also, Allahverdipour et al (2007) found that cognitions about perceived severity were significantly correlated with antidrug attitudes and

intentions to avoid drug abuse. In contrast, results from other research studies have identified efficacy to have an impact on persuasion but not perceptions of severity. Witte (1994) found that perceptions of efficacy were significantly correlated with attitudes, intentions, and behaviour changes in use of condoms to prevent AIDS.

Despite these evidently mixed results, it is claimed that the extended parallel process model is a good explanatory model because in a broad sense threat appeals produce both danger and fear control responses and the stronger the threat appeal, the more motivated individuals are to process the message (Witte and Allen, 2000). Indeed, Witte and Allen (2000, p604) concluded that threat appeals are “effective when they depict a significant and relevant threat, and when they outline effective responses that appear easy to accomplish.” However, as per the argument presented above, threat appeals themselves cannot be considered to necessarily always *depict* a “significant and relevant threat” and “effective responses that appear easy to accomplish” (Witte and Allen, 2000, p604), because of the key role of individual perception in such circumstances. Rather *intrinsic* message characteristics can be utilised to influence the *perceptions* of threat and efficacy, which are actually *responses* to the threat appeal, rather than features of it. Despite this, scholars continue to use the extended parallel process model as a platform to explore improvements to the model (e.g. Basil et al, 2008; Lewis et al, 2013), whilst Witte and Allen (2000) cite the fear control and danger control processes as central to the explanatory power of the model. The position taken in this thesis is that the explanatory power of the extended parallel process model (Witte, 1992), is in fact is derived from the inclusion of the cognitive appraisal variables (perceived severity, perceived susceptibility, response efficacy and self-efficacy) and the acknowledgement of both cognitive and emotional response variables (despite the emotion being restricted to fear).

As previously stated, the new conceptual framework under development will not limit the consideration of emotional responses to fear. This is due to the questioning of the assumption that threat appeals generate an instinctive fear response. In addition, as discussed in section 3.2.3, a fundamental component of threat appeals, the inclusion of a graphic image, has been empirically shown to generate disgust which is not a construct included in the extended parallel process model (Witte, 1992). One way to address this would be to simply add the construct of disgust to the model. Indeed adding emotions has been an approach adopted by researchers (e.g. So, 2013). However, this does not address the fundamental assumptions concerning the threat appeals and fear relationship, or further examine the mechanisms of fear control and danger control processes. As such, this thesis employs a different approach. The consideration of emotional responses will be widened

(as is discussed in section 4.2) and intrinsic message characteristics will be manipulated as threat appeal variables. The influence of the threat appeal variables on emotional responses and cognitive appraisals will be examined. Specifically the cognitive appraisals of perceived severity, perceived susceptibility, response efficacy and self-efficacy as identified in the extended parallel process model (Witte, 1992) that have been empirically shown to influence behavioural intention (e.g. Allahverdi-pour et al, 2007; Witte, 1994; Witte and Allen, 2000). Moving forward these variables will be included in the conceptual model presented in section 4.3 as subjective probabilities. They are reclassified as these due to the discussion presented in section 4.2 where judgment and decision making literature is used to re-frame the conceptual framework of responses to threat appeals as a decision. First, however, in line with the identified need to widen out consideration of relevant emotional responses in the new conceptual framework, a review of emotion theory is presented in section 4.2.

## **4.2 Examining emotional responses to threat appeals**

In order to better understand individuals' emotional responses to the intrinsic message characteristics contained in threat appeals (as discussed in chapter 3) it is important to generate a detailed understanding of the theoretical perspectives and debates surrounding emotions, and how these approaches have influenced the field. As previously discussed a number of problematic assumptions in the majority of existing literature have been identified, one of which is that threats are assumed to be contained in threat appeals, and further that these so-called threats can be designed so as that a given level of fear (e.g. high or low) is an inherent component. As identified in section 4.1 above and in chapter 2, fear is conceptualised as the only emotional response to threat appeals (if emotion is included at all) in the theories and models developed to explain responses to threat appeals (e.g. the extended parallel process model, Witte, 1992). Additionally, numerous researchers have measured only fear in their research (e.g. Witte, 1992; Roberto and Goddall (2009); Wong and Cappella (2009), further reinforcing the assumption that fear is the only emotional response a threat appeal can generate.

As such, it is not surprising that some researchers have identified the need to widen considerations of emotional responses. For example, Henley and Donovan (1999, p311) present an argument that when death is a negative consequence presented in stimuli it is qualitatively different to other negative outcomes, stating that "there is a need to identify and measure emotions other than fear or anxiety that are associated with death and threats of death. Guilt and remorse, sadness and anger are potentially relevant emotions." Also, Algie and Rossiter (2010, p266) state that "fear appeals can evoke the emotion of fear, and also

perhaps the emotions of shock or disgust in the viewing audience with the aim of grabbing the audience's attention and motivating them to act in a recommended way to avert the threat posed in the advertisement." Other scholars have also started to move away from the view that fear is the only response to threat appeals and have explored different emotional responses, such as self-conscious emotions (Agrawal and Duhachek, 2010), and self-accountability emotions (Passyn and Sujan, 2006). Based on the principle that not all individuals experience a fear response to threat appeals, it is therefore necessary to explore in more depth the emotional responses that can be generated by the intrinsic message features identified above.

Emotional responses can be considered to act as mediating influences (alongside cognitive processes, discussed in section 4.3) in the decision making process towards an intention towards a future behaviour. Indeed, as Dillard and Nabi (2006, pS123) state, "the effective use of emotions as persuasive devices, however, requires an understanding of not only principles related to emotional arousal but also the processes that allow emotional arousal to be translated into an effective action." As such, the different schools of thought on emotion are in need of consideration, which is presented below in section 4.2.2 before discussion moves towards a consideration of the role of emotions in decision making in section 4.2.3.

#### **4.2.1 Emotion and schools of thought**

No consensus has yet been reached in the field of psychology regarding the structure of emotion. As Forgas (2008, p94) states "even the definition of what is meant by *affect* and *emotion* remains problematic, and the relationship between affect and cognition continues to generate intense debate." More specifically, emotions can be conceptualised according to discrete categories (e.g. Izard, 1977; Plutchik, 1980) dimensions or bipolar concepts (Clark and Tellegen, 1988; Watson and Tellegen, 1985; Havlena et al, 1989), or a circumplex (Russell, 1980). This is further complicated by the boundaries and definitions of emotion, which have been described as "blurry" (Russell and Barrett, 1999, p805). This has resulted in disagreement between researchers concerning what constitutes an emotion. Although it is not the purpose of this study to define emotion itself, it is necessary to explore the pertinent schools of thought in emotion theory in order to develop a working understanding of the emotional responses that may be generated by threat appeals, and further to define the constructs to be empirically measured in the present study.

The perspective that is perhaps closest to the common understanding of emotions is that emotions (for example, happiness, fear, sadness, hostility, guilt, surprise and interest) are discrete entities. That is, emotions are assumed to be unique experiential states that stem from distinct causes and are present from birth (Izard, 1977). The assumption behind this perspective is that individuals experience emotion because people have internal mechanisms for a small set of reactions (typically anger, fear, happiness, love, sadness; Fehr and Russell, 1985) that, once triggered, can be measured objectively. Emotions such as anger, sadness, and fear are treated as entities that researchers can make discoveries about and this assumption shapes the scientific treatment of emotions (Barrett, 2004). For example, it is assumed that people feel fear when their biological fear mechanism has been triggered as discussed in section 3.1.2), and that this feeling shapes perception and behaviour.

One stream of research focuses on the identification of a basic set of universal discrete emotions. There are many conceptualisations of the basic emotions, a snapshot of which is presented in table 1 below. In all but one categorisation (Frijda, 1986), fear is considered to be a basic emotion, which may explain why historically the emotion has been given priority in the threat appeals literature. Not only did the threat appeals literature uphold the threat causes fear relationship based on the biological mechanisms associated with the presentation of a threat and fear response, but this was also supported in the psychology literature which takes fear to be a basic, discrete emotion with unique properties (e.g. Izard, 1977).

Authors	Date	Basic Emotions
Desmet	2003	Desire, pleasant surprise, inspiration, amusement, admiration, satisfaction, fascination, indignation, contempt, disgust, unpleasant surprise, dissatisfaction, disappointment, boredom
Ekman	1999	Amusement, anger, contempt, contentment, disgust, embarrassment, excitement, fear, guilt, pride in achievement, relief, sadness/distress, satisfaction, sensory pleasure, and shame.
Fehr and Russell	1985	Anger, fear, happiness, love, sadness
Frijda	1986	Desire, happiness, interest, surprise, wonder, sorrow
Izard	1977	Distress-anguish, contempt, disgust, joy, sadness, fear, interest-excitement, surprise, shame, guilt
Plutchik	1980	Anger-rage, disgust-loathing, joy-ecstasy, fear-terror, sadness-grief, astonishment-surprise, acceptance-trust, expectancy-anticipation

**Table 1 - Examples of theorists who present categories of discrete, basic emotions**

Despite the variety of approaches to identification of a set of basic discrete emotions in terms of the emotional constructs that are included (as shown in table 1 above), research has begun to move away from the strict identification of a specific set of emotions. Rather, scholars focus on the common characteristics of discrete emotions. Nabi (2002) identifies five components that can be used to identify similarities and differences between the different discrete emotions. First, specific emotions provide a unique cognitive appraisal or evaluation of a context or situation. Secondly, there is a physiological component of arousal associated with each emotion. Third, motor expression of each emotion occurs, in other words there is a physical expression of the emotion e.g. a facial expression. Fourth, there is a motivational component unique to each emotion which drives action responses and fifth, each emotion has a unique subjective feeling state. This perspective allows for the acknowledgement of the unique properties of discrete emotions but widens the perspective in the acknowledgement that emotional responses are not necessarily confined to the experience of one emotion. Indeed, messages such as threat appeals may generate multiple emotional responses rather than a single emotional response (e.g. Dillard and Peck, 2000; Dillard et al, 1996).

This perspective also encourages consideration of emotions that are intended to be generated by a stimulus variable and those that are not. For example, emotions that are generated by a stimuli such as a threat appeal, can be intended (i.e. the structure and

content of the message achieves the intended emotional effect), however, collateral or unintended emotions can also occur (e.g. Dillard and Meijnders, 2002). Importantly, evidence suggests there may be a differential effect of the same emotion according to whether it is intended or collateral. For example, Dillard et al (1996) demonstrated that when anger was evoked as an intended emotional response, persuasive effects were observed, but when anger was generated as a collateral response, dissuasive effects were observed. A number of authors have argued that the discrete emotions perspective allows for furthering the understanding of the persuasive impact of emotions in this context (e.g. DeSteno et al, 2000; Dillard and Meijnders, 2002). Indeed, when considering the restrictive approach taken in the threat appeals field regarding the conceptualisation and measurement of only fear, there may have been unintended or collateral emotional responses generated which influence emotional and cognitive processing which have not previously been accounted for. As such, this further supports the argument to widen consideration of emotional responses to threat appeals.

Theories of discrete emotions have been challenged from various perspectives (for a review see Russell, 2003). One relatively well-known alternative perspective identifies emotion as a global feeling construct (Shapiro et al, 2002), where emotional states can be described by their position on two fundamental dimensions: *arousal* and *valence*, where valence is defined as pleasantness or hedonic value, and arousal as bodily activation (Barrett, 1998). Whilst there have been numerous applications of this theoretical perspective (e.g. Lang, 1994; Fontaine et al, 2007) it does not allow for the examination of the specific properties of emotion and how these properties may interact with cognition to influence decision making. As such, this theoretical perspective has little application to the present study.

While both the discrete and dimensional theories of emotion have long histories across various disciplines, the broader appraisal-based approach to the theory of emotions has become increasingly popular in recent years (Moors and Scherer, 2013; Williams and Aaker, 2000). This theoretical approach posits that emotional differences must necessarily involve differences in the way an individual appraises their environment and, and that these appraisals, in addition to emotion differences, guide judgements and choices (Raghunathan and Pham, 1999; Lerner and Keltner, 2000; 2001). Thus, emotions are differentiated by an evaluation or judgement made about an event or stimulus, such as a threat appeal (Moors and Scherer, 2013).

Moors and Scherer (2013, p135) state that there are “two related criteria for a theory to count as an appraisal theory: 1. Appraisal theories consider appraisals as a typical cause of

emotion (or of emotional components), and because of this, 2, appraisal is the core determinant of the content of feelings.” Indeed, appraisal theory is based on the notion that emotions serve an adaptive function, and that appraisals play a critical role in the generation and differentiation of emotions (Smith and Kirby, 2001). The main tenet of appraisal theory is that emotions are prompted by evaluations, or appraisals, of experiences in a specific context (Roseman and Smith, 2001). This implies that emotions do not arise automatically from particular events (as instinctive responses for example) but rather are based on individuals’ cognitive processing of those experiences. As Smith and Kirby (2001, p121) state “appraisal is an evaluative process that serves to ‘diagnose’ whether the situation confronting an individual has adaptation relevance...and [to] produce an appropriate emotional response”.

Individual emotions and their accompanying appraisals involve their own innate action tendency (Smith and Lazarus, 1993; Roseman et al, 1994). For example, with regards to the emotion of fear, the accompanying appraisal is threat, and the corresponding action tendency is avoidance or flight. The emotion of guilt has the accompanying appraisals of regret or self-blame and the associated action tendency is a desire to engage in anticipatory preventative behaviours or retrospective corrective behaviours (for examples see Simson, 1992). Thus, emotions and associated cognitions shape and guide actions. That said, most previous research in the area of emotions has not directly examined action response. In particular, research on emotions in advertising and persuasion has focussed primarily on attitudinal measures as consequences of emotions (Aaker and Williams, 1988; Edell and Burke, 1987; Burke and Edell, 1989, Pham, 1996; Williams and Aaker, 2000). Similarly much of the emotion research in decision making has focussed on using preferences and intentions as consequence variables, rather than choices that translate into behaviours (Simson 1992; Kahn and Isen, 1993; Raghunathan and Pham, 1999).

However, Lerner and Keltner (2001) showed that two negative emotions, fear and anger, accompanied by appraisals of uncertainty and certainty respectively, differentially impact risk perception. This research found that individuals experiencing fear made pessimistic judgements whereas individuals experiencing anger made optimistic judgements about the future. Similarly Raghunathan and Pham (1999) generated results that identified differences in risk seeking between participants who experienced sadness or fear, according to whether they differed on appraisals of loss and uncertainty. Bagozzi et al (2003) conducted a study in the context of effortful decision making and the goal selection process. These authors identify that the appraisal of goals includes the assessment of the prospects of attaining (failing to attain) that goal which elicits an emotional reaction – termed

a prefectual appraisal. These prefectual appraisals lead to the *anticipation* of discrete emotions, which can be thought of as *anticipated emotions*, because of their prospective orientation. From this perspective the interplay between cognitions and emotions is important and allows one to incorporate a consideration of the temporal element of emotions (in particular the concept of anticipated emotions, as will be discussed in section 4.2.4).

Whilst emotion and cognition were historically viewed as separate systems (e.g. Izard, 1977) the two processes are now acknowledged to be dependent on each other (Damasio, 2006; LeDoux, 1998). In particular, the prevailing contemporary view in psychology (e.g. Seymour and Dolan, 2008) holds that emotions are actually an integral component of rational behaviour in uncertain social environments, or in any environment where there are a number of options for response. In light of this, it therefore seems somewhat surprising that the role of emotion has been largely neglected in the threat appeals literature, as shown by the literature review in Chapter 2. That is not to say the principles of appraisal theory have never been applied to the threat appeals context. Indeed, Dillard (1994) and Dillard and Peck (2000; 2001) used appraisal theory to provide insight into the persuasive effects of emotion as a result of exposure to threat appeals. Whilst results have been inconclusive Dillard and Nabi (2006) examine the interplay between emotions and cognitions and the resultant influence on perceived effectiveness. Dillard and Nabi (2006) particularly examine the functions of differing emotions in the threat appeals context, for example manipulating fear to communicate the severity of threat, manipulating sadness in accordance with a sense of loss.

In light of the discussion presented in section 4.1, it is important to reiterate that the notions of emotional responses and cognitive appraisals have not been neglected by threat appeal research. To the contrary, the extended parallel process model (as discussed in sections 2.2.4 and 4.1) has developed and empirically tested a number of cognitive appraisals (perceived severity, perceived susceptibility, response efficacy and self-efficacy) along with the emotion of fear (Witte, 1992). Indeed, a strength of the extended parallel process model (Witte, 1992) is the consideration of the interplay between cognitions and emotional response (even though this is restricted to fear). However, given the questioning of the assumption that threat appeals generate an instinctive fear response and the differing properties of emotions and associated appraisals, as per appraisal theory (e.g. Lerner and Keltner, 2010; Bagozzi et al, 2003) the actual functions of emotions as responses to threat appeals require further examination. In order to assist with this line of enquiry the role of emotions in the judgement and decision making literature is presented in section 4.2.3.

#### 4.2.2 The role of emotions in judgement and decision making

As discussed in chapter 3, threat appeal research examining the impact of message frame has included a consideration of a temporal dimension in terms of distinguishing between short term and long term consequences of engaging (or not) in the recommended behaviour (e.g. Gerrend and Cullen, 2008; Apanovitch et al, 2003; Kiene et al, 2005). This is particularly relevant to a threat appeal context because it firstly suggests that responses to threat appeals are not necessarily immediate spontaneous responses (as per the instinctive threat fear mechanism examined in chapter 3) but that instead the emotional and cognitive responses form an evaluation which corresponds to decision making. It is important to note that this conceptual shift allows for the consideration of a temporal dimension regarding exposure to a threat appeal and an individual using emotional and cognitive responses to make a decision about *future* behaviour. In practical terms the behaviour forming the action recommendation as part of the threat appeal is not usually immediately actionable. In other words, an individual may be exposed to a print advertisement about safe driving at a point in time where they will not drive a car in the immediate time period and therefore responses to the threat appeal influence future behavioural intentions. That is not to suggest that individuals do not experience immediate emotions in response to exposure to a threat appeal. Indeed, in order to enhance understanding of the role of cognition and emotion responses to threat appeals and the impact of these responses on behaviour intention, different types of emotion are considered. In particular, alongside immediate emotional responses (the range of which may include fear and a number of other immediate emotions), future oriented emotions – termed here anticipatory and anticipated emotions – play a central role in the decision making literature (e.g. Vastfjall and Slovic, 2013), and must be considered relevant to the present study also.

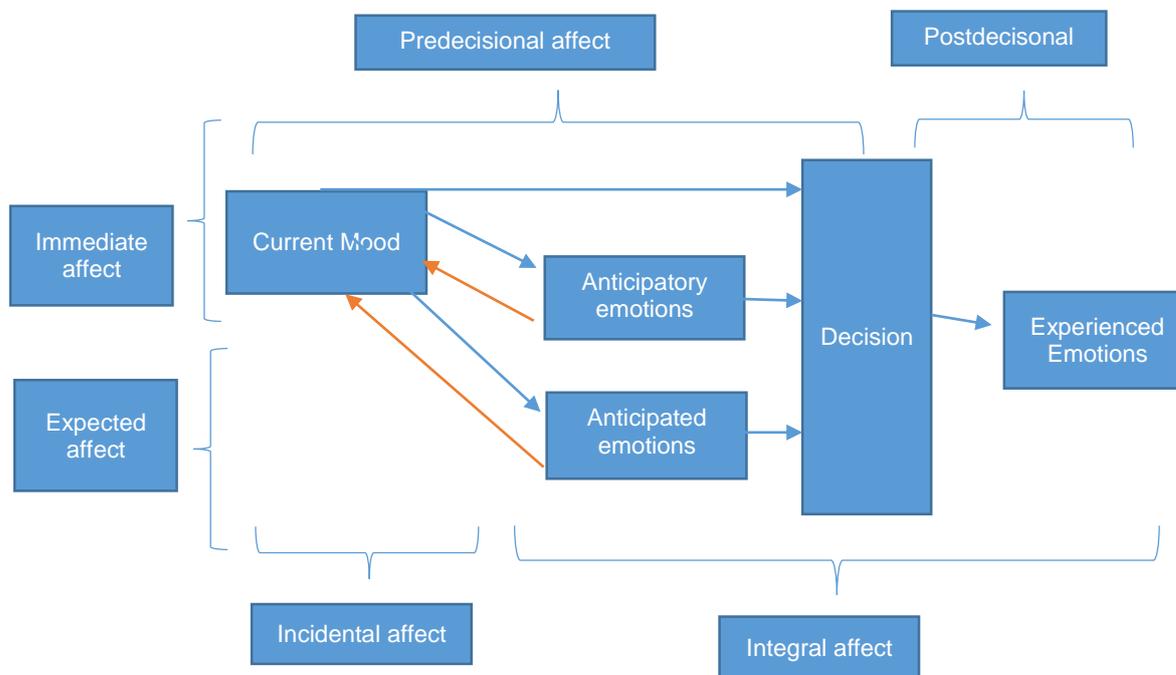
Emotions have played a key role in research on judgement and decision making field (JDM). Such research highlights the role of emotion in decision making, and has become increasingly focused on the role of emotions in the context of utility. In particular, JDM research has commonly utilised the concept of experienced utility; that is, the utility a decision maker experiences from the outcome of a chosen alternative (e.g. Khaneman, 2003). Essentially, utility refers to the pleasure and pain that we experience from outcomes (Vastfjall and Slovic, 2013). Therefore, in this context utility can be considered to be fundamentally concerned with emotions and emotional experiences, and refers to the pleasure-displeasure or comfort-discomfort derived from outcomes. As such, at a basic level, emotions guide decision making because human beings seek pleasure and avoid pain (Knutson et al, 2008). However, experienced utility is only one type of utility that guides

choice. Kahneman (2011) identifies four different types of utility; *instantaneous* utility is the conscious experienced utility from sensory input, *remembered* utility influences post decision evaluations (e.g. regret and disappointment with a decision outcome), *predicted* utility is the decision makers' anticipation or prediction of experienced utility, and finally *decision* utility is the utility that influences the actual decision. Of these four types of utility, predicted utility is most relevant to this discussion, as predicted utility influences future behaviour.

It is well-accepted that utility has a cognitive and emotional component, which can be clearly seen in examples such as gambling (e.g. Webb et al, 2014; Mellers et al, 1999; Zeelenberg et al, 1996). This perspective is of particular importance in the context of threat appeals, since there is an obvious (and unavoidable) time difference between exposure to a stimulus that is intended to change some behaviour (such as a threat appeal) and the behaviour in question. For example, an individual might see a threat appeal in a magazine or on the television about drink driving, but the point at which they may have the opportunity to decide whether or not to engage in that activity is likely to be at some point in the future. Here, it is clear that the concept of predicted utility is important, because encouraging individuals to think about the future and make a prediction based on a presented scenario (as presented in the threat appeal) will encourage people to make a decision or judgement and therefore change their future behaviour (or not) accordingly.

Indeed, Chang and Pham (2013) consider the role of emotions in judgement and decision making and purport that emotions are incorporated more into decision making when the outcome of the decision is closer to the present than in decisions where the outcome is more distant in time (which could be future or past). Chang and Pham (2013) demonstrate that outcome proximity to the present leads to preference for affectively superior options (e.g. the pleasure gained from renting an attractive apartment after graduating, when one is graduating in a few weeks versus a year). This increases the effect of incidental emotion on evaluations, and a greater perceived information value is placed on emotions. This is important because in practical terms, individuals are often exposed to threat appeal stimuli at a different time to the point at which they engage in the behaviour in question. Additionally because threat appeals are used to communicate the risks associated with a wide range of issues, ranging from speeding whilst driving, to binge drinking, to skin cancer, to sexually transmitted diseases, the "temporal distance or proximity" of exposure to the threat appeal appeal, to the actual potential outcome or incidence when the activity/behaviour in question might occur, can vary substantially.

Vastfjall and Slovic (2013, p 259) state that “Predecisional affect is emotion that influences the decision before the decision is actually made. Current mood, anticipatory, and anticipated emotions are such influences. Anticipatory emotions are emotional reactions experienced in the present, bought about by thinking about the future. Anticipated emotions on the other hand, are primarily cognitive expectations about future emotions without actually experiencing them in the present” This perspective highlights the roles of different types of emotions, and the role that each type can play in a decision making process which is stimulated by exposure to a stimulus. Vastfjall and Slovic (2013) present a model (see Figure 9) which considers the dimensions of the time of decision (pre-post decisional), the time of affect (immediate – expected) and the emotion/affect – decision relationship itself (incidental – integral). This model enables the incorporation of a temporal gap between exposure to stimulus, the emotions generated by that stimulus, and the point of actual behaviour, and consideration of the interplay between cognition and types of emotion.

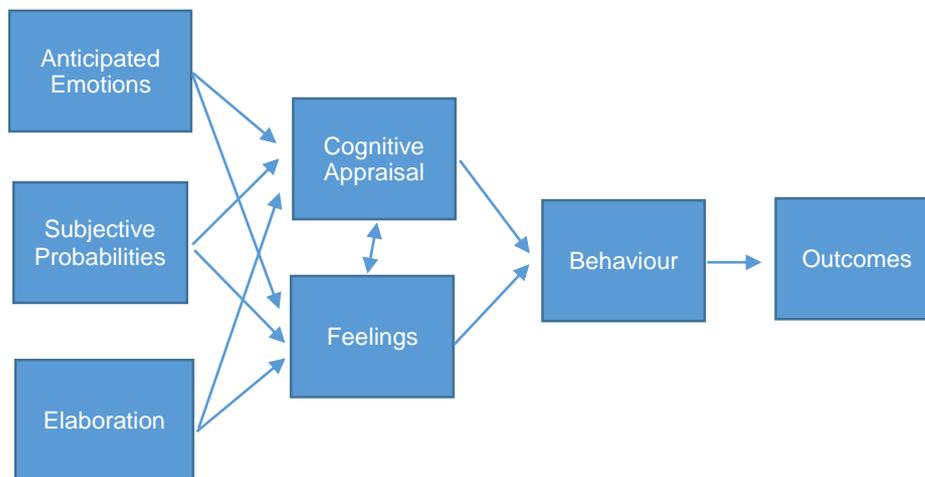


**Figure 9 - Different forms of emotion influencing decision making (Vastfjall and Slovic, 2013, p25)**

The distinction between immediate emotions and expected emotions, and their influence on decision making, is particularly relevant to a threat appeals context where individuals are responding to a threat appeal and using the cognitions and emotions to make a decision about future behaviour. As such, the different types of predecisional emotion are important.

However, prior research on threat appeals has not considered the role of anticipated or anticipatory emotions as responses to threat appeals.

Another prominent theoretical model in the JDM literature that examines different types of emotions in decision making is the risk-as-feeling hypothesis (Loewenstein et al, 2001) which is presented in figure 10. The risk-as-feelings hypothesis suggests that immediate or anticipatory emotions (i.e. visceral and immediate reactions to risk) have a direct effect on behaviour (Loewenstein et al, 2001). The-risk-as feelings hypothesis acknowledges that emotional responses to a risk may differ from cognitive appraisals of that risk, and reactions result “from emotional influences including feelings such as worry, fear, dread or anxiety” (Loewenstein et al, 2001, p270). The risk-as-feelings hypothesis conceptualises anticipated emotions, perceptions of subjective probabilities, and elaboration, as antecedents to cognitive appraisals and emotional responses that drive behaviour, as shown in figure 10.



**Figure 10 - Risk-as-feelings hypothesis (adapted from Loewenstein et al, 2001, p270)**

Whilst there is little empirical evidence to support the risk-as-feelings hypothesis (e.g. Tuokko et al, 2007) the model places emotions as integral part of decision making and particularly highlights the role of anticipated emotions as antecedents to cognitions and emotions that drive behaviour. Indeed, the risk-as-feelings hypothesis acknowledges the interaction between cognitions and emotions and the distinction between anticipated emotions and the effect these have on immediate emotions (i.e. those that are experienced at the time of appraisal).

Lerner and Keltner (2001) showed that two negative emotions, fear and anger, accompanied by appraisals of uncertainty and certainty respectively, differentially impact risk perception. This research found that individuals experiencing fear made pessimistic judgements whereas individuals experiencing anger made optimistic judgements about the future. Similarly Raghunathan and Pham (1999) generated results that identified a difference in risk seeking between participants who experienced sadness or fear, according to whether they differed on appraisals of loss and uncertainty. Bagozzi et al (2003) conducted a study in the context of effortful decision making and the goal selection process and identified that the appraisal of goals includes the assessment of the prospects of attaining (or failing to attain) that goal, which elicits an emotional reaction. These prefactual appraisals lead to the *anticipation* of discrete emotions, which can be thought of as anticipated emotions, because of their prospective orientation. From this perspective the interplay between cognitions and emotions is important and allows one to incorporate a consideration of the temporal element of emotions (in particular the concept of anticipated emotions, as will be discussed in section 4.2.3).

In a threat appeals context, perception of threat is an important cognitive evaluation (as discussed in section 4.1). Indeed, according to the risk-as-feelings hypothesis (Loewenstein et al, 2001) the immediate emotion experienced as a result of exposure to a graphic image (e.g. disgust) and the cognitive evaluation of threat severity and susceptibility, will drive behaviour. However, the anticipated emotions generated by exposure to a threat appeal may be different (i.e not disgust) as the intrinsic message characteristics that influence an anticipation of an event occurring, and the imagination of the associated feelings of that occurrence, are message frame issues which relate to the adoption of the recommended action and the direction of message. Arguably, the immediate fight or flight mechanism that could be activated by a threat, if it is perceived as such, or avoidance mechanisms associated with disgust, may serve to be counterproductive to the overall goal of threat appeal advertisements, which is making decisions regarding *future* behaviour. Indeed, an application of the affect as information hypothesis (Schwartz, 2001; Schwarz and Clore, 1983) demonstrates that the feelings aroused in the hypothetical situations presented in threat appeals (e.g. situations in the future) are not immediately relevant and therefore reduced or eliminated. As such, immediate instinctive emotional reactions such as fear or disgust appear likely to be less relevant to a future decision, or a decision about a future behaviour. However, the risk as feeling hypothesis (Loewenstein et al, 2001) and somatic marker theory (Damasio, 1994) posit that *immediately experienced* emotions remain important to risk assessment and choice. In support of this, studies (e.g. Katkin, 2001; Shiv and Huber, 2000; Carroll et al, 1982) have shown that there is a strong relationship between

imagery, emotion and decision making. Mental imagery and mental simulation of the scenario presented in a threat appeal which may be concerning the negative outcomes of a future behaviour are also important. Imagining an outcome encourages the elicitation of anticipatory and anticipated emotions and their influence on decisions. As such, the use of graphic images may facilitate elaboration and mental imagery which influence emotional and cognitive processes.

Loewenstein and Lerner (2003) state that anticipated emotions are predictions about emotional consequences of decision outcomes. In line with this, expected utility theories (e.g. Rosenstock, 1974) assume people attempt to predict the emotional consequences from alternative courses of action and then select actions that maximise positive emotions and minimise negative emotions. As discussed in chapter 2, the health belief model (Rosenstock, 1974) is an example of expected utility theory and influenced the development of protection motivation theory (Rogers, 1975) and subsequently the extended parallel process model (Witte, 1992). Expected utility theories state that behaviour is determined by an individual's assessment of the severity and likelihood of possible outcomes. This information is used to make an appraisal, and arrive at a decision that in turn drives behaviour. It can be seen that such models are primarily cognitive, and any emotions that are caused as a result of the decision, or the risk itself, are not considered as integral to the decision making process. Similar to the appraisal school of thought, emotions are considered in such models to be a product of the cognitive process. However, whilst the risk-as-feelings hypothesis has received little empirical support, the introduction of immediate, anticipatory and anticipated emotions as central constructs in a model of the response to threat appeals clearly has merit. As such, focus will now turn to a discussion of anticipated and anticipatory emotions, presented in section 4.2.3.

### **4.2.3 Anticipated and anticipatory emotions**

The distinction between anticipated and anticipatory emotions was introduced in the previous section within the context of models of decision making and judgment. The present section builds on the previous discussion to develop a more nuanced understanding of how these key concepts may influence individual responses to threat appeals. Anticipatory emotions are defined as emotions that are currently experienced due to the prospect of a future event (Baumgartner et al, 2008). Conversely, anticipated emotions are defined as the predicted emotional experience relating to an imagined future event (Baumgartner et al, 2008). As such, one can anticipate virtually any emotion (e.g. anticipated fear, anticipated joy, anticipated hope), while anticipatory emotions are a specific group with only some

overlap with immediate emotions (e.g. hope and fear are anticipatory emotions, but disgust is not). Baumgartner et al, (2008) suggest that anticipated emotions are distinct from anticipatory emotions (such as fear and hope) because anticipated emotions are the *predicted* emotions arising for a future event, whereas anticipatory emotions are those that are *currently* felt with respect to a future event.

Although anticipated emotions have an emotion component, the intensity is less than that of an actually experienced emotion (e.g. such as anticipatory emotions and immediate emotions). Anticipated emotions are likely to be experienced when the interpretation of an imagined future event matches an emotional appraisal. However, the specific appraisals for actually experienced and anticipated emotions are identical; the only difference is whether or not an event has been realised. For example, believing that a behaviour one has already carried out violates an internalised moral standard may evoke guilt and shame (Tangney and Dearing, 2002). Similarly, believing that an imagined *future* behaviour will violate a moral standard may elicit *anticipated* guilt and shame (Manstead, 2000).

Anticipated emotions facilitate self-regulation by signalling the emotional consequences of an action or omission / non-action (Baumeister et al, 2007). For example, Brown and McConnell (2011) found that the anticipation of negative emotions motivates people to undertake actions that may prevent an undesirable end-state. This study showed that when people anticipated negative emotions in the event that they would fail a future test, they were more likely to practice the task being tested. This is of course unsurprising, since humans prefer to experience positive arousal and to avoid negative arousal. As such, they should be motivated to undertake an action when they anticipate that it would result in positive emotions (such as pride and elation) and inhibit actions when they anticipate that they would result in negative emotions, such as guilt and shame. Indeed, research has found that including negative anticipated emotions in the theory of planned behaviour increases the predictive power of the model across various behaviours and contexts, such as binge drinking (Carrera et al, 2012; Ajzen and Sheikh, 2013) and blood donation (Conner et al, 2012). Research has also found that directly manipulating the prominence of anticipated emotions can increase health-related behaviour such as condom use (Richard et al, 1996), as well as – interestingly – consumer purchasing (Simonson, 1992). Anticipated emotions have also been used in the model of goal directed behaviour (which is based on the theory of planned behaviour). Specifically, Fry et al (2014) studied the causes of desires to drink responsibly. However, these approaches do not acknowledge the underlying mechanisms of the processes underpinning the decision making individuals undergo in deciding courses of future behaviour.

Baumgartner et al (2008) examined the difference between anticipatory and anticipated emotions and their predictive validity, using the umbrella term 'future-oriented emotions' to categorise anticipatory and anticipated emotions. Because anticipatory emotions are defined as those currently experienced due to the prospect of a future event (e.g. hope or fear), uncertainty about what is going to happen constitutes part of the meaning of anticipatory emotions and in fact partially *causes* the emotion. For example anticipatory hope for desired events or anticipatory worry for undesired events. On the other hand, because anticipated emotions are those expected to be experienced in the future if certain events do or do not occur (e.g. anticipated joy or regret), there is no uncertainty associated with these emotions. Specifically, mental simulation means that the individual is able to imagine how good or bad something would feel if the future event has occurred, and simulate how it would feel. Based on pre-factual thinking and imagined positive or negative consequences, anticipated emotions can be real emotional experiences based on vivid visualisations of possible futures, and are thus predictions or *affective forecasts*. Compared to anticipated emotions, the range of anticipatory emotions is necessarily smaller, because anticipatory emotions are a specific subset of all discrete emotions (i.e. those directly related to the prospect of future events). Conversely, an anticipated emotion can actually be *any* discrete emotion that is experienced in advance, based on mental simulation of future outcomes.

In this light, anticipated and anticipatory emotions may be seen as at least peripherally similar to a cognitive process. The discussion presented in the present chapter so far clearly shows that exploring the interplay between cognitions and emotions is fundamental to any comprehensive understanding of how individuals process threat appeal stimuli. However, prior 'fear appeal' models are mainly grounded in the cognitive school of thought (e.g. Protection Motivation Theory, Extended Parallel Process Model, Stage Model as discussed in the previous chapter) and, whilst many do incorporate an emotional element, it is usually restricted to the immediate fear response itself. As discussed at length in chapter 2, such models appear at least somewhat misspecified, since it was shown that the stimuli may not have the features to automatically generate the instinctive fear mechanism, and thus the fight or flight response. However, it is clear that much prior research does indeed make the assumption that one can include some level of 'fear' into a typical threat appeal stimuli (such as a threat appeal warning against drunk driving, or smoking).

Additionally it can also be seen that, through examining the typical scales employed by the field to measure fear, researchers have in fact been tapping into the construct of fear (and other

emotions) not as an immediate visceral response, but as a construct with future oriented properties. Unfortunately, at the same time, such research has not explicitly acknowledged the properties of the emotional construct under examination. For example, Passyn and Sujon (2006, p585) used two items to assess each emotion under investigation; "fear ("I felt afraid" and "I felt anxious that I might be at risk for developing skin cancer"), regret ("I felt regret" and "I felt blamable that because of my own doing, I might be at risk for developing skin cancer"), guilt ("I felt guilty" and "I felt ashamed that because of my own doing, I might be at risk for developing skin cancer hurting not only myself but loved ones as well"), challenge ("I felt challenged" and "I understood the problem and felt motivated to start protecting myself from UV rays"), and hope ("I felt hopeful" and "I felt wishful that everything would turn out well)". This clearly demonstrates a conceptual blurring between immediate felt emotional responses and cognitive predictions about an emotional response dependent on a scenario occurring. Therefore, it is imperative that this distinction informs the current research study. In addition, prior models in the threat appeals field (for example protection motivation theory and the extended parallel process model as discussed in chapter 2) emphasise the importance of the evaluation of subjective probabilities in the processing of the message contained in threat appeals (e.g. perceptions of severity and susceptibility, response efficacy and self-efficacy). Such cognitive evaluations also are generated through the mental simulation of an event or scenario occurring, which as discussed above, is an important part of the decision making process. As such, the constructs of anticipated, anticipatory emotion and elaboration, alongside cognitive evaluations are considered to have explanatory power that enhances understanding of consumer responses to threat appeals. The new conceptual framework based on this discussion is presented in section 4.3.

### **4.3 Developing a new conceptual framework to explain responses to threat appeals**

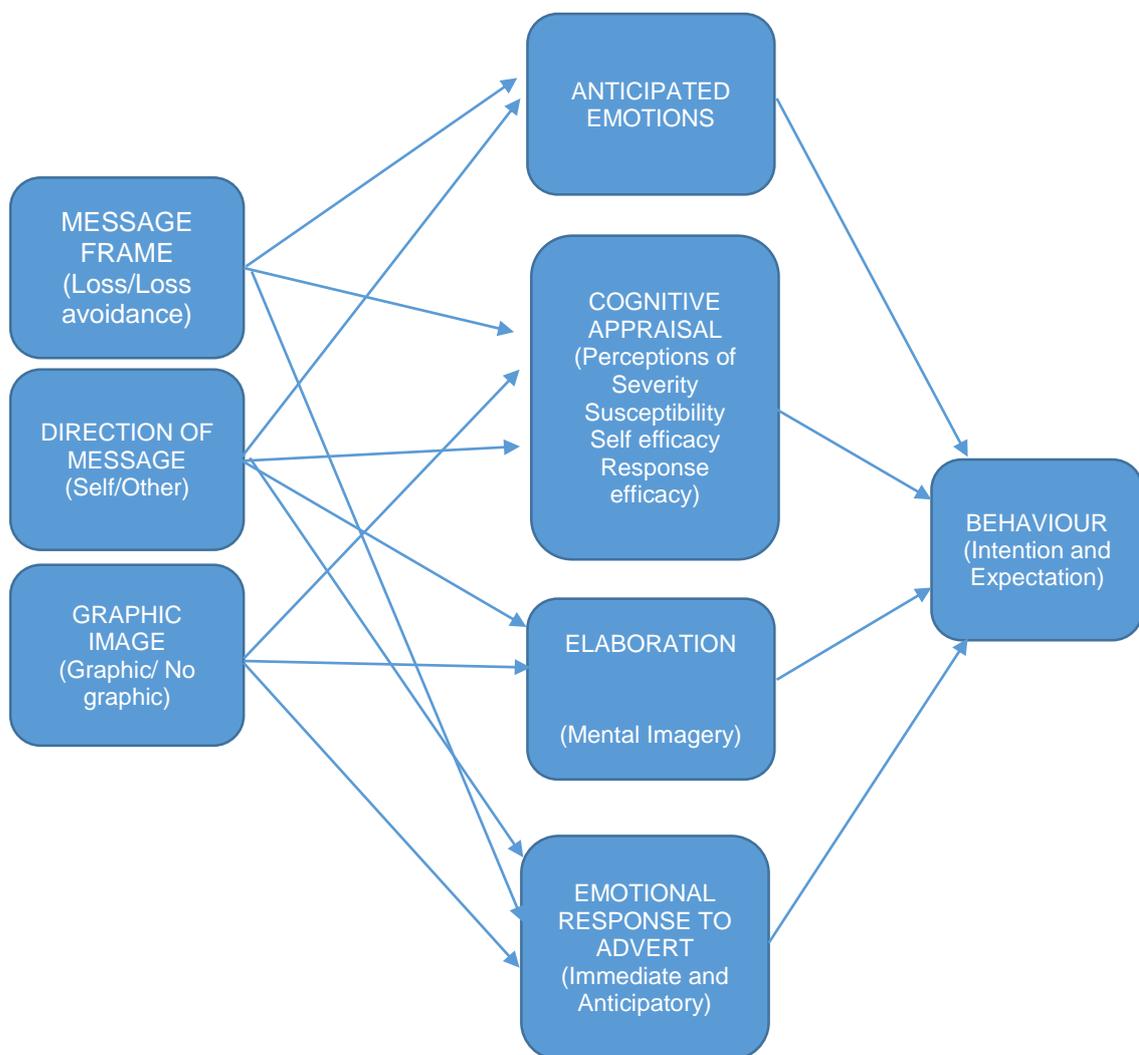
Drawing together the above discussion, a new conceptual framework to explain consumer responses to threat appeals is presented in figure 11. The conceptual framework will be outlined in this section and the hypotheses will be presented in section 4.4. The conceptual framework outlines the role of anticipated emotions alongside subjective probabilities, elaboration, and immediate and anticipatory emotions, resultant from manipulation of the intrinsic message characteristics of message direction, message frame and graphic image. The emotional and cognitive responses to the threat appeal manipulations are expected to influence behaviour intention and expectation. The rationale for this approach is based on the review of the literature presented in chapters 2 and 3. Specifically, the re-examination of

threat appeal variables presented in chapter 3 argues for a questioning of a fundamental assumption made in threat appeals literature, which is also identified in chapter 2. The assumption is that responses to threat appeals are underpinned by an instinctive mechanism whereby upon exposure to a threat, an individual experiences fear, which in turn, motivates action (e.g. Ohman and Mineka, 2001). As argued in section 1.1 the equivocal empirical results that pervade the threat appeals literature (e.g. Floyd et al, 2000, Witte and Allen, 2000) which is charted in Chapter 2, are in part caused by the conflation of message characteristics and the intended response.

The intrinsic message characteristics used as independent variables in the model are the direction of message, use of graphic images, and message frame, and they link directly to the defined common components of threat appeals as outlined in Chapter 2. The direction of message (towards self or other) relates to the positioning of the threat, the use of a graphic image is defined as a fundamental feature of a threat appeal (e.g. Witte, 1992) and the message frame (gain/loss avoidance or loss) relates to the presentation of the threat and the action recommendation. The intrinsic message characteristics (message direction, use of graphic image and message frame) and have empirically been shown to influence cognitive and emotional variables identified in prominent threat appeal models. More specifically, the variables of perceived severity of threat, perceived susceptibility, response efficacy, self-efficacy and the emotion of fear as proposed by the extended parallel process model (Witte, 1992).

This research reframes responses to threat appeals as a decision about future behaviour. The pertinent cognitive appraisal constructs from the extended parallel process model are synthesised with cognitive and emotional appraisal constructs from judgement and decision making to redefine the cognitive and emotional responses to threat appeals, adopting a decision making approach. As such, the role of anticipated and anticipatory (future oriented) emotions are included to further explain the underlying appraisal mechanisms that influence behaviour intention and behaviour expectation. The wider consideration of immediate, anticipatory and anticipated emotions is important as it cannot be assumed that responses to threat appeals are entirely based on a fear instinct mechanism. Indeed, as identified in chapter 3, whilst a graphic image may cause an instinctive emotional reaction such as disgust or fear, the message frame and message direction literature suggests that responses to these intrinsic message characteristics form part of an evaluative decision making process, which involves making a decision about future behaviour.

The conceptual model and hypotheses presented as such address the fundamental assumption so common in existing relevant literature that threat appeals generate an instinctive fear response, and as such the model does not conflate intrinsic message characteristics with cognitive or emotional responses. The new conceptual framework re-frames responses to threat appeals as a decision about future behaviour. Indeed, the cognitive appraisals of perceptions of severity, susceptibility, response efficacy and self-efficacy derived from the extended parallel process model (Witte, 1992) align with an assessment of subjective probabilities and cognitive appraisals as outlined in the JDM literature (see section 4.2.2). The model acknowledges the role of immediate emotions but also includes anticipatory and anticipated emotions as appraisals that will influence behavioural intention and behavioural expectation, which are generally accepted to strongly predict future behaviour (Vastfjall and Slovic, 2013). Elaboration is also presented as a variable that will be influenced by intrinsic message characteristics and in turn influence future behaviour intentions.



**Figure 11 - The new conceptual framework for the present study**

To summarize, based on the discussion presented in the previous chapters, the present study attempts to make a significant and original contribution to knowledge in the threat appeals domain of literature by developing and testing a conceptual model (see figure 11), which includes:

1. Intrinsic message characteristics associated with the core characteristics of threat appeals that have been demonstrated to influence emotional and cognitive appraisals, namely message direction, message frame and use of graphic image.
2. Key cognitive appraisal variables that have been shown in the extant literature to be important responses to threat appeals and to influence decision making.
3. The introduction of anticipated and anticipatory emotions alongside immediate emotional responses, to better understand the appraisal process and decision making about future behaviour
4. A consideration of the cognitive process associated with elaboration as a variable that will influence behavioural intention and expectation
5. Relevant outcome variables (i.e. behaviour intention and expectation), which represent a decision about future behaviour as a result of exposure to a threat appeal.

The next section (4.4) outlines and justifies the hypotheses for the present study in more detail.

#### **4.4 Research hypotheses**

As presented in figure 11 a new conceptual framework has been developed based on the review of the literature presented in this thesis. The conceptual framework outlines the role of anticipated emotions alongside subjective probabilities, elaboration, and immediate and anticipatory emotions, resultant from manipulation of the intrinsic message characteristics of message direction, message frame and graphic image. The emotional and cognitive responses to the threat appeal manipulations are expected to influence behaviour intention and expectation. Prior to the empirical test of the new conceptual framework (see Chapters 5, 6, and 7) the research hypotheses will now be presented and justified. To enhance clarity

of discussion, the hypotheses have been split into sections, the first three of which correspond to one intrinsic message characteristic (i.e. independent variable) each. First, section 4.4.1 will examine the influence of message frame effects on anticipated emotions, cognitive evaluations and immediate emotional responses. Section 4.4.2 considers the influence of direction of message on anticipated emotions, cognitive appraisals, elaboration and immediate emotional responses. Section 4.4.3 moves on to examine the influence of graphic images on cognitive appraisal, elaboration and immediate emotions. Finally, the relationship between anticipated emotions, cognitive appraisals, elaboration and immediate emotions, with behaviour change and expectation are then presented in section 4.4.4.

#### **4.4.1 Message Frame effects**

The positive or negative consequences included in threat appeals can be discussed in terms of gain or loss framed messages (e.g. Edwards et al, 2001). Gain framed messages emphasise the advantages of adopting the recommendation (i.e. specific advantages, or the avoidance of disadvantages, are presented) whereas loss framed messages emphasise the disadvantages of failing to adopt the recommendation (i.e. specific disadvantages, or failure to benefit from advantages, are presented). The general principles of theory relating to message framing is that individuals exposed to a gain framed message will respond differently in terms of cognitive evaluations (e.g. persuasion) to individuals exposed to a loss framed message (Rothman et al, 1999). Whilst a number of studies have demonstrated that gain framed messages are more effective in a general sense (e.g. Cox et al, 2006; Reinhart et al, 2007) these results have not been consistently upheld across the literature. Indeed, empirical research has shown that in some cases loss framed messages are more effective than gain framed messages (e.g. Rivers et al, 2005; Schneider et al, 2001). Equally, a number of research studies have reported no difference between gain framed and loss framed messages in terms of their effectiveness (e.g. Brug et al, 2003; Jones et al, 2004; O'Keefe and Jensen, 2006). That said, rather than adopting generalised measures of effectiveness, the approach taken in the present thesis is to examine the influence of message frame (namely loss and loss avoidance) on the cognitive and emotional constructs as identified in the new conceptual framework presented in figure 11. First the influence of message frame on anticipated emotions will be examined, second a consideration of the influence of message frame on cognitive appraisals and third, the influence of message frame on immediate emotions.

To recap, anticipated emotions are cognitions about emotions that are expected to be experienced in the future if a certain event does or does not occur (Baumgartner et al,

2008). These evaluations are based on the assumption that an individual engages with mental simulation and therefore imagines how they would feel if the future event were to occur. Essentially anticipated emotions are emotional forecasts based on an imagining of positive or negative consequences. Van T'Riet et al (2010) examined the effectiveness of message frame as mediated by positive or negative emotions. When exposed to a gain framed message, participants reported experiencing positive emotions which correlated with increased acceptance of message and favourable attitude toward the behaviour. In addition, participants who were exposed to a loss framed message, reported increased negative emotions and an increased intention to engage in the recommended behaviour. As such, loss framed messages, where the consequence is by definition negative, will likely generate thoughts associated with the loss occurring, and thus negative anticipated emotions. For example, if the loss frame threat appeal is the threat of serious injury caused by a car crash resulting from speeding. An individual would anticipate the negative emotions they would feel associated with the loss (injuries), for example anticipated fear, shame, humiliation or depressed feelings. Alternatively loss avoidance message frames are positive as they encourage individuals to imagine the emotional experience associated with avoiding a loss. If a loss avoidance threat appeals depicts a scenario where an individual avoids an accident and severe injuries because they chose to obey the speed limit, an individual would likely anticipate the positive emotions associated with that, for example anticipated relief or hope. As such,

*H1: Loss framed messages will generate negative anticipated emotions.*

*H2: Loss avoidance framed messages will generate positive anticipated emotions.*

There is strong empirical evidence that indicates message frame influences cognitive appraisals. For example, perceptions of severity and susceptibility are widely acknowledged to be generated by loss framed messages (Rothman et al, 2006; Bartels et al, 2010). Indeed, the perception of risk associated with perceived severity and susceptibility are fundamental to the persuasive mechanism that underpins loss framed messages (Block and Keller, 1995; O'Conner et al, 2005). Indeed, studies have demonstrated that loss framed messages generate perceptions of severity and susceptibility which subsequently created behavioural intentions to engage in behaviours such as flossing (Mann et al, 2004), HPV prevention measures (Block and Keller, 1995) and reduce alcohol consumption (Gerend and Cullen, 2008). However, there is little evidence to suggest that loss avoidance messages influence perceptions of severity and susceptibility, and it seems unlikely that such a causal mechanism would exist. As such it is hypothesised that use of a loss frame

increases perceptions of severity and susceptibility, but no specific hypothesis is drawn here regarding loss avoidance framed messages. To state this more formally:

*H3: Loss framed messages increase perceptions of a) severity and b) susceptibility.*

Similar to the appraisals discussed above, an individual's perceived efficacy (both self-efficacy and response efficacy) is also a cognitive appraisal specifically associated with the examination of the action recommendation presented as part of the threat appeal (e.g. Ruiters et al, 2001; Witte, 1992). In the threat appeals context, response efficacy is an individual's belief that the recommended action will avert or reduce the threat (Ruiters et al, 2001) and self-efficacy is the belief that an individual is capable of adopting the recommended response (Witte, 1992). When presented with loss avoidance messages in a threat appeals context, individuals are more likely to have higher self-efficacy and response efficacy, because the message presents the recommended action as an effective means by which to reduce the threat presented (Witte and Allen, 2000). In other words, the loss-avoidance message implies the effectiveness of the recommended action (e.g. slow down when driving) in reducing the threat, meaning the viewer has a clearer path to reducing the threat that is presented. As such,

*H4: Loss avoidance messages increase perceptions of a) self-efficacy and b) response efficacy.*

Given that the message frame of loss, or loss avoidance, in the threat appeals context focuses on either the advantages of adopting the recommendation (e.g. avoiding a loss) or emphasise the disadvantages of failing to adopt the recommendation (e.g. suffering a loss) respectively, it is unlikely that the message frame will generate an immediate visceral emotional response in individuals (for example the fight or flight fear mechanisms resultant from an immediate threat as outlined in section 4.2.2 and 3.1.2.) Rather, the immediate emotions experienced as a result of message frame manipulations are far more likely to be anticipatory emotions (Baumgartner et al, 2008). Given that the threat is not immediately present when an individual is exposed to a threat appeal, the short term and long term consequences of engaging (or not) in the recommended behaviour (e.g. Gerrend and Cullen, 2008; Apanovitch et al, 2003; Kiene et al, 2005) are important. This is in line with the idea of anticipatory emotions, as these are emotions experienced in the present, but are caused by consideration of the prospect of a future event (Baumgartner et al, 2008). As already discussed in depth, anticipatory emotions are distinct from anticipated emotions, where an individual imagines how they would feel if the future event actually occurred. As

such, anticipatory emotions are based on the uncertainty of future events. For example, an individual may be exposed to a threat appeal and experience anticipatory hope at the time of exposure (i.e. hope for desired events in the future) or anticipatory worry at the time of exposure about undesired events in the future. Baumgartner et al (2008, p686) identify “hope and fear [as] the prototypical categories of positive and negative anticipatory emotions”. As argued in section 4.2.4 some researchers (e.g. Passyn and Sujan, 2006) have measured what appear to be anticipatory emotions (e.g. fear and hope) but have unfortunately not distinguished them from immediate visceral responses, despite their distinct conceptual nature. Research has shown that loss framed messages generate fear (Witte and Allen, 2000). However, the distinction between anticipatory emotions and visceral immediate responses is not usually clearly determined. As such, it is expected that exposure to a loss framed message will evoke anticipatory fear at the prospect of experiencing the aversive outcomes integral to the presented loss, therefore;

*H5: Loss framed messages will generate fear*

Whilst gain framed messages are likely to generate anticipatory hope at the prospect of experiencing a gain as presented in the message (Connor et al, 2012), this is not directly applicable to a threat appeals context. As will be discussed in chapter 5, it is actually not possible to operationalise a truly gain framed threat appeal, and as such loss avoidance appeals are more appropriate. Carrera et al (2012) found that there was a clear increase in positive anticipatory emotions (in their case joy) evoked from a loss avoidance message concerning binge drinking behaviours. The present thesis follows this general logic that loss avoidance messages should generally result in an increase in positive anticipatory emotions, but in this case (due to the context of investigation discussed in Chapter 5 and elsewhere) it is considered the positive anticipatory emotion of relief is most appropriate (Bagozzi et al, 2003). Thus;

*H6: Loss avoidance messages will generate anticipatory relief.*

#### **4.4.2 The influence of message direction**

As discussed in section 3.2.2 threat appeals can be directed towards the self ('you') or another person ('other', e.g. Block, 2005; Block and Williams, 2000; Adams et al, 2011) as intrinsic message characteristics. A large body of empirical evidence suggests that advertising messages found to be self-relevant are more persuasive and generate higher

recall than those that are not, because the latter are unable to access individuals' self-schema (Hamami et al, 2011; Burnkrant and Unnava, 1995; Debevec and Iyer, 1988; Rogers, Kuiper and Kirker, 1977). According to Keller and Block (1996), information about the self includes a vast array of knowledge (e.g. physical appearance, past experiences, behaviour patterns, attitudinal likes and dislikes, and relationships towards others), and it is this knowledge that makes the self, one of the most elaborate networks in memory. The self-reference effect (SRE) has been empirically shown to influence persuasion and elaboration (e.g. Hamami et al, 2011). However the application of the SRE is questionable in the threat appeals context because, by definition, individuals instinctively defend their sense of self when threatened (Keller and Block, 1999). As presented in chapter 3, whether a threat appeal consists of a threat that will evoke defence mechanisms (Sherman et al, 2000) can be quite strongly questioned. Thus, whilst prior research has focussed on the influence of direction of message on variables such as persuasion (Keller and Block, 1996) and donation intention (Basil et al, 2008), the approach taken in this thesis is somewhat different (as outlined in the new conceptual framework in figure 4.3). Indeed, this thesis particularly examines the effect of manipulating the direction of a threat appeal (towards the self or other) on anticipated emotions, cognitive appraisals, elaboration and immediate emotions. These variables are distinct from the generalised persuasion variables commonly utilised in the literature, as they are conceptualised as elements of a decision making process in response to exposure to a threat appeal about an individuals intended future behaviour.

As previously stated, anticipated emotions are cognitions about emotions expected to be experienced in the future if a certain event does or does not occur (Baumgartner et al, 2008). In the context of message direction, it can be seen that the direction towards either self or other may evoke different anticipated emotions (Manstead, 2000). In particular, shame and guilt are distinct from other negative emotions, as they involve perceptions of self and therefore have strong personal implications (Boudewyns et al, 2013). In order for shame or guilt to be directly experienced or anticipated, an individual has to either have performed a negative act, or to imagine how they would feel if they actually engaged in a negative act (Agrawal and Duhachek, 2010). Shame is evoked when an individual violates a moral or social norm (Tangney, 1991) which leads to an individual believing their identity is somehow tarnished (Ferguson et al, 2007). Indeed, shame and humiliation have similar characteristics because there is an implicit acknowledgement that the negative behaviour that evokes shame or humiliation is viewed as such by other individuals, who evaluate the individual in question. Guilt, on the other hand, is generated when an individual (i.e. the self) engages in a negative behaviour that has a negative impact on others (Agrawal and

Duhachek, 2010). Indeed, whilst anticipated shame and humiliation are similar, anticipated guilt is distinct, and is revolves around and anticipation of feelings of responsibility for the negative event. By definition, if an individual is imagining a scenario where they may feel guilty, they would also have to imagine they were responsible for a negative action towards another individual. As such, the present research focuses on the effects of message direction on shame, humiliation, and feelings of responsibility, and it is hypothesised that

*H7: Self-directed messages will evoke anticipated a) shame, b) humiliation and c) feelings of responsibility*

Self-directed messages have also been shown to influence anticipated emotions with relevance to goal directed behaviour (Baumgartner et al, 2008). Anticipated emotions are experienced when an individual imagines a prediction about a desired or undesired future event and it is either confirmed or disconfirmed as likely to occur. For example, anticipated fear is evoked when an individual imagines a future event that is a) confirmed, b) undesirable and c) about the self. For example, if an individual imagines they will be in a car accident and sustain critical injuries they will anticipate fear as a response. In contrast, if an individual imagines a future event that is disconfirmed they will experience anticipated relief. To explain the idea of disconfirmation more clearly, disconfirmation could occur if an individual imagines avoiding having a car accident and sustaining critical injuries. Both anticipated fear and relief focus on the self, however the confirmation or disconfirmation of imagined events is likely to be triggered by the message frame (discussed in section 4.4.1 above). Indeed, a loss frame represent confirmed future events and a loss avoidance frame represents disconfirmed future events. This suggest an interaction between message direction and message frame such that;

*H8: Self-directed messages will interact with loss frames to evoke anticipated fear*

*H9: Self-directed messages will interact with loss avoidance frames to evoke anticipated relief*

Another emotion that is tightly bound to individuals' sense of self is regret. Regret can only be experienced after an action or behaviour has occurred, unless an individual imagines the anticipated regret they would experience if they engage with a negative behaviour in the future. Indeed, generally speaking, empirical research has shown that regret is an aversive emotion that individuals are very motivated to avoid (Reb and Connolly, 2009). As

Zeelenberg and Peters (2007, p7) state “regret is distinct from related other specific emotions such as anger, disappointment, envy, guilt, sadness and shame, and from general negative affect, on the basis of its appraisals, experiential content, and behavioural consequences”. Indeed, Lechner et al, (1997) conducted a study in the context of communicating the potential threat of not engaging with breast cancer screening. Individuals who experienced anticipated regret were more likely to have a breast scan, than those who did not experience anticipated regret. Importantly, the experience of anticipated regret is dependent on an individual feeling responsible for the outcome (Tsiros and Mittal, 2000), and as such is far more likely to be evoked in self-directed messages. Therefore,

*H10: Self-directed messages will evoke anticipated regret*

As discussed in chapter 3, the influence of message frame on cognitive appraisals has received mixed support in the literature (e.g. Keller and Block, 1996; Green et al, 2008). That said, the mixed results are almost definitely a result the conflation of stimulus variables and expected responses. For example, Keller and Block (1996) found that a self-condition enhanced the persuasiveness of a ‘low’ fear appeal by causing individuals to elaborate upon the negative consequences of smoking. Conversely, other-referenced conditions increased the persuasiveness of a ‘high’ fear appeal, by decreasing the extent to which individuals denied the harmful consequences portrayed. In the context of the new conceptual framework developed for this study, in order to generate hypotheses concerning the direction of message and cognitive appraisals the rationale behind protection motivation theory (Rogers, 1983) and the extended parallel process model (Witte, 1992) is utilised. These models are described in detail in chapter 2 and the discussion identifies that perceptions of severity and susceptibility represent a threat appraisal. Given that an individual must find a warning to be self-relevant in order to perceive a threat (as argued in chapter 3) it is therefore apparent that self-directed messages will influence perceptions of severity and susceptibility. Using the same logic, given that self-efficacy is an individual’s belief they have the capacity to carry out the action recommendation and reduce the threat, it is more likely that a self-directed message will achieve an increase in self-efficacy. Therefore,

*H11: Self-directed messages will increase perceptions of a) severity and b) susceptibility*

*H12: Self-directed messages will increase perceptions of self-efficacy*

To move to a consideration of the effect of direction of message on elaboration, it is necessary to return to the fundamental mechanism of the SRE. Self-referencing “occurs when information is processed by relating it to aspects of oneself” (Burnkrant and Unnava, 1995, p17). Self-referencing enhances information processing because “the self is an extremely active and powerful agent in the organisation of the person’s world” (Rogers et al, 1977, p677). Block (2005, p2291) identifies the “unique properties” of self-referenced information, namely that it is “highly elaborative, highly organised and frequently accessed”, and attributes these features to increases in persuasion and recall. Elaborative processing, where conscious cognitive activities occur, has been shown to lead to increases in message persuasion (Keller and Block, 1996). More specifically when a message is related to an individual’s personal experience, self-referencing has been found to increase message persuasion (Burnkrant and Unnava, 1995). Taken together, these lines of argument suggest the hypothesis that;

*H13: Self-directed messages will increase mental imagery elaboration*

The anticipatory emotion of guilt, and its relationship with message direction, has been examined in a threat appeals context (e.g. Basil et al, 2008; Boudewyns et al 2013; Duhacheck et al 2010). As Bagozzi et al (1999, p185) state “emotions arise in response to appraisals one makes for something of relevance to one's well-being.” Indeed, as evidenced above, guilt is an emotion with accountability characteristics, which are proposed to drive the effectiveness of the self-direction of the message. More specifically anticipatory guilt is experienced when an individual deviates from what they consider to be correct behaviour. As Hibbert et al (2007, p 725) state “anticipatory guilt refers to guilt that is experienced when one considers going against one’s own standards of acceptable behaviour (e.g. planning to call in to work sick when one is in full health).” Whilst this example is not pertinent to the threat appeals context, it highlights how anticipatory guilt differs from anticipated guilt. As outlined above, anticipated guilt translates to a feeling of responsibility towards others because it is evoked on the basis of an imagined confirmed event. Anticipatory guilt, however has more focus on the self. On the other hand, anticipatory worry has a locus directed towards other individuals. Indeed, worry is fundamentally underpinned by empathy. Whereas guilt is an emotion with accountability characteristics, which are proposed to drive the effectiveness of the self-direction of the message, worry is an emotion with empathy characteristics (Basil et al, 2008). As such the following is hypothesised

*H14: Self-directed messages will evoke anticipatory guilt*

*H15: Other-directed messages will evoke anticipatory worry*

#### **4.4.3 The use of graphic images**

As discussed in section 3.2.3 the use of graphic images in threat appeals to grab attention is widespread (Dahl et al, 2003). However, as previously discussed the conflation of message characteristics and responses has often used 'levels' of threat or fear erroneously as message characteristics (e.g. Carey et al, 2013; Ruiter et al, 2014). However it is clearly shown in the present thesis that fear is more correctly considered as an emotional response, and a more accurate understanding of threat shows that it is dependent upon perceptions of severity and susceptibility. As such, threat and fear are conceptualized as response constructs in the new conceptual framework presented in figure 11. Presently, graphic images are presented as the intrinsic message characteristic that manipulates these responses.

The first common element of a threat appeal is the presentation of a graphic image (Witte, 1992) that depicts "a personally relevant and significant threat" (Witte, 1994, p114). Generally speaking there is much, empirical evidence that identifies the information processing of visual images, or pictures, as superior to that of verbal information, or words (e.g. MacInnis and Price, 1987; Cautela and McCullough, 1978). Perceptions of threat are a cognitive response to a threat appeal, and fear is one possible emotional response to a threat appeal, as outlined in the extended parallel process model (Witte, 1992). The intrinsic message characteristic that is intended to generate cognitions concerning severity of threat and susceptibility to threat in a threat appeal, is the use of a graphic picture. Indeed, research has shown that the inclusion of vivid or graphic images with a threat appeal increases perceptions of threat (e.g. Cauberghe et al, 2009; Sabanne et al, 2009). As such,

*H16: Graphic images will generate increased perceptions of a) severity and b) susceptibility*

Whilst there is some empirical evidence which identifies that information processing of visual images is superior to that of words (e.g. MacInnis and Price, 1987; Cautela and McCullough, 1978), it is not clear that this effect will necessarily translate into increased elaboration. Indeed, individuals instinctively avoid graphic images (cite), and therefore elaboration cannot be assumed. When high levels of elaboration are evoked, central or systematic processing occurs. (Petty and Cacioppo, 1981) This involves the careful consideration of, and critical attention paid to, the arguments central to the message.

Alternatively, when low elaboration is evoked, a peripheral or heuristic route is prompted, where shallow cues serve to persuade (Green and Brock 2000). Arguably, the presence of graphic features (e.g. blood) in a threat appeal may be a shallow cue (instinctively recognised as something to avoid) and as such low elaborative processing seems more likely to occur. Low and high levels of elaboration can be distinguished in terms of the response elicited, with the former evoking only a recognition response, and the latter constructing a connection between encoded information and prior knowledge, involving the integration of data from multiple knowledge structures (MacInnis and Price 1987). When low elaboration occurs, individuals will protect their cognitive resources and filter information believed to be irrelevant, or devote available cognitive resources to another task (Petty and Cacioppo, 1981). Given that graphic images may facilitate low elaboration and heuristic processing it is hypothesised that non graphic images will encourage higher levels of elaboration when compared to a high graphic image of the same situation. Therefore,

*H17: Non graphic images will encourage increased mental imagery elaboration*

Whilst the addition of graphic images to threat appeals has been found to make them be more persuasive (Dahl et al, 2003; Sabbane et al, 2009; Miller et al, 2009), research has identified a number of immediate, visceral emotional responses to graphic images that are not limited to fear. That is not to say fear is not a response. Indeed, Kees et al (2010) found that 'highly' graphic images strengthened smokers' intention to stop smoking, which was mediated by a fear response. However, recall of specific messages was lower than for 'low' or graphic absent conditions. In line with this, Andrews et al (2014) found that graphic warnings and smoking frequency influenced fear, which in turn generated negative health beliefs about smoking and increased intentions to stop smoking. That said, research has demonstrated that graphic images generate other discrete emotional responses (e.g. disgust), which appear to contribute to message effectiveness (e.g. Stephenson, 2002, 2003; Niederdeppe et al, 2007). For instance, Biener et al. (2005) concluded that visual images that graphically depict disease caused by smoking increase emotional response to messages (in particular, fear, anger and sadness). The position in this thesis is to question the assumption that graphic images automatically create only a fear response (cf. Witte and Allen, 2000), and it is the intention to include a wider consideration of negative emotions alongside fear as the possible emotional responses to a graphic image in threat appeals. As such, drawing from existing evidence and argument above, the following is hypothesised

*H18: Graphic images will evoke immediate emotions of a) disgust, b) fear, c) anger and d) uncomfortable feelings*

#### 4.4.4 Influences on behaviour intention and expectation

As outlined in figure 11 and the ensuing discussion, threat appeals are hypothesised to generate emotional and cognitive responses that influence decisions about future behaviour. Indeed, examining the mechanisms behind this decision making process is the focus of this study. Specifically, a core purpose of the present study is to examine how the intrinsic message characteristics of threat appeals can be manipulated to evoke emotional and cognitive processes that change behaviour in accordance with the recommended behaviour in the threat appeal (e.g. don't drink and drive). Whilst research has intermittently considered the emotional responses to threat appeals (albeit with a primary focus on cognitive processes, as outlined in chapter 2) a key assumption pervading the literature is that threat appeals evoke an instinctive fear response (e.g. Witte, 1992), which in turn activates a fight or flight mechanism. However, the position taken in the present thesis is that it is necessary to widen the consideration of emotional and cognitive responses to threat appeals in order to acknowledge that threat appeals do not present a threat in the true sense. As such, responses to threat appeals are conceptualised within a decision making framework, which influences future behaviour through decisions regarding intentions and expectations.

In sections 4.1, 4.2, and 4.3 above, the identified intrinsic message characteristics were examined, and hypotheses generated based on the extant literature. At this point, focus now turns to the variables that influence behaviour intention and expectation. Indeed, as is outlined in the conceptual framework presented in figure 11, it is not expected that intrinsic message characteristics will have a direct effect on behaviour intention or expectation. Rather, in accordance with prominent JDM theories (e.g. Vastfjall and Slovic, 2013; Loewenstein et al, 2001) the cognitive appraisals and emotional responses mediate the relationship between message characteristics and behavioural intention and expectation. In support of this, Banerjee et al (2011, p2) state that "numerous studies have previously examined the impact of emotions and emotional appeals on attitude and behaviour change (e.g. Dillard and Peck, 2001; Dillard et al, 2007; Rains and Turner, 2007), and their findings suggest that emotions may serve a number of key functions in persuasion processes". As outlined throughout this thesis, a number of fundamental assumptions that this statement rests upon have been questioned, however, it is important to recognise that behaviour change is the dependent/ outcome variable of interest. Many studies in the threat appeals field examine persuasion or attitude to advert as the dependent variable and yet, as outlined in chapter 1, this would seem to have little practical relevance to the ultimate goal of behaviour change (Carey et al, 2013). Indeed, persuasion can be an indicator of increased

likelihood of behaviour intention but this correlation is not upheld in the literature (Algie and Rossiter, 2010). To be clear, behavioural intention refers to the amount of effort or motivation an individual has to perform a behaviour, and behavioural expectation is an estimate or subjective probability concerning whether the behaviour will actually be performed, considering situational factors such as past experience (Carrera et al, 2012). Essentially, behaviour intention can be seen as the formulation of a decision, and behaviour expectation is the likelihood that the decision will be carried out (Carrera et al, 2012).

Anticipated emotions, which by definition are cognitions about future emotions, are a novel consideration in the threat appeals field. However, other streams of empirical research show that anticipated emotions influence goal directed behaviour (Baumgartner et al, 2008) and as such would appear relevant to any comprehensive theory regarding the response to threat appeals. Indeed, as previously discussed (see Chapter 1), researchers in threat appeals contexts appear to have often unintentionally amalgamated immediate visceral response and anticipatory emotions in their measurement of various emotional responses. For example, detailed examination of the instruments used to measure the general fear response used in many prior studies shows that it may have tapped not only the immediate visceral response of fear (as intended), but also perhaps anticipatory fear, or even anticipated fear (e.g. Passyn and Sujan, 2006). These distinctions have not been made clear in the past. Importantly, it could be argued that there is in fact little evidence for the presence of the instinctive fear mechanism in this context. Further, it should also be clear that anticipatory or anticipated fear actually bears no relation to the intrinsic fear response that constitutes the origins of the field (e.g. Hovland et al, 1953).

Brown and McConnell (2011) found that the anticipation of negative emotions motivated people to undertake actions that may prevent an undesirable end-state. Brown and McConnell (2011) specifically examined student examination practise and found that when individuals anticipated negative emotions for failing a test they were more likely to practice the task. Even so, this has relevance to the threat appeals context. Indeed, it seems that even the anticipation of negative outcomes that would be self-relevant, and result in negative emotions about self-concept, are avoided by individuals. As such, individuals are motivated to undertake action to reduce negative emotions, which is presented as part of the threat appeal.

Generally speaking, evoking anticipated emotions have been shown to influence behavioural responses. For example, directly manipulating anticipated emotions increases condom use (Richard, et al, 1996) and other behaviours, according to extant literature (e.g.

Baumeister et al, 2007; Damasio, 1994; Haidt, 2001, 2003). The core of anticipated emotions is linked to behaviour because the cognitive appraisal is based on the assumption that a particular outcome will occur. As such, anticipated emotions are closely linked to behaviour intention and behaviour expectation (Carrera et al, 2012). Whilst the assumption has been made that fear is necessary for behaviour change in a threat appeals context, this assumption has been questioned herein, and it is instead proposed that *anticipated* fear is more likely to be an influence on behaviour change in a threat appeals context. Indeed, if an individual imagines they will be in a car accident and sustain critical injuries they will likely anticipate fear as a response. In contrast, if an individual imagines a future event that is disconfirmed they will anticipate relief as a response. In addition, anticipated regret is also particularly bound to behaviour intention and expectation because regret is an emotion generated in response to the assumption that an action or behaviour has occurred (Reb and Connolly, 2009). As discussed above, shame and humiliation have similar characteristics because there is an implicit acknowledgement that the negative behaviour that evokes shame or humiliation is viewed as such by other individuals, who evaluate the individual in question. Guilt, on the other hand, is generated when an individual (i.e. the self) engages in a negative behaviour that has a negative impact on others (Argawal and Duhachek, 2010). Indeed, whilst anticipated shame and humiliation are similar, anticipated guilt is distinct, and is revolves around the anticipation of feelings of responsibility for the negative event. By definition, if an individual is imagining a scenario where they may feel guilty, they would also have to imagine they were responsible for a negative action towards another individual. As such, the present research focuses on the influences of shame, humiliation, and feelings of responsibility on behaviour intention and expectation. Research has also shown that anticipated hope and anticipated delight have an influence on behavioural intention (Spears et al, 2012; Chadwick, 2015; Bagozzi et al, 2003). Passyn and Sujun (2006) identified that both positive and negative emotional constructs are motivators for action in a threat appeals context, and purport that the consideration of both positive and negative emotions is important. Therefore, it is hypothesised that

*H19: Anticipated emotions, and specifically, a) fear, b) shame, c) regret, d) relief, e) humiliation f), depressed feeling, g) responsible feelings, h) hope and i) delight will influence behavioural intention*

*H20: Anticipated emotions, and specifically, a) fear, b) shame, c) regret, d) relief, e) humiliation f), depressed feeling, g) responsible feelings, h) hope and i) delight, will influence behavioural expectation*

Cognitive appraisals, specifically perceptions of severity, susceptibility, self-efficacy and response-efficacy, have been widely shown to influence behaviour intention and expectation (e.g. Lloyd et al 2000; Milne et al, 2000; Lewis et al, 2013; Basil et al, 2013). Witte and Allen (2000) state that perceptions of severity and susceptibility have a strong effect on behaviour intention, and also that self-efficacy and response efficacy have a strong effect on behaviour intention and constructs associated with behaviour expectation. Indeed, Milne et al (2000) indicate that self-efficacy perceptions have twice as much influence as severity perceptions on behaviour outcome measures. Whilst Pechmann et al, (2003) found perceptions of severity to most strongly influence behaviour intention, Brewer et al (2005) found perceptions of susceptibility to most strongly influence behaviour intention, and Tay and Watson (2002) found self-efficacy and response efficacy to strongly influence behaviour intention. Whilst, results across the literature vary in identifying which of the cognitive appraisal variables have the most influence on behaviour intention and expectation, the variables of perceived severity, susceptibility, self-efficacy and response-efficacy have all been widely shown to influence behaviour intention and expectation. Therefore, it is hypothesised that

*H21: Cognitive appraisals, and specifically, a) severity, b) susceptibility, c) response efficacy, and d) self-efficacy, will influence behavioural intention*

*H22: Cognitive appraisals, and specifically, a) severity, b) susceptibility, c) response efficacy, and d) self-efficacy, will influence behavioural expectation*

Research has examined the role of elaboration in response to threat appeals and demonstrated that elaboration serves as a mechanism to influence behaviour intention outcomes (Block and Williams, 2000; Keller and Block, 1996). Whilst there is only a small bank of evidence to suggest that elaboration influences behaviour intention and expectation, the role of elaboration as a mediating variable between message characteristics and behaviour intention and expectation is key in the conceptual model presented in figure 11. Behaviour intention and expectation represent cognitions about future behaviour. As such, individuals have to imagine the future in order to decide how they intend to act and appraise how likely it is they will act in this way. It is proposed that mental imagery elaboration will facilitate this process. Indeed, as presented in the discussion of the JDM literature in section 4.2, this is the role that elaboration has in decision making. It is a somewhat novel approach to examine the influence of elaboration on the specific variables of behaviour intention and behaviour expectation in a threat appeals context, nonetheless, it is hypothesised that

*H23: Elaboration will influence behavioural intention*

*H24: Elaboration will influence behavioural expectation*

Whilst existing threat appeals research has focused on the roles of immediate visceral responses such as fear and disgust (e.g. Morales et al, 2012; Argrawal and Duhachek, 2010) and anger and sadness (e.g. Biener et al, 2005), there is scant empirical evidence to suggest that immediate visceral responses drive behaviour intention or expectation in a threat appeals context. As such, no hypotheses are drawn regarding the immediate visceral emotional responses measured in the present study as responses to the threat appeal messages (specifically, fear and disgust). Conversely, anticipatory emotions have been clearly shown to motivate individuals to take appropriate action to achieve goals and avoid negative outcomes (Carrera et al, 2012). As such, research has repeatedly demonstrated the influence of anticipatory emotions on behaviour intention and expectation. In particular, the anticipatory emotion of guilt has been examined in a threat appeals context (e.g. Basil et al, 2008; Boudewyns et al 2013; Duhacheck et al 2010) and has been shown to influence behaviour intention (e.g. Hibbert et al, 2007; Passyn and Sujan, 2006). As discussed above, whilst guilt, worry and relief have a different direction, accountability and empathy foci, the nature of anticipatory emotions (akin to anticipated emotions) is that they are future oriented (Baumgartner et al, 2008) and as such are inherently linked to behaviour intention and expectation. Indeed, anticipatory emotions are evoked through considerations of outcome and behaviour (Bagozzi et al, 2003). However, Therefore, it is hypothesised that

*H25: Anticipatory emotions, and specifically a) worry b) relief and c) guilt, will influence behavioural intention*

*H26: Anticipatory emotions, and specifically a) worry b) relief and c) guilt, will influence behavioural expectation*

## **4.5 Summary**

The aim of this chapter was to develop a new conceptual focus on the cognitive and emotional responses to threat appeals, namely anticipated, anticipatory and immediate emotions alongside elaboration and cognitive appraisal. These variables serve to influence decision about future behaviour. This conceptual framework is novel within the threat appeals context in that it conceptualises the influence of threat appeal messages as a

decision-making process regarding a future behaviour, taking in constructs such as anticipated and anticipatory emotion which are new to this context (despite them being reasonably well-established in other relevant streams of research). This is in contrast to much existing threat appeals research which focuses primarily on cognitions, with the addition of immediate visceral emotional responses such as fear. Drawing from conceptual argument and existing empirical support, a number of formal hypotheses were advanced which are outlined in table 2.

<b>Label</b>	<b>Hypothesis</b>
<b>H1</b>	Loss framed messages will generate negative anticipated emotions.
<b>H2</b>	Loss avoidance framed messages will generate positive anticipated emotions.
<b>H3a</b>	Loss framed messages increase perceptions of severity
<b>H3b</b>	Loss framed messages increase perceptions of susceptibility
<b>H4a</b>	Loss avoidance messages increase perceptions of self-efficacy
<b>H4b</b>	Loss avoidance messages increase perceptions of response efficacy
<b>H5</b>	Loss framed messages will generate fear
<b>H6</b>	Loss avoidance messages will generate anticipatory relief
<b>H7a</b>	Self-directed messages will evoke anticipated shame
<b>H7b</b>	Self-directed messages will evoke anticipated humiliation
<b>H7c</b>	Self-directed messages will evoke anticipated feelings of responsibility
<b>H8</b>	Self-directed messages will interact with loss frames to evoke anticipated fear
<b>H9</b>	Self-directed messages will interact with loss avoidance frames to evoke anticipated relief
<b>H10</b>	Self-directed messages will evoke anticipated regret
<b>H11a</b>	Self-directed messages will increase perceptions of severity
<b>H11b</b>	Self-directed messages will increase perceptions of susceptibility
<b>H12</b>	Self-directed messages will increase perceptions of self-efficacy
<b>H13</b>	Self-directed messages will increase mental imagery elaboration
<b>H14</b>	Self-directed messages will evoke anticipatory guilt
<b>H15</b>	Other-directed messages will evoke anticipatory worry

<b>H16a</b>	Graphic images will generate increased perceptions of severity
<b>H16b</b>	Graphic images will generate increased perceptions of susceptibility
<b>H17</b>	Non graphic images will encourage increased mental imagery elaboration
<b>H18a</b>	Graphic images will evoke immediate emotions of disgust
<b>H18b</b>	Graphic images will evoke immediate emotions of fear
<b>H18c</b>	Graphic images will evoke immediate emotions of anger
<b>H18d</b>	Graphic images will evoke immediate emotions of uncomfortable feelings
<b>H19a</b>	Anticipated emotions, and specifically fear influence behavioural intention
<b>H19b</b>	Anticipated emotions, and specifically shame will influence behavioural intention
<b>H19c</b>	Anticipated emotions, and specifically regret will influence behavioural intention
<b>H19d</b>	Anticipated emotions, and specifically relief will influence behavioural intention
<b>H19e</b>	Anticipated emotions, and specifically humiliation will influence behavioural intention
<b>H19f</b>	Anticipated emotions, and specifically depressed feelings will influence behavioural intention
<b>H19g</b>	Anticipated emotions, and specifically, responsible feelings will influence behavioural intention
<b>H19h</b>	Anticipated emotions, and specifically, hope will influence behavioural intention
<b>H19i</b>	Anticipated emotions, and specifically, delight will influence behavioural intention
<b>H20a</b>	Anticipated emotions, and specifically fear influence behavioural expectation
<b>H20b</b>	Anticipated emotions, and specifically shame will influence behavioural expectation
<b>H20c</b>	Anticipated emotions, and specifically regret will influence behavioural expectation
<b>H20d</b>	Anticipated emotions, and specifically relief will influence behavioural expectation
<b>H20e</b>	Anticipated emotions, and specifically humiliation will influence behavioural expectation
<b>H20f</b>	Anticipated emotions, and specifically depressed feelings will influence behavioural expectation
<b>H20g</b>	Anticipated emotions, and specifically, responsible feelings will influence behavioural expectation

<b>H20h</b>	Anticipated emotions, and specifically, hope will influence behavioural expectation
<b>H20i</b>	Anticipated emotions, and specifically, delight will influence behavioural expectation
<b>H21a</b>	Cognitive appraisals, and specifically, severity will influence behavioural intention
<b>H21b</b>	Cognitive appraisals, and specifically, susceptibility will influence behavioural intention
<b>H21c</b>	Cognitive appraisals, and specifically, response efficacy will influence behavioural intention
<b>H21d</b>	Cognitive appraisals, and specifically, self-efficacy will influence behavioural intention
<b>H22a</b>	Cognitive appraisals, and specifically, severity will influence behavioural expectation
<b>H22b</b>	Cognitive appraisals, and specifically, susceptibility will influence behavioural expectation
<b>H22c</b>	Cognitive appraisals, and specifically, response efficacy will influence behavioural expectation
<b>H22d</b>	Cognitive appraisals, and specifically, self-efficacy will influence behavioural expectation
<b>H23</b>	Elaboration will influence behavioural intention
<b>H24</b>	Elaboration will influence behavioural expectation
<b>H25a</b>	Anticipatory emotions, and specifically worry will influence behavioural intention
<b>H25b</b>	Anticipatory emotions, and specifically relief will influence behavioural intention
<b>H25c</b>	Anticipatory emotions, and specifically guilt, will influence behavioural intention
<b>H26a</b>	Anticipatory emotions, and specifically worry will influence behavioural expectation
<b>H26b</b>	Anticipatory emotions, and specifically relief will influence behavioural expectation
<b>H26c</b>	Anticipatory emotions, and specifically guilt, will influence behavioural expectation

**Table 2 - A summary of the research hypotheses**

The conceptual model and hypotheses presented in this chapter are based on a thorough review of the literature and the hypotheses address important priorities for theory

development in the threat appeals domain of literature. Indeed, the key assumptions that have been identified in the literature are addressed. Having reviewed the pertinent literature and stated a series of hypotheses together with a conceptual model, chapter 5, addresses the methodological considerations of the present study. In doing so chapter 5 describes in detail the research design and methodology utilised to test the hypotheses presented in this chapter and in table 2.

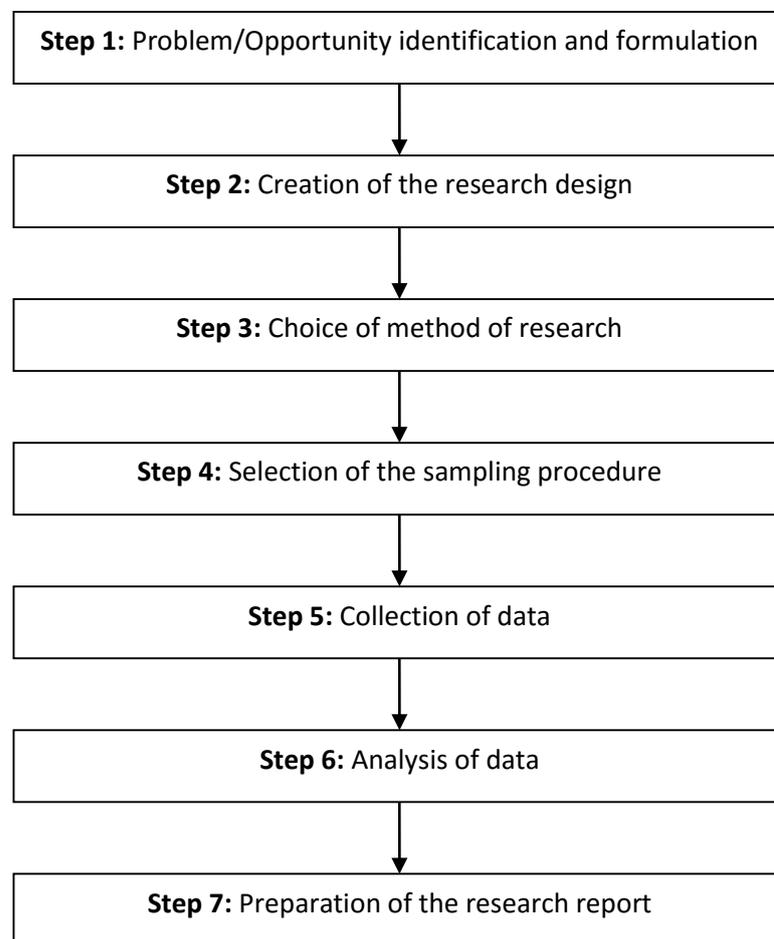
## Chapter 5 - Research Methodology

In the previous chapter a conceptual framework was developed. The focus now moves to the process used to generate data to test the theoretical model. The overall approach is based around an experimental methodology to gain some insight into the relationships between the key variables as discussed in prior chapters. While the nature of causality itself is often the subject of some debate, experimental methods are generally seen as something of a 'gold standard' in this regard (Churchill and Iacobucci, 2004). As such, a web experiment is developed in accordance with the objectives of the research, i.e. to investigate the various hypotheses which together comprise the conceptual framework. In this chapter, the critical decisions taken in designing the experimental method are discussed. First, the methodological and experimental design is explained and justified. Subsequently, the steps undertaken to a) select the manipulations in the advertisements for each of the experimental conditions, and b) ascertain the validity of the stimuli and measuring instruments to be used are presented. Decisions related to the sample size are then presented and justified using *a-priori* power analysis. Finally, a discussion regarding the strategies used to improve the response rate for the web experiment, along with a description of the pre-tests and pilot study undertaken before the main data collection, is provided.

According to Burns and Bush, (2000, p120) a research design is a "set of advance decisions that make up the master plan specifying the methods and procedures for collecting and analysing the needed information." The research design process to be followed in this study is outlined in Figure 12 (overleaf). Whilst some authors advocate fewer stages (e.g. Churchill and Iacobucci, 2004) and others outline an increased number of stages of the research process (e.g. Mooi and Sarstedt, 2011), the slight variances in approach are well encapsulated by the process outlined in figure 12 (Burns and Bush, 2000).

The structure of the overall study follows the seven sequential steps outlined in figure 12. Step one has been addressed in chapters 1-4. The current chapter addresses steps 2-5 as steps 6 and 7 are addressed in subsequent chapters. Section 5.1 provides an overview of the scientific philosophy behind the study and the research approach undertaken. Section 5.2 discusses the experimental design employed, and section 5.3 outlines the design of the advertisements for the experimental conditions. Section 5.4 details the measures of dependent variables, and section 5.5 the design of the data instrument. Section 5.6 details

the pretest processes and result, section 5.7 outlines the main data collection process and sample, and section 5.8 discusses ethical considerations and validity. Finally, section 5.9 provides a summary of the chapter. In each section it will be demonstrated that the research method adopted by this study is the most appropriate in order to meet the objectives of the study, test the research hypotheses and present valid and reliable results. It is important to note that the structure of the chapter follows the sequential steps outlined in figure 12. Section 5.6 particularly details the stimuli pre-tests and associated results and the pre-testing of the web experiment which is considered to be part of step 3, choice of method of research. Indeed, the selection of sampling procedure (step 4) and collection of data for the web experiment (step 5) were contingent on rigorous pre-testing and as such the pre-tests formed part of stage 3, essentially to ensure that the choice of method of research was valid and reliable prior to moving through the process as outlined in figure 12.

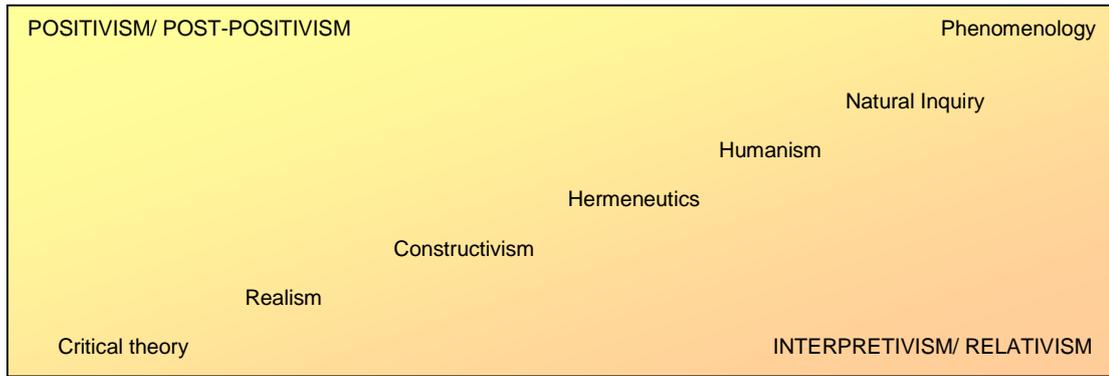


**Figure 12 - The research design process (adapted from Burns and Bush, 2000, p27)**

## 5.1 Philosophy of science and general approach

The first consideration for step 3 in figure 12, the choice of research method, is a consideration of the philosophy of science and philosophical position of the researcher. Indeed, it is important to acknowledge the importance of philosophy of science upon the methodological approach to any study. Carson et al (2001) highlight the distinction between epistemology and methodology. Specifically, epistemology is the relationship between reality and the researcher, and methodology is the technique used by the researcher to discover that reality. An examination of epistemological influences on this present study reveals the philosophy that underpins the choices and decisions made throughout the research design process. On this basis, the different sides of the epistemological debate will be considered in this section, in order to define the philosophical position taken here, and the subsequent effects that this inevitably has on the design and implementation of the study. That said, in accordance with Seale (1999), the philosophical positions outlined are best considered as resources for thinking about research, rather than taken as problems to be solved before research can proceed.

Literature concerning research philosophy generally identifies positivism and interpretivism as two distinct paradigms in an epistemological debate concerning the best method for conducting research (Patton, 1990). A paradigm is defined as “a worldview, a general perspective and a way of breaking down complexity in the real world.” (Patton, 1990, p37). Therefore, as paradigms aid researchers’ understanding and thought processes it is necessary to draw out the distinctive features of different paradigms. It must be noted that “the search for research approaches other than those guided by pure positivism has led to a number of competing perspectives in the philosophy and sociology of science.” (Carson et al 2001, p7). Therefore, although at a basic level positivism and interpretivism are identified as polar paradigms, in reality the philosophical debate is not as simple or clear cut as some definitions lead us to believe. Indeed, Carson et al (2001) identify positivism and interpretivism at either end of a continuum, which encompasses a number of philosophies and approaches. This diagram (Figure 13) indicates that although positivism and interpretivism can be considered as opposites, the characteristics of each paradigm are not restricted to those specific constructs and are used in a variety of other philosophies.



**Figure 13 - Continuum of research philosophies (Carson et al, 2001, p8)**

In addition to this notion of a continuum, Carson et al (2001) present a “combination approach” which merges elements of both the positivist and interpretivist philosophies. To illustrate this point, an example will be used concerning the implementation of qualitative or quantitative study designs by researchers. According to the traditional definitions of research philosophy, positivist researchers use quantitative methods and interpretivist researchers use qualitative methods (Lee and Lings, 2008). However, a common example of the “combination approach” is the use of qualitative research methods to generate key phenomena that can then be quantitatively researched to produce results that can be generalised. Therefore, the “combination approach” demonstrates that researchers are not restricted to certain research methods as a result of the research philosophy to which they adhere. In support of this, Saunders et al (2003) posit that researchers can fall into a trap in thinking that one research approach is ‘better’ than another. This is viewed as significant because research rarely falls neatly into one philosophical domain, as demonstrated by the continuum of research philosophies outlined above. Also, Saunders et al (2003) identify that it is common in business and management research to adopt the ‘combination approach’ using a mixture of positivist and interpretivist influences.

Positivism is regarded as the ‘received view’ that has dominated formal discourse in social and physical science for over four hundred years (Guba and Lincoln, 1994). Lee and Lings (2008) discuss the historical roots of positivism, identifying its origins from the views of practising scientists who were part of the Vienna Circle and empiricism and its principles, which were founded by 17<sup>th</sup> Century philosophers such as John Locke (1632-1704). Empiricism is based on the principle that the only knowledge individuals can possess is that which has come from their observations. The link between empiricism and positivism, or logical positivism as it is also known (Lee and Lings, 2008), is apparent when considering that the positivist paradigm argues that concepts are only meaningful if they can be verified

or empirically tested. This extends to the concept that knowledge of any idea or concept that is not directly observable is considered impossible. Positivist researchers prefer quantitative data, and adopt the position of an objective observer. As such, reality is considered external to the disinterested scientific observer.

In the 1960s logical positivism declined in popularity as, among other things, it was considered flawed by its insistence on observability (Lee and Lings, 2008). The accepted scientific paradigm shifted to realism, or post-positivism (Guba and Lincoln, 1994; Healey and Perry, 2000) which had been developed by another member of the Vienna Circle, Herbert Feigl (1902 – 1988). According to the realist paradigm, one does not have to directly observe something in order to gain knowledge of it, and as such researchers attempt to capture reality as closely as possible, with truth becoming a goal of science, even though absolute truth may very well be unobtainable (Peter, 1992).

Under the realist paradigm, researchers use *theory* as the basis of investigation, from which unobservable concepts can be deduced, including causality (which itself is unobservable). The intention is to explain a phenomenon and ultimately to predict and control it. Importantly, the realist focus shifts from the positivist emphasis on confirmation of hypotheses through observation, to the attempt to falsify hypotheses. Knowledge in the realist sense is thus built on non-falsified hypotheses that can be regarded as probable facts or laws (Guba and Lincoln, 1994). Accordingly, the realist paradigm focuses on efforts to falsify *a-priori* hypotheses or mathematical propositions that can be easily converted into precise mathematical formulas expressing functional relationships (Guba and Lincoln, 1994). A key difference between positivism and realism is that, in contrast to positivism, realism holds that while many things scientists are interested in, such as internal human processes, cannot be directly observed; researchers can measure them and study them in the context of theoretical explanations (Lee and Lings, 2008). Neuman (2000, p66) states that realism “sees social science as an organised method for combining deductive logic with precise empirical observations of individual behaviour in order to discover and confirm a set of probabilistic causal laws that can be used to predict general patterns of human activity.”

In contrast to this, interpretivist researchers hold that the social world is too complex to enable law-like generalities to be created. Objectivity (so fundamental to the realist and positivist views of science) is questioned, whilst subjectivity is examined and brought into focus. Interpretivism is most closely related to qualitative methods of research, where a researcher is more likely to engage or interact with respondents. Neuman (2000, p71) suggests that the interpretive approach is “the systematic analysis of socially meaningful

action through the direct detailed observation of people in natural settings in order to arrive at understandings and interpretations of how people create and maintain their social worlds.”

Critical theory and its offshoots such as postmodernism, offer a similarly broad scope of investigation, but emphasize the notion that research is embedded in historical, cultural and social contexts. The critical theory paradigm emphasises how knowledge has grown and changed through a dialectic process of historical revision (Guba and Lincoln, 1994). However, conducting research under this paradigm makes it impossible to generalise the findings, as post-modern analyses of (for example) marketing communications only represent the particular views of the participants. This highly relativist paradigm argues that realities are understood in the form of multiple, intangible mental constructions. These constructions are socially and experientially based, local and specific in nature and dependent for their form and content on the individuals or groups holding them (Guba and Lincoln, 1994).

In drawing direct comparisons between paradigms it can be seen that in the positivist and realist paradigms, the aim of inquiry is explanation, generalisation and the creation of possible cause-effect linkages. Alternatively, the aim of critical theory is critique and transformation, and the aims of interpretivism and relativism are understanding and reconstruction. In addition, the nature of knowledge also differs between paradigms. Specifically, knowledge in the positivist paradigm refers to verified hypotheses established as facts or laws. In the realist paradigm, knowledge rests on non-falsified hypotheses that are probable facts or laws. In the critical theory paradigm, knowledge emerges from structural and historical insights. Finally, under the relativist and interpretive paradigms, knowledge rests on individual reconstructions (Guba and Lincoln, 1994).

In light of such comparisons, the positivist and realist paradigms which aim to discover, explain, and generalize cause-effect linkages are best suited to the present research. As this study focuses on testing phenomena which cannot be directly observed, for example consumer emotional responses to threat appeals, this research is anchored in the realist paradigm. Whilst positivists indicate that only associations can be truly observed, and thus that causality is an irrelevant concept; realists consider the purpose of science to be an attempt (however difficult) to uncover the complexity of causal relations (Lee and Lings, 2008). Indeed, the development of the conceptual model and hypotheses of this study are based on the logic of causal relationships between the variables of interest.

### 5.1.1 Research approach and strategy

Although the methods used to falsify/disconfirm hypotheses are not themselves epistemologically bound, certain approaches are indeed more appropriate for a realist project such as this. Indeed, to move the discussion of the choice of method of research (step 3 in figure 12) forward it is necessary to consider the research approach to be undertaken based on the philosophical position of the researcher and the hypotheses generated in chapter 4. The distinction between a deductive and inductive research approach is clear (Lee and Lings, 2008). A deductive approach is characterised by the consideration of theory which is used to develop hypotheses. The hypotheses are then tested and results are used to further deduce an explanation for phenomena or behaviour (Robson, 1993). In contrast to this, an inductive approach begins with the collection of data, usually observations. As a result of the subsequent data analysis a theory is developed (Saunders et al, 2003).

Bearing in mind the research initiative and objectives of this study outlined in chapter 1 and the research hypotheses developed in chapter 4, a deductive approach has been adopted. The review of pertinent literature in chapter 2-4 highlighted fundamental assumptions that have pervaded the threat appeals field, which are called into question. It is argued that these assumptions have contributed to the apparent confusion in the threat appeals field (Rotfeld, 1997). As theory formed the basis of investigation leading to the development of research hypotheses, a deductive approach is appropriate, in accordance with the realist position of the researcher.

Based on the deductive approach taken there are three research strategies available to the researcher as a shaping component of the research design, namely causal, descriptive and exploratory. An exploratory research design is often used to gain background information, define terms, clarify problems and establish research priorities. This strategy is often regarded as flexible and informal by researchers but as McDaniel and Gates (1998) indicate, it is a useful strategy which can define the exact nature of a 'problem' and provide an understanding of the context in which this 'problem' occurs. Exploratory research is most appropriate when researchers are faced with a large or vague research issue and assists the distilling of information into specific research 'problems' and the development of hypotheses (Churchill and Iacobucci, 2005).

In contrast, a descriptive research design is used to present an "accurate profile" of phenomena or behaviour (Robson 1993, p53). Burns and Bush (2000, p125) assert that this

research strategy is most useful when a researcher wishes to answer questions such as “who, what, when, where and how”. It is important to note that this research strategy does not include the explanatory element of *why* phenomena or behaviour occur; it only analyses an occurrence in descriptive terms. Descriptive research is generally used to establish the frequency of occurrences of an event or phenomenon, or the relationship between two variables. As such, descriptive research is more rigid and systematic in comparison to the flexible nature of exploratory research (Churchill and Iacobucci, 2005) and can be used to build upon the foundations set by the findings of exploratory research. Descriptive research designs are either longitudinal or cross-sectional, where longitudinal studies use fixed samples of respondents and collect data at multiple points in time, and cross-sectional studies collect data at one point in time from a sample considered to be representative of the population (Lee and Lings, 2008).

A causal research design is used to establish a cause and effect relationship between variables and as such, addresses the main weakness of descriptive research by illuminating the explanatory element of *why* phenomena or behaviour occur. Burns and Bush (2000, p132) illustrate this research design with the use of conditional statements, for example “if *x* then *y*”. It is important to note that, despite its name, casual research does not prove that *x* has caused *y* but demonstrates that *x* made the occurrence of *y* more probable (Churchill and Iacobucci, 2005). Causal research typically employs experimental designs where independent variables (the causes) are manipulated and controlled for, whilst dependent variables (the effects) are observed (Churchill and Iacobucci, 2005). In order to claim causality, Mooi and Sarstedt (2011) identify four conditions that must be met. First, the two (or more) variables under examination must be related to one another (correlation). Second, the cause must occur before the effect. Third, other factors must be controlled for. Finally, there must be a strong explanatory theory. Thus, if these four conditions are met, a causal design is most appropriate when a researcher wishes to manipulate variables in order to identify and evaluate both the factors that influence an effect, and the relationships and interactions between those variables.

Whilst exploratory research is flexible and usually employs small samples to provide insight and understanding using qualitative techniques (Malhotra and Birks, 2000), the more rigid nature of descriptive and causal research, using larger samples to test specific hypotheses and relationships (Malhotra, 1993) is more suited to meet the objectives of this research study. Given the research objectives, the extent of the confusion generated from prior research (as outlined in Chapters 2, 3 and 4) and the hypotheses developed for this study (in Chapter 4) a causal research design is most appropriate to examine the specific

advertisement variables manipulated in threat appeals, and the effect these have on emotions, cognitions and behaviour.

In line with the decision to adopt a causal research design for this study the research techniques employed to collect data for analysis must also be decided upon. A key distinction between types of research technique can be categorised in terms of qualitative or quantitative methods. Table 3 outlines the key differences between the two research techniques. On one hand, qualitative methods regard human behaviour as the consequence of how individuals interpret their world and therefore use techniques to attempt to capture this process of interpretation. Qualitative research requires 'Verstehen'<sup>1</sup>, the empathic understanding or the capacity to produce in the mind the feelings and motives behind the actions of others (Bogdan and Taylor, 1975). Generally, qualitative techniques are best suited to exploratory research and the inductive generation of hypotheses and as such are not appropriate to meet the research objectives of this study.

In contrast, quantitative research requires the use of structured questions in which the response options have been predetermined and involves a large number of respondents (Burns and Bush, 2000). The quantitative paradigm seeks to identify 'causes' and 'facts' pertaining to phenomena and generally speaking, it is objective (Bogdan and Taylor, 1975). The research techniques employed emphasise the reliability of numbers, in order to produce statistical evidence to test hypotheses, which is most suitable for the present study. Indeed, only quantitative research can provide enough data for generalisation purposes (Churchill and Iacobucci, 2005). That is not to say, quantitative techniques are without limitations. Indeed, quantitative research does not allow for a deep exploration of the subjective feelings and attitudes held by individuals (Wright and Crimp, 2000; Bogdan and Taylor, 1975).

Given the hypotheses developed in Chapter 4, quantitative research is most appropriate to test these. Although qualitative data is not appropriate for theory testing (as explained above), it is important to note that qualitative techniques were employed in this study, alongside quantitative techniques, for the purposes of stimuli development. This is to ensure triangulation and reliability and validity of stimuli.

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<sup>1</sup> "Verstehen" is the opposite of "Erklaren" or process of objectivist clarification

	<b>Qualitative</b>	<b>Quantitative</b>
<b>Conceptual</b>	<ol style="list-style-type: none"> <li>1. Concerned with understanding human behaviour from the individuals perspective</li> <li>2. Assumes dynamic and negotiated reality</li> </ol>	<ol style="list-style-type: none"> <li>1. Concerned with discovering measurable facts about social phenomena</li> <li>2. Assumes a fixed and measured reality</li> </ol>
<b>Methodological</b>	<ol style="list-style-type: none"> <li>1. Data collected through observations</li> <li>2. Thematic analysis</li> <li>3. Informal structure</li> </ol>	<ol style="list-style-type: none"> <li>4. Data collected through the measurement of variables</li> <li>3. Analysis uses numerical comparisons and statistical inferences</li> <li>4. Statistical analysis used to report data</li> </ol>

**Table 3 - Comparison of qualitative and quantitative research techniques (adapted from Minichiello et al, 1992)**

The quantitative data collection methods available to test the hypotheses are bound by the nature of the research. Lee and Lings (2008) differentiate between interactive methods which involves the questioning of participants in some way and recording the answers, and non-interactive methods where a researcher records information about participants, usually through observation. Given the hypotheses developed and the causal research design undertaken, an interactive method is best suited to collect the data required to test the hypotheses. As the research objective is to investigate the effect specific stimulus variables in threat appeals advertisements have on emotions, cognitions and behaviour an experimental design is best suited to control for appropriate factors and examine the relationship between cause and effect. Discussion will now move to a consideration of experimental design and the most appropriate design for the study at hand, in order to select the most appropriate method of research as outlined in step 3 of figure 12.

## **5.2 Experimental design**

Experiments are causal designs and the key strengths of this technique are the identification of causal connections and the capacity to distinguish between causes and the observed and measurable effects (Churchill and Iacobucci, 2005). This technique lends itself to the rigorous testing of hypotheses and in addition, enables the use of pictures or advertisements, which help make tasks more meaningful, or closer to “reality”. This is

hugely advantageous to the present research as the hypothesis testing necessitates a controlled exposure of participants to advertisements that manipulate specific variables.

The key advantage of an experiment is that it has a greater ability to supply evidence of causality because of the control it affords researchers. Because researchers are able to control at least some manipulations of the presumed causal factor, they can be more confident that the relationships discovered are “true” relationships (Churchill and Iacobucci, 2005). Given that an experiment is capable of providing evidence of causal relationships *and* enables the use of advertising stimuli in its procedure, it is deemed the most appropriate method for the research at hand.

Shadish et al (2002) identify four different types of causal methods which range from the “gold standard” (Shadish et al, 2002, p13) of a randomized experiment, to quasi-experiments, natural experiments and correlations. The key differences between these are presented in table 4 below. An experiment is a type of study where a treatment is deliberately introduced in order to observe its effects. By definition they are orthogonal as the treatments are varied independently from one another which makes it easier to isolate the effect of the treatment on the observed responses, therefore avoiding multicollinearity between treatments. In order to conduct an experiment the hypotheses must be testable and three conditions must be met. First, that there are procedures for manipulating the setting. Second, the predicted outcome must be observable, and finally the predicted outcome must be measurable (Myers and Hansen, 2012).

Type	Definition
<b>Randomised experiment</b>	An experiment in which units are assigned to receive the treatment or the alternative condition by a random process such as the toss of a coin or a table of random numbers.
<b>Quasi- experiment</b>	An experiment in which units are not assigned to conditions randomly
<b>Natural experiment</b>	Adaption of an experiment as the cause cannot be manipulated e.g. a study that contrasts a naturally occurring event such as an earthquake with a comparison condition
<b>Correlational study</b>	Usually synonymous with non-experimental or observational study, a study that simply observes the size and direction of a relationship between variables

**Table 4 - Adapted from Shadish et al (2002, p12)**

Randomised experiments are where the experimental unit (e.g. people, time period or institution) are assigned to a treatment by chance (Shadish et al, 2002). A minimum of two groups are created which are probabilistically similar to each other on average, which means that the outcomes of observed differences between the groups are likely to be an effect of the treatment, as opposed to individual differences between units. Quasi-experiments are similar to randomized experiments but are lacking one of the essential elements (e.g. manipulation of antecedents or random assignment of units to treatments) (Myers and Hansen, 2012). Indeed, the differences between randomized experiments and quasi-experiments can be subtle (Field and Hole, 2003). Often quasi-experimental groups are based on the event, characteristic or behavior whose influence is under investigation and units either self-select the treatment they are assigned to or an administrator to the process assigns units to treatments (Shadish et al, 2002). This is a key distinction because this means that the differences between groups may be systematic (i.e. non-random) and therefore researchers must rule out plausible alternative explanations of any observed and measured effect.

Natural experiments are defined by the research context within which the causal relationship under examination occurs. These methods observe a “naturally-occurring contrast between a treatment and a comparison condition” (Shadish et al, 2002, p17). The treatments themselves are not malleable and often are events or phenomena such as earthquakes or terrorist attacks. When experiments are not possible due to practical or ethical reasons, correlation studies can be employed to compare relationships or associations between variables (Myers and Hansen, 2012). Such methods differ from experiments where the objective is to identify differences between treatments, as the associations between variables are examined to identify cause and effect relationships. Thus, whilst cause and effects are measures the structural elements of experiments (e.g. pre-tests, random assignment to treatments) are absent. Generally speaking, this leads to problematic issues for researchers, for example in a cross sectional study because the data is collected at one point in time it is difficult to assure that cause precedes effect (Shadish et al, 2002).

Given the research hypotheses outlined in Chapter 4 and the objectives of the present study, natural experiments and correlation studies are not suitable methods to observe the cause and effect relationship between threat advertisement manipulations/ treatments and emotional, cognitive and behavioural effects of those treatments. The most appropriate method is a randomised experiment where participants are allocated to treatments by chance. This allows for a confident attribution of differences in observed effects to the

treatment variables, which is not possible with quasi-experiments. Indeed, the use of randomised experiments allows for “control by design” (Keppel and Wickens, 2004, p7) whereby the design of the experiment naturally controls for individual differences and nuisance factors.

### **5.2.1 Factorial experimental design**

As outlined in the conceptualisation and hypothesised relationships between variables in Chapter 4, this research examines the effects of three independent variables manipulated in threat advertisement treatments on emotion, cognition and behavior variables. A randomised experiment is the most appropriate method to collect data to measure the differences between treatments. Research designs where two or more independent variables are studied at the same time are factorial designs (Myers and Hansen, 2012) where every level of one factor is combined with every level of the other(s). Indeed, factorial designs are rich with information because they involve the variation of multiple independent variables within a single study (Keppel and Wickens, 2004).

There are three general factorial designs (Hair et al, 2006). First is the between-subjects factorial design, in which every treatment is assigned to a different sample of units. Alternatively there is the within-subject factorial design, in which a single sample of units is assigned to every experimental treatment. Mixed designs adopt some within-subjects factors and some between-subjects factors. This type of design combines the advantages (and, it must be said, disadvantages) of between-subjects and within-subjects designs (Keppel and Wickens, 2004). There are distinct advantages and disadvantages associated with the three different types of factorial design which are outlined in table 5 below.

Whilst between-subjects designs have practical benefits, such as ease of design and analysis, they are less sensitive and therefore require a large number of units. However, whilst within-subjects designs allow for direct comparison between treatments among the same sample, nuisance variables such as order effects must be accounted for. Equally when a large number of variables are to be examined, a within-subjects design becomes cumbersome and inefficient. (Keppel and Wickens, 2004). A mixed design can be utilised to simplify overly complex designs which necessitate a large number of between-subjects treatments or reduce the likelihood of respondent fatigue prompted by a lengthy within-subjects design.

	<b>Between subjects factorial design</b>	<b>Mixed factorial design</b>	<b>Within-subjects factorial design</b>
<b>Description</b>	Every condition contains a unique sample of subjects.	Factorial design with some within-subjects factors (the same subjects serve at all levels) and some between-subjects factors (different samples are used at each level).	A single sample of subjects is used in every condition.
<b>Advantages</b>	<ol style="list-style-type: none"> <li>1. Simple to understand.</li> <li>2. Easy to design.</li> <li>3. Easy to analyse.</li> <li>4. Require the smallest number of statistical assumptions.</li> </ol>	Advantages of between subjects and within subjects design.	<ol style="list-style-type: none"> <li>1. The groups are more comparable.</li> <li>2. The statistical tests more sensitive as the same subjects serve at each level.</li> </ol>
<b>Disadvantages</b>	<ol style="list-style-type: none"> <li>1. Samples are less sensitive.</li> <li>2. Large number of subjects required.</li> </ol>	Disadvantages of between subjects and within subjects design.	<ol style="list-style-type: none"> <li>1. Order effects are a nuisance variable introduced with this design.</li> <li>2. Subject fatigue is more likely.</li> </ol>

**Table 5 - Comparison of factorial designs**

As there are three independent variables for this study, a between subjects factorial design is most appropriate because of the efficiency of the design and the requirement of the smallest number of statistical assumptions. Thus, a 2x2x2 between subjects factorial design is employed, with the graphic nature of the image (graphic and no graphic), the message frame (loss or loss avoidance) and the direction of threat (self or other) manipulated between-subjects. This leads to eight experimental treatment conditions. Whilst there are advantages to a within-subject design, this approach would have been too demanding for the respondents who would have been required to evaluate a large number of advertisement stimuli containing the experimental manipulations, almost certainly triggering respondent fatigue. A between subjects design enables the researcher to keep the complexity of the experimental design at a manageable level with eight sub groups of

respondents and to minimise respondent fatigue, while being able to test all the hypotheses of the conceptual framework. Furthermore, a large number of subjects were recruited (as outlined in section 5.7) in order to counterbalance the lack of sensitivity that characterises between-subject designs (Keppel and Wickens, 2004). The eight between-subjects treatments are outlined in table 6 below.

Experimental Condition	Between-subjects factors		
	Message Frame	Message Direction	Graphic Image
1	Loss Avoidance	Other	Graphic
2	Loss Avoidance	Other	No Graphic
3	Loss Avoidance	Self	Graphic
4	Loss Avoidance	Self	No Graphic
5	Loss	Other	Graphic
6	Loss	Other	No Graphic
7	Loss	Self	Graphic
8	Loss	Self	No Graphic

**Table 6 - Factorial design of experimental treatments**

### 5.3 Stimuli design

As the experimental design for the study has been determined, focus now turns to the development of threat appeal advertisements that are used as experimental stimuli. The manipulations within the stimuli create the eight treatments defined as experimental conditions identified in table 6 above. The successful implementation of the experimental stimuli treatments is key, as the validity of the data collected, hinges on the stimuli being received as intended by participants. Shadish et al (2012) acknowledge that in an ideal world treatments would be properly received, however in reality, issues concerning treatment implementation and attrition can occur. However, the early recognition of potential pitfalls in the process of designing stimuli, combined with rigorous pre-testing ensures the robustness of the experimental manipulations.

There are two main approaches to stimulus design in the extant literature. The first is the development of advertisements for testing as a whole entity (e.g. Morales et al, 2012; Block, 2005; Agrawal and Duhacheck, 2010; Passyn and Sujan, 2006). That is, the elements of an advertisement or stimulus (e.g. strap line, copy and picture) are designed as a whole and manipulations implemented to create the different treatments. An alternative approach, as advocated by Dillard and Meijnders (2002) is the message component research design. This is where stimuli are broken down into constituent elements (e.g. strap line, copy and picture) and responses to each of those elements are measured. Whilst the detailed approach of examining the different stimulus elements individually is appealing, this approach is arguably removed from 'reality'. Stimuli are generally presented as a whole and therefore the interaction of the constituent elements is an important factor for consideration. In light of this, a blended approach is taken where the different elements of the stimuli are developed and tested individually, and then tested as a whole entity.

Given the research objectives of the study, it is hugely important to control for factors that may influence the relationships between variables. As such, the stimulus medium is a key consideration. In the main, research on threat appeals utilise print advertisements (e.g. Agrawal and Duhacheck, 2010). However, there are cases where leaflets (Passyn and Sujan, 2006) and television advertisements (Rossiter and Thornton, 2004; Potter et al, 2006) are used. It is recognised that print advertisements are a simple form of communication (compared to television advertising, for example) the advantage of this stimulus type is that the independent variables can be tightly controlled. Prior research has predominantly used print advertisements as the stimulus in studies (e.g. Janssens and De Pelsmacker, 2007; Dillard and Anderson, 2004; Wauters and Brengman, 2013) and given that the purpose of this research is to develop understanding of the cause and effect relationship between message variables and responses, it is prudent to test the hypotheses of this study on print stimuli before considering other forms of marketing communication.

As outlined in chapter 3 and above in table 6 the stimulus variables for manipulation are message frame, message direction and graphicness. The following sections will outline how these variables are manipulated in the experimental stimuli, whilst tightly controlling for confounds and ensuring validity using a series of pre-tests.

### **5.3.1 Selection of stimulus topic**

As previously stated, the conceptualisation and hypothesised relationships between variables (see Chapter 4) are not context specific and are aimed at a generalised

understanding of the effect of stimulus variable manipulations on emotional, cognitive and behavioural responses. However, it is necessary to select a topic that is addressed as part of the inherent message of the stimuli. Prior research has been conducted using a wide variety of topics from obesity (Chan et al, 2009), to anti-smoking (Adams et al, 2011), to cancer prevention (Harris and Napper, 2005) to climate change (O'Neill and Nicholson-Cole, 2009). A summary of examples of the wide variety of topics enlisted for research concerning threat appeals is presented in Appendix 5.1. Given this large pool of topics, a set of criteria were developed to guide the selection process.

Based on the objective for generalisable results, firstly, topics had to be deemed relevant to the general public and not specific to certain work or niche environments. Secondly, the topics have to be perceived by participants as realistic, in other words that it is a threat that they or someone close to them may encounter. Third, as the stimulus must contain visual and written elements, the consequences of the threat must be able to be depicted visually. This issue greatly reduces the pool of topics considered for inclusion in the experiment as the consequences of some threats cannot be represented visually in an ethically sound manner. Fourth, the chosen topic for the threat must be applicable to both individuals' sense of self and to others, as per the direction of message independent variable identified in this study.

The application of the identified criteria significantly reduced the number of topics that could be successfully employed. In line Appendix 5.1 the most suitable topics are those that are most often used in the extant research. The short listed topics were anti-smoking, dangerous driving, safe sex and cancer prevention. Cancer prevention was removed from the consideration set. Whilst there are lifestyle choices that can increase the likelihood of developing different types of cancers; defensive processing<sup>2</sup> (in other words "it won't happen to me") is prevalent with this particular topic (e.g Witte, 1992). On this basis, this topic does not meet the relevance and realistic criteria as outlined above.

The safe sex topic was also removed from the consideration set. The visual element of the stimulus is a manipulation of the graphic independent variable. Given the nature of the topic, and intention to encourage a large sample to participate, it was decided that the balance between ethical considerations and stimulus manipulation for this topic would not be satisfactory. In order to decide between the two remaining topics the criteria of general relevance was re-examined. Statistics indicate that whilst approximately 10 million

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<sup>2</sup> In the field of medicine this is referred to as 'optimistic bias' which is the mistaken belief that one's chances of experiencing a negative event are lower than that of one's peers

individuals smoke in the UK in 2015, approximately 32 million people hold a full car driving license in England in 2013<sup>3</sup>. Based on this evidence it is more likely that a sample of the population would find a message concerning driving safety as more relevant. There are a large number of studies that employ driving related topics (e.g. Lewis et al, 2013; Carey and Sarma, 2011); Algie and Rossiter, 2010); Taubman Ben-Ari et al, 2000); Block, 2005). Specifically, Janssens and De Pesmacker (2007) identify that the increased number of speeding campaigns means that whilst non-drivers may have less involvement with the subject, they serve as a reason to expect that effects would be seen among non-drivers. In addition, given the message direction variable and the statistics regarding driving license qualifications; it would seem reasonable that non-drivers are likely to be passengers in cars or be close to another person (other) who does hold a driving license. On this basis, the topic of safe driving with (not) speeding as the focus is selected.

### **5.3.2 Development of stimuli**

Eight stimuli were developed, as per the previously identified factorial design in table 6. As previously discussed in section 5.2.1 it is imperative that the experimental treatments (advertisement stimuli) only manipulate the variables of interest and no other factors. The following section will outline the manipulations, the nuisance factors that are controlled for in the design of the advertisements, and the qualitative testing of the manipulations.

The independent variable of graphicness is manipulated with the use of the pictorial element of the stimuli. This is a common method of manipulation for this variable (e.g. Morales et al, 2012, Leshner et al, 2010, Boer et al, 2006; Dens et al, 2008). A detailed review of the extant literature is presented Chapters 2, 3 and 4. The operationalisation of this variable, in the context of the speeding topic, determined the consequence to be portrayed in the stimuli as physical injury. This is consistent across all conditions. As such, the graphic condition portrays an injury with blood and the non-graphic condition portrays an

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<sup>3</sup> According to ASH ([http://www.ash.org.uk/files/documents/ASH\\_93.pdf](http://www.ash.org.uk/files/documents/ASH_93.pdf)) 10 million adults smoke in Great Britain in 2015. This equates to approximately one sixth of the population.

According to the Department of Transport National Travel Survey for England in 2013 [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/342160/nts2013-01.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/342160/nts2013-01.pdf) it is estimated that 74% of all adults aged over 17 in England hold a full car driving license, which is approximately 32 million people.

injury with no blood, but bruising to denote injury. This is in line with the operationalization employed by Janssens and De Pelsmacker (2007).

A special effects make-up artist was commissioned to create a bank of pictures for testing, to ensure that the correct variables are manipulated in the pictures selected for the experimental stimuli. Indeed, given the argument presented in chapters 1-4 that the manipulation of intrinsic message characteristics is of importance, this novel approach was undertaken to ensure that the elements of the picture not intended for manipulation remain constant. Therefore, there is confidence that the variable of interest is the only variable being manipulated (which will be subject to rigorous pre-testing). Indeed, a criticism of prior research is the use of a variety or inconsistent images across treatment conditions (e.g. Dahl, 2003) and this procedure addresses this criticism directly.

The make-up artist was briefed to keep the pictures identical, but to vary the type of injury (i.e. blood or bruising) and to create three different 'levels' of injury from mild, to moderate to severe. It was important to make sure that the severe condition was realistic and believable whilst not being overly severe. More specifically, due to ethical considerations (which will be discussed in section 5.8) it was important to create the different types and 'levels' of injury to ensure the most appropriate image is selected. However, in order to ensure that perceptions of severity of injury are broadly similar across the 'levels' of injury, and the manipulation is focused on the graphic (or non-graphic) features of the picture itself (i.e. not on severity of the injury being different), a prop to denote severity in the form of an oxygen face mask was included for consideration in the non-graphic condition. The bank of pictures created can be viewed in Appendix 5.2.

To assist with the selection process, six academic experts from the fields of marketing and consumer behavior were recruited to conduct a free sorting task. The free sorting method is beneficial as any preconceptions or biases held by the researcher are ruled out (Rosenberg and Kim, 1975). The sorting task was designed to simply categorise the different images according to perceptions of graphicness and perceptions of injury severity, and therefore was conducted in two simple stages. The categorisation of the images into groups will refine the set of images put forward for further qualitative and quantitative pre-tests, thus recording differences between and similarities between perceptions is entirely appropriate as an initial screening of the images (Fincher and Tenenber, 2005; Rugg and McGeorge, 2005).

The experts were presented with copies of the sixteen pictures that had been commissioned and were asked to put the cards in order of how graphic each picture is

perceived to be to each of them. Each participant ranked the pictures with blood as more graphic than the pictures with no blood. The experts were then asked to re-sort the pictures according to severity of injury and asked to create groups where the severity is similar per group. Interestingly, whilst the 'graphic severe injury' condition performed as expected, the 'no graphic severe injury' and 'no graphic moderate injury' image were perceived to be equally as severe as the 'graphic severe injury' image by four of the six participants. In addition, five of the six participants, independently of one another, identified that the pictures where the individual has her eyes open, are not believable or realistic. Based on these results, the pictures with eyes open were eliminated. Whilst the graphicness variable is manipulated as intended, further information is required regarding the perceptions of severity of injury. It is possible that the inclusion of an oxygen mask denotes severity and confounds this variable slightly. On this basis three pictures were selected to be tested further in conjunction with the advertisement copy, which is outlined in section 5.3.3. The three images were the graphic severe injury condition and the no graphic severe injury and the moderate injury condition, all with the eyes shut format.

The message frame and message direction manipulations are conducted using the text (copy) in the stimuli. In order to keep the text constant, aside from the manipulated variables, a text format was constructed where words could be changed according to the manipulation. According to the definitions of threat appeals, as outlined in Chapters 2 and 3, it is important to present a warning or threat, the consequences and then a recommended action. As such the following format was adopted (where blanks signify manipulations):

\_\_\_\_\_ driving on a winding road. \_\_\_\_\_ are late. But \_\_\_\_\_ decide to \_\_\_\_\_ the speed limit

\_\_\_\_\_ could \_\_\_\_\_ an accident and serious injuries

*Obeying the speed limit significantly reduces accidents, drive responsibly.*

The scenario is simple and involves the pressure of being late, the severity of consequence is kept constant and the action recommendation is constant. The direction of message manipulation is operationalised as towards the self 'you' or an 'other'. For the purposes of this study, to avoid ambiguity or defensive processing, the operationalisation of this variable is in accordance with that employed by Block (2005) where the 'other' condition is an individual's best friend. Therefore the manipulation for direction of message is presented as follows:

***You are/Your best friend is driving on a winding road. You/ They are late. But You/ They decide to \_\_\_\_ the speed limit***

***You /Your best friend could \_\_\_\_ an accident and serious injuries***

*Obeying the speed limit significantly reduces accidents, drive responsibly.*

As outlined in Chapters 3 and 4, the message frame manipulation focuses on loss or avoidance of loss. Given the topic (speeding) and the consequences (accident and serious injuries) it would be incongruous to utilise a gain frame in this context. As Donovan and Henley (2003) identify, credibility of the message is very important and can only be achieved with appropriate themes which are not incongruous. The theoretical justification is presented in Chapter 3, However, the loss and avoidance of loss are operationalised according to Gerend and Cullen (2008) where loss avoidance is manipulated by stating the individual in question could obey the speed limit and avoid an accident, and loss is manipulated by stating the individual could break the speed limit and have an accident. Therefore the manipulation for message frame is as follows:

*\_\_\_\_ is driving on a winding road. \_\_\_\_ are late. But \_\_\_\_ decide to **obey/break** the speed limit*

*\_\_\_\_ could **avoid/have** an accident and serious injuries*

*Obeying the speed limit significantly reduces accidents, drive responsibly.*

In order to perform an initial test of the manipulations, another six expert judges from the fields of marketing and psychology were recruited to perform another two stage sorting task, using the same rationale as presented above. The experts were presented with four statements (a combination of self and loss avoidance, other and loss avoidance, self and loss, other and loss) as presented using the alternatives in bold in the statement below:

***You are/Your best friend is driving on a winding road. You/ They are late. But You/ They decide to **obey/break** the speed limit***

***You /Your best friend could **avoid/have** an accident and serious injuries***

*Obeying the speed limit significantly reduces accidents, drive responsibly.*

The experts were first asked to sort the statements according to the direction of the message, which was successfully completed by all six participants. Second, the experts were asked to sort the statements according to the message frame and again, all six participants sorted the statements as intended. Thus, the message direction and message frame manipulations are confidently upheld at this point.

Subsequent to the initial developmental stages and associated qualitative initial tests, the advertisement stimuli were constructed for further testing and development. Whilst the pictorial and written elements to the stimuli were initially tested separately, in order to ensure the initial manipulations are appropriate, it is necessary to combine the elements to generate a more detailed understanding of how the stimuli as an entity are perceived. Additionally, given the results for the first sorting task with the graphicness condition, whilst graphicness was successfully manipulated, it is important to ensure a similar perception of severity of injury so that this variable does not overly interfere with the manipulation.

Given the manipulations and need to identify the most appropriate images for the advertisements twelve mock advertisements were created for further testing. The manipulations for these advertisements is as follows:

Pre-test Condition	Between-subjects factors		
	Message Frame	Message Direction	Graphic Image
1	Loss Avoidance	Other	Graphic
2	Loss Avoidance	Other	No Graphic, moderate injury
3	Loss Avoidance	Other	No Graphic, severe injury
4	Loss Avoidance	Self	Graphic
5	Loss Avoidance	Self	No Graphic, moderate injury
6	Loss Avoidance	Self	No Graphic, severe injury
7	Loss	Other	Graphic
8	Loss	Other	No Graphic, moderate injury
9	Loss	Other	No Graphic, severe injury
10	Loss	Self	Graphic
11	Loss	Self	No Graphic, moderate injury
12	Loss	Self	No Graphic, severe injury

**Table 7 - Pre-test stimulus conditions**

When constructing experimental stimuli it is crucial to hold all other factors constant apart from the variables under manipulation. As such, the construction of the advertisement stimuli developed in stages. First, the layout of the stimuli was held constant across all conditions. The picture is located in the middle of the stimulus, which is a standard format in advertising. As per stimuli employed in similar research (e.g. Dens et al, 2008) the text is located above and below the picture. The scenario above, and the consequences and action recommendation below. In addition, the researcher controlled for a range of potential nuisance factors, for example the size of the components of the stimuli. The pictures used in the all conditions were the same size. In addition, the text varied according to section, but is consistent in size across all conditions. Furthermore, the differences in terms of paragraph length and number of words were kept to a minimum. It was necessary to include slightly more words in the avoidance of loss condition than the loss condition in order to present the message effectively, but as this is a between subjects study (each participant is only exposed to one condition) any variation in response this may have caused was

controlled. Accordingly, twelve stimuli were developed for further testing, which will be discussed in the subsequent section.

### **5.3.3 Qualitative pre-test of stimuli**

As an integral part of the choice of method of research as identified in step 3 of figure 12. It is necessary to ascertain the validity of the developed stimuli (as described above) in order for the research process to move forward. First, qualitative initial pre-tests are conducted which are presented here. Pre-testing moves to a quantitative phase in section 5.6. This is dependent on the identification of measurement strategy for the variables of interest (presented in section 5.4 and the design of the data collection instrument (presented in section 5.5). As such, the qualitative pre-test of stimuli presented here was conducted at the stimuli design stage and subject to further testing later in the process.

In order to test the validity of the experimental manipulations and ascertain which graphic (severe or moderate) condition is most appropriate, a qualitative pre-test was undertaken to verify the validity and appropriateness of the advertisement stimuli. A sample of thirty four undergraduate students from Aston University, enrolled in the consumer behaviour module<sup>4</sup>, were recruited to participate in this study. Given that the earlier developmental qualitative procedure utilised the expertise of relevant academics, the recruitment of a student convenience sample in this case would provide further, and valid, evidence of any effects recorded. As previously outlined, twelve pre-test conditions were developed according to the experimental conditions identified. Participants were individually asked to perform a sorting task (based on the previous justification) of the twelve stimuli that were presented. This was a three stage sorting task where participants were asked to firstly, identify stimuli that are graphic or non-graphic. All thirty four individual's perceived the manipulations to be successful. Second, participants were asked to categorise whether the images were directed to the self or others and then whether the message was concerning loss or avoidance of loss. Again, all thirty four participants perceived the manipulations as they are intended. The third stage of the pre-test required participants to rank the stimuli in order of severity of injury. It was found that for 28 participants (82.3% of the sample) the inclusion of the oxygen mask with severe bruising was perceived to be more severe than the graphic image, yet the severity of the moderate bruising and the oxygen mask was closer in severity

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<sup>4</sup> Module code at Aston, BM2258. 278 students enrolled in the module.

to the graphic image. As such, the stimuli with the severe bruising were removed and the remaining eight stimuli (see Appendix 5.3) which correspond to the eight experimental conditions were retained for further quantitative pre-testing which is presented in section 5.6.

## **5.4 Measurements of mediating variables, control variables and dependent variables**

The constructs identified in Chapter 4 that serve as the variables of interest in the conceptualisation, are now discussed in terms of their operationalisation. A summary of the measures utilised in this study, and item lists are presented in Appendix 5.4. Given the proliferation of research in the various fields as outlined in Chapters 2, 3 and 4, and the robust and reliable measures already available and tested extensively in the literature, their use in this study was justified. As such, all measures have been previously used in research studies, and as such are valid and reliable. The main consideration in the selection of measures to operationalise the relevant constructs, is whether to employ multi-item or single item measures.

Whilst Nunnally and Bernstein (1994) and Spector (1992) provide comprehensive arguments for using multi-item measures instead of single-item measures, it is of paramount importance that the most appropriate and reliable measures for this study are selected. Given the complexity and large number of the constructs under investigation, single item measures may be more appropriate and a pertinent method to reduce the possibility of participant fatigue. It is important to acknowledge that whilst the benefits of multi-item measures (for example, capturing potential measurement error) are compelling, the approach taken is to select the most appropriate measure. A preference for multi-item measures is adopted, however due consideration will be given to single-item measures.

As existing measures are utilised they were adapted at a minimum level to retain the constructs' reliability and face validity. In all cases, adaptation merely involved changes in the wording of items to match the specific research context. Closed-ended questions were adopted in order to reduce participant fatigue and likert scales were adopted as is the case in the majority of web experiments. Most constructs were measured either by 7-point Likert scales or by 7-point bipolar adjective scales. However, in order to preserve the reliability and face validity of the scales, a number of scales were used with the original smaller or larger point scales.

### 5.4.1 Mediating variables

As outlined in Chapter 4 a number of variables have been hypothesised to mediate the relationship between the independent stimulus variables and dependent behavior variables. These can be categorised as immediate emotions, anticipatory emotions, cognitions and anticipated emotions. These will be considered in turn, in the following sections.

#### 5.4.1.1 *Immediate emotions*

As discussed in the review of the extant literature (in chapter 4) there are a number of different conceptualisations of emotional constructs. Therefore, unsurprisingly there are a number of valid and reliable methods to collect self-reported emotion data, according to the different theoretical paradigms. As previously justified, one focus of the study is to examine the elicitation of immediate emotions generated as a result of exposure the advertisement stimulus. A discrete approach is adopted, whereby all emotional constructs are assumed to have differing properties (see Chapter 4) Given the range of theoretical approaches and variables of interest, a large number of immediate emotion measures are utilised in the extant literature. To give just one example, using the construct of, what is termed in this study as 'immediate fear', a number of scales are utilised in studies in the field. For example, Dillard et al (2007) use a measure of immediate fear with the items 'scared, afraid, and fearful'. Yet, Power (2006) uses the items 'anxiety, nervousness, tense, worried and shy' to tap into immediate fear. Alternatively, Richins (1997) uses the items 'scared, afraid and panicky' to measure fear. Alternatively, the perceived fear index (Block, 2005) uses 'scared and afraid' to measure fear. Additionally, Laros and Steenkamp (2005) use 'scared, afraid, panicky, nervous, worried, and tense' to measure fear. A comparison of the examples of fear items used by the different authors identified is presented in table 8 below.

Authors	Block (2005)	Richins (1997)	Dillard et al (2007)	Laros and Steenkamp (2005)	Power (2006)
Items used	Scared	Scared	Scared	Scared	
	Afraid	Afraid	Afraid	Afraid	
		Panicky		Panicky	
				Nervous	Nervousness
				Worried	Worried
				Tense	Tense
			Fearful		
					Shy
					Anxiety

**Table 8 - Examples of variations in measures of fear from the extant literature**

As identified, there are clear similarities between the scales utilised (for example, scared and afraid are items used by four of the five examples presented above). However, given the plethora of available measures, there is a conundrum as there is no ‘rule of thumb’ for measurement in the field. As such, it was necessary to analyse emotion scales to identify the best measures for the constructs under observation.

A number of authors (for example, Bagozzi et al, 2003; Edell and Burke, 1987) use single item measures of emotions. Whilst this is an acceptable approach, it was deemed necessary to utilise multi item measures, where possible, given that immediate emotions are a core construct of interest and the benefits of this measurement technique as explained in section 5.4. As a starting point for analysis, Richins (1997) CES measure was examined. This measure specifically links to consumption related emotions and has been successfully used in many studies (e.g. Pollai et al, 2010; Christodoulides, et al 2013) As such, the range of constructs and items identified makes it a good starting point for consideration. The core constructs of the CES (Richins, 1997) measure are examined. These are anger, discontent, worry, sadness, fear, shame, envy, loneliness, romantic love, love, peacefulness, contentment, optimism, joy, excitement, surprise, guilt, pride, eagerness and relief. Of these, it is possible to identify variables of interest for the pertinent study, namely, anger, worry, fear, guilt and relief as listed in table 9 below.

	<b>Selected Constructs</b>	<b>Items</b>
<b>Richins (1997) CES</b>	Anger	Frustrated
		Angry
		Irritated
	Worried	Nervous
		Worried
		Tense
	Fear	Scared
		Afraid
		Panicky
	Guilt	Guilty
	Relief	Relieved

**Table 9 - CES constructs and items from Richins (1997)**

Given worry, guilt and relief are conceptualised as anticipatory emotions (as identified in chapter 4) and therefore are conceptually distinct from immediate emotions, these will be addressed in the next section of this chapter. The three items for anger and three items for fear are retained. In a comparison of these items with commonly used fear scales it was noted that the item 'fearful' is often added to fear scales (e.g. Dillard et al, 2007 and Block and Keller, 1995) and therefore this item was added to the item pool. It was also noted that 'uncomfortable' is an item in Witte (1992) fear scale, which is often used in the extant literature (e.g. So et al, 2013). As discussed in chapter 4 this is a conceptually distinct construct to fear and therefore is retained as a single item measure of this construct. Other authors (e.g. Baumgartner et al, 2008) measure uncomfortable as a single item and therefore this was deemed to be acceptable.

To examine the construct of disgust, the scale utilised by Nabi et al (2001) was first considered. The items in this scale are anger, disgust, repulsion, revulsion and grossed out. Given that anger is not disgust and is conceptually different (as discussed in section x) this item was not deemed to be appropriate. Equally the phrase 'grossed out' is firstly an Americanism (not appropriate for a study conducted in the UK) and very colloquial. As such, it may not be an accessible term to individuals of older generations. As such, anger and

grossed out were rejected. An alternative item to grossed out is nauseated (as used by Keller and Block, 1995) and as such this item was replaced.

#### *5.4.1.2 Anticipatory emotions*

As identified in the previous section, the CES scale (Richins, 1997) includes three items that tap the construct of worry (nervous, worried and tense) and use single item measures to measure relief and guilt. The three worry items were retained and the single item measure of relief was retained as there are few other ways to measure this construct in a self-report measure. However, a single item measure of guilt was not considered to be substantially robust and as such alternative guilt scales were considered. The scale used by Hibbert et al (2007) consists of the items ashamed, guilty, accountable, bad, irresponsible, uneasy and upset. Many authors (e.g. Richins, 1997, Bagozzi et al 2003, Dillard et al, 2007) use the item guilt, however the addition of accountable and bad complement the guilt item. It was identified that the items ashamed, uneasy and upset are not appropriate items for this study given the conceptual definitions as presented in chapter 4. The item irresponsible is reverse scored by Hibbert et al, (2007), however, given the focus of this study the logical step is to change the focus of the item to responsible. As such the items guilty, accountable bad and responsible were retained to measure the construct of guilt.

#### *5.4.1.3 Mental imagery*

The measure used to capture elaboration is a modified version of the mental imagery scale by Babin and Burns (1998). The original scale consists of 14 items designed to assess vividness, quantity and elaboration. The individual items were assessed for relevance. The three elaboration items (I fantasised about the product in the ad, I imagined what it would be like to use the product advertised and I imagined the feel of the product) were identified as not relevant for this study. In addition, the 8 vividness items are an unnecessary number of items to tap into the construct. Therefore, the items weak, fuzzy, vague, sharp and well-defined were removed. As such, the 7 items as listed in Appendix 5.4 were retained.

#### *5.4.1.4 Cognitions*

As identified in chapters 3 and 4, the cognition constructs from the extended parallel process model (Witte, 1992) are applied to the conceptual framework. As such, the items developed by Witte et al (1995) as part of the Risk Behaviour Diagnosis Scale for defensive

avoidance, susceptibility, severity, response efficacy and self-efficacy are retained as shown in appendix 5.4. These items have been successfully used in many other research studies (e.g. Wauters and Brengman, 2013) and therefore were deemed to be acceptable measures of the cognition constructs.

#### *5.4.1.5 Anticipated emotions*

As previously stated, studies concerning 'threat' or 'fear' appeals have not previously considered the role of anticipated emotions (see section chapter 4). As such, an examination of the measures utilised to measure anticipated emotions across the wider field of consumer behavior was necessary. It is common practice to measure anticipated emotions as single item constructs (see Baumgartner et al, 2008; Bagozzi et al, 2003; Bagozzi et al, 1998). Given this the anticipated emotions of interest were measured using single items as shown in Appendix 5.4. The wording of the anticipated emotion question was adapted to the context. In the study by Bagozzi et al (2003, p282), which focuses on health and fitness goals, participants were asked "If I succeed to achieve the personal goal I mentioned on page one of this questionnaire, I will feel" and "Please take a moment to consider how you would feel if you were not to achieve the personal goal you mentioned on page one of this questionnaire". Based on this example, similar context relevant questions were developed. This is shown in appendix 5.4. The three positive emotions were hope, relief and delight. The six negative emotions measured were fear, shame, regret, humiliation, responsible feelings and depressed feelings, as hypothesised in chapter 4.

### **5.4.2 Control variables**

As identified in chapter 4 a number of control variables must be accounted for and as such will act as covariates. The measures used for this purpose are outlined below, along with the manipulation checks used to verify the stimuli were perceived as intended.

#### *5.4.2.1 Attitude to speeding*

Attitude to speeding was measured using the six item bipolar scale developed by Lewis et al (2007). The wording of the question was adjusted slightly to reflect the content of the stimulus message which was concerning 'breaking the speed limit whilst driving'.

#### *5.4.2.2 Anxiety sensitivity*

Anxiety Sensitivity Index was measured using the scale presented by Peterson and Heilbronner (1987). This is based on the Reiss-Epstein-Gursky Anxiety Sensitivity index and is a 16 item measure developed to assess a person's beliefs about the social and somatic consequence of anxiety symptoms. (Reiss and McNally, 1985; Reiss, Peterson, Gursky and McNally, 1986).

#### *5.4.2.3 Style of processing*

Style of processing was measured using the scale developed by Childers et al (1985). This 22 item scale measures individuals preference for a visual or verbal processing modality and the original four point response scale format was retained.

#### *5.4.2.4 Construal*

Self-construal was measured using the 24 item scale developed by Singelis (1994), question items were altered to move the focus away from students specifically to make the questions relevant to a wider set of participants. These items are presented in appendix 5.4.

#### *5.4.2.5 Empathy*

The perspective taking items and empathetic concern items from the larger empathy scale (Davis, Date?) were reviewed and 14 relevant items were retained from the pool of 23, which are presented in appendix 5.4.

#### *5.4.2.6 Confound, perceived manipulation and message derogation*

The items developed by Witte et al (1995) as part of the Risk Behaviour Diagnosis Scale for confound, perceived manipulation and message derogation are used to ensure the validity of the experimental treatments and as a control covariate.

#### 5.4.2.7 *Social desirability*

Social Desirability was measured using the scale developed by Hays, Hayashi and Stewart (1989). This scale is a five item measure of socially desirable response set which is based on the longer (33 item) and hence more cumbersome Marlowe –Crowne scale (Crowne and Marlowe, 1960).

#### 5.4.3 **Dependent variables**

In order to measure behaviour anticipations in this context three measures are employed. The single item behaviour intention and behaviour expectation measures developed by Carrera et al (2013) are used. These are distinct as behaviour intention is the amount of motivation an individual has to perform a behaviour whereas behaviour expectation is an estimate of the likelihood an individual will perform the behaviour. Single items of self-reported behavioural intention and expectation are widely used across the literature (e.g. Hibbert et al, 2007; Carrera et al, 2013) and therefore it was deemed appropriate to measure these constructs using single items which would also reduce the possibility of participant fatigue.

The third measure of behaviour of behaviour prediction is a decision task (operationalised as a slider in the online questionnaire, see Beck, 1984 and Appendix 5). Decision tasks have been developed in the consumer behaviour field as a reliable predictor of future behaviour (e.g. Bergh et al, 2007, Bergh et al, 2011). As such participants were presented with a hypothetical scenario which was intended to activate an individual's decision process regarding the potential to break the speed limit. Participants were asked to move a slider on a scale to identify how fast they would travel for the journey. The slider showed the speeds and the number of minutes late or early that participants would be if they selected that speed (see Appendix 5.5). Therefore, participants were given all the required information to make a decision concerning what they would do if they were in that position and as such data acts as a predictor of behaviour.

#### 5.4.4 **Manipulation checks and pre-test variables**

The manipulations checks (presented appendix 5.4) were adopted from prior studies. The graphicness manipulation check is that used by Kees et al, (2010) and Dahl et al (2012). The message direction measure was adopted from Block (2005) and the message direction

(loss/ loss avoidance) measure was developed by Gerrend and Cullen (2008). Severity of injury used in the pre-tests was developed from Lewis et al (2013). The items developed by Witte et al (1995) as part of the Risk Behaviour Diagnosis Scale for confound, perceived manipulation and message derogation are used to ensure the validity of the experimental treatments in the pre-tests.

## **5.5 Design of data collection instrument**

Once the stimuli were developed and qualitatively pre-tested (as outlined in section 5.3 above), and the appropriate measures were identified (as outlined in section 5.4 above) the construction of the data collection instrument, in terms of the most appropriate physical design, is considered. Given the decision to undertake a randomised 2x2x2 between subjects experiment, the first consideration is the method of administration. In line with the sample size considerations and expected response rates (addressed in section 5.7 below) ease of access to the study is of primary importance.

Whilst there are benefits of a laboratory experiment, for example increased internal validity (Lee and Lings, 2008), the number of variables to be examined and practicalities of running a laboratory experiment mean that this method is much more cumbersome in comparison to a web experiment. Web experimentation is not applicable in situations that require the experimenter to be physically present, such as when manipulations or measurements involve physiological reactions. However, web experiments have substituted successfully for a variety of classic cognitive experiments (see Birnbaum 2004 for a review). Indeed, many laboratory experiments use a computer to collect the data (in a variety of ways) and as such, there is little difference in information loss, whether the data is collected using a laboratory computer or using the Internet (Reips, 2002). The use of web experimentation also removes the influence of 'experimenter bias' as the researcher is not present and participants are able to complete the experiment in a setting of their choice, in their own time (Birnbaum 2001).

In addition, compared to traditional field experiments, web experiments have the benefit of lowering costs, being more efficient and allowing for time differences as it is available for completion 24 hours a day, which is particularly relevant if conducting research using an international sample (Birnbaum 2004; Reips 2002). The automation of the Internet allows the researcher to control the experimental environment, and crucially for the present study, enables exposure to advertising stimuli. This is beneficial because the researcher has options to control the length of exposure, or equally give participants the option to choose

how long they spend viewing the experimental treatment. In such cases, if the software utilised allows for it, it is possible to record the time spent on the web page where the participant is exposed to the experimental stimulus. Additionally, web experimentation allows researchers to collect information immediately after exposure to an experimental stimulus, or build in distraction tasks, which in some contexts are appropriate. Participants are able to complete web experiments at their own convenience and therefore the results are generated from a more realistic (and thus externally valid) experimental setting, compared to those obtained in a laboratory. Following these considerations, web experimentation was chosen as the most suitable administration method for this study.

Birnbaum (2004) identifies three web-experimentation techniques: client-side programming, server-side programming and running one's own server. Given the lack of facility to run an experiment specific server, this technique was ruled out. Client-side programs such as JavaScript run on the participant's computer. A potential problem with running a program on the client's computer is that the researcher relies on the participant to have the proper software installed. Software incompatibilities can result in significant dropout rates, as there is no guarantee that all participants will be able to participate in the experiment. Conversely, server-side programs run on the server and do not require the participant to have any special hardware or software (beyond the basic ability to read HTML Web pages). Schwarz and Reips (2001) find considerably lower participant dropout rates in server-side than client-side programs and as such, a server-side method was adopted. Specifically, the web experiment was created using Qualtrics (<http://www.qualtrics.com>) as this program was available to the researcher and has many features that are appropriate for collection of data for the present study.

Subsequent to the selection of the appropriate tool for administration, focus now turns to the design of the instrument, using the measures identified in section 5.4 above. As a general 'rule of thumb' the primary consideration when designing a data collection instrument is the order in which questions are presented to participants (Malhotra and Birks, 2000). It is usually (but not always) an objective to retain as many participants as possible to the end of the experiment. Admittedly, a weakness of web experiments can be due to the inherent lack of physical presence of a researcher during the experimental procedure. As such, participants can simply walk away from their computer or be distracted during the study which may mean they fail to complete the experiment. It is impossible to account for environmental factors at the point of experimentation using this method, however, it is possible to employ techniques in the data collection tool to encourage participant engagement.

The introduction to the experiment and introductory questions are largely defined by ethical considerations (as outlined in section 5.8), however it is important to recognise that these must not be off-putting to participants. Whilst ethical considerations for the present study must be implemented (particularly due to the topic of the study and the graphicness variable as an experimental treatment), these must be balanced with simplicity of information and ease of answering questions. This is to reduce the possibility of participant boredom or miscomprehension (Churchill, 1999). To aid the impression of ease of completion a progress bar is utilised throughout the experiment so participants are aware of how much of the experiment is left to complete. Use of a progress bar allows participants to make decisions during the experiment process. For example, if a distraction may potentially interfere with the process that can be delayed, the participant is able to make an informed decision to continue with the experiment based on the information on the progress bar. The progress bar also allows for a reduction of the appearance of length of the questionnaire as it corresponds to number of web pages, not the number of questions, and therefore participants' perception of progress through the experiment is not influenced by the large number of items and constructs measured.

It is widely considered appropriate (e.g. Malhotra and Birks, 2000) for researchers to divide questions into logical sub-sets which allows for participants to easily answer the questions as they are perceived to be clear and logical. It is not desirable to suddenly change topic or indeed return to an earlier topic at a later point in the questionnaire. In addition, it is important to 'signpost' participants through the questionnaire with explanations and instructions where appropriate. As such, sub-sets of questions were developed alongside detailed and user friendly explanations and instructions (see Appendix 5.6 for a copy of the questionnaire).

As previously stated, section 5.8 discusses the ethical considerations for this study in detail. The first section of the questionnaire concerns experiment instructions, participant consent and two screening questions (please refer to section 5.8). The second section of the questionnaire concerns the collection of demographic information and individual difference data, collected using the measures for the experimental covariates identified in section 5.4. Given the instructions for the study had to provide information about the topic of the study it was deemed appropriate to collect information about the topic of interest at the beginning of the second section of the questionnaire, for example pre-exposure attitude to speeding. Any priming effect of the position of these questions in the order of questioning is reduced as the bank of questions subsequent to these are those pertaining to demographic information and individual difference control covariates. The positioning of these questions acts as a buffer,

so in essence participants are forced to think about themselves and not the topic prior to exposure to the experimental treatment.

The third element of the experiment is exposure to one of the eight experimental treatments. Using the randomisation function alongside the survey flow function in Qualtrics it was possible to design the experiment so that participants were randomly allocated to one of the eight treatment conditions by the software program and therefore would be exposed to only one of the eight treatments accordingly. Participants were presented with an instruction page detailing that they were about to view a mock advertisement alongside instructions with viewing the advertisement and progressing with the study. The time frame of exposure was not limited (although this function is available in Qualtrics) as controlling for this variable is not relevant to the research objectives and allowing participants to proceed at their own pace creates a more natural environment.

Post exposure, participants were asked questions with a series of items to capture immediate and anticipatory emotions experienced as a result of exposure to the experimental treatment. This data is crucial to the research objectives of the study. In particular, the very nature of the emotional constructs in question means they will deteriorate relatively quickly. Therefore in order to best capture these responses in a self-report format, these questions were asked whilst the responses were most likely to be 'top of mind'. Following this, the next set of questions included the manipulation checks to ensure the treatment had been perceived as intended and then the two single item behaviour intention and behaviour expectation measures. Participants were then asked the bank of questions pertaining to cognitions about the treatment and then anticipated emotion items. The last section of the questionnaire is the behaviour predictor decision task measure, before participants were thanked for their time and given an opportunity to enter a prize draw (see section 5.2 concerning improvement of response rate).

Once the order of the sub-set of question items was developed they were entered into corresponding question 'blocks' in the Qualtrics program. Using the survey flow, randomiser and branches functions it was possible to set conditions where all participants were exposed to the same banks of questions, in the same order, yet at the point of exposure to the experimental treatment, participants were randomly assigned to one of the eight possible treatments. In addition, the structure of the overall survey allowed for participants to be directed to a thankyou and debrief page if the screening questions at the beginning of the study deemed a participant as not eligible to continue with the study. It is important to note that given the rapid advances in technology and that participants will select a device of

choice to conduct the experiment these factors had to be considered. Given the nature of the questionnaire in terms of length and type of experimental treatment it was deemed that smartphones or tablet devices are not appropriate for the completion of this study (due to limitations in the display format for this questionnaire, inherent to the Qualtrics system at the time, as discovered through pretesting). As such, the 'mobile phone' function was not activated in Qualtrics for the questionnaire and clear instructions for appropriate devices were presented on the information page on the first page of the study.

## **5.6 Pre-tests and results**

As outlined previously, the quantitative pre-tests and results are now presented to ensure that the process of choosing the most appropriate method of research (as outlined in stage 3 of figure 12) has occurred before moving on to the selection of sampling procedure outlined in step 4 of figure 12 (presented in section 5.7) and the step 5, the collection of data (presented in sections 5.7 and 5.8).

Prior to distribution of the web-experiment, two crucial pre-tests were conducted. Pre-testing is an essential component to the collection of data (Reynolds et al, 1993). Firstly, a quantitative pre-test of the eight advertisement stimuli developed as discussed in section 5.3 is undertaken. The objective of this pre-test is to provide evidence that the treatment manipulations are likely to be perceived by participants as intended. Prior qualitative pre-tests were adopted to assist the development of the stimuli, as outlined in section 5.3. A rigorous quantitative pre-test of the experimental stimuli will enhance the validity and reliability of the manipulation of the independent variables, and the experimental design as a whole. This pre-test also serves as an initial pre-test of the design and layout of the questionnaire, using a reduced number of questions and also serves as a test of the behaviour prediction measure.

A second pre-test to examine the validity of the measurement instrument developed as described in Section 5.5 is also administered in the form of a pilot study. The questionnaire, in the format intended for the main data collection, is administered to a small sample in order to identify both positive and negative aspects of the design and functionality of the questionnaire. Additionally, the pre-test will allow for an estimation of response rate for the main web experiment which will assist with sample size selection. The following sections will first outline the quantitative pre-test of the experimental stimuli (section 5.6.1) and results from that pre-test in section 5.6.2. Discussion will then move on to the pre-test of the main measurement instrument and the results generated from this pre-test in section 5.6.3.

### 5.6.1 Stimuli pre-test

A pre-test of the experimental stimuli using manipulation check measures and a reduced number of questions to generate data for the mediating and dependent variable of interest was developed in Qualtrics. The same formatting procedures as outline in section 5.5 were applied. The pre-test questionnaire designed to test the experimental stimuli is in Appendix 5.6. This quantitative pre-test was conducted among 175 respondents drawn from the population of staff at Aston University. The aim of this pre-test was to ensure the validity of the stimuli developed and to ascertain that the manipulations were perceived as intended. Eight stimuli were developed (per the operational definitions defined in section 5.3.2) and a between subjects experimental design was utilised. Respondents were contacted by e mail with a link to the questionnaire. The Qualtrics software randomly assigned participants to one of the eight conditions as described in section 5.5. The experimental conditions and sample size per condition are outlined in table 10 below.

Experimental Condition	Between-subjects factors			Sample Size
	Message Frame	Message Direction	Graphic Image	
1	Loss Avoidance	Other	Graphic	23
2	Loss Avoidance	Other	No Graphic	16
3	Loss Avoidance	Self	Graphic	23
4	Loss Avoidance	Self	No Graphic	23
5	Loss	Other	Graphic	25
6	Loss	Other	No Graphic	22
7	Loss	Self	Graphic	20
8	Loss	Self	No Graphic	23
<b>Total</b>				175

**Table 10 - Pretest experimental conditions and sample size**

#### *5.6.1.1 Demographic profile of respondents*

Respondents were asked a series of questions to generate demographic information used to profile the sample. The graphical representations of these results are in Appendix 5.7. Of the 175 participants, 58 were male and 117 were female. Participants were asked to give their age with regard to one of seven age categories. 0 participants were 16-19 years old (as per the ethical considerations outlined in section 5.8), 7 participants were 20-24 years old, 80 participants were 25-34 years old, 46 participants were 35-44 years old, 26 participants were 45-54 years old, 13 participants were 55-64 years old, and 3 participants were 65 or over. Appendix 5.7 shows the frequencies of this item. There were no missing values for this variable. The distribution is positively skewed with the frequent scores clustered at the lower end of the age ranges (skewness = .867). The distribution has a peak as most of the participants are aged between 25-34 years old. As the questionnaire was targeted at staff of Aston University, this distribution can be explained. In addition, age served as a screening variable. Due to ethical considerations the study was only available to respondents over the age of 18 and participants under 18 were screened out accordingly (details in the section 5.8). The age question in the study was also set to screen out respondents under the age of 18. If a respondent clicked the 16 – 19 category they were directed to a screen that explained the study was only eligible to participants over the age of 18 and requested participants to enter their year of birth in order to filter out any participants under the age of 18.

Ethnicity was recorded to profile participants. 124 respondents were White British, 2 respondents were White Irish, and 29 respondents were from any other white background. Thus, 155 respondents identified themselves as white ethnicity. 20 respondents in total identified themselves to be of a non-white ethnicity which ranges from mixed, black British, Asian British, Asian, Black Caribbean, any other black background or other. There were no missing values for this variable. Respondents were also asked whether they have a driving license, if they drive a car and if they own a car, in order to identify if there is a difference between responses of drivers and non-drivers. Of the sample, 164 respondents have a driving license and 11 do not. 146 consider themselves to be drivers and 29 do not and 134 participants own a car and 41 do not. The graphical representations of these results are in Appendix 5.7.

### 5.6.1.2 Exploratory factor analysis

In order to examine the characteristics of the experimental stimuli, a number of important measures had to be taken (e.g. a measure of graphicness). Before use, each measure was analysed for internal consistency using Cronbach's alpha, and entered into an exploratory factor analysis. Since the scales being analysed were pre-existing, and therefore had been subjected to significant amounts of prior analysis, a lower bound of .7 was used when evaluating internal consistency scores (Churchill, 1979; Nunnally, 1978). Exploratory factor analysis was conducted upon each scale individually and they were purified as a result. For more detail regarding Exploratory Factor Analysis please refer to Chapter 6. The results and detail for the factor analyses conducted for the pre-tests can be found in Appendix 5.8. A summary of the results from the Exploratory Factor Analysis is presented in table 11 below.

Scale	Items retained	Cronbach's	KMO	Bartlett's
Graphicness	Shocking, Scary, Frightening, Vivid, Intense, Powerful, Graphic, Unpleasant, Gruesome	.985	.900	1727.442 df=36 $p= 0.000$
Mental Imagery Clarity	The imagery which occurred was clear, The imagery that occurred was detailed, The imagery that occurred was vivid	.934	.769	877.159 df: 15 $p= 0.000$
Mental Imagery Imagination	The advert made me imagine or picture something in my mind, I imagined a number of things, Many images came to mind	.881	.769	877.159 df: 15 $p= 0.000$
Message confound	The message was clearly written, I clearly understood this message, I learned a lot about speeding from this message, The quality of arguments in this message were good	.839	.718	323.088 df: 6 $p= 0.000$
Perceived Manipulation	The message was manipulative, The message was misleading, The message tried to manipulate me, The message was exploitative	.821	.752	288.268 df: 6 $p= 0.000$
Message Derogation	This message was exaggerated, This message was distorted, This message was overblown, This message was overstated	.916	.810	585.295 df: 6 $p= 0.000$

**Table 11 - Pre-test Exploratory Factor Analysis of existing scales**

### 5.6.2 Pre-test results

A series of factorial analyses of variance (ANOVAs) were conducted to confirm the effectiveness of the manipulations in the advertisement stimuli across the experimental conditions. The measures used are outlined in sections 5.4 and 5.5.

#### 5.6.2.1 Graphicness

A one way analysis of variance was conducted to explore the impact of the experimental conditions of graphic and non-graphic images on perceptions of graphicness. Participants were randomly assigned to either one of four treatments that used the graphic image or one of four treatments that used the non-graphic image. The results show a statistically significant effect of experimental condition on perception of graphicness  $F(7,167) = 6.350$ ,  $p = .000$ . As shown in the table below, (table 12) the mean statistics demonstrate that graphic images were perceived to have increased perceptions of graphicness and non-graphic images caused lower perceptions of graphicness. These results confirm that the graphicness manipulations were perceived by respondents as intended.

Experimental Conditions	Graphicness mean	Graphicness Standard Deviation
3 (Graphic)	4.34	1.68
1 (Graphic)	3.89	1.95
7 (Graphic)	4.63	1.53
5 (Graphic)	4.01	1.38
4 (No Graphic)	2.94	1.65
2 (No Graphic)	2.50	1.38
8 (No Graphic)	2.56	1.30
6 (No Graphic)	2.76	1.35

**Table 12 – Means for graphic and non-graphic experimental conditions**

### 5.6.2.2 Message Frame

A one way analysis of variance was conducted to explore the impact of the experimental conditions of loss avoidance and loss frame messages on perceptions of loss. Participants were randomly assigned to either one of four treatments that used the loss avoidance frame or one of four treatments that used the loss frame. The results show a statistically significant effect of experimental condition on perception of message frame  $F(7,167) = 2.914, p = .007$ . As shown in the table 13, the mean statistics demonstrate that loss avoidance frames have decreased perceptions of loss and the loss frame messages caused higher perceptions of loss. These results confirm that the message frame manipulations were perceived by respondents as intended.

Experimental Conditions	Framing mean	Framing Standard Deviation
3 (Loss Avoidance)	3.09	1.64
1 (Loss Avoidance)	3.30	2.22
4 (Loss Avoidance)	3.09	2.21
2 (Loss Avoidance)	2.75	1.84
7 (Loss)	5.75	1.83
5 (Loss)	6.28	1.40
8 (Loss)	4.91	1.99
6 (Loss)	5.55	1.87

**Table 13 - Means for loss avoidance and loss frame experimental conditions**

### 5.6.2.3 Direction of message

A one way analysis of variance was conducted to explore the impact of the experimental conditions of self or other direction of message on perceptions of direction of message. Participants were randomly assigned to either one of four treatments that used the self-frame or one of four treatments that used the other frame. The results show a statistically significant effect of experimental condition on perception of direction of message  $F(7,167) = 5.573, p = .000$ . As shown in the table 14 the mean statistics demonstrate that other directed messages were perceived to be concerning others (as per the bipolar scale) and

the self-directed messages perceived to be about the self. These results confirm that the message frame manipulations were perceived by respondents as intended.

Experimental Conditions	Direction mean	Direction Standard Deviation
3 (Self)	4.04	1.89
4 (Self)	4.04	2.24
7 (Self)	3.20	1.73
8 (Self)	3.74	1.68
1 (Other)	5.61	1.99
2 (Other)	5.75	1.52
5 (Other)	5.92	1.84
6 (Other)	5.50	1.76

**Table 14 - Means for self and other directed experimental conditions**

#### 5.6.2.4 Severity of injury

A one way analysis of variance was conducted to explore the impact of all the experimental conditions on perceptions of severity of injury. Participants were randomly assigned to one of the eight experimental treatments. The results show a statistically significant effect of experimental condition on severity of injury  $F(7,167) = 2.087, p = .048$ . However, this effect is only marginally significant. As shown in the table 15, the mean statistics demonstrate that there appears to be a marginal increase in perceptions of severity of injury in the graphic conditions in comparison to the no graphic conditions. As discussed in section 5.3.2 it is important that perceptions of severity are similar to ensure that graphicness is not significantly confounded as a key independent variable. In this case, the strength of the manipulation of graphicness reported in section 5.6.2.1 indicate that the stimuli do manipulate graphicness as intended, with only a small influence on the severity of injury as perceived by respondents. Indeed, such an influence may be impossible to avoid in such designs, and in that light it is heartening to see such a small effect here.

Experimental Conditions	Severity of injury mean	Severity of injury Standard Deviation
1 (Graphic, Loss Avoidance, Other)	4.26	1.91
2 (No Graphic, Loss Avoidance, Other)	3.63	1.70
3 (Graphic, Loss Avoidance, Self)	4.96	1.58
4 (No Graphic, Loss Avoidance, Self)	4.00	1.47
5 (Graphic, Loss, Other)	4.28	1.37
6 (No Graphic, Loss, Other)	4.55	1.37
7 (Graphic, Loss, Self)	5.15	1.72
8 (No Graphic, Loss, Self)	4.00	1.47

**Table 15 – Means for perceptions of severity of injury**

5.6.2.5 *Mental imagery (clarity)*

A one way analysis of variance was conducted to explore the impact of all the experimental conditions on mental imagery clarity. Participants were randomly assigned to one of the eight experimental treatments. The results show a statistically non-significant effect of  $F(7,167) = 1.789, p = .092$ . As shown in the table 16 the mean statistics demonstrate there were no differences between conditions. These results confirm that the messages were perceived by respondents as intended.

Experimental Conditions	Mental Imagery Clarity mean	Mental Imagery Clarity Standard Deviation
1 (Graphic, Loss Avoidance, Other)	4.30	2.07
2 (No Graphic, Loss Avoidance, Other)	3.87	1.43
3 (Graphic, Loss Avoidance, Self)	3.91	1.81
4 (No Graphic, Loss Avoidance, Self)	3.46	1.70
5 (Graphic, Loss, Other)	4.16	1.39
6 (No Graphic, Loss, Other)	3.81	1.46
7 (Graphic, Loss, Self)	4.50	1.67
8 (No Graphic, Loss, Self)	3.00	1.76

**Table 16 – Means for mental Image clarity**

5.6.2.6 *Mental imagery (imagination)*

A one way analysis of variance was conducted to explore the impact of the eight experimental conditions on mental imagery imagination. Participants were randomly assigned to one of eight experimental conditions. The results show a statistically non-significant effect of  $F(7,167) = .856, p = .543$ . As shown in the table 17 the mean statistics demonstrate there were no differences between conditions. These results confirm that the messages were perceived by respondents as intended.

Experimental Conditions	Mental Imagery Imagination mean	Mental Imagery Imagination Standard Deviation
1 (Graphic, Loss Avoidance, Other)	2.75	2.11
2 (No Graphic, Loss Avoidance, Other)	2.68	1.56
3 (Graphic, Loss Avoidance, Self)	3.46	1.98
4 (No Graphic, Loss Avoidance, Self)	2.55	1.43
5 (Graphic, Loss, Other)	3.06	1.69
6 (No Graphic, Loss, Other)	2.80	1.67
7 (Graphic, Loss, Self)	2.63	1.70
8 (No Graphic, Loss, Self)	3.36	1.68

**Table 17 – Means for mental imagery imagination**

*5.6.2.7 Confound*

A one way analysis of variance was conducted to explore the impact of the eight experimental conditions on message confound. Participants were randomly assigned to one of eight experimental conditions. The results show a statistically non-significant effect of  $F(7,167) = 1.836, p = .083$ . As shown in the table 18 the mean statistics demonstrate there were no differences between conditions. These results confirm that the messages were perceived by respondents as intended.

Experimental Conditions	Confound mean	Confound Standard Deviation
1 (Graphic, Loss Avoidance, Other)	3.50	1.65
2 (No Graphic, Loss Avoidance, Other)	3.70	1.22
3 (Graphic, Loss Avoidance, Self)	3.70	1.56
4 (No Graphic, Loss Avoidance, Self)	3.71	1.43
5 (Graphic, Loss, Other)	4.66	1.16
6 (No Graphic, Loss, Other)	4.28	1.21
7 (Graphic, Loss, Self)	4.20	1.36
8 (No Graphic, Loss, Self)	4.18	1.45

**Table 18 – Means for confound**

*5.6.2.8 Perceived manipulation*

A one way analysis of variance was conducted to explore the impact of the eight experimental conditions on perceived manipulation. Participants were randomly assigned to one of eight experimental conditions. The results show a statistically non-significant effect of  $F(7,167) = 1.153, p = .333$ . As shown in the table 19 the mean statistics demonstrate there were no differences between conditions. These results confirm that the messages were perceived by respondents as intended.

Experimental Conditions	Perceived manipulation mean	Perceived manipulation Standard Deviation
1 (Graphic, Loss Avoidance, Other)	3.22	1.60
2 (No Graphic, Loss Avoidance, Other)	2.87	1.34
3 (Graphic, Loss Avoidance, Self)	2.89	1.29
4 (No Graphic, Loss Avoidance, Self)	2.84	1.62
5 (Graphic, Loss, Other)	3.16	1.57
6 (No Graphic, Loss, Other)	2.90	1.35
7 (Graphic, Loss, Self)	3.15	1.60
8 (No Graphic, Loss, Self)	2.20	0.86

**Table 19 – Means for perceived manipulation**

*5.6.2.9 Message derogation*

A one way analysis of variance was conducted to explore the impact of the eight experimental conditions on message derogation. Participants were randomly assigned to one of eight experimental conditions. The results show a statistically non-significant effect of  $F(7,167) = 1.276, p = .265$ . As shown in the table 20 the mean statistics demonstrate there were no differences between conditions. These results confirm that the messages were perceived by respondents as intended.

Experimental Conditions	Message derogation mean	Message derogation Standard Deviation
1 (Graphic, Loss Avoidance, Other)	2.50	1.38
2 (No Graphic, Loss Avoidance, Other)	1.93	0.75
3 (Graphic, Loss Avoidance, Self)	2.39	1.18
4 (No Graphic, Loss Avoidance, Self)	2.36	1.28
5 (Graphic, Loss, Other)	2.27	1.52
6 (No Graphic, Loss, Other)	2.42	1.65
7 (Graphic, Loss, Self)	2.61	1.30
8 (No Graphic, Loss, Self)	1.66	0.81

**Table 20 – Means for message derogation**

The results of this quantitative pre-test of the eight stimuli developed for the web experiment confirm that the stimuli are perceived as intended and the manipulations are successful in creating the experimental treatments. Focus will now shift to the pre-test of the web experiment as a whole.

### 5.6.3 Pre-testing the web experiment (pilot study)

Pre-testing of the web experiment occurred in two stages. First, ‘protocols’ were carried out (Diamantopoulos et al, 1994) which entails watching participants complete the questionnaire and receive feedback on any pertinent issues that arise as a result. This is a useful check as a large amount of detailed feedback, on small issues that may have been missed by the researcher, can be highlighted. Whilst the presence of the researcher and the intellectual exercise itself, may bias this procedure, it is a useful ‘first check’ of the experiment. Two experienced academic experts in the field of marketing, performed the protocol check. Both participants stated that the procedure was longer than average but this should not pose a problem to response rate. In order to maintain data quality the feedback was acknowledged but the length of the procedure was not changed.

The technical presentation of the questionnaire and randomised presentation of stimuli was successful. Participants noted that it was difficult to differentiate between response options

for some of the blocks of questions. As a result, the highlight function in Qualtrics was utilised to clearly highlight alternating lines of response options, so participants can more easily respond to the questions and corresponding items. No issues pertaining to the questions or items used were identified, although a small number of typographical errors were identified and subsequently corrected. This procedure was also useful to serve as another check that the stimuli were perceived as intended and the behaviour prediction measure was successful. Feedback on both of these elements was positive.

Following the protocol checking by academic experts, a small-scale web experiment was administered in order to further anticipate any issues in the final experimental design. (See appendix 5.6 for a copy of the questionnaire and Appendix 5.9 for the experimental treatments.) A small sample of 42 staff from Aston University were recruited using the staff newsletter to participate in the web experiment pre-test. One positive aspect of the pre-test was that no modifications to the questionnaire instrument itself or to the stimuli were deemed necessary. Indeed, the report from Qualtrics identified that all 42 participants who attempted to participate in the pre-test did so successfully. All the scales were filled in correctly by the respondents. Also, given the small time frame within which the respondents engaged with the pre-test, initial indications were that the recruitment of participants would be as successful as anticipated. The pre-test suggested that once participants engaged with the study, they completed it. As such, it was appropriate to proceed as no concerns were identified. Therefore the focus turned to recruitment of willing participants (to be detailed in the following sections) as per stage 4 of figure 12.

## **5.7 Main data collection procedure and sample**

As described in the previous section (section 5.6) the quantitative pre-tests identified some small improvements to the questionnaire were necessary, and as such were implemented. However, the stimuli, data collection method and instrument performed as anticipated. It was seen that administration of the pre-tests was successful through a web link and as such this posed no issue. Focus now turns to the sampling plan and considerations associated with improving response rate, which will be addressed in turn.

The sample of respondents should be consistent with the key objectives of the study. Previous studies have primarily used student samples (for example, Schmitt and Blass, 2008; Potter et al, 2006; Passyn and Sujun, 2006; Smith and Stutts, 2003). In order to select the sampling procedure two types of general procedure (probability and non-probability sampling) must be considered (Burns and Bush, 2000; Wright and Crimp, 2000;

Malhotra and Birks, 2000 and Hair et al, 2006). The probability sampling procedure is characterised by a situation where each element of the population has a fixed probability of being selected as part of the sample, but this does not mean that there is an equal chance of selection (Malhotra and Birks, 2000). On the other hand, non-probability sampling procedure does not involve chance selection but has reliance upon the personal judgement of the researcher (Malhotra and Birks, 2000). The use of non-probability sampling necessitates that the probability of an element of the population being selected for the sample is unknown.

Both sampling orientations consist of four separate techniques (Wright and Crimp, 2000). In the case of probability sampling these are simple random sampling, systematic sampling, stratified sampling and cluster sampling. These are presented in table 21 below. Non probability sampling techniques consist of convenience sampling, judgmental sampling, quota sampling and snowball or referral sampling, presented in table 22 below. Each of these techniques has strengths and weaknesses, which are outlined in Tables 21 and 22, accompanied by a brief description of each technique (adapted from Malhotra and Birks, 2000).

Name of Technique	Brief Description	Strengths	Weaknesses
<b>Simple Random Sampling</b>	Each element has a known and equal chance of selection. Each element is selected independently of the other and the sample is drawn by random procedure from a random sampling frame (similar to the lottery system)	<ul style="list-style-type: none"> <li>+ Sample results may be projected to a large population</li> <li>+ Easily understood</li> </ul>	<ul style="list-style-type: none"> <li>- Difficult to construct a sampling frame</li> <li>- Time consuming and expensive</li> <li>- Results are generally lower in precision with large standard errors</li> <li>- May not result in a representative sample</li> </ul>
<b>Stratified Sampling</b>	Two-step process utilised to split the population into subsections. Elements are then selected using the simple random sampling technique.	<ul style="list-style-type: none"> <li>+ Ensures that all important sub populations are included</li> <li>+ Increased precision is achieved</li> </ul>	<ul style="list-style-type: none"> <li>- Numerous criteria can be used to select stratification variables</li> <li>- Expensive</li> </ul>
<b>Systematic Sampling</b>	Elements are chosen through the selection of a random starting point and then selecting every <i>n</i> th element from the sampling frame.	<ul style="list-style-type: none"> <li>+ Easier to administer compared to Simple random sampling</li> <li>+ Less expensive to administer than Simple random sampling</li> <li>+ Can increase representativeness of the population if the elements are ordered in relation to the characteristic of interest</li> <li>+ A sampling frame is not always necessary.</li> </ul>	<ul style="list-style-type: none"> <li>- Assumption that the sample frame is in a pre-existing order</li> <li>- Can decrease representativeness of population and may yield similar results to simple random sampling techniques.</li> </ul>
<b>Cluster Sampling</b>	Two step technique whereby the population is divided into mutually exclusive and collectively exhaustive sub populations (clusters). A random sample of the clusters is then selected using a probability technique such as simple random sampling.	<ul style="list-style-type: none"> <li>+ Decreased costs as sampling efficiency is increased</li> <li>+ Easy to implement</li> </ul>	<ul style="list-style-type: none"> <li>- Not as precise as stratified sampling techniques</li> <li>- Results can be difficult to analyse and interpret.</li> </ul>

**Table 21 - Comparison of available probability sampling techniques**

<b>Name of Technique</b>	<b>Brief Description</b>	<b>Strengths</b>	<b>Weaknesses</b>
<b>Convenience Sampling</b>	Convenient elements are selected by the researcher as they are in the same place at the same time.	+ Least time consuming + Least expensive + Convenient + Sample are accessible, cooperative and easy to measure	- A lot of selection bias  - Not representative of any definable population
<b>Judgemental Sampling</b>	Similar techniques to convenience sampling however, elements are purposely selected based upon researchers' judgement and/ or study objectives.	+ Convenient + Time efficient + Inexpensive	- Subjective  - Generalisability is limited
<b>Quota Sampling</b>	Two step restricted judgemental sampling technique. Control categories (quotas) are developed then sample elements are selected based upon convenience or judgement.	+ Sample can be controlled for certain characteristics, for example, demographics	- Potential for overlooking characteristics that are relevant to the issue under investigation  - Selection bias
<b>Snowball or referral Sampling</b>	Elements are initially selected using probability techniques and subsequent elements are chosen based on information provided by initial elements.	+ Increased likelihood of locating desired characteristic in the population  + low sampling variance + Inexpensive	- Time consuming  - Potential for sample bias due to dependence on respondent judgements.

**Table 22 - Comparison of available non-probability sampling techniques**

For the pre-test studies staff from Aston University were used as the sample. This is a non-probabilistic, judgment sample (Churchill and Iacobucci, 2004). For the main study staff and students were approached alongside a snowball sample of the general population. One goal in research is to generalise a set of findings beyond the participants to the experiment. Researchers are not specifically interested in the behaviour of the people who actually participate in the experiment, but in their behaviour as representative of the population (Keppel and Wickens 2004). A non-probabilistic sample composed of students and staff at

Aston University, and snowball/ referral sampling methods to engage respondents outside of Aston University were used due to the convenience and efficiency strengths of this method.

Whilst a purely student sample would have been a more homogenous sample, given the nature of the topic at hand and type of data collected this was not of paramount importance. Indeed, the design of the randomized web experiment rules out the issues associated with a non-homogenous sample and therefore serves as further justification for utilising this sampling method.

Another, and arguably more important, decision regarding the sample of the experimental study is the size required to estimate the desired effects. A priori power analysis facilitates the choice of adequate sample size (Cohen 1988). Power analysis essentially involves the specification of Type I and Type II errors with respect to null hypothesis testing. Experimenters often stipulate the power instead of Type II error rate (Keppel and Wickens, 2004), and define power of the test as the probability to reject the null hypothesis when the null hypothesis is false - in other words, the probability to find an effect provided that it exists. Table 23 summarises type I and type II errors along with the power of the statistical test.

Statistical Decision	True state of null hypothesis	
	H0 True	H0 False
Reject H0	Type 1 Error ( $\alpha$ )	Power of the test ( $1-\beta$ )
Do not reject H0	Correct	Type II Error ( $\beta$ )

**Table 23 - Summary of type I and type II errors**

The power of the experiment depends on a number of factors, including the significance level  $\alpha$ , the sample size  $n$ , and the magnitude or size of the treatment effects (Keppel and Wickens, 2004). The most direct way to increase the prospective power of a test is to increase the sample size  $n$ . A priori power calculations help determine an adequate sample size for the estimation of experimental treatment effects and are therefore very important at the planning stage. Researchers can pre-define the desired significance level, the size of the effects that they wish to detect, and the desired power of the test, and calculate the appropriate sample size. When many factors and interactions are involved, as in the

present case, power calculations can be difficult, thus the use of power charts or software packages (Erdfelder, et al 1996) is imperative. Computer software has the potential to make power analysis more accurate, interactive, and easy to perform. For the purpose of a priori power analysis in this study, GPOWER was used. GPOWER is a software application (Faul et al 2007) that performs various types of power analyses including a priori F-tests for multi-factor experimental designs and multiple regression analyses.

For an a priori power analysis for multi-factor experiments with a mixed subjects design in GPOWER, the researcher needs to set the  $\alpha$  level, the desired effect size measure ( $f$ ), the desired power level, the number of groups and the number of repetitions in the design. According to Cohen (1988), there are small, medium, and large effect sizes (Keppel and Wickens, 2004). For an a priori power analysis of a multi-factor F-test in ANOVA, GPOWER uses the following  $f$  effect size conventions: small:  $f=0.10$ , medium:  $f=0.25$  and large:  $f=0.40$ .

In order to have a good chance of detecting medium effects, the standard was set to an effect size of  $f=0.25$ . The significance level alpha was set at 0.05 and the desired power level at 0.95. For simplicity reasons, the researcher assumes all factors and interactions equally important for the analysis. As previously mentioned, the design of the experiment is a 2x2x2 between-subjects design. Hence, the number of groups in the experiment is eight. Based on this, the a priori power analysis in GPOWER suggests that the study requires a minimum of 400 participants in order to estimate the factorial effects with a power of 0.9510. This implies a minimum of 50 respondents in each cell (see table 24). As such, the target sample is a minimum of four hundred participants and any sample larger than this will increase power accordingly.

Parameters	Effects
Effect size $f$	0.25
$\alpha$ error probability	0.05
Power (1- $\beta$ error probability)	0.95
Number of groups	8
Non-centrality parameter $\lambda$	25.0
Critical F	1.854
Minimum sample size	400

Minimum cell size	50
Actual power	0.9510

**Table 24 - GPOWER analysis results**

A potential issue in the use of web experiments is that of non-response bias. Non-response bias occurs when the characteristics of the respondents who choose to complete the web experiment differ in a substantive manner from those who did not complete it (Churchill and Iacobucci, 2004). This bias can compromise the external validity and generalisability of a study's results, Armstrong and Overton (1977) among others, recommend that all feasible efforts be made to increase response rates, which were undertaken as part of this study. A variety of techniques were used to try and increase participation to the web experiment (Churchill and Iacobucci, 2004). These techniques were crucial to reach a minimum sample size of 400 as identified in the a priori power analysis. Monetary incentives were not used as they would have proved too expensive, and there is some doubt over their utility in increasing response rates (Diamantopoulos and Schlegelmilch, 1996). Instead, a more cost-effective option was chosen, which was to enter respondents in a prize draw. The details of the prize draw are presented in Appendix 5.10 and were granted full ethical approval by Aston Business School ethics committee.

To recruit the participants to the Web experiment, an e-mail was sent to all students, staff and alumni of Aston University and staff and students at Loughborough University. The e-mail gave an indication of the approximate time it would take to complete the experiment, details about the prize draw and stressed the contribution of the study to the area of consumer response. A shorter version of this e mail was prepared for posting on social media sites. This correspondence is presented in Appendix 5.11. In addition a request on the thank you page at the end of the experiment to forward the link to the questionnaire on to other potential participants was included. The web-experiment was e-mailed to potential respondents in three waves, each two weeks apart thus resulting in a six week data collection period. In the last email sent, a return deadline to be included in the prize draw was mentioned in an attempt to increase the response rate. A total of 1511 responses to the web experiment were started, however due to the screening questions (see section 5.8) and incomplete responses, 681 were usable responses.

## 5.8 Validity of the design and ethical issues

Consideration will now turn to the validity of the research design, which is described below and then the ethical considerations appropriate for this study will be addressed in section 5.8.1. Mariampolski (2001) presents a useful concept for researchers called 'the critical eye.' This concept advocates the continuous critical scrutiny of all aspects of the research project, for example respondent definitions, data gathering strategies, analysis procedures and interpretation of results. In addition to this, the researcher should be critical of themselves and the impact of their behaviour on the different aspects of the research process. This level of awareness adopted by the researcher is intended to ensure higher levels of reliability and validity and will be employed in this study. It is important to note that quantitative studies, emphasising causality and generalisability, frequently overlook validity issues in their pursuit of reliability (Churchill and Iacobucci, 2004).

Reliability refers to the extent to which the research procedure adopted is replicable and a measurement procedure yields the same answer (Minichiello et al, 1992). Thus, for a data collection to be reliable it must be shown that research can be repeated or replicated, which is test/retest reliability (Minichiello et al, 1992). Thus, if the questionnaire for this web-experiment were to be re-tested, using the same experimental stimuli, the data would remain the same. Reliability is distinguished from validity in that validity is represented in the agreement between two attempts to measure the same trait through different methods, whereas reliability is the agreement between two efforts to measure the same trait through similar methods (Campbell and Fiske, 1959).

Issues specific to measure reliability and validity are covered in more depth in Chapter 6, however, in brief, evaluating the reliability of any measuring instrument consists of determining how much of the variation in scores is due to inconsistencies in measurement (Peter, 1979). One of the main issues to do with reliability is internal consistency. This is where the reliability of a measure is associated with the extent to which a single respondent's score for a set of items measuring a single construct is the same as another set of items measuring the same construct. Four methods may be used to evaluate reliability. These include test-retest, where the same questionnaire is distributed twice to the same respondents; alternative forms, where different questions that have an equivalent meaning are used in a questionnaire; the split-half reliability which involves comparing the answers of two identical sample groups; and the coefficient alpha or Cronbach's alpha, which is the average of all possible split-half coefficients resulting from different ways of splitting the scale items (Malhotra and Birks, 2000). In the present research, this last

method is used with the SPSS software. Furthermore, all the constructs are measured using existing scales previously tested for reliability by their authors.

A measure could be reliable but still not be valid. A valid measure is one that is truthful and which is accurate in measuring what it is trying to measure (Burns and Bush, 2000). The researcher distinguishes between internal and external validity. Internal validity increases when the researcher controls for a range of potential confounding factors, while external validity is enhanced when the experimental setting is more naturalistic and less controlled (Churchill and Iacobucci, 2004). Thus, these two types of validity are often at odds. Marketing researchers have typically sacrificed external validity for internal validity, under the assumption that theory application research does not need to be externally valid (Calder et al, 1982). Nevertheless, when an experiment lacks external validity the theoretical constructs also lack validity (Lynch 1982). Hence, the researcher should strive to achieve both internal and external validity.

In the present research, internal validity was achieved by controlling for a variety of potential confounding factors related to the design of the stimuli. These factors are discussed in the section 5.3. External validity focuses on the problem of collecting data that demonstrate that the changes in the dependent variables observed in the experiment as a result of changes in the independent variables can be expected to occur in other situations. The prerequisites for external validity include ecological validity, statistical generalisability and robustness (Lynch, 1982). Ecological validity was enhanced in two ways. First, the design of the stimuli was realistic, as all the stimuli used contained both text and pictorials. A web experiment was conducted, therefore ensuring that respondents viewed the stimuli in relatively more natural conditions (for example, at home or at work when one may often be exposed to advertising stimuli) than a laboratory experiment. The statistical generalisability and robustness of the findings were increased by using the random assignment technique where participants self-allocated an experimental condition.

### **5.8.1 Ethical considerations**

The experimental stimuli, pre-tests and web experiment were submitted to the Aston Business School ethics committee. The researcher adhered to the four main principles of beneficence (do positive good), non-maleficence (do no harm), informed consent, and confidentiality/anonymity. The ethics application identified how these principles were applied throughout the development of the research methodology. A detailed procedure was put in place for participants to raise any issues, make complaints or withdraw from the study if

they should wish. The ethical guidelines outlined at the beginning of the experiment intended to circumvent possible concerns over confidentiality. The experiment was not anonymous as respondents were required to provide their email address if they wanted to be considered for the prize draw connected to the experiment. However, participants were reassured that the prize draw entry details would be kept separate from their answers to the questionnaire and that the data would be related to their participant number, not to their name.

Given the sensitive nature of the topic and desire to cause no unnecessary distress, the committee ensured that the screening questions would rule out individuals with prior experiences (either themselves or loved ones) of serious car accidents. Due to the graphic manipulation in some of the images it was appropriate to screen out any potential participants under the age of 18. In addition the wording at the beginning of the study was specifically designed to make participants aware of the topic of the study, that they may be exposed to shocking images and actions to take if they experienced distress during the study. No participants contacted the researcher to complain of distress caused. As such, all participants were presented with a high level of detail and asked for consent prior to conducting the study.

## **5.9 Summary**

This chapter has outlined the methodology chosen to address the research questions and hypotheses specified in chapter 4. Following the development of stimuli, measurement instrument and pre-tests, a web experiment was administered and received 681 usable responses. This data is analysed in the following two chapters (chapter 6 and 7) to first, describe the data set and then test the hypotheses.

# Chapter 6 - Descriptive Analysis Results

The previous chapter outlines the details of the methodology utilised for data collection for this study and explicitly articulates the procedure followed. The following two chapters are ordered to present the analysis of the obtained data; firstly the descriptive analysis which is presented in Chapter 6 and then, hypothesis testing which is presented in Chapter 7.

This chapter presents the descriptive analysis (essential to enable hypothesis testing) which has four main components. First, an analysis of the demographic profile variables of participants was conducted, using tables to assist clarity of presentation in section 6.1. Secondly, sections 6.2 and 6.3 outline the measures used in the study, the exploratory factor analysis of those measures, the distribution of measures with focus on a search for outliers and statistical testing. In order to be confident in the properties and operationalisation of measures employed in the study, this analysis was conducted to ensure that the measures used, have necessary levels of statistical robustness to make them valid for inclusion in the testing of the hypotheses. Third, as outlined in section 6.4, the measures were tested for potential contamination with social desirability bias. Those that presented significant correlations were transformed to remove the social desirability bias from the measure. Section 6.5 presents the descriptive analysis of the individual scales to be utilised in the testing of hypotheses. Section 6.6 identifies correlations between measures and finally section 6.7 provides a summary of the chapter

The hypothesis testing presented in Chapter 7 uses univariate analyses of covariance (ANCOVAs), and as such, in order to identify and minimise any violations of test assumptions, the identification of patterns in, and characteristics of the variables is necessary. This descriptive analysis of the measures is crucial to ensure a robust interpretation of results.

## 6.1 Demographic profile of participants

This section profiles experimental participants according to demographic variables, as the participants are the units of analysis. As outlined in the previous chapter, participants were randomly allocated to one of eight experimental conditions. The sample size of participants per experimental condition is described in table 25 below.

<b>Experimental Condition</b>	<b>Message Frame</b>	<b>Message Direction</b>	<b>Graphic Image</b>	<b>Sample Size</b>
1	Loss Avoidance	Other	Graphic	85
2	Loss Avoidance	Other	No Graphic	87
3	Loss Avoidance	Self	Graphic	91
4	Loss Avoidance	Self	No Graphic	83
5	Loss	Other	Graphic	86
6	Loss	Other	No Graphic	83
7	Loss	Self	Graphic	84
8	Loss	Self	No Graphic	82
<b>Total</b>				681

**Table 25 - Experimental conditions and corresponding sample sizes**

Table 26 shows the distribution of gender among the participants of the research study across all eight experimental conditions. There were no missing values and it can be seen that females outnumber males in the sample, with 37.4% and 62.6% respectively. Given the randomised experimental design, as described in chapter 5 this data is therefore acceptable.

<b>Participant Gender</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Male</b>	225	37.4%
<b>Female</b>	426	62.6%
<b>TOTAL</b>	681	100%

**Table 26 - Frequencies of participant gender**

Participants were requested to give their age with regard to one of the seven age categories (0-18 years old, 19-24 years old, 25-34 years old, 35-44 years old, 45-54 years old, 55-64 years old, 65 years old and above). Table 27 outlines the frequencies for this variable and there were no missing values. Participants under the age of 18 were screened out of the study at the beginning of the procedure due to ethical considerations as outlined in section 5.8.1 in Chapter 5. Whilst it was expected that this screening would be successful, the

category 0-18 was still included in the data collection instrument as a second screening measure.<sup>5</sup> No participants reported to be below the age of 18 and therefore all participants were able to continue with the study. The relative asymmetry in the distribution is reflected by the cumulative percentage which shows that 63.3% of the sample are aged between 19 and 34. As the experiment was primarily targeted at University staff and students this asymmetry can be explained.

<b>Participant Age</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Cumulative Percent</b>
<b>18-24</b>	267	39.2%	39.2%
<b>25-34</b>	164	24.1%	63.3%
<b>35-44</b>	93	13.7%	76.9%
<b>45-54</b>	65	9.5%	86.5%
<b>55-64</b>	50	7.3%	93.8%
<b>65 or over</b>	42	6.2%	100%
<b>TOTAL</b>	681	100%	

**Table 27 - Frequencies of participant age**

The majority of the participants identified themselves to be of White ethnicity (cumulative percentage 76.9%), which consists of 58.7% of the sample identifying as White British, 2.3% of the sample identifying as White Irish and 15.9% of the sample identifying as any other white background. The remaining 23.1% of the sample identify as a range of ethnicities including Mixed, Asian British, Asian, Black British, Black Caribbean, Black African, Any other black background, Chinese and other. There were no missing values for this variable and frequencies for each ethnicity category are shown in table 28. As the experiment was primarily targeted at staff and students at UK Universities with a subsequent snowball sample, the range of respondent ethnicities is not surprising.

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<sup>5</sup> As with the screening questions at the beginning of the study, if participants stated their age to be below 18 they were redirected to an end of study page explaining why they could not continue and thanking them for their time.

<b>Ethnicity</b>	<b>Frequency</b>	<b>Percentage</b>
<b>White British</b>	400	58.7%
<b>White Irish</b>	16	2.3%
<b>Any other white background</b>	108	15.9%
<b>Mixed</b>	12	1.8%
<b>Asian British</b>	47	6.9%
<b>Asian</b>	29	4.3%
<b>Black British</b>	6	0.9%
<b>Black Caribbean</b>	2	0.3%
<b>Black African</b>	8	1.2%
<b>Any other black background</b>	4	0.6%
<b>Chinese</b>	30	4.4%
<b>Other</b>	19	2.8%
<b>Total</b>	681	100%

**Table 28 - Frequencies of participant ethnicity**

A large proportion of the sample identified themselves to be single (34.1%) and a similar percentage identified themselves as married (32.7%). The other 33.3% of the sample identified themselves as in a relationship but not living together, living with partner, civil partnership, separated, divorced or widowed. Overall, 62.4% of participants identify themselves as being in a relationship (in a relationship but not living together, living with partner, civil partnership or married) and 37.6% of participants identify themselves to be without a partner (single, separated, divorced or widowed). There were no missing items for this variable and the frequencies are presented in table 29.

<b>Relationship Status</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Single</b>	232	34.1%
<b>In a relationship but not living together</b>	116	17%
<b>Living with partner</b>	85	12.6%
<b>Civil partnership</b>	1	0.1%
<b>Married</b>	223	32.7%
<b>Separated</b>	2	0.3%
<b>Divorced</b>	20	2.9%
<b>Widowed</b>	2	0.3%
<b>Total</b>	681	100%

**Table 29 - Frequencies of participant relationship status**

Participants were asked to identify whether or not they have children and are therefore inherently responsible for other human beings. 31.6% of the sample do have children and 68.4% of the sample do not have children. Given the sampling techniques employed in this study it is to be expected that a higher number of participants do not have children compared to the frequency of those who do have a child or children. There was no missing data for this variable and the frequencies are presented in table 30 below.

<b>Child or Children</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Yes</b>	215	31.6%
<b>No</b>	466	68.4%
<b>Total</b>	681	100%

**Table 30 - Frequencies of participants with or without a child or children**

Participants were asked to report whether they own a valid driving license or not. The frequencies for this item are presented in table 31. There were no missing items for this variable. Overall, 84% of participants declared themselves to have a valid driving license and 16% identified themselves as having no driving license.

<b>Driving License Ownership</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Yes</b>	572	84%
<b>No</b>	109	16%
<b>Total</b>	681	100%

**Table 31 - Frequencies of participants who do and do not own a driving license**

This section has presented an analysis of the demographic profile variables of experimental participants, specifically examining gender, age, ethnicity, relationship and family status, and driving license ownership. No major issues were identified and due to the randomised experimental design employed, confidence was high in the sample as a basis for further analysis. As outlined in chapter 5, randomised experiments are where the experimental unit (in this case, experimental participants) are assigned to a treatment by chance (Shadish et al, 2002). A minimum of two groups are created which are probabilistically similar to each other on average, which means that the outcomes of observed differences between the groups are likely to be an effect of the treatment, as opposed to individual differences between units.

## **6.2 Construct measurement approach**

As outlined in the previous chapter, existing measures were employed to collect data regarding participants cognitive, emotional and behavioural responses to the advertisements presented in each experimental condition. Additionally data regarding trait and individual differences was obtained using existing measures. All scales used have been previously developed and published in peer-reviewed academic journals as detailed in section 5.4 in Chapter 5. A small number of existing and recognised single item measures are used in the study (as outlined and justified in Chapter 5) yet the majority of scales are multi item measures. In light of this, the objective of the following analysis is to verify measure properties for the current study, conduct exploratory factor analysis and correlations with social desirability bias.

The objective for this study is to provide empirical evidence of the impact of intrinsic message characteristics of threat appeals on consumer emotional, cognitive and conative response variables. In doing so, it is necessary to – in essence - identify relationships among what are theorised as unobserved (latent) constructs (e.g. emotions, behavioural

intentions). Doing so requires the development of measures of these unobserved constructs, using observed variables or indicators (Borsboom et al, 2003; 2004). The measurement model for the present study is reflective, where in theoretical terms “causality flows from the latent construct to the indicator” (Coltman et al, 2008, p1250).

### **6.2.1 Single item measures: Analysis strategy**

Theoretically speaking, the latent constructs exist (in an absolute sense) independent of the measures as “observable indicators are reflective effects” of latent variables (Howell et al., 2007, p 205). As such, the indicators used to measure the latent constructs are interchangeable, as change in the latent variable must precede variation in the indicators. This flexibility enables researchers to measure the construct by sampling a few relevant indicators underlying the construct (Churchill, 1979). It is important to note that inclusion or exclusion of one or more indicators from the construct does not necessarily alter the content validity. However, some constructs are measured using single-item measures which is appropriate when constructs are unambiguous (Bergkvist and Rossiter, 2007; Loo, 2002). As identified in section 5.4, based on scales utilised in the relevant literature, single item measures are used to measure behavioural intention, behavioural expectation and anticipated emotions – which are all constructs which have been captured with single-item measures successfully in past research (e.g. Carrera et al, 2012; Baumgartner et al, 2008; Bagozzi et al, 2003).

### **6.2.2 Multi item measures: Analysis strategy**

While single-item measures were used for some constructs, where appropriate, multi-item scales were used wherever possible, and indeed were used to measure the majority of constructs in this study. Certainly, multi-item measures have some advantages over single-item measures (Churchill, 1979), although they also increase length and complexity of an instrument. According to Gerbing and Anderson (1988) an important assumption in reflective measurement theory is that there is a single construct underlying any set of items intended to measure a construct. Thus, questionnaire items are indicators of the measured construct, or in other words are “caused by” the construct, and overlap in meaning so that they correlate moderately strongly (Baxter, 2009). It is important to note that the implication of this is that a multi-item measure of a construct, for example immediate emotion, should examine immediate emotion only and no other construct. Hence, the variation in each emotion item should only be influenced by the respondent’s true emotion score and random error, and no other latent construct or error.

This existence of a single trait or construct underlying a set of items intended to measure that construct is referred to as unidimensionality (Hattie, 1985; Hair et al 2008). A composite score, defined by the respondents' scores on these measures, gives an estimate of the corresponding underlying construct. However, the computation of this composite score is meaningful *only* if each of the measures is unidimensional (Gerbing and Anderson, 1988). Unidimensionality is only one indicator of the validity of a measure. Indeed acceptable unidimensionality does not guarantee the validity of a measure (Peter, 1981). For example, the measure may be unidimensional, but in fact reflect another construct than that intended by the researcher. In other words, a lack of unidimensionality demonstrates a lack of construct validity, however unidimensionality by itself does not guarantee the validity of a measure.

This does not detract from the fact that unidimensionality is a necessary, although not sufficient, condition to ensure validity, where validity is whether a multi-item measure of a construct actually measures the intended construct. Correlation of items with social desirability bias can present information regarding the validity of a scale (Spector, 1992). Social desirability bias is an individual trait which examines whether respondents are likely to respond to measures in a manner that is not "true", but biased towards making themselves appear favourable according to social standards. If a measure is influenced by respondent's social desirability bias then it cannot be a unidimensional or valid measure of the intended construct. As such, the measures are examined for the potential presence of social desirability bias in section 6.4 below.

To provide evidence of validity and unidimensionality, existing scales were subject to exploratory factor analysis and internal consistency analysis. Internal consistency examines whether scale items have high intercorrelations, not only with each other but also with the total of items ( DeVellis, 1991). If a scale has high internal consistency, then a high quantity of the scale variance is believed to come from a common source (DeVellis 1991). This common source is assumed to be the latent construct under investigation. Internal consistency is often measured with Cronbach's coefficient alpha (Churchill 1979). Cronbach's alpha assesses the reliability of the scale which is the extent to which independent but comparable measures of the same construct agree (Churchill, 1979). For a scale to be valid and possess practical utility, it must be reliable. Conceptually, reliability is defined as the degree to which measures are free from error and therefore yield consistent results (Peter, 1979). Peterson (1994) provides a meta-analysis of magnitudes of coefficient alpha obtained in behavioural research and identifies the minimum  $\alpha$  requisite is .7 for the research design employed in this study. Exploratory factor analysis directly addresses the

unidimensionality issue by using the inter-item correlations to determine whether there is an underlying latent variable responsible for the pattern of correlations observed in the data (Sharma, 1996). Such results reveal whether there is a single factor underlying the measure (unidimensional) or multiple factors (multidimensional and thus invalid).

### **6.3 Analysis of measures: Exploratory factor analysis and internal consistency**

Exploratory factor analysis directly addresses the unidimensionality issue by using the inter-item correlations to determine whether there is an underlying latent variable responsible for the pattern of correlations observed in the data (Sharma, 1996). Such results reveal whether there is a single factor underlying the measure (unidimensional) or multiple factors (multidimensional and thus invalid). Exploratory factor analysis is therefore appropriate for the multi-item measures employed in this study.

Each measure was analysed for internal consistency using Cronbach's alpha, and entered into an exploratory factor analysis. Since the scales being analysed were pre-existing, and therefore had been subjected to significant amounts of prior analysis, a lower bound of .7 was used when evaluating internal consistency scores (Churchill, 1979; Nunnally, 1978). Exploratory factor analysis was conducted upon each scale individually and they were purified as a result. To provide a statistical measure of item homogeneity, the Bartlett's test for sphericity was used. This check provides a statistical test for the presence of correlations amongst the variables (Hair et al., 2006). A significant Bartlett's test result suggests that the correlation matrix is not orthogonal (the variables are intercorrelated) (Sharma 1996).

Given that this analysis is intended to identify groups of variables that measure specific constructs, it should be obvious that some variables should correlate to have an appropriate dataset for factoring (Field, 2005). Therefore the Bartlett's test should be significant (Field, 2005). However, this test is sensitive to sample size (Hair et al, 2008; Sharma 1996), and thus it should not be used solely to assess appropriateness of the data for the exploratory factor analysis when the sample for this study  $n=681$ . As a result, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was also used. This index (ranging from 0 to 1) determines the extent to which variables are homogenous (Sharma 1996). A value of 0 indicates that the sum of partial correlations is large, relative to the sum of correlations, indicating diffusion in the pattern of correlations (hence, factor analysis is likely to be

inappropriate). A value close to 1 indicates that patterns of correlations are relatively compact and so factor analysis should yield distinct and reliable factors (Field, 2005). While there are no statistical tests for the KMO measure, it is generally considered that values above .5 imply that the data is appropriate for factor analysis (Hair et al, 2008; Sharma 1996). Furthermore, values between .6 and .7 are considered as mediocre, values between .7 and .8 are good, values between .8 and .9 are great and values above .9 are superb (Hutcheson and Sofroniou, 1999). When examining the loadings of each item on the extracted factors, a minimal loading of .3 was used as the lower bound to indicate a significant factor loading, commonly considered a threshold level (Spector, 1992).

The exploratory factor analysis procedure used in all analyses was principal axis factoring with an Oblimin oblique rotation. As the dataset for this study has an underlying structure due to the experimental design, the measures are analysed using traditional principal axis factoring. The use of oblique rotation is in contrast to the original development process of many of the measures, where orthogonal rotations were used. An oblique factor rotation was used here for a number of theoretical reasons. It is recognised that orthogonal rotations such as Varimax are the rule, rather than the exception, particularly within marketing (Hair et al, 2008). However, the popularity of orthogonal rotation methods may originate mainly from non-theoretical reasons, such as convenience (as Varimax is the default procedure within most statistical packages such as SPSS) and tradition (Lee and Hooley 2005). However, orthogonal rotations assume that the factors are uncorrelated (Sharma, 1996), which is an unlikely event when one is considering psychological variables as in this study. As Cattell (1978, p104) states “it makes sense for factors to be correlated rather than represented artificially in rigid orthogonality, because influences in the real world do get correlated”. In the present case, there was no theoretical reason to suggest uncorrelated factors in any situation in which factor analysis was used, thus oblique rotations were implemented.

When an oblique rotation is conducted, the factor matrix is split into two matrices: the pattern matrix and the structure matrix. The pattern matrix contains the factor loadings and is comparable to the factor matrix that is interpreted in an orthogonal rotation. The structure matrix takes into account the relationship between factors. In fact, it is a product of the pattern matrix and the matrix containing the correlation coefficients between factors. The pattern matrix is preferable for interpretative reasons because it contains information about the unique contribution of a variable to a factor (Field, 2005). Therefore, the pattern matrices are reported in the exploratory factor analyses presented in the next sections.

The following section provides the results of the development of the existing measures, where each measure is discussed individually. An iterative process of exploratory factor analysis and internal consistency analysis was used to eliminate any items that appear to detract from the unidimensionality of the scale.

### **6.3.1 Mediating variables**

Exploratory factor analysis was conducted on the multi-item measures of the mediating variables in the model, which is presented by each variable in turn below.

#### *6.3.1.1 Immediate emotions*

Immediate emotions were measured using scales as detailed in section 5.4.1.1 of Chapter 5. The EFA results indicated that the items loaded onto four factors as presented in table 32 below.

Scale Items	Factor 1	Factor 2	Factor 3	Factor 4
Frustrated				.797
Angry				.804
Irritated				.794
Scared	.941			
Afraid	.963			
Panicky	.773			
Fearful	.956			
Depressed	.550			.302
Sad	.655			
Miserable	.567			
Happy		.905		
Pleased		.939		
Joyful		.977		
Delighted		.963		
Glad		.762		
Disgusted			-.815	
Repulsed			-1.021	
Revolted			-.945	
Nauseated			-.731	
Rotation converged in 6 iterations KMO = .920 Bartlett's test = 14881.571 df: 171 P= .000				

**Table 32 - EFA Immediate emotions iteration 1**

Analysis of this pattern matrix suggested that Factor 4 represented anger items, factor 3 represented disgust items, factor 2 represented happy items and factor 1 represented *both* fear and sadness items. The fear items loaded far more strongly onto factor 1 in comparison

to the sadness items and additionally, the depressed item loaded onto both factors 1 and 4. Given the theoretical underpinnings of the study, the fear items were identified as most important and therefore the depressed, sad and miserable items were removed from the analysis, to leave a purified measure of fear (rather than what appeared to be a confounded mixture of fear and sadness). The pattern matrix of the EFA with those items removed is presented in table 33 below.

Scale Items	Factor 1	Factor 2	Factor 3	Factor 4
Frustrated				.837
Angry				.827
Irritated				.829
Scared			-.936	
Afraid			-.988	
Panicky			-.764	
Fearful			-.928	
Happy		.904		
Pleased		.938		
Joyful		.978		
Delighted		.964		
Glad		.761		
Disgusted	.823			
Repulsed	1.019			
Revolted	.942			
Nauseated	.740			
Rotation converged in 7 iterations KMO = .905 Bartlett's test = 12877.021 df: 120 P= .000				

**Table 33 - EFA Immediate emotions iteration 2**

Analysis of the pattern matrix suggests that factor 4 represents the anger items, factor 3 represents the fear items, factor 2 represents the happy items and factor 1 represents the disgust items. However, the repulsed item loaded onto factor 1 over the value of 1. Given the slight variations in loadings of the factor items and the fact that disgust is measured as part of the manipulation check (as outlined in Chapter 5) the disgust item was removed and the EFA recalculated, as presented in table 34 below.

Scale Items	Factor 1	Factor 2	Factor 3	Factor 4
Frustrated			.838	
Angry			.830	
Irritated			.832	
Scared	.939			
Afraid	.990			
Panicky	.763			
Fearful	.927			
Happy		.903		
Pleased		.938		
Joyful		.978		
Delighted		.963		
Glad		.763		
Repulsed				-.965
Revolted				-.958
Nauseated				-.729
Rotation converged in 5 iterations KMO = .893 Bartlett's test = 11775.679 df: 105 P= .000				

**Table 34 - EFA Immediate emotions iteration 3**

Analysis of the pattern matrix suggests that factor 1 represents fear items, factor 2 represents happy items, factor 3 represents anger items and factor 4 disgust items. As the correlation matrix obtained displayed all coefficients above 0.3 and the KMO and Bartlett's test were both indicative of an appropriate data set the items were split according to the four factors identified. The Cronbach's alpha for the four fear items is .959, for the five happy items is .957, for the three anger items is .882 and for the three disgust items is .936. All of these are above the threshold of .7 (Nunnally, 1978). Overall 82% of variance is explained by these factor loadings.

#### *6.3.1.2 Anticipatory emotions*

Anticipatory emotions were measured using the scales identified and justified in section 5.4.1.2. The initial results from this analysis are presented in table 35.

Scale Items	Factor 1	Factor 2	Factor 3
Unfulfilled	.484		
Discontented	.674		
Nervous	.913		
Worried	.920		
Tense	.956		
Embarrassed	.310		
Ashamed			-.535
Optimistic		.829	
Encouraged		.824	
Hopeful		.912	
Excited		.661	
Guilty			-.783
Accountable			-.895
Bad	.388		-.442
Responsible			-.725
Upset	.669		-.358
Rotation converged in 6 iterations KMO = .901 Bartlett's test = 7318.114 df: 120 P= .000			

**Table 35 - EFA anticipatory emotions iteration 1**

The items loaded onto three different factors. Both bad and upset loaded onto two factors and were therefore removed from the next stage of analysis. A further review of these items identified unfulfilled and discontented are not central to the core anticipatory emotions under examination (as outlined in chapter 4) and therefore these items were removed from the next stage of analysis. The results of the second iteration are presented in table 36.

Scale Items	Factor 1	Factor 2	Factor 3
Nervous			.890
Worried			.902
Tense			.911
Embarrassed	.433		
Ashamed	.596		
Optimistic		.835	
Encouraged		.849	
Hopeful		.918	
Excited		.642	
Guilty	.789		
Accountable	.907		
Responsible	.712		
Rotation converged in 7 iterations KMO = .854 Bartlett's test = 5491.688 df: 66 P= .000			

**Table 36 - EFA anticipatory emotions iteration 2**

Analysis of the pattern matrix identifies that five items load onto the first factor which represents the guilt construct. Four items load onto the second factor which represents the optimism construct and three items load on the third factor that represent the worry construct. Overall, 66.74% of variance is explained by these factor loadings. Whilst the embarrassed and shame items had weaker loadings than the other items on this factor these items were retained. These results display all coefficients as above 0.3 and as the KMO and Bartlett's test were both indicative of an appropriate data set, the items were split according to the three factors identified. The Cronbach's alpha for the five guilt items is .858, the four optimism items is .883 and the five guilt items .931. These results are all above the threshold of .7 (Nunnally, 1978).

### 6.3.1.3 Mental imagery

Mental imagery is measured using the scale by Babin and Burns (1998). The exploratory factor analysis results for the whole scale are presented in table 37.

Scale Items	Factor 1	Factor 2
The advert made me imagine or picture something in my mind	.432	-.490
The imagery which occurred was clear	.909	
The imagery that occurred was detailed	.919	
The imagery that occurred was vivid	.893	
I really only experienced one image		.571
I imagined a number of things		-.872
Many images came to my mind		-.836
Rotation converged in 9 iterations KMO = .812 Bartlett's test = 3974.347 df: 21 P= .000		

**Table 37 - Mental imagery EFA iteration 1**

As indicated, the items loaded onto two different factors. However, the first item "The advert made me imagine or picture something in my mind" loaded onto both factors and as such this item was removed and the analysis run again. The results from the second iteration of exploratory factor analysis are presented in table 38 below.

Scale Items	Factor 1	Factor 2
The imagery which occurred was clear	.898	
The imagery that occurred was detailed	.924	
The imagery that occurred was vivid	.896	
I really only experienced one image		.561
I imagined a number of things	.326	-.858
Many images came to my mind	.325	-.838
Rotation converged in 6 iterations KMO = .760 Bartlett's test = 3478.284 df: 15 P= .000		

**Table 38 - Mental imagery EFA iteration 2**

The second iteration of analysis presented maintains the presence of two distinct factors. However, the items “I imagined a number of things” and “Many images came to mind” loaded onto both factors. As such, these items were identified for removal. Given this would leave one item “I really only experienced on image” concerns the concept of generating multiple images along with the two factors identified for removal, this item was also removed.

Scale Items	Factor 1
The imagery which occurred was clear	.884
The imagery that occurred was detailed	.940
The imagery that occurred was vivid	.906
1 factor extracted. 7 iterations required KMO = .762 Bartlett's test = 1742.492 df: 3 P= .000	

**Table 39 - Mental imagery EFA iteration 3**

Analysis of the pattern matrix identifies that three items load onto one factor which represents the mental imagery construct. Overall, 82.81% of variance is explained by these factor loadings. These results display all coefficients as above 0.3 and as the KMO and Bartlett's test were both indicative of an appropriate data set. The Cronbach's alpha for the mental imagery items retained is .935 and above threshold of .7 (Nunnally, 1978). The remaining items represent the core construct of mental imagery elaboration and as such, these three items capture the meaning of the construct as presented in chapter 4.

*6.3.1.4 Defensive avoidance*

Defensive avoidance was measured using the two item scale developed by Witte et al (1995). Cronbach's alpha was above the .7 threshold (Nunnally, 1978) at .727. The correlation matrix obtained from the factor analysis displayed several coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining 57.04% of variance, thus both items were retained. This analysis is shown in Table 40 below.

<b>Scale Items</b>	<b>Factor 1</b>
When I drive I tend to avoid thoughts of speeding accidents	.755
When I speed I tend to avoid thoughts of speeding accidents	.755
1 factor extracted.8 iterations required KMO = .500 Bartlett's test = 268.151 df: 1 P= .000	

**Table 40 - Defensive avoidance EFA**

### 6.3.1.5 Susceptibility

Susceptibility was measured using the three item scale developed by Witte et al (1995). Cronbach's alpha was above the .7 threshold (Nunnally, 1978) at .849. The correlation matrix obtained from the factor analysis displayed several coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining 66.16% of variance, thus all three items were retained. This analysis is shown in Table 41 below.

Scale Items	Factor 1
I am at risk of having an accident from speeding	.895
It is likely that I will have an accident from speeding	.792
It is possible that I will have an accident from speeding	.747
1 factor extracted. 12 iterations required KMO = .715 Bartlett's test = 909.542 df: 3 P= .000	

**Table 41 - Susceptibility EFA**

### 6.3.1.6 Severity

Severity was measured using the three item scale developed by Witte et al (1995). Cronbach's alpha was above the .7 threshold (Nunnally, 1978) at .862. The correlation matrix obtained from the factor analysis displayed several coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining 71.75% of variance, thus all three items were retained. This analysis is shown in Table 42 below.

Scale Items	Factor 1
I believe that having an accident from speeding is severe	.678
I believe that having an accident from speeding has serious negative consequences	.952
I believe that having an accident from speeding is extremely harmful	.880
1 factor extracted. 13 iterations required KMO = .689 Bartlett's test = 1213.650 df: 3 P= .000	

**Table 42 - Severity EFA**

*6.3.1.7 Response efficacy*

Response efficacy was measured using the three item scale developed by Witte et al (1995). Cronbach's alpha was above the .7 threshold (Nunnally, 1978) at .899. The correlation matrix obtained from the factor analysis displayed several coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining 75.65% of variance, thus all three items were retained. This analysis is shown in Table 43 below.

Scale Items	Factor 1
Obeying the speed limit is effective in preventing accidents	.916
Obeying the speed limit works in preventing accidents	.926
If I obey the speed limit I am less likely to have an accident	.758
1 factor extracted. 8 iterations required KMO = .722 Bartlett's test = 1369.710 df: 3 P= .000	

**Table 43 - Response efficacy EFA**

### 6.3.1.8 Self-efficacy

Self-efficacy was measured using the three item scale developed by Witte et al (1995). Cronbach's alpha was above the .7 threshold (Nunnally, 1978) at .893. The correlation matrix obtained from the factor analysis displayed several coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining 74.03% of variance, thus all three items were retained. This analysis is shown in Table 44 below.

Scale Items	Factor 1
I am able to obey the speed limit to prevent getting having an accident	.823
I have the ability to obey the speed limit to prevent having an accident	.884
I can easily obey the speed limit to prevent having an accident	.873
1 factor extracted. 7 iterations required KMO = .747 Bartlett's test = 1220.151 df: 3 P= .000	

**Table 44 - Self-efficacy EFA**

### 6.3.2 Control variables

#### 6.3.2.1 Attitude to speeding

Attitude to Speeding was measured using the six item scale developed by Lewis et al (2007). Cronbach's alpha was above the .7 threshold (Nunnally, 1978) at .938. The correlation matrix obtained from the factor analysis displayed several coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining 75.52% of variance, thus all six items were retained. This analysis is shown in Table 45 below.

Scale Items	Factor 1
Unacceptable – Acceptable	.871
Foolish- wise	.864
Wrong – right	.866
Unfavourable – favourable	.857
Bad – Good	.899
Risky – safe	.745
1 factor extracted. 4 iterations required KMO = .929 Bartlett's test = 3458.694 df: 15 P= .000	

**Table 45 - Attitude to speeding EFA**

6.3.2.2 *Anxiety sensitivity*

Anxiety Sensitivity was measured using the Anxiety Sensitivity Index scale by Peterson and Heilbronner (1987). The results from the initial analysis in the pattern matrix are shown in table 46 below.

Scale Items	Factor 1	Factor 2	Factor 3	Factor 4
It is important to me not to appear nervous			.620	
When I cannot keep my mind on a task, I worry that I might be going crazy				-.589
It scares me when I feel “shaky” (trembling)		.668		
It scares me when I feel faint		.786		
It is important to me to stay in control of my emotions			.542	
It scares me when my heart beats rapidly	.335		.542	
It embarrasses me when my stomach growls	.363			
It scares me when I am nauseous	.432			
When I notice my heart is beating rapidly, I worry I might have had a heart attack	.601			
It scares me when I become short of breath	.498			
When my stomach is upset I worry that I might be seriously ill	.681			
It scares me when I am unable to keep my mind on a task				-.627
Other people notice when I feel shaky				-.349
Unusual body sensations scare me	.360			
When I am nervous I worry that I might be mentally i'll				-.778
It scares me when I am nervous				-.771
Rotation converged in 13 iterations KMO = .885 Bartlett's test = 3641.060 df: 120 P= .000				

**Table 46 - Anxiety sensitivity EFA iteration 1**

The pattern matrix reveals that the items loaded onto four factors. The item 'It scares me when my heart beats rapidly' loaded onto two factors and therefore was removed from the analysis. The analysis was then re-run and the results are shown in table 47 below.

Scale Items	Factor 1	Factor 2	Factor 3	Factor 4
It is important to me not to appear nervous			.610	
When I cannot keep my mind on a task, I worry that I might be going crazy	.597			
It scares me when I feel "shaky" (trembling)		.649		
It scares me when I feel faint		.759		
It is important to me to stay in control of my emotions			.546	
It embarrasses me when my stomach growls				.402
It scares me when I am nauseous				.493
When I notice my heart is beating rapidly, I worry I might have had a heart attack				.557
It scares me when I become short of breath				.507
When my stomach is upset I worry that I might be seriously i'll				.725
It scares me when I am unable to keep my mind on a task	.616			
Other people notice when I feel shaky	.317			
Unusual body sensations scare me				.380
When I am nervous I worry that I might be mentally i'll	.807			
It scares me when I am nervous	.738			
Rotation converged in 11 iterations KMO = .874 Bartlett's test 3195.772 df: 105 P= .000				

**Table 47 - Anxiety sensitivity EFA iteration 2**

All items loaded onto four factors. Two items loaded onto the third factor; 'It is important to me not to appear nervous' and 'It is important to me to stay in control of my emotions'. These factors tap into the need for individuals to appear in control which isn't theoretically relevant and as such these items were removed. The exploratory factor analysis was then re-run with the retained items and is shown in table 48 below.

Scale Items	Factor 1	Factor 2	Factor 3
When I cannot keep my mind on a task, I worry that I might be going crazy	.634		
It scares me when I feel "shaky" (trembling)		.672	
It scares me when I feel faint		.706	
It embarrasses me when my stomach growls			.351
It scares me when I am nauseous			.488
When I notice my heart is beating rapidly, I worry I might have had a heart attack			.598
It scares me when I become short of breath			.536
When my stomach is upset I worry that I might be seriously ill			.771
It scares me when I am unable to keep my mind on a task	.654		
Other people notice when I feel shaky	.330		
Unusual body sensations scare me			.410
When I am nervous I worry that I might be mentally ill	.779		
It scares me when I am nervous	.773		
Rotation converged in 12 iterations KMO = .884 Bartlett's test 3046.249 df: 78 P= .000			

**Table 48 - Anxiety sensitivity EFA iteration 3**

Analysis of the pattern matrix shows that the item 'Other people notice when I feel shaky' has a low loading at .330. Whilst this is above the threshold of .3, given the other items loading onto this factor are concerning mental anxiety and the need to have an efficient number of items this item was removed and the exploratory factor analysis was re-run as shown in table 49 below.

Scale Items	Factor 1	Factor 2
When I cannot keep my mind on a task, I worry that I might be going crazy	.557	
It scares me when I feel "shaky" (trembling)		.659
It scares me when I feel faint		.829
It embarrasses me when my stomach growls		.378
It scares me when I am nauseous		.591
When I notice my heart is beating rapidly, I worry I might have had a heart attack	.325	.319
It scares me when I become short of breath		.514
When my stomach is upset I worry that I might be seriously ill	.430	
It scares me when I am unable to keep my mind on a task	.660	
Unusual body sensations scare me	.344	.339
When I am nervous I worry that I might be mentally ill	.858	
It scares me when I am nervous	.695	
Rotation converged in 12 iterations KMO = .879 Bartlett's test 2892.036 df: 66 P= .000		

**Table 49 - Anxiety sensitivity EFA iteration 4**

The pattern matrix shows that the items loaded onto two factors, however 'When I notice my heart is beating rapidly, I worry I might have had a heart attack' and 'Unusual body sensations scare me' loaded onto both factors and as such were removed and the exploratory factor analysis was re-run as shown in table 50 below.

Scale Items	Factor 1	Factor 2
When I cannot keep my mind on a task, I worry that I might be going crazy	.589	
It scares me when I feel “shaky” (trembling)		.720
It scares me when I feel faint		.832
It embarrasses me when my stomach growls		.368
It scares me when I am nauseous		.570
It scares me when I become short of breath		.485
When my stomach is upset I worry that I might be seriously ill	.414	
It scares me when I am unable to keep my mind on a task	.671	
When I am nervous I worry that I might be mentally i'll	.828	
It scares me when I am nervous	.710	
Rotation converged in 8 iterations KMO = .849 Bartlett's test 2309.705 df: 45 P= .000		

**Table 50 - Anxiety sensitivity EFA iteration 5**

Analysis of the pattern matrix shows that the items loaded onto two factors. The following items loaded onto factor one and relate to the construct of cognitive anxiety; ‘When I cannot keep my mind on a task, I worry that I might be going crazy’, ‘When my stomach is upset I worry that I might be seriously ill’, ‘It scares me when I am unable to keep my mind on a task’, ‘When I am nervous I worry that I might be mentally ill’ and ‘It scares me when I am nervous’. The items that loaded onto the second factor relate to physical manifestations of anxiety and are ‘It scares me when I feel “shaky” (trembling)’, ‘It scares me when I feel faint’, ‘It embarrasses me when my stomach growls’, ‘It scares me when I become short of breath’. As such, these two factors and associated items are retained and named anxiety sensitivity (mental) and anxiety sensitivity (physical) for efficiency purposes. These items explain 44.86% of variance. The Cronbach’s alpha for anxiety sensitivity (mental) is .802

and the Cronbach's alpha for anxiety sensitivity (physical) is .765, both above the threshold of .7 (Nunnally, 1978).

### 6.3.2.3 *Style of processing*

Style of processing was measured using the scale by Childers et al (1985). As per the instructions of this scale the visual processing items and the verbal processing items were analysed separately. The visual style of processing items were analysed first and the results from the exploratory factor analysis of all the items is shown in table 51 below.

<b>Scale Items</b>	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>
There are some special times in my life that I like to revive by mentally "picturing" just how everything looked.	.589		
When I'm trying to learn something new, I'd rather watch a demonstration than read how to do it.			.511
When I'm trying to learn something new, I'd rather watch a demonstration than read how to do it.			
I like to daydream.		.899	
I generally prefer to use a diagram rather than a written set of instructions.			.473
I like to "doodle".		.377	
I find it helps to think in terms of mental pictures when doing many things.	.548		
After I meet someone for the first time I can usually remember what they look like but not much about them			
When I have forgotten something I frequently try to form a mental "picture" to remember it.	.689		
I prefer activities that don't require a lot of reading.			.579
I seldom daydream.		.686	
My thinking often consists of mental "pictures" or images.	.673		
Rotation converged in 8 iterations KMO = .793			

Bartlett's test = 1847.552

df: 66

$P = .000$

**Table 51 - Visual processing EFA iteration 1**

The pattern matrix shows that two items did not load in the pattern matrix. These were 'When I'm trying to learn something new, I'd rather watch a demonstration than read how to do it' and 'After I meet someone for the first time I can usually remember what they look like but not much about them'. As these items did not load they were removed and the exploratory factor analysis was re-run. The results are shown in table 52 below.

Scale Items	Factor 1	Factor 2	Factor 3
There are some special times in my life that I like to revive by mentally "picturing" just how everything looked.	.582		
When I'm trying to learn something new, I'd rather watch a demonstration than read how to do it.			.561
I like to daydream.		.798	
I generally prefer to use a diagram rather than a written set of instructions.			.566
I like to "doodle".		.373	
I find it helps to think in terms of mental pictures when doing many things.	.529		
When I have forgotten something I frequently try to form a mental "picture" to remember it.	.716		
I prefer activities that don't require a lot of reading.			.439
I seldom daydream.		.746	
My thinking often consists of mental "pictures" or images.	.660		
Rotation converged in 7 iterations KMO = .775 Bartlett's test = 1618.472 df: 45 $P = .000$			

**Table 52 - Visual processing EFA iteration 2**

Analysis of the pattern matrix shows that the items loaded onto three factors. The first factor relates to items that capture the visual processing construct, in other words, the core ability to use mental pictures to aid memory recall and organise activities. The second factor consists of items that relate to daydreaming and doodling. The capacity to daydream is not relevant to present study and doodling loaded weakly onto this factor, so there is no strong theoretical justification underpinning for these items and as such they are identified for removal. The third factor concerns extracting information from visual methods (e.g. diagram or demonstration) and is retained. The exploratory factor analysis was re-run without the items that loaded onto factor two and the results are shown in table 53 below.

Scale Items	Factor 1	Factor 2
There are some special times in my life that I like to revive by mentally “picturing” just how everything looked.	.589	
When I’m trying to learn something new, I’d rather watch a demonstration than read how to do it.		.660
I generally prefer to use a diagram rather than a written set of instructions.		.458
I find it helps to think in terms of mental pictures when doing many things.	.628	
When I have forgotten something I frequently try to form a mental “picture” to remember it.	.679	
I prefer activities that don’t require a lot of reading.		.417
My thinking often consists of mental “pictures” or images.	.665	
Rotation converged in 5 iterations KMO = .816 Bartlett’s test = 1070.657 df: 21 P= .000		

**Table 53 - Visual processing EFA iteration 3**

The retained items loaded onto two factors which explain 41.03% of variance. However whilst Cronbach’s alpha for the items associated with mental pictures was .769 and above

the .7 threshold (Nunnally, 1978), the items associated with visual information had a Cronbach's alpha of .537 and therefore did not meet the appropriate criteria. As such the four mental picture items were retained and the exploratory factor analysis was re-run which is shown in table 54 below.

Scale Items	Factor 1
There are some special times in my life that I like to revive by mentally “picturing” just how everything looked.	.507
I find it helps to think in terms of mental pictures when doing many things.	.719
When I have forgotten something I frequently try to form a mental “picture” to remember it.	.706
My thinking often consists of mental “pictures” or images.	.762
1 Factor Extracted. 7 iterations KMO = .768 Bartlett’s test = 694.097 df: 6 P= .000	

**Table 54 - Visual processing EFA iteration 4**

Analysis of the pattern matrix shows that all four items loaded onto one factor. These items associate with the construct of mental pictures. These results display all coefficients as above 0.3 and as the KMO and Bartlett’s test were both indicative of an appropriate data set. The Cronbach’s alpha for the four visual style of processing items is .769 and above the threshold of .7 (Nunnally, 1978). These items explain 43.37% of variance.

Next the verbal style of processing items were analysed using exploratory factor analysis and the initial results are presented in table 55 below.

Scale Items	Factor 1	Factor 2	Factor 3
I enjoy doing work that requires the use of words			.464
I can never seem to find the right word when I need it		.612	
I do a lot of reading			.671
I think I often use words in the wrong way		.833	
I enjoy learning new words	.929		
I often make written notes to myself			
I like to think of synonyms for words	.424		
I like learning new words	.968		
I prefer to read instructions about how to do something rather than have someone show me			
I spend very little time attempting to increase my vocabulary	.300		
Rotation converged in 6 iterations KMO = .774 Bartlett's test = 1958.159 df: 45 P= .000			

**Table 55 - Verbal processing EFA iteration 1**

The items loaded onto three factors. However, 'I often make written notes to myself' and 'I prefer to read instructions about how to do something rather than have someone show me' did not load onto either factor and as such, were removed from the next iteration of analysis. These results are shown in table 56 below.

Scale Items	Factor 1	Factor 2
I enjoy doing work that requires the use of words	.434	
I can never seem to find the right word when I need it		.720
I do a lot of reading	.359	
I think I often use words in the wrong way		.669
I enjoy learning new words	.953	
I like to think of synonyms for words	.530	
I like learning new words	.945	
I spend very little time attempting to increase my vocabulary	.453	
Rotation converged in 5 iterations KMO = .776 Bartlett's test = 1893.751 df: 28 P= .000		

**Table 56 - Verbal processing EFA iteration 2**

Analysis of the pattern matrix shows that the items load on to two factors. The five items that load onto the first factor items are specifically to do with the use of words, yet, the items loading onto factor two are related to not being able to use words correctly, which is not theoretically relevant to this study. As such, these items were removed and the exploratory factor analysis was re-run, which is shown in table 57 below.

Scale Items	Factor 1
I enjoy doing work that requires the use of words	.546
I do a lot of reading	.469
I enjoy learning new words	.882
I like to think of synonyms for words	.528
I like learning new words	.867
I spend very little time attempting to increase my vocabulary	.522
1 factor extracted. 6 iterations required. KMO = .769 Bartlett's test = 1549.249 df: 15 P= .000	

**Table 57 - Verbal processing EFA iteration 3**

Analysis of the pattern matrix shows that the items loaded onto one factor. The following items loaded onto factor one which were; 'I enjoy learning new words', 'I like to think of synonyms for words', 'I like learning new words' and 'I spend very little time attempting to increase my vocabulary'. As such, these items are retained and named verbal style of processing. These items explain 43.28 % of variance. The Cronbach's alpha for anxiety sensitivity mental is .791, above the threshold of .7 (Nunnally, 1978).

#### 6.3.2.4 *Construal*

Construal was measured using the scale by Singelis (1994). As per the instructions of this scale the independent items and the interdependent items were analysed separately. The independent items were analysed first and the results from the exploratory factor analysis of all the items is shown in table 58 below.

Scale Items	Factor 1	Factor 2	Factor 3	Factor 4
My personal identity, independent of others is very important to me	.690			
I enjoy being unique and different from others	.676			
Being able to take care of myself is a primary concern for me				.543
I take responsibility for my own actions	.310			
Speaking up at work/ task group/ class is not a problem for me			.496	
Having a lively imagination is important to me	.443			
I'd rather say "no" directly then risk being misunderstood			.385	
I am comfortable being singled out for praise or rewards			.337	
I am the same person at home that I am at work/ university		-.917		
I act the same way no matter who I am with		-.779		
I feel comfortable using someone's first name soon after I meet them, even when they are much older than I am			.477	
I prefer to be direct and forthright when dealing with people I have just met			.686	
I value being in good health above everything				.665
Rotation converged in 9 iterations KMO = .766 Bartlett's test = 1979.780 df: 78 P= .000				

**Table 58 - Independent items EFA iteration 1**

The factor analysis demonstrates that the items loaded onto four factors. Considering the constructs, factor two is concerned with consistency in context or setting, which is not

theoretically relevant to this study. Factor three includes items that concern being direct in communication which is also not theoretically relevant for this study. However, the items that loaded onto factor one concern the central construct of internal abilities, thoughts and feelings and as such these items were retained. The items that loaded onto factor four concern self-protection which is theoretically relevant and therefore these items were also retained. The exploratory factor analysis was then re-run which is presented in table 59 below.

<b>Scale Items</b>	<b>Factor 1</b>	<b>Factor 2</b>
My personal identity, independent of others is very important to me	.644	
I enjoy being unique and different from others	.760	
Being able to take care of myself is a primary concern for me		.505
I take responsibility for my own actions	.397	
Having a lively imagination is important to me	.510	
I value being in good health above everything		.701
Rotation converged in 6 iterations KMO = .771 Bartlett's test = 742.522 df: 15 P= .000		

**Table 59 - Independent items EFA iteration 2**

The results from the pattern matrix show that the items loaded onto two factors. Factor one concerns the core construct of individuals internal abilities and had a Cronbachs alpha of .704 which is above the .7 threshold (Nunnally, 1978). However, the second factor which concerns self-protection had a Cronbach's alpha of .555 which does not reach the .7 (Nunnally, 1978) threshold. Therefore these items were removed and the exploratory factor analysis was re-run. The results are shown in table 60 below.

<b>Scale Items</b>	<b>Factor 1</b>
My personal identity, independent of others is very important to me	.731
I enjoy being unique and different from others	.642
I take responsibility for my own actions	.544
Having a lively imagination is important to me	.539
1 factor extracted. Converged in 9 iterations KMO = .730 Bartlett's test = 474.012 df: 6 P= .000	

**Table 60 - Independent items EFA iteration 3**

Analysis of the pattern matrix identifies that four items load onto one factor. Overall, 38.30% of variance is explained by these factor loadings. These results display all coefficients as above 0.3 and as the KMO and Bartlett's test were both indicative of an appropriate data set. The Cronbach's alpha is .704, above the threshold of .7 (Nunnally, 1978). The interdependent items were then subject to exploratory factor analysis which is presented in table 61 below.

Scale Items	Factor 1	Factor 2
My relationships with those in my group are more important than my personal accomplishments	.611	
My happiness depends on the happiness of those in my group	.721	
I am careful to maintain harmony in my group	.502	
I would sacrifice my self-interests for the benefit of the group	.634	
I will stay in a group if they need me, even if I'm not happy with the group	.500	
I respect the decisions made by my group		.517
If my brother or sisters fail, I feel responsible		
I have respect for authority figures with whom I interact		.750
I respect people who are modest about themselves		.527
Even when I strongly disagree with group members I avoid an argument		
Rotation converged in 5 iterations KMO = .780 Bartlett's test = 1272.523 df: 45 P= .000		

**Table 61 - Interdependent items EFA Iteration 1**

Analysis of the pattern matrix shows that 'If my brother or sisters fail, I feel responsible' and 'Even when I strongly disagree with group members I avoid an argument' did not load onto either of the two factors and therefore these items were removed and the analysis was re-run. The results are shown in table 62 below.

Scale Items	Factor 1	Factor 2
My relationships with those in my group are more important than my personal accomplishments	.604	
My happiness depends on the happiness of those in my group	.727	
I am careful to maintain harmony in my group	.464	
I would sacrifice my self-interests for the benefit of the group	.626	
I will stay in a group I they need me, even if I'm not happy with the group	.458	
I respect the decisions made by my group		.533
I have respect for authority figures with whom I interact		.743
I respect people who are modest about themselves		.538
Rotation converged in 5 iterations KMO = .776 Bartlett's test = 1124.380 df: 28 P= .000		

**Table 62 - Interdependent items EFA iteration 2**

The items that load onto factor one all concern group belonging, fitting in and relationships which are core to the interdependent construct. The three items that load onto the second factor concern occupying ones proper place and engaging in appropriate action. The Cronbach's alpha for the first factor is .735 and above the .7 threshold (Nunnally, 1978). However, the Cronbach's alpha for the second factor is .639 which does not reach the required .7 threshold (Nunnally, 1978). The items that loaded onto the second factor were removed and the analysis was re-run. The results are shown in table 63 below.

Scale Items	Factor 1
My relationships with those in my group are more important than my personal accomplishments	.555
My happiness depends on the happiness of those in my group	.666
I am careful to maintain harmony in my group	.575
I would sacrifice my self-interests for the benefit of the group	.688
I will stay in a group I they need me, even if I'm not happy with the group	.512
1 Factor extracted. 6 iterations required KMO = .759 Bartlett's test = 684.995 df: 10 P= .000	

**Table 63 - Interdependent items EFA iteration 3**

Analysis of the pattern matrix identifies that five items load onto one factor. Overall, 36.35% of variance is explained by these factor loadings. These results display all coefficients as above 0.3 and as the KMO and Bartlett's test were both indicative of an appropriate data set. The Cronbach's alpha is .735 above the threshold of .7 (Nunnally, 1978).

#### 6.3.2.5 *Perspective taking*

Perspective taking was measured using the scale by **Davis (date)**. All the items for the scale were entered into exploratory factor analysis and the results are presented in table 64 below.

Scale Items	Factor 1	Factor 2
Before criticising somebody, I try to imagine how I would feel in their place	.733	
If I'm sure I'm right about something, I don't waste much time listening to other peoples arguments		.500
I sometimes try to understand my friends better by imagining how things look from their perspective	.780	
I believe there are two sides to every question and ty to look at them both	.606	
I sometimes find it difficult to see things from the "other guy's" point of view		.429
I try to look at everybody's side of a disagreement before I make a decision	.652	
When I'm upset at someone, I usually try to "put myself in his shoes" for a while	.704	
Rotation converged in 4 iterations KMO = .843 Bartlett's test = 1338.049 df: 21 P= .000		

**Table 64 - Perspective taking items EFA iteration 1**

The perspective taking items loaded onto two factors. 'If I'm sure I'm right about something, I don't waste much time listening to other peoples arguments' and 'I sometimes find it difficult to see things from the "other guy's" point of view' both loaded onto the second factor and concern other individuals points of view. These items are not theoretically relevant and as such were removed and the analysis was run again. The results are presented in table 65 below.

<b>Scale Items</b>	<b>Factor 1</b>
Before criticising somebody, I try to imagine how I would feel in their place	.713
I sometimes try to understand my friends better by imagining how things look from their perspective	.759
I believe there are two sides to every question and try to look at them both	.677
I try to look at everybody's side of a disagreement before I make a decision	.722
When I'm upset at someone, I usually try to "put myself in his shoes" for a while	.660
1 Factor extracted. 6 iterations required KMO = .832 Bartlett's test = 1190.059 df: 10 P= .000	

**Table 65 - Perspective taking items EFA iteration 2**

Analysis of the pattern matrix identifies that five items load onto one factor. Overall, 49.99% of variance is explained by these factor loadings. These results display all coefficients as above 0.3 and as the KMO and Bartlett's test were both indicative of an appropriate data set. The Cronbach's alpha is .829 above the threshold of .7 (Nunnally, 1978).

#### 6.3.2.6 *Empathetic concern*

Empathetic concern was measured using the scale by Davis (1980). All the items for the scale were entered into exploratory factor analysis and the results are presented in table 66 below.

Scale Items	Factor 1	Factor 2
When I see someone being taken advantage of, I feel kind of protective toward them	.499	
When I see someone being treated unfairly, I sometimes don't feel very much pity for them	-.775	
I often have tender, concerned feelings for people less fortunate than me	.758	
I would describe myself as a pretty soft-hearted person		-.615
Sometimes I don't feel sorry for other people when they are having problems		.666
Other people's misfortunes do not usually disturb me a great deal		.603
I am often quite touched by things that I see happen	.671	
Rotation converged in 5 iterations KMO = .818 Bartlett's test = 1445.304 df: 21 P= .000		

**Table 66 - Empathetic concern items EFA iteration 1**

Analysis of the pattern matrix shows that the items 'When I see someone being treated unfairly, I sometimes don't feel very much pity for them' and 'I would describe myself as a pretty soft-hearted person' had negative loadings. As such, these two items were removed and the analysis was repeated. The results are shown in table 67 below.

Scale Items	Factor 1
When I see someone being taken advantage of, I feel kind of protective toward them	.629
I often have tender, concerned feelings for people less fortunate than me	.721
Sometimes I don't feel sorry for other people when they are having problems	.483
Other people's misfortunes do not usually disturb me a great deal	.640
I am often quite touched by things that I see happen	.671
1 factor extracted. 6 iterations required KMO = .772 Bartlett's test = 841.586 df: 10 P= .000	

**Table 67 - Empathetic concern items EFA iteration 2**

Analysis of the pattern matrix identifies that five items load onto one factor. Overall, 40.19% of variance is explained by these factor loadings. These results display all coefficients as above 0.3 and as the KMO and Bartlett's test were both indicative of an appropriate data set. The Cronbach's alpha is .756 above the threshold of .7 (Nunnally, 1978).

#### 6.3.2.7 *Message confound*

Message confound was measured using the four item scale developed by Witte et al (1995). Cronbach's alpha was above the .7 threshold (Nunnally, 1978) at .814. The correlation matrix obtained from the factor analysis displayed several coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining 53.01% of variance, thus all four items were retained. This analysis is shown in Table 68 below.

Scale Items	Factor 1
The message was clearly written	.749
I clearly understood this message	.721
I learned a lot about speeding from this message	.624
The quality of the arguments in the message were good	.763
1 factor extracted. 6 iterations required KMO = .669 Bartlett's test = 1213.747 df: 6 P= .000	

**Table 68 - Message confound EFA**

#### 6.3.2.8 Perceived manipulation

Perceived manipulation was measured using the four item scale developed by Witte et al (1995). Cronbach's alpha was above the .7 threshold (Nunnally, 1978) at .825. The correlation matrix obtained from the factor analysis displayed several coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining 54.77% of variance, thus all four items were retained. This analysis is shown in Table 69 below.

Scale Items	Factor 1
The message was manipulative	.762
The message was misleading	.612
The message tried to manipulate me	.835
This message was exploitative	.734
1 factor extracted. 8 iterations required KMO = .782 Bartlett's test = 1003.803 df: 6 P= .000	

**Table 69 - Perceived manipulation EFA**

6.3.2.9 *Message derogation*

Message derogation was measured using the four item scale developed by Witte et al (1995). Cronbach's alpha was above the .7 threshold (Nunnally, 1978) at .933. The correlation matrix obtained from the factor analysis displayed several coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining 78.35% of variance, thus all four items were retained. This analysis is shown in Table 70 below.

Scale Items	Factor 1
This message was exaggerated	.849
This message was distorted	.785
This message was overblown	.948
This message was overstated	.947
1 factor extracted. 5 iterations required KMO = .834 Bartlett's test = 2543.192 df: 6 P= .000	

**Table 70 - Message derogation EFA**

## **6.4 Analysing social desirability bias**

In order to provide one indication of validity, each item of the existing multi-item scales employed in the study was examined for the effects of social desirability bias. Social desirability can influence results as respondents may select items of high social desirability and not select items of low social desirability regardless of whether the item describes their actual behaviour (Edwards, 1990). Strong correlations between social desirability bias and another variable are likely to indicate either self-deception about, or deliberate misrepresentation of respondent's thoughts, feelings and behaviours (Borkenau and Ostendorf, 1989).

Social desirability bias was measured using a five item social desirability bias measure developed by Hays, Hayashi and Stewart (1989) as a reliable short version of the longer thirty three item (and hence more cumbersome) Marlowe –Crowne scale (Crowne and Marlowe, 1960). In order to detect the potential presence of social desirability bias, each scale was correlated with the social desirability bias measure, with large and significant correlations taken as indications that the scale was influenced by social desirability bias. According to the guidelines developed by Cohen (1988), for a small correlation, the correlation coefficients range from .10 to .29; for a medium correlation from .30 to .49; and for a strong correlation from .50 to 1. If scales are found to be correlated with social desirability, the recommended procedure is to transform the scales against social desirability bias using the unstandardised regression residual (as discussed in section 6.3.6). The mediating, control and dependent variables were analysed in turn and the results are presented in the following three sections.

### **6.4.1 Mediating variables**

The mediating emotion and cognition variables were analysed using Pearson correlation with the social desirability bias measure. The results are presented in table 71 below.

<b>Construct</b>	<b>Pearson Correlation</b>	<b>Sig. (two tailed)</b>
Anger	-.20	.600
Fear	-.097*	.011
Disgust	-.087*	.024
Uncomfortable	-.061	.114
Worry	-.074	.054
Guilt	-.008	.831
Relief	-.082*	.032
Mental Imagery	-.011	.772
Defensive Avoidance	-.090*	.018
Susceptibility	.003	.930
Severity	.098*	.010
Response Efficacy	.145**	.000
Self-Efficacy	.107**	.005
Anticipated Hope	.083*	.030
Anticipated Delight	.074	.052
Anticipated Relief	.018	.642
Anticipated Depressed	-.016	.684
Anticipated Fear	.029	.452
Anticipated Ashamed	-.003	.928
Anticipated Humiliation	.019	.619
Anticipated Responsible	.095*	.013
Anticipated Regret	.096*	.012

\*\* Correlation is significant at the 0.01 level (2 tailed)

\*Correlation is significant at the 0.05 level (2 tailed)

**Table 71 - Correlations between mediating variables and social desirability bias**

As can be seen from these results, no scales reached a medium or strong correlation with social desirability bias. However the scales for fear, disgust, relief, defensive avoidance, severity, response efficacy, self-efficacy and anticipated responsible and anticipated regret all exhibited a small significant correlation with social desirability bias.

#### 6.4.2 Control variables

The control variables were analysed using Pearson correlation with the social desirability bias measure. The results are presented in table 72 below.

Construct	Pearson Correlation	Sig. (two tailed)
Graphicness	-.044	.247
Attitude to Speeding	-.173**	.000
Anxiety Sensitivity Mental	-.106**	.006
Anxiety Sensitivity Physical	-.105**	.006
Style of Processing Visual	.046	.234
Style of Processing Verbal	-.059	.125
Independent Construal	.091*	.018
Interdependent Construal	.104**	.007
Perspective Taking	.174**	.000
Empathetic Concern	.159**	.000
Confound	.084*	.029
Perceived Manipulation	-.119**	.002
Message Derogation	-.139**	.000

\*\* Correlation is significant at the 0.01 level (2 tailed)

\*Correlation is significant at the 0.05 level (2 tailed)

**Table 72 - Correlations between control variables and social desirability bias**

As can be seen from these results, no scales reached a medium or strong correlation with social desirability bias. However the scales for attitude to speeding, anxiety sensitivity

mental, anxiety sensitivity physical, independent construal, interdependent construal, perspective taking, empathetic concern, message confound, perceived manipulation, message derogation all exhibited a small significant correlation with social desirability bias.

### 6.4.3 Dependent variables

The dependent variables were analysed using Pearson correlation with the social desirability bias measure. The results are presented in table 73 below.

Construct	Pearson Correlation	Sig. (two tailed)
Behavioural Intention	-.120**	.002
Behavioural Expectation	-.124**	.001
Behaviour Prediction	-.113**	.003

\*\* Correlation is significant at the 0.01 level (2 tailed)

\*Correlation is significant at the 0.05 level (2 tailed)

**Table 73 - Correlations between dependent variables and social desirability bias**

As can be seen from these results, no scales reached a medium or strong correlation with social desirability bias. However, all the dependent variable measures, behaviour intention, behaviour expectation and behaviour prediction all exhibited a small significant correlation with social desirability bias.

### 6.3.4 Dealing with social desirability bias through transformation

One method of removing the contamination of social desirability bias in the measures is to delete entirely the specific items contaminated by social desirability bias and therefore remove the social desirability bias present in the scale (Spector, 1992). This method is disadvantageous because it reduces the number of items available to measure the construct. When evaluating existing scales this has the potential to be problematic given that item numbers are already low due to the purification procedures undertaken by the original scale developers. The measures of attention to message and attention to visual, for

example, each only have three items. The reduction of item numbers can lead to lower reliability and an overall lowering of variance captured by measures (Kline, 2000).

In order to avoid such issues, when evaluating existing measures, scales / items<sup>6</sup> correlated with social desirability bias were not deleted outright. Instead they were transformed by regressing them against social desirability bias and using the unstandardised regression residual, rather than the raw scale / item score (Ganster, Hennessey and Luthans, 1983). This procedure enabled the removal of variance in the measures that was attributable to contamination by social desirability bias.

### **Descriptive analysis of individual scales**

Following the construction of the measures based on existing scales, it was also necessary to examine the characteristics of the final scales. This was necessary to determine whether the measures were appropriate for further use in hypothesis testing. The descriptive analysis focused on the distribution of the measures, including a search for outliers and statistical testing of the distribution.

Given the large sample size for this study (681) the Kolmogorov-Smirnoff (KS) test was not used to assess the normality of the distribution. The KS statistic is a test of the hypothesis that the distribution differs from a normal distribution. A non-significant KS test indicates that the observed distribution approximates normality (Hair et al, 2006). However, for large samples (200 or more), it is more important to look at the value of the skewness and kurtosis statistics rather than examine the significance of the KS test (Field, 2005, p 72) as the KS test is extremely sensitive to minor departures from normality (Sharma, 1996) and slight violating of the assumption of normality is quite common in larger samples (Pallant, 2005, p57).

The skewness value provides an indication of the symmetry of the distribution. Kurtosis, on the other hand, provides information about the “peakedness” of the distribution. If the distribution is perfectly normal the values of the skewness and kurtosis would be zero (Pallant, 2005, p51-52). Positive skewness values indicate positive skew (scores clustered to the left at the low values). Negative skewness values indicate a clustering of scores at

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<sup>6</sup> Single items were transformed where they were the measurement method for a given construct (e.g. behavioural intention). Otherwise, the scale as a whole was transformed rather than individual items.

the high end (right hand-side of a graph) (Pallant, 2005, p51-52). Positive kurtosis values indicate that the distribution is rather peaked or “leptokurtic” (clustered in the centre). Kurtosis values below 0 indicate a distribution that is relatively flat or “platykurtic” (too many cases in the extremes). Kurtosis can result in an underestimate of the variance but this risk is reduced with a large sample (which is again defined as a sample of 200 or more; see Tabachnick and Fidell, p 75). The skewness and kurtosis for each of the scales tapping into the constructs are presented in table 74 below.

<b>Scale</b>	<b>Skewness</b>	<b>Kurtosis</b>
Anger	.661	-.599
Fear	.541	-.816
Disgust	.927	-.184
Uncomfortable	-.109	-1.276
Worry	.656	-.725
Guilt	1.455	1.735
Relief	2.887	8.258
Mental Imagery	-.160	-.941
Defensive avoidance	-.192	-.622
Susceptibility	.064	-.813
Severity	-1.187	1.555
Response efficacy	-.859	.209
Self-efficacy	-1.080	.922
Anticipated Hope	-.360	-.897
Anticipated delighted	-.270	-1.008
Anticipated relieved	-.734	-.608
Anticipated depressed	-.885	-.240
Anticipated fearful	-.910	-.292
Anticipated ashamed	-1.353	.862
Anticipated humiliated	-.723	-.596
Anticipated responsible	-1.732	2.758
Anticipated regret	-1.771	2.513
Attitude to Speeding	.695	.554
Anxiety Sensitivity Mental	.559	-.157
Anxiety Sensitivity physical	-.183	-.411
Style of Processing visual	-.191	.062
Style of Processing verbal	.189	-.298

Scale	Skewness	Kurtosis
Independent	-1.042	2.543
Interdependent	-.365	.346
Perspective Taking	-.763	1.396
Empathetic Concern	-.586	.901
Message confound	-.102	-.296
Perceived Manipulation	.187	-.429
Message derogation	.582	-.111
Behavioural Intention	1.106	.423
Behavioural Expectation	.574	-.787
Behaviour Prediction	1.050	1.262

**Table 74 - Skewness and Kurtosis for the scales**

It can be seen that skewness and kurtosis are present, however given the large sample size none of these values are cause for concern and there are no significant concerns about the normality of the variables and the scales are retained for future analysis. The correlation coefficients for the present study are presented in appendix 6.1. As expected, the table reveals a number of significantly correlated variables, although there is no evidence of correlations high enough to be concerned about multi-collinearity at this point (Field, 2005).

## 6.5 Chapter summary

This chapter provided a descriptive analysis of the key variables of interest in the study. First the data obtained about the sample was described in terms of the characteristics of the sample. This chapter has also described the rigorous statistical analysis which was undertaken in order to evaluate the reliability and validity of the existing measures utilised in the present study. These statistical tests included assessments of internal consistency and exploratory factor analysis.

These tests were performed using the IBM SPSS Statistics 20 software package. From the procedures undertaken all item and factor structures provided statistically acceptable values. As such, there were no concerns regarding the use of the data collected for the purpose of testing the theoretical model hypothesised in the present study. The following chapter (7) presents the process and results of the hypothesis testing.



## Chapter 7 – Results

Having developed a conceptual model and hypotheses in chapter 4, explained the methodology in chapter 5 and described the data in chapter 6; this chapter presents the results of the hypothesis testing. To be more specific, the characteristics of the sample of participants and responses to variables of interest have been described and examined in the previous chapter (chapter 6). The focus of this chapter is the analysis methods employed to examine the conceptual model and associated hypotheses developed in Chapter 4. To test the present study's hypotheses, the data generated from the web experiment is used. As specified in Chapter 5, a 2 X 2 X 2 between subjects randomised experiment was conducted to generate the data for hypothesis testing. The sample size for each of the eight experimental conditions is summarised in table 75 below.

<b>Experimental Condition</b>	<b>Message Frame</b>	<b>Message Direction</b>	<b>Graphic Image</b>	<b>Sample Size</b>
1	Loss Avoidance	Other	Graphic	85
2	Loss Avoidance	Other	No Graphic	87
3	Loss Avoidance	Self	Graphic	91
4	Loss Avoidance	Self	No Graphic	83
5	Loss	Other	Graphic	86
6	Loss	Other	No Graphic	83
7	Loss	Self	Graphic	84
8	Loss	Self	No Graphic	82
<b>Total</b>				<b>681</b>

**Table 75 - Sample size for each experimental group**

This chapter comprises several sub-sections. Section 7.1 examines the results of the manipulation checks employed to verify the suitability of the experimental stimuli and the manipulation of the independent variables. Section 7.2 details the method for analysis, namely three way analyses of covariance (ANCOVAs). Section 7.3 is a detailed presentation of the results of the hypothesis testing. For purposes of clarity, the results are presented in subsections arranged according to the dependent variable under consideration

(e.g. immediate emotions, anticipated emotions, cognitive appraisals and elaboration) and it is clearly stated which hypotheses are tested in each sub section. Section 7.4 summarises and presents a brief discussion of the results, in anticipation of a fuller discussion in Chapter 8.

## **7.1 Manipulation checks**

Prior to conducting the required analysis to test the hypotheses developed in Chapter 4, a series of manipulation checks were carried out. To assess the effectiveness of the threat appeal intrinsic message characteristic manipulations (i.e. message frame, message direction and use of graphic image), a series of one-way ANOVAs of the eight experimental conditions (as outlined in table 7.1) and manipulation check measures as identified in section 5.4 and 5.5.

First, a one way ANOVA was conducted to examine the impact of the experimental conditions of loss versus loss avoidance framed messages on subjects' perceptions of loss. Participants were randomly assigned to either one of four treatments that used the loss frame or one of four treatments that used the loss avoidance frame as per the experimental conditions presented in table 7.1. Although Levene's test was significant and thus the homogeneity assumption was violated, the Welch's robust test of equality of means showed a significant difference across the frames ( $F= 7.648, p<.000$ )<sup>7</sup>. The results show a statistically significant effect of the loss versus avoidance of loss experimental condition on perception of message frame in the expected direction. Specifically, as shown in table 76, the mean statistics demonstrate that loss avoidance frames have increased perceptions of loss avoidance and the loss framed messages caused lower perceptions of loss avoidance. These results confirm that the message frame manipulations were perceived by respondents as intended.

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<sup>7</sup> According to Field (2009) Welch's robust test should be reported when the assumption for homogeneity of an ANOVA is violated.

Experimental Conditions	Perception of loss avoidance mean	Perception of loss avoidance standard deviation
1 (Graphic, Loss Avoidance, Other)	4.26	2.28
2 (No Graphic, Loss Avoidance, Other)	4.57	1.99
3 (Graphic, Loss Avoidance, Self)	4.38	2.41
4 (No Graphic, Loss Avoidance, Self)	4.83	1.97
5 (Graphic, Loss, Other)	3.01	2.06
6 (No Graphic, Loss, Other)	3.52	1.96
7 (Graphic, Loss, Self)	3.56	2.46
8 (No Graphic, Loss, Self)	3.68	2.26

**Table 76 - Perception of loss means**

A one way ANOVA was also conducted to explore the impact of the experimental conditions of self versus other direction of message on subjects' perceptions of the message direction. Again, participants were randomly assigned to either one of four treatments that used the self-frame or one of four treatments that used the other frame, as presented in table 7.1. In this case, the homogeneity assumption was met ( $p > .05$  for Levene's test). The results show a statistically significant effect of the self versus other experimental condition on subjects' perception of direction of message ( $F(7,673) = 22.557, p = .000$ ), in the expected direction. As shown in the table 77, the mean statistics demonstrate that other directed messages were perceived to be concerning others (as per the bipolar scale) and the self-directed messages perceived to be about the self. These results confirm that the message frame manipulations were perceived by respondents as intended.

Experimental Conditions	Direction mean	Direction standard deviation
1 (Graphic, Loss Avoidance, Other)	5.15	2.00
2 (No Graphic, Loss Avoidance, Other)	5.26	1.62
3 (Graphic, Loss Avoidance, Self)	3.49	1.96
4 (No Graphic, Loss Avoidance, Self)	3.39	1.83
5 (Graphic, Loss, Other)	5.15	1.85
6 (No Graphic, Loss, Other)	5.23	1.77
7(Graphic, Loss, Self)	3.39	1.97
8 (No Graphic, Loss, Self)	3.30	1.94

**Table 77 - Message direction means**

As a final manipulation check, a one way ANOVA was conducted to explore the impact of the experimental conditions of graphic versus non-graphic images on subjects' perceptions of graphicness. Participants were randomly assigned to either one of four treatments that used the graphic image or one of four treatments that used the non-graphic image as presented in table 7.1. The homogeneity assumption was met ( $p > .05$  for Levene's test). The results of the manipulation check show a statistically significant effect of the graphic versus non-graphic experimental condition on subjects' perception of graphicness ( $F(7,673) = 24.152, p = .000$ ), in the expected direction. As shown in table 78, the means demonstrate that graphic images were perceived to have increased perceptions of graphicness, and non-graphic images caused lower perceptions of graphicness, across the sample. These results confirm that the graphicness manipulations were perceived by respondents as intended.

Experimental Conditions	Graphicness mean	Graphicness Standard Deviation
1 (Graphic, Loss Avoidance, Other)	4.80	1.65
2 (No Graphic, Loss Avoidance, Other)	3.20	1.46
3 (Graphic, Loss Avoidance, Self)	4.44	1.64
4 (No Graphic, Loss Avoidance, Self)	2.88	1.24
5 (Graphic, Loss, Other)	4.36	1.47
6 (No Graphic, Loss, Other)	3.31	1.40
7(Graphic, Loss, Self)	4.29	1.38
8 (No Graphic, Loss, Self)	2.69	1.38

**Table 78 - Use of graphic image means**

The results of the manipulation checks above (as well as the pre-testing process reported in Chapter 5) indicate that the manipulations of the intrinsic message characteristics contained in the threat appeal stimuli act as intended, and were perceived as such by the sample used to test the hypothesized theoretical model. As such, the stimuli were deemed to be appropriate and focus now moves on to testing of the research hypotheses. Prior to presenting the results of the hypothesis testing (in section 7.3) a justification for the method of data analysis utilised is presented in section 7.2 below.

## **7.2 ANCOVA**

In chapter 4, a comprehensive set of research hypotheses was developed to test the novel conceptual framework developed in the present thesis, which examines emotional, cognitive and behavioural responses to threat appeals. Given the research design (i.e. a randomised experiment), the hypothesised relationships contained in the model, and the large number of variables under examination, the most appropriate statistical technique is a series of three way factorial ANCOVAs. Importantly, given the 2x2x2 between subjects design (as described in chapter 5), ANCOVA allows for an examination of the effects of a) individual intrinsic message characteristics (message frame, message direction and use of graphic image), as well as b) the interactions between these independent variables, upon the hypothesised dependent variables of interest. This is important, because a number of hypotheses specifically concern interactions between the treatments, and coupled with an

experimental design such as that used herein, ANCOVA is a powerful tool to test such hypotheses. Further, covariate analysis is particularly appropriate because it allows for a) the statistical control of covariates as control variables, and in the same way b) the incorporation of the mediating variables in the proposed conceptual model (Pallant, 2007). Indeed, given the large number of variables and hypothesised relationships, and the large sample size of the present study, other methods of statistical analysis are generally precluded. Interestingly, Iacobucci (2008 p. 5) suggests that in cases where an experiment has been conducted (such as the present case), that specific analyses predicated on uncovering mediation are unnecessary, due to their reliance on correlational data. Certainly, this is the case in a general sense, and the ANCOVA approach taken here follows from Iacobucci's (2008) recommendations, in that the key independent variables are manipulated, and the specific hypotheses regarding their effects on subjects' response variables (i.e. immediate emotion, anticipated emotion and cognition) are tested by ANCOVA. However, it remains relevant to explore the pattern of how those key response variables appear to influence key behaviour change variables, and in doing so, ANCOVA's are also conducted, using the response variables as covariates, and the intrinsic message characteristics as independent variables. This approach strengthens the ability of the present study to determine how the intrinsic message characteristics that can be manipulated in a threat appeal may feed through to ultimate behaviour change – even though no direct relationships between those intrinsic message characteristics and behavioural variables are hypothesised in this study. In fact, as shall be seen, the analysis in this way uncovers a number of key issues that future research into threat appeals must take into account, and provides very strong support to the contentions made in the present thesis that many of the assumptions inherent to existing threat appeals work are unsound.

The use of ANCOVA (and its simpler cousin ANOVA) is common across the threat appeals literature (e.g. Passyn and Sujana, 2006; Lewis et al, 2013; Block, 2005; Argrawal and Duhachek, 2010). However, before it can be confidently used, it requires the satisfaction of a number of assumptions about the data. These assumptions are summarised below (Field, 2009; Pallant, 2007), along with the specific section of the thesis where they are discussed. Indeed, many of them have been covered in earlier chapters of the present thesis, but a number of key assumptions remain in need of assessment. Specifically, the assumptions necessary for an ANCOVA are;

1. Measurement of the covariates as part of the research design (as presented in chapters 4 and 5)

2. Selection of the most reliable measures of the covariates (which are presented in chapter 5)
3. Establishment of correlations between covariates (as undertaken in chapter 6)
4. Identification of a linear relationship between variables and distribution of scores (as presented in chapter 6)
5. Ascertaining there is no interaction between the covariate(s) and the experimental manipulation (i.e. in this case the threat appeal message characteristics). This is achieved through a check of the homogeneity of regression slopes (see below).

For reasons of clarity, a full analysis of the homogeneity of regression slopes is presented in appendix 7.1. In brief however, all significance values for the relevant tests are greater than .05, and as such the assumption of the homogeneity of regression slopes has not been violated. As such, the ANCOVA analysis can proceed.

### **7.3 Hypothesis testing**

This section of chapter 7 presents the results of the hypotheses testing, commencing with the results of the factorial ANCOVAs concerning the effects of threat appeal intrinsic message characteristics on immediate emotions, with control covariates (presented in section 7.3.1). Section 7.3.2 then presents the results of factorial ANCOVAs that identify the effects of threat appeal intrinsic message characteristics on anticipated emotions, with control covariates. Section 7.3.3 presents the results of factorial ANCOVAs concerning the effects of threat appeal intrinsic message characteristics on cognitive appraisals, with control covariates. Section 7.3.4 presents the results of factorial ANCOVAs demonstrating the effects of intrinsic message characteristics on elaboration, with control covariates. Given the design of the theoretical model as shown in chapter 4, it could be said that these three sections present the most critical hypotheses tests from the perspective of Iacobucci (2008). However, as previously discussed, additional insight can be gained from exploring the influences of the response variables explored in sections 7.3.1 – 7.3.4 on key behavioural variables. As such, Section 7.3.5 presents the results of factorial ANCOVAs that examine the influence of threat appeal intrinsic message characteristics on behavioural intention, with the covariates of anticipatory and anticipated emotions, cognitive appraisals and elaboration and controls. Section 7.3.6 presents the results of factorial ANCOVAs that examine the influence of threat appeal intrinsic message characteristics on behavioural

expectation, with the covariates of anticipatory and anticipated emotions, cognitive appraisals and elaboration and controls. Finally, Section 7.3.7 presents the results of factorial ANCOVAs that examine the influence of threat appeal intrinsic message characteristics on behavioural decision, with the covariates of anticipatory and anticipated emotions, cognitive appraisals and elaboration and controls.

A key point to note in the design of the ANCOVA analysis is the coding for the independent variables. Specifically, there were 8 individual treatments, in a 2x2x2 factorial design, which was intended to allow the exploration of interactions between the specific independent variables, as well as their individual effects. As such, each specific treatment group was coded as either a 0 or 1 on three new variables created in the data file, depending on the level of each treatment for that condition. The coding scheme is shown in table 79, and as such, it can be seen that any given experimental group can score either a 0 or 1 on each treatment. For example, the 'low graphic', 'loss', 'self' treatment group scores an 0 on the graphicness variable, a 0 on the frame variable, and a 0 on the direction variable. This method of treatment coding allows the individual treatment effects, as well as interactions, to be explored. However, it does result in the creation of a large set of results for each ANCOVA analysis, which can prove difficult to extract key points from, and this is discussed subsequently.

Experimental Conditions	Message Frame	Message Frame Code	Message Direction	Message Direction Code	Graphic Image	Graphic Image Code
1	Loss Avoidance	1	Other	1	Graphic	1
2	Loss Avoidance	1	Other	1	No Graphic	0
3	Loss Avoidance	1	Self	0	Graphic	1
4	Loss Avoidance	1	Self	0	No Graphic	0
5	Loss	0	Other	1	Graphic	1
6	Loss	0	Other	1	No Graphic	0
7	Loss	0	Self	0	Graphic	1
8	Loss	0	Self	0	No Graphic	0

**Table 79 - Coding of the independent variables**

The relevant hypotheses regarding the dependent variable of interest for each ANCOVA are examined in each section. It is important to note that because of this structure, the hypotheses therefore do not appear in numerical order (as they were presented in Chapter 4). The hypotheses were developed from a conceptual perspective with focus on the effects of the intrinsic message characteristics. However, the use of ANCOVA analysis necessitates that the clearest structure for presenting results is one arranged according to the dependent variables. Because of this, the chapter summary will provide a summary of the results in their original numerical order. The key statistical hypothesis test results can be found in the following sections. However, for clarity, more detailed results tables can be found in appendix 7.2. More specifically, as discussed above, the treatment coding method used – while useful in a hypothesis testing sense – results in the creation of a very large set of results for each ANCOVA, incorporating many marginal means for individual treatments and combinations. For the sake of clarity, in the present chapter, only the key statistical test results, and the relevant marginal means are reported, and the full results are reported in Appendix 7.2 for reference. A number of variables were consistently controlled for as covariates in the ANCOVA analyses. These are operationalised in chapter 5 and presented in Appendix 7.3. Given the number of covariates, these are not listed throughout the chapter, but summarised for ease in appendix 7.3. It is important to note that the ANCOVA covariates increased for the analyses where behaviour intention, expectation and decision task are the dependent variables as the cognitive appraisal, elaboration, anticipated emotion and immediate emotion variables are treated as covariates. This is also detailed in appendix 7.3.

Before moving to the specific results discussion, it is important to note that it was not possible to use Levene's test as the sample size and number of variables is too large. As such, in order to ascertain the homogeneity of variance for each ANCOVA, the highest and lowest variances for each ANCOVA were examined as proposed by Field (2009, p405). The detailed results of this analysis are presented in appendix 7.1. However, in sum, the results for all the ANCOVA analyses do not violate the assumption of homogeneity of variance.

### **7.3.1 Immediate emotions**

#### *7.3.1.1 Fear*

Two hypotheses relating to the immediate emotion of fear were originally hypothesised in chapter 4. However, only one of these was supported by the analysis. The supported hypothesis was H18b, that graphic images will evoke immediate emotions of fear. The use

of a graphic image had a significant effect on fear ( $F(14,56)=11.96, p=.001$ ), in the expected direction. The mean for the graphic condition was .21 whereas the mean for the non-graphic condition was -.21, which is shown in table 80.

Treatment Graphic	Mean	Std. Error
No graphic	- 0.21	.087
Graphic	0.21	.085

**Table 80 - Graphic treatment means for fear ANCOVA**

Conversely H5, that loss framed messages will evoke fear, did not yield a significant result ( $F(14,56)=3.107, p=.078$ ). The results herein suggest that graphic images generate the immediate visceral response of fear, but that loss framed messages do not. Of course, given the underlying mechanism of instinctive fear responses to threatening stimuli, it seems logical that the presence of a graphic image creates a fear response. The result is an important indication that this intrinsic message characteristic does indeed generate a fear response. However, no other message characteristics, or interactions between the message characteristics, generated a fear response. This indicates that an immediate fear response is dependent on the presence of a graphic image as a component of a threat appeal, but that this effect is not dependent on any other intrinsic message characteristic. To summarise;

- |             |  |               |
|-------------|--|---------------|
| <b>H5</b>   | Loss framed messages will generate fear              | Not supported |
| <b>H18b</b> | Graphic images will evoke immediate emotions of fear | Supported     |

### 7.3.1.2 Anger

One hypothesis was generated in chapter 4 concerning the effects of intrinsic message characteristics on the immediate emotion of anger. Namely, H18c states that graphic images will evoke immediate emotions of anger. Unfortunately this hypothesis was not supported as the results were not statistically significant, ( $F(3,984)=.776, p=.379$ ). This result indicates that anger is not a response to graphic images. Given that anger is

conceptually distinct from fear and has different properties (as outlined in appraisal theory) this indicates that the mechanism that generates a fear response does not generate an anger response.

This analysis did, however, suggest the potential for effects of intrinsic message characteristics on anger that were not specifically hypothesised. Indeed, an interaction between message frame and direction of message (namely loss frame and other direction) had a significant effect on anger ( $F(3,984)=3.985, p=.046$ ). The means are presented in table 81, with the result of interest highlighted.

Treatment Message Frame	Treatment Direction	Mean	Std. Error
Loss	Self	2.57	.123
	Other	2.86	.121
Gain	Self	2.69	.120
	Other	2.50	.121

**Table 81 - Message frame means for anger ANCOVA**

In addition, the analysis suggested another effect of intrinsic message characteristics on anger that was not hypothesised. Indeed, a three-way interaction between message frame, direction of message and use of graphic image (namely loss frame, other direction and no graphic image) had a significant effect on anger ( $F(3,984)=4.575, p=.033$ ). The means are presented in table 82, with a highlight showing the specific result of interest.

Treatment Message Frame	Treatment Direction	Treatment Graphicness	Mean	Std. Error
Loss	Self	No graphic	2.29	.176
		Graphic	2.84	.172
	Other	No graphic	3.00	.174
		Graphic	2.73	.171
Gain	Self	No graphic	2.70	.174
		Graphic	2.68	.166
	Other	No graphic	2.41	.169
		Graphic	2.59	.172

**Table 82 - Message frame and message direction means for anger ANCOVA**

The results that were not hypothesised will be examined in more detail in chapter 8, in order to avoid confusion regarding hypothesis testing versus unexpected results. Therefore, to summarise these results in the context of hypothesis testing:

**H18c** Graphic images will evoke immediate emotions of anger                      Not supported

### 7.3.1.3 Disgust

One hypothesis was generated in chapter 4 concerning the effects of intrinsic message characteristics on the immediate emotion of disgust. Namely, H18a states that graphic images will generate immediate disgust, and this was supported by way of a statistically significant test ( $F(12,878)=59.188$   $p=.000$ ). The means are presented in table 83. This result supports the argument made throughout the present thesis that emotional responses to threat appeals are not limited to fear. Of course, given the variable of graphic image and its operationalisation (as outlined in chapter 5) it is not surprising that a disgust response was elicited in the graphic condition.

Treatment Graphic	Mean	Std. Error
No graphic	-.46	.084
Graphic	.45	.083

**Table 83 - Graphic treatment means for disgust ANCOVA**

In addition, the analysis suggested another effect of intrinsic message characteristics on disgust that was not explicitly hypothesised. Specifically, an interaction between message frame, direction of message and use of graphic image (namely loss frame, self-direction and graphic image) had a significant effect on disgust ( $F(12,878) = 13.379$ ,  $p = .017$ ). The means are presented in table 84, with the interaction highlighted.

Treatment Message Frame	Treatment Direction	Treatment Graphic	Mean	Std. Error
Loss	Self	No graphic	-.41	.170
		Graphic	.65	.168
	Other	No graphic	-.26	.168
		Graphic	.37	.166
Gain	Self	No graphic	-.45	.169
		Graphic	.18	.161
	Other	No graphic	-.72	.164
		Graphic	.60	.167

**Table 84 - Message frame, message direction and graphic treatment means for disgust ANCOVA**

As already mentions, any results that were not hypothesised will be examined in more detail in chapter 8, in order to avoid confusion. Therefore, to summarise in the context of hypothesis testing:

**H18a** Graphic images will evoke immediate emotions of disgust Supported

7.3.1.4 *Uncomfortable feelings*

One hypothesis was developed concerning the effects of intrinsic message characteristics on immediate uncomfortable feelings (see Chapter 4). Specifically, H18d states that graphic images will generate immediate uncomfortable feelings, and the test of this hypothesis was found to be statistically significant ( $F(11,777)=36.217$   $p=.000$ ). The means are presented in table 85, showing the direction of the effect to be as hypothesized, and that therefore this result also supports the contention that emotional responses to threat appeals are not limited to fear. That said, again given the variable of graphic image and its operationalisation (as outlined in chapter 5) it is not surprising that the uncomfortable feelings were elicited for respondents in the graphic condition.

Treatment Graphic	Mean	Std. Error
No graphic	3.53	.103
Graphic	4.41	.102

**Table 85 - Graphic treatment means for uncomfortable feelings ANCOVA**

To summarise;

**H18d** Graphic images will evoke immediate emotions of uncomfortable feelings Supported

7.3.1.5 *Guilt*

H14 (see Chapter 4) states that Self-directed messages will evoke anticipatory guilt. However, statistical results do not provide support with  $F(3,790)=.177$  ( $p=.674$ ). This suggests that a self-accountability focus is not relevant in the context of threat appeals. However, the ANCOVA analysis did suggest an effect of intrinsic message characteristics on guilt that was not hypothesised; specifically, the use of a loss framed message had a

statistically significant effect on worry ( $F(3,790)=4.289$   $p=.039$ ). The means are presented in table 86.

Treatment Message Frame	Mean	Std. Error
Loss	2.07	.067
Gain	1.88	.065

**Table 86 - Message frame means for guilt ANCOVA**

This non-hypothesized result will be examined in more detail in chapter 8. To summarise in the context of hypothesis testing:

**H14** Self-directed messages will evoke anticipatory guilt Not supported

#### 7.3.1.6 Relief

Chapter 4 argued that (see H6) that loss avoidance framed messages will generate anticipatory relief. However, statistical results for this hypothesis test were not significant ( $F(5,718) = 2.260$   $p=.113$ ). This suggests that the key positive anticipatory emotion is not generated by changes in the message frame. That said, the analysis did suggest a number of other effects of intrinsic message characteristics on anticipatory relief that were not hypothesised. First, the use of a other framed message had a significant effect on relief ( $F(5,718) = 8.400$   $p=.004$ ). The means are presented in table 87.

Treatment Direction	Mean	Std. Error
Self	-.11	.056
Other	.11	.055

**Table 87 - Message direction means for relief ANCOVA**

In addition, graphicness appeared to have an influence on anticipatory relief that was not hypothesised. Specifically, the use of a non-graphic image had a significant effect on anticipatory relief  $F(5,718) = 18.229$   $p=.000$ . The means are presented in table 88.

Treatment Graphic	Mean	Std. Error
No graphic	.17	.056
Graphic	-.17	.056

**Table 88 - Graphic treatment means for relief ANCOVA**

The results that were not hypothesised will be examined in more detail in chapter 8, and to summarise in the context of hypothesis testing:

**H6** Loss avoidance messages will generate anticipatory relief      Not supported

#### 7.1.3.7 Worry

One hypothesis was generated in chapter 4 concerning the effects of intrinsic message characteristics on the anticipatory emotion of worry. Namely, H15 states that other-directed messages will evoke worry, and this test was statistically significant at  $F(9,671)= 5.224$  ( $p=.023$ ). The means are presented in table 89. This result supports the idea that worry has a locus towards others, and not towards an individual's sense of self.

Treatment Direction	Mean	Std. Error
Self	2.60	.088
Other	2.88	.088

**Table 89 - Message direction means for worry ANCOVA**

In addition, the analysis produced another interesting effect of intrinsic message characteristics on worry that was not hypothesised. Indeed, the use of graphic image had a significant effect on worry ( $F(9.671)= 11.808$   $p=.001$ ). The means are presented in table 90.

Treatment Graphic	Mean	Std. Error
No graphic	2.52	.089
Graphic	2.95	.088

**Table 90 - Graphic treatment means for worry ANCOVA**

The results that were not hypothesised will be examined in more detail in chapter 8, in order to avoid confusion regarding hypothesis testing and unexpected results. Therefore, to summarise in the context of hypothesis testing:

**H15** Other-directed messages will evoke anticipatory worry Supported

### 7.3.2 Anticipated emotions

#### 7.3.2.1 Anticipated fear

Two hypotheses relating to anticipated fear were originally hypothesised in chapter 4. However, only one of these was supported by the analysis. The supported hypothesis was H8, that self-directed messages will interact with loss frames to evoke anticipated fear. Indeed, self-directed messages did interact with loss frame messages to have a statistically significant effect on anticipated fear ( $F(9,232)=4.373$   $p=.037$ ). The means are shown in table 91. This result suggests that the self-referencing effect is enhanced by a loss frame. In fact, further supporting this, the direction of threat alone had no significant effect on anticipated emotion.

Treatment Message Frame	Treatment Direction	Mean	Std. Error
Loss	Self	6.87	.177
	Other	6.65	.175
Gain	Self	6.27	.173
	Other	6.78	.174

**Table 91 - Message frame means for anticipated fear ANCOVA**

However H1, that loss framed messages will generate negative anticipated emotions, did not generate a statistically significant effect in the context of anticipated fear ( $F(9,232)=1.776$   $p=.183$ ). These results indicate that message frame as an intrinsic characteristic and direction of message are not effective unless they are paired with each other, as a loss framed self-directed message. Interestingly no effect was attributed to the use (or not) of a graphic image on anticipated fear (even though there was an effect as seen in Section 7.3.1.1 on immediate fear), either as a single variable or in interaction with other intrinsic message characteristics. As such, to summarise;

- |           |   |               |
|-----------|---|---------------|
| <b>H1</b> | Loss framed messages will generate negative anticipated emotions.               | Not supported |
| <b>H8</b> | Self-directed messages will interact with loss frames to evoke anticipated fear | Supported     |

### 7.3.2.2 *Anticipated shame*

Chapter 4 presented two hypotheses relating to anticipated shame. However, neither were supported by the analysis. Specifically, H1 stated that loss framed messages will generate negative anticipated emotions, and this did not return a statistically significant result ( $F(5,537)= 3.045$   $p=.081$ ). Additionally H7a, which stated that self-directed messages will evoke anticipated shame, was not supported either, with  $F(5,537)= .006$  ( $p=.936$ ).

However, an interesting result that was not hypothesised was suggested by ANOVA results. When loss frame interacted with a self-framed message, there was a significant effect on anticipated shame ( $F(5,537)= 5.258$   $p=.022$ ). It is particularly noteworthy that this is the same effect that was observed for anticipated fear, which indicates that self-referencing and a loss frame may impact the anticipation of these negative emotions. The means are presented in table 92, with the mean of particular interest highlighted.

Treatment Message Frame	Treatment Direction	Mean	Std. Error
Loss	Self	7.47	.172
	Other	7.10	.170
Gain	Self	6.79	.167
	Other	7.19	.168

**Table 92 - Message frame and message direction means for anticipated shame ANCOVA**

The results that were not hypothesised will be examined in more detail in chapter 8, Therefore, to summarise the hypothesis tests:

**H1** Loss framed messages will generate negative anticipated emotions. Not supported

**H7a** Self-directed messages will evoke anticipated shame. Not supported

### 7.3.2.3 Anticipated regret

Two hypotheses relating to anticipated regret were originally hypothesised in chapter 4, with neither fully supported by the analysis. H1, stated that loss framed messages will generate negative anticipated emotions which (like for anticipated fear and shame above) did not reach significance for anticipated regret ( $F(7,870) = .548$   $p=.459$ ). On the other hand, the results did demonstrate an effect of message direction on anticipated regret, with a

statistically significant result ( $F(7,870) = 3.896$   $p=.049$ ). However, the direction of this result was not as hypothesised. Specifically, H10 stated that self-directed messages will evoke anticipated regret. Yet, an examination of the means presented in table 93 indicate that *other*-framed messages influenced anticipated regret. The reversal of the self-reference effect is surprising, as regret is conceptualised as a self-oriented emotion (as discussed in chapter 4). This will be discussed in more detail in chapter 8.

Treatment Direction	Mean	Std. Error
Self	-.14	.103
Other	.14	.103

**Table 93 - Message direction for anticipated regret ANCOVA**

To summarise the hypotheses tested:

<b>H1</b>	Loss framed messages will generate negative anticipated emotions.	Not supported
<b>H10</b>	Self-directed messages will evoke anticipated regret	Not supported

#### 7.3.2.4 *Anticipated humiliation*

Two hypotheses relating to anticipated humiliation were originally hypothesised in chapter 4. However, neither were fully supported by the analysis. H1, stated that loss framed messages will generate negative anticipated emotions (which includes anticipated humiliation), and this did not reach significance ( $F(6,179)=1.593$   $p=.207$ ). Equally, H7b stated that self-directed messages will evoke anticipated humiliation, and this did not achieve statistical significance either with  $F(6,179)=.007$  ( $p=.933$ ). However, as a result of the analysis, two relationships between intrinsic message characteristics and anticipated humiliation were suggested that had not been hypothesised in Chapter 4. Indeed, when message frame and message direction interacted, to generate a loss framed self-directed message, a significant effect on anticipated humiliation was observed. ( $F(6,179)=5.636$

$p=.018$ ) . Specifically, results indicate that loss framed messages directed toward the self, have an effect on anticipated humiliation. This is an indication that the self-reference effect occurs in a loss framed context to evoke anticipated humiliation, but that direction of message alone does not generate the self-reference effect in this context. The means for this finding is shown in table 94, with the mean of particular note highlighted.

Treatment Message Frame	Treatment Direction	Mean	Std. Error
Loss	Self	6.68	.189
	Other	6.22	.187
Gain	Self	6.00	.184
	Other	6.43	.185

**Table 94 - Message frame and message direction means for anticipated humiliation ANCOVA**

In addition the use of graphic images increased anticipated humiliation ( $F(6.179)=7.763$   $p=.005$ ), which was not a hypothesised relationship. The means are presented in table 95. This suggests there is an effect of the graphic image on anticipated humiliation. It is possible in the present case that this is due to the nature of the injury presented in the stimuli (e.g. a facial injury), which is linked to one's appearance. This will be explored further in chapter 8.

Treatment Graphic	Mean	Std. Error
No graphic	6.07	.134
Graphic	6.60	.132

**Table 95 - Graphic treatment means for anticipated humiliation ANCOVA**

To avoid confusion, the results that were not hypothesised will be examined in more detail in chapter 8. Therefore, to summarise in the context of hypothesis testing:

- H1** Loss framed messages will generate negative anticipated emotions. Not supported
- H7b** Self-directed messages will evoke anticipated humiliation. Not supported

### 7.3.2.5 Anticipated depressed feelings

One hypothesised relationship regarding anticipated depressed feelings was generated in chapter 4; H1, Loss framed messages will generate negative anticipated emotions. The analysis is not fully supportive of this hypothesis, as the effect of message frame on anticipated depressed feelings was non-significant ( $F(6,958)=1.458$   $p=.228$ ). However, results indicate that when message frame interacts with direction, that this influences anticipated depressed feelings ( $F(6,958)=5.067$   $p=.025$ ). Indeed, the means presented in table x (with the mean of interest highlighted) identify that loss framed messages directed toward the self, have an effect on anticipated depressed feelings. This is an indication that the self-reference effect occurs in a loss framed context to evoke anticipated depressed feelings, but that direction of message alone does not generate the self-reference effect in this context.

Treatment Message Frame	Treatment Direction	Mean	Std. Error
Loss	Self	6.96	.180
	Other	6.46	.177
Gain	Self	6.35	.175
	Other	6.65	.176

**Table 96 - Message frame and message direction means for anticipated depressed feelings ANCOVA**

The results that were not hypothesised will be discussed in chapter 8. Therefore, to summarise in the context of hypothesis testing:

**H1** Loss framed messages will generate negative anticipated emotions. Not Supported

### 7.3.2.6 Anticipated responsible feelings

Two hypotheses were developed in Chapter 4 regarding intrinsic message characteristics and their effect on anticipated responsible feelings. To recap, responsible feelings represent the accountability element of anticipated guilt. H1 states that loss framed messages will generate negative anticipated emotions, which in the case of anticipated responsible feelings was not statistically significant ( $F(5,710)=1.479=p.224$ ). In addition, H7c proposed that self-directed messages will evoke anticipated feelings of responsibility. This was also not supported, with  $F(5,710)=1.166$  ( $p=.281$ ). Indeed, there were no significant effects of any of the intrinsic message characteristics on anticipated feelings of responsibility. As such, whilst it was argued that in the self-directed condition an individual is more likely to feel responsible for their own behaviour, this was not supported. However, it could be the case that if the locus of control changes, and an individual was presented as responsible for the well-being of *someone else* (i.e. 'other') this may increase anticipated responsibility (e.g. injuring a passenger in a car that 'you' are driving). Whilst the literature regarding guilt focuses on the self, it is arguable that the responsible construct of guilt is more likely to be anticipated if the victim of a message was 'other'. This will be explored in more detail in chapter 8. To summarise the hypothesis tests for anticipated feelings of responsibility,

**H1** Loss framed messages will generate negative anticipated emotions. Not Supported

**H7c** Self-directed messages will evoke anticipated feelings of responsibility. Not Supported

### 7.3.2.7 Anticipated relief

Two hypothesised relationships regarding anticipated relief were generated in chapter 4. H2 stated that loss avoidance framed messages will generate positive anticipated emotions. However, this is not supported by the analysis, as a non significant result between message frame and anticipated relief was observed ( $F(3,266) = .125$   $p=.724$ ). In addition, H9 stated that Self-directed messages will interact with loss avoidance frames to evoke anticipated

relief, which was also not supported by the results with a non-significant  $F(3,266) = .001$  ( $p = .982$ ).

It was anticipated that the message frame of loss avoidance would be more likely to generate anticipated relief, either as a single variable or through an interaction with direction of message which would include the self-reference effect. However, while these propositions were not supported, the results identified a relationship between direction of message and anticipated relief that had not been hypothesised. Specifically, direction of message had a significant effect on anticipated relief ( $F(3,266) = 4.718$   $p = .030$ ), which the means (in table 97) show to be associated with the self-condition. This suggests that the self-reference effect does link to anticipated relief, but is not related to loss avoidance.

Treatment Direction	Mean	Std. Error
Self	6.50	.140
Other	6.07	.140

**Table 97 - Message direction means for anticipated relief ANCOVA**

The results that were not hypothesised will be examined in more detail in chapter 8, in order to avoid confusion regarding hypothesis testing and unexpected results. Therefore, to summarise in the context of hypothesis testing:

- H2** Loss avoidance framed messages will generate positive anticipated emotions. Not Supported
- H9** Self-directed messages will interact with loss avoidance frames to evoke anticipated relief. Not Supported

*7.3.2.8 Anticipated hope*

One hypothesised relationship regarding anticipated hope was generated in chapter 4, which was H2, that loss avoidance framed messages will generate positive anticipated

emotions The analysis did not find support for this hypothesis with a non-significant result being returned ( $F(2,985)=.617$   $p=.617$ ). Indeed, there were no effects observed for any intrinsic message characteristics, or interactions of those characteristics, on anticipated hope. Whilst it was hypothesised that the avoidance of loss would generate anticipation of hope, perhaps the simple avoidance of severe injuries does not specifically generate hope, which is a future oriented emotion. To summarise,

**H2** Loss avoidance framed messages will generate positive anticipated emotions. Not Supported

#### 7.3.2.9 *Anticipated delight*

One hypothesised relationship regarding anticipated delight was generated in chapter 4; H2, that loss avoidance framed messages will generate positive anticipated emotions The analysis did not find support for this hypothesis, with the statistical test being non-significant ( $F(1.990)=.199$   $p=.656$ ). Again, like anticipated hope, there were no effects of intrinsic message characteristics, or interactions of those characteristics, observed at all on anticipated delight. Whilst it seems intuitively plausible that the avoidance of loss would generate anticipation of delight, it could be that (like anticipated hope above) perhaps simply the avoidance of severe injuries does not specifically generate delight, which is a happiness emotion. Indeed, whilst it seems that individuals would be happy to avoid serious injuries, perhaps the anticipation of delight is inappropriately positively valenced for this context. To summarise,

**H2** Loss avoidance framed messages will generate positive anticipated emotions. Not Supported

### 7.3.3 **Cognitive appraisals**

#### 7.3.3.1 *Perceptions of severity*

Three hypotheses were developed regarding the effect of intrinsic message characteristics on perceptions of severity. However, only one of these hypotheses was statistically significant. H16a stated that graphic images will generate increased perceptions of severity, which is supported by the ANCOVA results ( $F(5,093)= 7.348$   $p=.007$ ), with means presented in table x below. This result is not surprising, because whilst the severity of

injuries were described identically across the experimental conditions, the graphic image uses cues such as blood, which are hypothesised to generate instinctive responses, and implicitly indicate severity of injury.

The remaining two hypotheses were not supported. H3a stated that loss framed messages increase perceptions of severity which was not significant ( $F(5,093)=.018$   $p=.894$ ). It is surprising that message frame did not have a significant influence on perceptions of severity, as the avoidance of loss is less severe than experiencing loss. However, in this context it is important to remember that participants were not making a comparison between conditions due to the between subjects design, where participants were only exposed to one condition. H11a stated that self-directed messages will increase perceptions of severity, which also was not supported, with  $F(5,093)=.063$  ( $p=.803$ ). Again, this is a surprising result, as the self-reference effect would suggest that individuals who feel their sense of self is threatened, or (in this context) to suffer a serious injury, would perceive this consequence to be more severe. However, this effect was not supported by the results.

Treatment Graphic	Mean	Std. Error
No graphic	-.12	.067
Graphic	.12	.066

**Table 98 - Graphic treatment means for severity ANCOVA**

To summarise,

<b>H3a</b>	Loss framed messages increase perceptions of severity	Not supported
<b>H11a</b>	Self-directed messages will increase perceptions of severity	Not supported
<b>H16a</b>	Graphic images will generate increased perceptions of severity	Supported

### 7.3.3.2 *Perceptions of susceptibility*

Three hypotheses were developed in Chapter 4 regarding the effect of intrinsic message characteristics on perceptions of susceptibility. However, none of these hypotheses were supported by the ANCOVA results. H3b stated that loss framed messages increase perceptions of susceptibility, which was not significant ( $F(1,696)=.212$   $p=.645$ ). H11b stated that self-directed messages will increase perceptions of susceptibility, again which was not supported ( $F(1,696)=2.319$   $p=.128$ ). Finally, H16b stated that graphic images will generate increased perceptions of susceptibility, which was also not supported with  $F(1,696)= 2.328$  ( $p=.128$ ).

Further, none of the interactions between the intrinsic message characteristics influenced perceptions of severity. It is important to note that whilst these results indicate that the variables manipulated in the experiment did not influence perceptions of susceptibility, that is not to say that participants did not perceive their own susceptibility, but rather that there were no differences across the different message treatments. Even so, these results are surprising as the self-reference effect does not appear to influence susceptibility in this context. Indeed, the use of a graphic image was proposed to increase perceptions of susceptibility but this is not supported in the results. This will be discussed in more detail in chapter 8, but to summarise,

<b>H3b</b>	Loss framed messages increase perceptions of susceptibility	Not supported
<b>H11b</b>	Self-directed messages will increase perceptions of susceptibility	Not supported
<b>H16b</b>	Graphic images will generate increased perceptions of susceptibility	Not supported

### 7.3.3.3 *Self-efficacy*

Chapter 4 presented two hypotheses concerning the influence of message characteristics on self-efficacy. H4a stated that loss avoidance messages increase perceptions of self-efficacy. Unfortunately this was not upheld by the ANCOVA results ( $F(10,016)=3.494$   $p=.062$ ). In addition, H12 stated that self-directed messages will increase perceptions of self-

efficacy, again not supported by the statistical results ( $F(10,016)=.076$   $p=.782$ ). Given that self-efficacy refers to an individual's belief that they are able to carry out the recommended action, it is somewhat surprising that self-directed messages did not influence this. Indeed, the self-reference effect states that individuals are motivated to protect their sense of self. As such it is interesting that a message directed towards the self does not influence this. To summarise,

<b>H4a</b>	Loss avoidance messages increase perceptions of self-efficacy	Not supported
<b>H12</b>	Self-directed messages will increase perceptions of self-efficacy	Not supported

#### 7.3.3.4 *Response efficacy*

One hypothesis was developed in chapter 4, to explain the influence of intrinsic message characteristics on response efficacy. Namely, H4b stated that loss avoidance messages increase perceptions of response efficacy. However, this was not evidenced by the statistical results, with  $F(14,322)=.081$  ( $p=.777$ ). Response efficacy is an individual's perception that the recommendation in the message will be effective in reducing the risk or threat. As such a loss avoidance frame was considered as likely to increase perceptions of response efficacy, and it was surprising that the results do not support this. This will be discussed in more detail in chapter 8. To summarise,

<b>H4b</b>	Loss avoidance messages increase perceptions of response efficacy	Not supported
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#### 7.3.4 **Elaboration**

Two hypotheses were generated to explain the influence of intrinsic message characteristics on mental imagery elaboration in chapter 4. H13 stated that self-directed messages will increase mental imagery elaboration, however this effect was not statistically significant ( $F(4,901)=.128$   $p=.720$ ). This is surprising, as the self is one of the most powerful networks in memory (see chapter 3) and as such it was anticipated that elaboration was more likely to occur when associated with the self, as opposed to 'other'. However, no effect of message direction was observed for this variable.

Further, H17 stated that non graphic images will encourage increased mental imagery elaboration, and a significant result was generated for the effect of graphic treatment on elaboration ( $F(4,901)=34.3031$   $p=.000$ ). However an examination of the means, as presented in table x, show that the effect was reverse to that hypothesised. The hypotheses was generated based on evidence that suggest individuals are less willing to process graphic images and rather would avoid them as such mental elaboration is less likely to occur if they did. However, the present results suggest that the opposite may be the case. This will be examined in more detail in chapter 8.

Treatment Graphic	Mean	Std. Error
No graphic	3.63	.091
Graphic	4.38	.090

**Table 99 - Graphic treatment means for elaboration ANCOVA**

To summarise,

- |   |                          |
|---|--------------------------|
| <b>H13</b> Self-directed messages will increase mental imagery elaboration        | Not supported            |
| <b>H17</b> Non graphic images will encourage increased mental imagery elaboration | Not Supported (reversed) |

### 7.3.5 Behavioural intention

Seventeen hypotheses were generated concerning the influence of anticipated emotions, cognitive appraisals and anticipatory emotions on behavioural intention. Of the seventeen hypothesised relationships, six were found to be statistically significant, to be discussed subsequently. The process of testing these hypotheses was accomplished in ANCOVA, with the inclusion of the intrinsic message characteristics as independent variables, and the emotional and cognitive variables included as covariates. While no effects between the message characteristics and behavioural intention were hypothesised, this testing approach also provided a useful test of whether any direct effect of message characteristics could be

observed on behavioural intention in the presence of the variables hypothesized to mediate the influence of message characteristics on behavioural intention. No significant effects were observed for any of the message characteristics, although as will be discussed later, one interaction was observed.

Moving to discussion of emotions, it is notable that two hypotheses that relate to the anticipation of positive emotions were observed to influence behavioural intention. H19h stated that anticipated hope will influence behavioural intention which was confirmed with  $F(11,533) = 4.521$  ( $p = .034$ ). Additionally, H19i stated that anticipated delight would influence behavioural intention and this was also confirmed ( $F(11,533) = 5.225$ ,  $p = .023$ ). These results are interesting in a threat appeals context, in particular given the earlier results that indicate none of the intrinsic message characteristics manipulated in this study influenced anticipated hope or anticipated delight (see Chapter 8 for full discussion of this result).

One hypothesis that identified the influence of a negative anticipated emotion, namely that depressed feelings should influence behavioural intention, found support. Indeed, H19f stated that anticipated depressed feelings would influence behavioural intention, which was supported with  $F(11,533) = 4.503$  ( $p = .034$ ). Interestingly, none of the hypothesised relationships between intrinsic message characteristics and the anticipation of depressed feelings were supported. However, one unexpected result was observed, which will be examined in more detail in chapter 8.

Three hypotheses that concerned the influence of cognitive appraisals on behavioural intention received empirical support. Specifically H21b, which hypothesised the influence of susceptibility on behavioural intention, was significant with  $F(11,533) = 6.666$  ( $p = .010$ ). Further, H21c proposed that response efficacy would influence behavioural intention, and this hypothesis was supported ( $F(11,533) = 4.554$ ,  $p = .033$ ). Lastly, H21d which hypothesised the influence of self-efficacy on behavioural intention was also supported  $F(11,533) = 6.558$ ,  $p = .011$ . It is of particular interest that perceptions of severity do not influence the intention to behaviour in the future. Indeed, this suggests that susceptibility has a more pivotal role.

As already mentioned, an unexpected effect was observed. Indeed, the analysis suggested an effect of an interaction between message frame and graphic image (loss frame with no graphic image) on behavioural intention ( $F(11,533) = 4.481$ ,  $p = .035$ ). It was not expected that in this ANCOVA the message treatments would directly influence behavioural intention, rather that effects would be observed for the covariates, modelled as mediators in Chapter

4. This will be discussed in more detail in chapter 8. Therefore, to summarise in the context of hypothesis testing:

<b>H19a</b>	Anticipated emotions, and specifically fear influence behavioural intention	Not supported
<b>H19b</b>	Anticipated emotions, and specifically shame will influence behavioural intention	Not supported
<b>H19c</b>	Anticipated emotions, and specifically regret will influence behavioural intention	Not supported
<b>H19d</b>	Anticipated emotions, and specifically relief will influence behavioural intention	Not supported
<b>H19e</b>	Anticipated emotions, and specifically humiliation will influence behavioural intention	Not supported
<b>H19f</b>	Anticipated emotions, and specifically depressed feelings will influence behavioural intention	Supported
<b>H19g</b>	Anticipated emotions, and specifically, responsible feelings will influence behavioural intention	Not supported
<b>H19h</b>	Anticipated emotions, and specifically, hope will influence behavioural intention	Supported
<b>H19i</b>	Anticipated emotions, and specifically, delight will influence behavioural intention	Supported

<b>H21a</b>	Cognitive appraisals, and specifically, severity will influence behavioural intention	Not supported
<b>H21b</b>	Cognitive appraisals, and specifically, susceptibility will influence behavioural intention	Supported
<b>H21c</b>	Cognitive appraisals, and specifically, response efficacy will influence behavioural intention	Supported
<b>H21d</b>	Cognitive appraisals, and specifically, self-efficacy will influence behavioural intention	Supported
<b>H23</b>	Elaboration will influence behavioural intention	Not supported
<b>H25a</b>	Anticipatory emotions, and specifically worry will influence behavioural intention	Not supported
<b>H25b</b>	Anticipatory emotions, and specifically relief will influence behavioural intention	Not supported
<b>H25c</b>	Anticipatory emotions, and specifically guilt, will influence behavioural intention	Not supported

### **7.3.6 Behavioural expectation**

Seventeen hypotheses were generated concerning the influence of anticipated emotions, cognitive appraisals and anticipatory emotions on behavioural expectation. Of the seventeen hypothesised relationships, six were found to be statistically significant. Again, in the same way as the ANCOVA for behavioural intention, the message characteristics were included as independent variables, with the emotional and cognitive variables treated as covariates.

Notably, two hypotheses that relate to the anticipation of positive emotions were supported by the analysis. H20h stated that anticipated hope will influence behavioural expectation, which was confirmed by the analysis, with  $F(13,421)=12.373$  ( $p=.000$ ). Additionally, H19i stated that anticipated delight would influence behavioural expectation and this was also confirmed ( $F(13,421)=10.018$ ,  $p=.002$ ). These results are interesting in a threat appeals context, particularly given the earlier results that indicate none of the intrinsic message characteristics manipulated in this study actually influenced anticipated hope or anticipated delight. Further, this result also mirrors the influence of anticipated hope and anticipated delight on behaviour intention, suggesting the key importance of these two variables in this context.

A single hypothesis that identified the influence of a negative anticipated emotion, namely anticipated regret, on behavioural expectation found support. Specifically, H20c stated that anticipated regret would influence behavioural expectation, which was supported with  $F(11,533)=4.503$  ( $p=.034$ ). Interestingly, the previous discussion shows that none of the hypothesised relationships between intrinsic message characteristics and the anticipation of regret were supported.

Three hypotheses that identified the influence of cognitive appraisals on behavioural expectation received empirical support. H21b, which hypothesised the influence of susceptibility on behavioural expectation, was significant ( $F(13,421)=38.523$   $p=.000$ ). Further, H21c proposed that response efficacy would influence behavioural expectation, and this was statistically significant with  $F(13,421)=4.837$  ( $p=.028$ ). Lastly, H21d which hypothesised the influence of self-efficacy on behavioural expectation was also statistically supported ( $F(13,421)=11.889$ ,  $p=.001$ ). It is surprising that perceptions of severity do not influence the expectation of future behaviour. Indeed, this result suggests that susceptibility may have a more pivotal role. To summarise:

<b>H20a</b>	Anticipated emotions, and specifically fear influence behavioural expectation	Not supported
<b>H20b</b>	Anticipated emotions, and specifically shame will influence behavioural expectation	Not supported

<b>H20c</b>	Anticipated emotions, and specifically regret will influence behavioural expectation	Supported
<b>H20d</b>	Anticipated emotions, and specifically relief will influence behavioural expectation	Not supported
<b>H20e</b>	Anticipated emotions, and specifically humiliation will influence behavioural expectation	Not supported
<b>H20f</b>	Anticipated emotions, and specifically depressed feelings will influence behavioural expectation	Not supported
<b>H20g</b>	Anticipated emotions, and specifically, responsible feelings will influence behavioural expectation	Not supported
<b>H20h</b>	Anticipated emotions, and specifically, hope will influence behavioural expectation	Supported
<b>H20i</b>	Anticipated emotions, and specifically, delight will influence behavioural expectation	Supported
<b>H22a</b>	Cognitive appraisals, and specifically, severity will influence behavioural expectation	Not supported
<b>H22b</b>	Cognitive appraisals, and specifically, susceptibility will influence behavioural expectation	Supported

<b>H22c</b>	Cognitive appraisals, and specifically, response efficacy will influence behavioural expectation	Supported
<b>H22d</b>	Cognitive appraisals, and specifically, self-efficacy will influence behavioural expectation	Supported
<b>H24</b>	Elaboration will influence behavioural expectation	Not supported
<b>H26a</b>	Anticipatory emotions, and specifically worry will influence behavioural expectation	Not supported
<b>H26b</b>	Anticipatory emotions, and specifically relief will influence behavioural expectation	Not supported
<b>H26c</b>	Anticipatory emotions, and specifically guilt, will influence behavioural expectation	Not supported

### **7.3.7 Behaviour decision task**

As discussed in section 5.4.3, a third measure of future behaviour was also incorporated. Specifically, this measure was a behavioural decision task, where subjects predicted their likely speed to travel to a job interview, while under time pressure to get there on time. In this sense, the measure taps a similar but distinct issue to the more general behavioural intention and expectation measures that have been popular in relevant research, and are used above. Because of the exploratory nature of this dependent variable, no specific hypotheses were drawn in Chapter 4. However, to maintain consistency with the rest of the analysis, it is useful to examine the same basic relationships as those examined for both behavioural intention and behavioural expectation above. Indeed, this was done, and the process of analysis for the behavioural decision task was identical to that already discussed above.

As with the hypotheses developed in chapter 4 for the behaviour intention and behaviour expectation variables, seventeen relationships that mirror the hypotheses were examined for the behaviour decision task. These concerned the influence of anticipated emotions, cognitive appraisals and anticipatory emotions on the behaviour decision task. Of the seventeen relationships, four were found to be statistically significant. Again, in the same way as the ANCOVAs for behavioural intention and expectation, the message characteristics were included as independent variables, with the emotional and cognitive variables treated as covariates.

Notably, two relationships that relate to the anticipation of negative emotions were supported by the analysis. It was predicted that anticipated fear would influence the behavioural decision, which was confirmed by the analysis, with  $((F_{4,891})=4.044, p=.044)$ . In addition, It was predicted that anticipated feelings of responsibility would influence the behavioural decision, which was confirmed by the analysis, with  $((F_{4,891})=6.519, p=.011)$ . These results are interesting in a threat appeals context because they suggest that anticipated fear and feeling of responsibility (which are associated with guilt) influence behavioural decision making. These anticipated emotions did not influence behavioural intention or expectation in the above analysis.

Two relationships that identified the influence of cognitive appraisals on the behaviour decision task received empirical support. The influence of perceived severity on the behaviour decision task was significant  $((F_{4,891})=8.727, p=.003)$ . Further, self-efficacy influenced the behaviour decision task, which was confirmed by analysis  $((F_{4,891})=12.237, p=.001)$ . As noted previously, the results above suggest a pivotal role of susceptibility regarding future behaviour, however, these results would suggest that perceptions of severity may influence more immediate decision making. In this context it is therefore logical that perceptions of self-efficacy would also influence the behaviour decision task. To summarise:

Anticipated emotions, and specifically fear influence behavioural decision	Supported
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Anticipated emotions, and specifically shame will influence behavioural decision	Not supported
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Anticipated emotions, and specifically regret will influence behavioural decision	Not supported
Anticipated emotions, and specifically relief will influence behavioural decision	Not supported
Anticipated emotions, and specifically humiliation will influence behavioural decision	Not supported
Anticipated emotions, and specifically depressed feelings will influence behavioural decision	Not supported
Anticipated emotions, and specifically, responsible feelings will influence behavioural decision	Supported
Anticipated emotions, and specifically, hope will influence behavioural decision	Not supported
Anticipated emotions, and specifically, delight will influence behavioural decision	Not supported
Cognitive appraisals, and specifically, severity will influence behavioural decision	Supported
Cognitive appraisals, and specifically, susceptibility will influence behavioural decision	Not supported
Cognitive appraisals, and specifically, response efficacy will influence behavioural decision	Not supported

Cognitive appraisals, and specifically, self-efficacy will influence behavioural decision	Supported
Elaboration will influence behavioural decision	Not supported
Anticipatory emotions, and specifically worry will influence behavioural decision	Not supported
Anticipatory emotions, and specifically relief will influence behavioural decision	Not supported
Anticipatory emotions, and specifically guilt, will influence behavioural decision	Not supported

## 7.4 Chapter summary

The purpose of this chapter was to provide an empirical test of the conceptual model developed in Chapter 4. More specifically, the objective of the analysis presented here was to test the hypothesised influences of threat appeal intrinsic message characteristics on the identified emotions and cognitive responses, and then examine the influence of cognitions and emotions on behavioural intention and expectation. To achieve this aim, a series of factorial ANCOVAs were conducted. The suitability of this as the most appropriate statistical technique for analysis was discussed in section 7.2.

The manipulation checks to ensure the validity of the stimuli are presented in section 7.1. As a result of rigorous pre-testing (as described in chapter 5) the intrinsic message characteristic treatments were perceived as intended and as such the manipulations were deemed to be valid and reliable.

The results of hypothesis testing is presented in section 7.3. The hypotheses addressed thematically, by the dependent variable of interest, as necessitated by the ANCOVA procedure. A summary of the hypotheses and whether they are supported or not are presented in each sub section and then presented again in table 100 below to provide an overview. For ease of reference, table 100 returns the presentation of hypotheses to the numerical order presented in Chapter 4. The focus of the hypothesis testing was to observe

correlations between intrinsic message characteristics and responses. Whilst some hypotheses were supported a number were not. In addition, a number of influences were identified that had not been hypothesised but were of note. These will be discussed in more detail in chapter 8.

<b>Label</b>	<b>Hypothesis</b>	<b>Results</b>
<b>H1</b>	Loss framed messages will generate negative anticipated emotions.	Not Supported
<b>H2</b>	Loss avoidance framed messages will generate positive anticipated emotions.	Not Supported
<b>H3a</b>	Loss framed messages increase perceptions of severity	Not Supported
<b>H3b</b>	Loss framed messages increase perceptions of susceptibility	Not Supported
<b>H4a</b>	Loss avoidance messages increase perceptions of self-efficacy	Not Supported
<b>H4b</b>	Loss avoidance messages increase perceptions of response efficacy	Not Supported
<b>H5</b>	Loss framed messages will generate fear	Not Supported
<b>H6</b>	Loss avoidance messages will generate anticipatory relief	Not Supported
<b>H7a</b>	Self-directed messages will evoke anticipated shame	Not Supported
<b>H7b</b>	Self-directed messages will evoke anticipated humiliation	Not Supported
<b>H7c</b>	Self-directed messages will evoke anticipated feelings of responsibility	Not Supported
<b>H8</b>	Self-directed messages will interact with loss frames to evoke anticipated fear	Supported
<b>H9</b>	Self-directed messages will interact with loss avoidance frames to evoke anticipated relief	Not Supported
<b>H10</b>	Self-directed messages will evoke anticipated regret	Not Supported
<b>H11a</b>	Self-directed messages will increase perceptions of severity	Not Supported
<b>H11b</b>	Self-directed messages will increase perceptions of susceptibility	Not Supported
<b>H12</b>	Self-directed messages will increase perceptions of self-efficacy	Not Supported
<b>H13</b>	Self-directed messages will increase mental imagery elaboration	Not Supported
<b>H14</b>	Self-directed messages will evoke anticipatory guilt	Not Supported

<b>H15</b>	Other-directed messages will evoke anticipatory worry	Supported
<b>H16a</b>	Graphic images will generate increased perceptions of severity	Supported
<b>H16b</b>	Graphic images will generate increased perceptions of susceptibility	Not Supported
<b>H17</b>	Non graphic images will encourage increased mental imagery elaboration	Not Supported (Reversed)
<b>H18a</b>	Graphic images will evoke immediate emotions of disgust	Supported
<b>H18b</b>	Graphic images will evoke immediate emotions of fear	Supported
<b>H18c</b>	Graphic images will evoke immediate emotions of anger	Not Supported
<b>H18d</b>	Graphic images will evoke immediate emotions of uncomfortable feelings	Supported
<b>H19a</b>	Anticipated emotions, and specifically fear influence behavioural intention	Not supported
<b>H19b</b>	Anticipated emotions, and specifically shame will influence behavioural intention	Not supported
<b>H19c</b>	Anticipated emotions, and specifically regret will influence behavioural intention	Not supported
<b>H19d</b>	Anticipated emotions, and specifically relief will influence behavioural intention	Not supported
<b>H19e</b>	Anticipated emotions, and specifically humiliation will influence behavioural intention	Not supported
<b>H19f</b>	Anticipated emotions, and specifically depressed feelings will influence behavioural intention	Supported
<b>H19g</b>	Anticipated emotions, and specifically, responsible feelings will influence behavioural intention	Not supported
<b>H19h</b>	Anticipated emotions, and specifically, hope will influence behavioural intention	Supported
<b>H19i</b>	Anticipated emotions, and specifically, delight will influence behavioural intention	Supported
<b>H20a</b>	Anticipated emotions, and specifically fear influence behavioural expectation	Not supported
<b>H20b</b>	Anticipated emotions, and specifically shame will influence behavioural expectation	Not supported
<b>H20c</b>	Anticipated emotions, and specifically regret will influence behavioural expectation	Supported

<b>H20d</b>	Anticipated emotions, and specifically relief will influence behavioural expectation	Not supported
<b>H20e</b>	Anticipated emotions, and specifically humiliation will influence behavioural expectation	Not supported
<b>H20f</b>	Anticipated emotions, and specifically depressed feelings will influence behavioural expectation	Not supported
<b>H20g</b>	Anticipated emotions, and specifically, responsible feelings will influence behavioural expectation	Not supported
<b>H20h</b>	Anticipated emotions, and specifically, hope will influence behavioural expectation	Supported
<b>H20i</b>	Anticipated emotions, and specifically, delight will influence behavioural expectation	Supported
<b>H21a</b>	Cognitive appraisals, and specifically, severity will influence behavioural intention	Not supported
<b>H21b</b>	Cognitive appraisals, and specifically, susceptibility will influence behavioural intention	Supported
<b>H21c</b>	Cognitive appraisals, and specifically, response efficacy will influence behavioural intention	Supported
<b>H21d</b>	Cognitive appraisals, and specifically, self-efficacy will influence behavioural intention	Supported
<b>H22a</b>	Cognitive appraisals, and specifically, severity will influence behavioural expectation	Not supported
<b>H22b</b>	Cognitive appraisals, and specifically, susceptibility will influence behavioural expectation	Supported
<b>H22c</b>	Cognitive appraisals, and specifically, response efficacy will influence behavioural expectation	Supported
<b>H22d</b>	Cognitive appraisals, and specifically, self-efficacy will influence behavioural expectation	Supported
<b>H23</b>	Elaboration will influence behavioural intention	Not supported
<b>H24</b>	Elaboration will influence behavioural expectation	Not supported
<b>H25a</b>	Anticipatory emotions, and specifically worry will influence behavioural intention	Not supported
<b>H25b</b>	Anticipatory emotions, and specifically relief will influence behavioural intention	Not supported
<b>H25c</b>	Anticipatory emotions, and specifically guilt, will influence behavioural intention	Not supported

<b>H26a</b>	Anticipatory emotions, and specifically worry will influence behavioural expectation	Not supported
<b>H26b</b>	Anticipatory emotions, and specifically relief will influence behavioural expectation	Not supported
<b>H26c</b>	Anticipatory emotions, and specifically guilt, will influence behavioural expectation	Not supported

**Table 100 - Results of hypothesis testing**

Full discussion of these results will be provided in Chapter 8. However, in brief, the series of ANCOVAs reported herein provide general support for the basic principles of the theoretical model presented in Chapter 4, although not all of the individual hypotheses found support. Of the original 61 detailed hypotheses, 18 found support. For clarity, the supported hypotheses are presented in table 101 below. It is important to note that there were a number of unexpected results which will be examined in more detail in chapter 8. The discussion in this section, pertains only to the hypothesised relationships.

The empirical results from hypothesis testing indicate that message frame did not influence any of the response variables. In contrast, the graphic treatment variable was observed to influence immediate emotions, specifically fear, disgust and uncomfortable feelings. In addition, graphic images increased perceptions of severity. The direction of message was found to influence anticipated fear. As such, the hypothesised relationships between intrinsic message characteristics and cognitive and emotional responses appears, on the surface, to rely on instinctive mechanisms. However, the role of anticipated emotions on behavioural intention and expectation in this context have been shown to have a greater influence on decisions regarding future behaviour than the generation of immediate emotional responses. This will be discussed in more detail on chapter 8. Indeed, these result also indicate that, in terms of decision making, perceived susceptibility has a more important influence than perceived severity, but that perceptions of severity are a direct result of exposure to graphic images. This may suggest that graphic images do influence immediate and visceral response, but these have little influence on decisions concerning future behaviour. This will be explored in more detail in chapter 8.

<b>Label</b>	<b>Hypothesis</b>	<b>Results</b>
<b>H8</b>	Self-directed messages will interact with loss frames to evoke anticipated fear	Supported
<b>H15</b>	Other-directed messages will evoke anticipatory worry	Supported
<b>H16a</b>	Graphic images will generate increased perceptions of severity	Supported
<b>H18a</b>	Graphic images will evoke immediate emotions of disgust	Supported
<b>H18b</b>	Graphic images will evoke immediate emotions of fear	Supported
<b>H18d</b>	Graphic images will evoke immediate emotions of uncomfortable feelings	Supported
<b>H19f</b>	Anticipated emotions, and specifically depressed feelings will influence behavioural intention	Supported
<b>H19h</b>	Anticipated emotions, and specifically, hope will influence behavioural intention	Supported
<b>H19i</b>	Anticipated emotions, and specifically, delight will influence behavioural intention	Supported
<b>H20c</b>	Anticipated emotions, and specifically regret will influence behavioural expectation	Supported
<b>H20h</b>	Anticipated emotions, and specifically, hope will influence behavioural expectation	Supported
<b>H20i</b>	Anticipated emotions, and specifically, delight will influence behavioural expectation	Supported
<b>H21b</b>	Cognitive appraisals, and specifically, susceptibility will influence behavioural intention	Supported
<b>H21c</b>	Cognitive appraisals, and specifically, response efficacy will influence behavioural intention	Supported
<b>H21d</b>	Cognitive appraisals, and specifically, self-efficacy will influence behavioural intention	Supported
<b>H22b</b>	Cognitive appraisals, and specifically, susceptibility will influence behavioural expectation	Supported
<b>H22c</b>	Cognitive appraisals, and specifically, response efficacy will influence behavioural expectation	Supported
<b>H22d</b>	Cognitive appraisals, and specifically, self-efficacy will influence behavioural expectation	Supported

**Table 101 - Supported hypotheses**

Overall, these results are notable because they suggest that individual message characteristics (i.e. frame, direction, graphicness) can have impacts on individual cognitive and emotional responses. However, it is also clear that few of these responses appear to have a strong influence on future behaviour-relevant variables, and in particular it seems that it is *anticipated* emotion that plays a key role in influencing future behaviour, a concept which has been heretofore absent from threat appeals research.

This chapter has focussed on a presentation of the results in light of the hypotheses generated in chapter 4. The next chapter synthesises the major findings and contributions of this study, including a discussion of the unexpected results regarding threat appeals research and the research field. Following this, the practical implications are examined. Finally, the limitations are highlighted, and as a result of this (as well as previous discussion of the study's findings), some directions for future research are given.

## **Chapter 8 - Discussion and Conclusions**

In this, the final chapter, a summary of the main conclusions to be drawn from the findings of the study are presented. Furthermore, the implications of the findings are analysed, in the context of their contribution to both threat appeal theory and the implications of using threat appeals in the public sphere. More specifically, section 8.1 examines the theoretical implications of the study and clearly highlights the contribution to research on threat appeals that has been made in this thesis. The results from the hypothesis tests are discussed, and the unexpected (i.e. non-hypothesised) results from the empirical work are also considered in depth. Section 8.2 presents a discussion of the practical implications of the research, with particular relevance to the manipulation of intrinsic message characteristics. Using this information, a number of recommendations are proposed, which may be of practical use to governments or other public bodies, charities and other third sector organisations (such as voluntary organisations). Finally, in section 8.3 the limitations of the study are outlined, and an agenda for future research is provided.

### **8.1 Theoretical implications of the study**

In a detailed chronological and thematic examination of the literature (chapters 2, 3 and 4), two assumptions were uncovered that in prior research on threat appeals have either a) been explicitly reiterated despite little supporting evidence, or b) received limited attention at all, in the literature. Specifically, these assumptions are a) that threat appeal characteristics can be conflated with their intended responses, and b) that a threat appeal always and necessarily evokes a fear response in the subject. A detailed examination of these assumptions underpins this thesis. The conceptual framework presented (see chapter 4) outlines the role of anticipated and anticipatory emotions, alongside subjective probabilities, elaboration and immediate visceral emotions that are resultant from manipulation of the intrinsic message characteristics of a threat appeal (namely, message direction, message frame and graphic image). In particular, the emotional and cognitive responses to the threat appeal manipulations are hypothesised to influence behaviour intentions and expectations pertaining to future behaviour. The results from the empirical testing of the research hypotheses are presented in chapter 7 and these results will be discussed in detail in sections 8.1.1.

There are four main areas where the present study makes a contribution to existing threat appeal theory. First and foremost is the development of a novel theory of responses to

threat appeals, which is grounded in the extant literature and evidence, rather than based on questionable assumptions. The new theoretical framework makes a significant and original contribution to knowledge in the threat appeals domain of literature and includes:

1. Intrinsic message characteristics associated with the core characteristics of threat appeals that have been demonstrated to influence emotional and cognitive appraisals, namely message direction, message frame and use of graphic image.
2. Key cognitive appraisal variables that have been shown in the extant literature to be important responses to threat appeals and to influence decision making.
3. The introduction of anticipated and anticipatory emotions alongside immediate emotional responses, to better understand the appraisal process and decision making about future behaviour.
4. A consideration of the cognitive process associated with elaboration as a variable that will influence behavioural intention and expectation.
5. Relevant outcome variables (i.e. behaviour intention and expectation), which represent a decision about future behaviour as a result of exposure to a threat appeal.

Secondly, this study identifies threat appeal intrinsic message characteristics as the most appropriate variables for manipulation in empirical research in the field and highlights the utility of this approach, in contrast to the very common conflation of message characteristics with their intended effects (see Chapters 1, 2, and 3). Third, a contribution is made by the provision of evidence that the new approach has theoretical and practical merit within the context of the body of threat appeals research. This is specifically achieved through the empirical examination of cognitive, emotional and behavioural response constructs. Finally, the study also contributes to the evolving discourse on threat appeals. More specifically, this thesis presents an approach that moves beyond the oft-cited confusion in the threat appeals field (e.g. Rotfeld, 1997; Johnston et al, 2015), and presents a strong platform from which to examine relationships between threat appeals and responses more reliably, and as a consequence build towards a more coherent body of research. These and related issues are subsequently discussed in depth in the following sections. The next section will focus on a discussion of the results from the empirical testing of the research hypotheses that have been presented in chapter 7.

Research on threat appeals is regularly described as confused (Rotfeld, 1997), which is an issue that has pervaded the literature for many decades. Indeed, Kay (1972, p16) observed that contradictions have occurred in research concerning 'fear appeals' due to a failure to explicitly define the nature of the specific factor, or intrinsic message features to be measured. This has meant that researchers "whose findings were at variance with each other appeared to believe they were all measuring the same thing, but in likelihood were not." This thesis provides empirical evidence that indicates that the effects of intrinsic message characteristics and interactions of these characteristics can be observed, therefore indicating how the components of threat appeals can be manipulated to generate different responses. Whilst, this requires significant further research, the use of intrinsic message characteristics will allow for a body of research to develop, whereby findings can be compared and contrasted in a more reliable fashion. Indeed, the effects of use of graphic image can be compared across studies reliably, whereas 'high' or 'low' threat appeals cannot. In addition the re-framing of responses to threat appeals as a decision about future behaviour has generated some interesting insights, particularly with regard to the role of anticipated emotions which merit further investigation.

### **8.1.1 Examining the empirical findings**

The results of hypothesis testing have been presented in chapter 7. Discussion now turns to an examination of the findings themselves in relation to the extant literature. A number of hypotheses were supported in the study (as outlined in chapter 7). Specifically the results show that graphic images evoked the immediate emotions of disgust, fear and uncomfortable feelings. This is in general support of prior research that has widened consideration of emotional responses to graphic images in this context away from solely fear (e.g. Dahl et al, 2003; Sabbane et al, 2009; Miller et al, 2009; Kees et al, 2010). Indeed, given that the review of the literature presented in this thesis identifies the assumption that emotional responses to threat appeal are limited to fear, this result supports that a range of immediate emotions are evoked through exposure to threat appeals. Indeed, the intrinsic message characteristic of graphic images evokes fear, disgust and uncomfortable feelings. Biener et al. (2005) in particular identified the immediate emotion of anger as an emotional response to graphic images. Whilst the results did not indicate that the graphic image manipulation alone caused anger, it was found that an interaction between graphic image, loss frame and other direction did evoke anger. This suggests that whilst fear, disgust and uncomfortable feelings are directly manipulated by the graphic components (e.g. blood) of an image, anger is evoked by the presence of a graphic image placed in the context of loss

(e.g. suffering severe injuries) combined with the subject of the image being someone else (i.e. the other condition, which in this study was presented as an individual's best friend).

In addition, prior research has shown that the inclusion of graphic images with a threat appeal increases perceptions of threat (e.g. Cauberghe et al, 2009; Sabanne et al, 2009). Presently though, perceptions of threat have been operationalised as perceptions of severity and susceptibility, as discussed earlier. The results indicate that graphic images do influence perceptions of severity, as expected. However, the results did not identify the influence of graphic images on susceptibility. It is not surprising that a graphic image increases perceptions of severity, as the presence of blood generates visceral emotional responses (as discussed above). However, the presence of blood alone does not provide any information regarding how susceptible an individual may be to having an accident. Rather, it presents information about the *consequences* of having an accident, and therefore it is not surprising that the use of a graphic image had no influence on perceptions of susceptibility. This particular finding suggests the importance of separating out the key aspects of a 'threat', unlike prior work which has tended to measure a global construct.

It was also hypothesised that non-graphic images would influence elaboration, because individuals instinctively *avoid* graphic images (Kees et al, 2010), and therefore in such cases elaboration cannot be assumed. Conversely, when non-graphic images are presented, subjects are better able to elaborate. When high levels of elaboration are evoked, central or systematic processing occurs. (Petty and Cacioppo, 1981), which involves the careful consideration of, and critical attention paid to, the arguments central to the message. Alternatively, when low elaboration is evoked, a peripheral or heuristic route is prompted, where shallow cues serve to persuade (Green and Brock 2000). It was suggested that the presence of graphic features (e.g. blood) in a threat appeal is a shallow cue (instinctively recognised as something to avoid) and as such low elaborative processing is more likely for graphic images and conversely higher for non-graphic images. However, the results indicate that graphic images in fact served to *increase* elaboration. This unexpected result may be explained by the specific operationalisation of the elaboration construct in terms of mental imagery. Indeed, when considering that graphic images have been shown to generate visceral emotional responses (as identified above) it is unsurprising that the image will also be subject to more mental imagery elaboration.

Further, the empirical results identified that the graphic images influenced anticipated humiliation. This was not specifically hypothesised, but is nonetheless an interesting finding. It might be possible to attribute this effect to the specific type of injury presented in the

graphic image used in this study, which was a severe facial injury. It is possible that the anticipation of facial injuries that leave permanent damage would evoke anticipated humiliation, particularly because injury to the face is something which is likely to be an injury that is highly visible to others. In such a case, it is likely to be that subjects may feel the likelihood of humiliation, when compared with a more private injury which may be more effectively hidden. This result is particularly interesting, and suggests that future research may even need to take the specific nature of the consequential injuries into account when designing stimuli for research, to avoid inconsistent results.

Regarding message frame, it was hypothesised that message frame would influence a number of emotional and cognitive responses. Specifically, it was argued that exposure to a loss frame would evoke negative emotions and influence perceptions of severity and susceptibility. Indeed, in the review of the literature it was apparent that the influence of loss framed messages on perceptions of severity and susceptibility is widely upheld in prior work (Rothman et al, 2006; Bartels et al, 2010). This is because the perception of risk associated with perceived severity and susceptibility are believed to be fundamental to the persuasive mechanism that underpins loss framed messages (Block and Keller, 1995; O'Conner et al, 2005). In addition, it was hypothesised that exposure to a loss avoidance frame would evoke positive emotions, self-efficacy and response efficacy as this frame highlights that the recommended action is effective and achievable. However, none of these hypotheses were supported.

This lack of support indicates that the intrinsic message characteristic alone does not influence emotions and cognitions in this context. This idea is supported by the fact that the empirical findings did suggest effects of message frame that had not been hypothesised. These effects were generated by the interaction between message frame and other intrinsic message characteristics (either / or direction of message and graphic treatment). Indeed, as noted above, an interaction between message frame, direction and graphic image evoked the immediate emotion of anger. In addition, whilst the emotion of disgust was generated by the use of graphic image, an interaction between graphic image, loss frame and self-direction, *also* evoked disgust. It was hypothesised that loss frame and self-direction would evoke fear, but the interaction between loss frame and self-direction also generated some interesting results that were not hypothesised.

The interaction between loss frame and self-direction was found to evoke anticipated emotions, namely anticipated fear, anticipated shame, anticipated humiliation, and anticipated depressed feelings. This is a very interesting finding that has substantive

implications for future work. It is possible that prior researchers (e.g. Passyn and Sujan, 2006) have assumed that the measures employed to capture emotional responses have recorded information about *immediate* emotions, when in fact individuals were actually experiencing an *anticipation* of emotions. Indeed, it was acknowledged in the review of the literature that message frame itself is unlikely to generate visceral emotional responses (for example the fight or flight fear mechanisms resultant from an immediate threat.) As such it was argued that, the immediate emotions experienced as a result of message frame manipulations are far more likely to be anticipatory emotions (Baumgartner et al, 2008). Given that, typically, the threat is *not* immediately present when an individual is exposed to a threat appeal, the short term and long term consequences of engaging (or not) in the recommended behaviour (e.g. Gerrend and Cullen, 2008; Apanovitch et al, 2003; Kiene et al, 2005) are important. This is in line with the idea of anticipatory emotions, as these are emotions experienced in the present, but which are caused by consideration of the prospect of a future event (Baumgartner et al, 2008). However, message frame did not interact with other intrinsic message characteristics to evoke anticipatory emotions. Rather, it is that the results identify *anticipated* emotions as the response which indicates that the temporal distance of the threat is key. Indeed, these results suggest strong support for the re-framing of research regarding responses to threat appeals in a decision making context about future behaviour.

Three of the hypothesised relationships regarding direction of message found support. Indeed, direction of message directly influenced anticipated fear, anticipatory worry and perceptions of severity. Interestingly, there was no effect observed on the emotions of anticipated shame or responsible feelings. Particularly because shame and guilt involve perceptions of self and therefore have strong personal implications (Boudewyns et al, 2013) it was hypothesised that self-directed messages were more likely to generate these emotions. However, in order for shame or guilt to be directly experienced or anticipated, an individual has to either have *performed* a negative act, or to imagine how they would feel if they *actually engaged* in a negative act (Agrawal and Duhachek, 2010). Shame is evoked when an individual violates a moral or social norm (Tangney, 1991) which leads to an individual believing their identity is somehow tarnished (Ferguson et al, 2007). It seems that the manipulation of the direction of message does not lead to greater or lesser violations of moral or social norms or more or less tarnishing of an individual's identity, which explains why these emotional responses were not evoked in response to this manipulation.

Another interesting result which was not hypothesised was the influence of other directed messages on anticipated regret. It was expected that self-directed messages would

influence anticipated regret, as regret is tightly bound to individuals' sense of self. Regret can only be experienced after an action or behaviour has occurred, or when an individual imagines the anticipated regret they would experience if they were to actually engage in a negative behaviour in the future. Indeed the motivating influence of regret is well documented. For example, Lechner et al, (1997) conducted a study in the context of communicating the potential threat of not engaging with breast cancer screening. Individuals who experienced anticipated regret were more likely to have a breast scan, than those who did not experience anticipated regret. Importantly, the experience of anticipated regret is dependent on an individual feeling responsible for the outcome (Tsiros and Mittal, 2000), and therefore it was expected that regret would be evoked by self-directed messages, and it was surprising to see that empirical results did not support this idea. A possible explanation for this lack of effect is that individuals are more loss averse when considering other people. For example, Polman (2012) found that when individuals were asked to make choices for others in a gambling task, less loss aversion (the preference for avoiding losses as opposed to acquiring gains) occurred than when individuals were making choices for themselves. Therefore, while this is admittedly somewhat speculative, perhaps imagining that someone else (e.g. a best friend) sustains serious injuries from a car accident generates anticipated regret because the individual may feel they could have changed the outcome in some way. As the gambling example above shows, individuals are motivated to be more loss averse when considering other people. This possibility appears to be worthy of future research, as will be discussed in due course.

Interestingly, the intrinsic message characteristics and interactions of those characteristics did not evoke any positive anticipated emotions. Admittedly, this is somewhat unsurprising, given the context of the message and the focus on injuries sustained from a car accident. However, that isn't to say that positive anticipated emotions are not relevant to an examination of responses to threat appeals. Indeed, the empirical results presented in Chapter 7 here showed that both anticipated hope and anticipated delight influenced behaviour intention *and* behaviour expectation. Given that anticipated emotions hinge on imagining events occurring, combined with the notion that individuals are motivated to protect their sense of self (as outlined above), the anticipation of positive emotions associated with engaging in the recommended action could influence future behaviour intentions and expectations. Interestingly, anticipated hope and delight did not influence the decision making task, which would indicate that these emotions are only pertinent to an individual's cognitions about future behaviour *prior* to engaging in the behaviour.

Further, empirical findings suggested that anticipated depressed feelings influenced behavioural intention and anticipated regret influenced behavioural expectation. While the finding that anticipated regret was influenced by other directed messages was surprising, this latter result is not especially so. As previously stated, regret is a very powerful emotion, and as such its influence on behavioural expectation is to be expected. It was also identified that the anticipated emotions of fear and responsible feelings influenced the decision task. Indeed, whilst anticipated emotions were found to have an effect on the measures linked to future behaviour and the decision making task, immediate (i.e. visceral or anticipatory) emotions were not found to influence any of these constructs.

Moving to discussion of the effects of cognition variables, cognitive appraisals were found to influence the outcome variables. Behavioural intention and behavioural expectation were both influenced by susceptibility, self-efficacy and response efficacy. Perceptions of severity were not found to influence either of these constructs. However, perceptions of severity and self-efficacy did influence the decision task. Indeed, these results support the idea that cognitions about future behaviour differ from those required in the decision making task immediately after exposure.

It is important to note that the empirical results suggested that the anticipated emotions of fear, regret and depressed feelings were also influenced by manipulations of the intrinsic message characteristics employed in this study. However, the intrinsic message characteristics used in this study did not influence anticipated hope, anticipated delight or perceptions of susceptibility. Therefore there is support for the model in that it is successful in identifying the relationships between the variables but finding the combination of appropriate intrinsic message characteristics to generate particular effects requires a lot more research.

Finally, it is important to note that – while these effects were not specifically hypothesised – empirical analysis suggested that an interaction between message frame and graphic treatment have an influence on behavioural intention. This suggests that at least two of the intrinsic message characteristics had a direct impact on behavioural intention, which was not mediated through any of the emotional or cognitive response variables. This is of particular interest and requires further examination. Indeed, a key feature of theories and models developed to explain responses to threat appeals (as outlined in chapters 2 and 3) all have cognitive (and sometime emotional) variables that mediate the relationship between threat appeal and outcome variable.

Overall, these results indicate that immediate emotions (beyond just fear), cognitive appraisals, elaboration, and anticipated emotions, are generated by exposure to the identified intrinsic message characteristics of threat appeals. However, immediate emotions and elaboration were not found to have any detectable effect on cognitions about future behaviour, while only a small number of anticipated emotions and cognitive appraisals did have an effect. That is not to say the emotional and cognitive responses produced no effects at all, but that the variables of interest in the study were only specifically influenced by a limited number of these response variables. As such, the results reported in this chapter reinforce the notion that the instinctive threat mechanism that is assumed to drive behaviour in the threat appeals field (i.e. the immediate visceral fear response) is not particularly important in achieving the objectives of threat appeals (i.e. behaviour change in the future). However, *anticipated* fear was found to influence the decision making task, and as such it is proposed that anticipations of fear may influence decisions soon after exposure to a threat appeal, but do not influence cognitions about future behaviour.

These findings have significant implications for future work in the area, which will be discussed in later sections of this chapter. In brief, it has been argued above that the present study makes a number of significant contributions to existing research by virtue of the creation and explication of a new consideration of responses to threat appeals. It is also true that the work done in this study contributes to existing theory due to the examination of existing constructs, such as immediate emotional responses to threat appeals. Indeed, the results of this study demonstrate that threat appeals do generate fear, disgust anger and uncomfortable feelings as a result of the intrinsic message characteristics or interactions of these. This supports the widening of consideration of emotional responses to threat appeals away from just fear (e.g. Witte, 1992) incorporate these emotions (e.g. Morales et al, 2012). Whilst these emotions did not influence the outcome variables of this study, the effects of these immediate emotions warrant further research. In addition, this study finds support for the influence of cognitive response variables as identified in the extended parallel process model (Witte, 1992) namely perceived severity, susceptibility, self-efficacy and response efficacy. Indeed, these variables are found to influence behavioural intention and expectation and as such are confirmed as an integral response to threat appeals.

## **8.2 Practical Implications**

Whilst there are many other communication strategies that can be utilised – and indeed authors such as Hastings et al. (2004) call for a rise in use of alternative strategies – for the

general task of behaviour change within a social marketing context (i.e. the reduction of harmful public behaviour, or the encouragement of positive public behaviour), threat appeals of the general type studied in the present thesis are arguably the most common, and have been historically very popular amongst a number of groups for this purpose. While this popularity has generated a large amount of research in the area from academics, unfortunately, the early chapters of this thesis make clear that existing research has proven inconclusive. The position taken in this thesis is that there is a pressing need for additional research in the area because of the fact results are mixed and there are major “gaps” (Leshner et al, 2011, p77) in scholarly understanding in the field. Also given that threat appeals are employed by government, charities and third sector organisations and require significant financial investment, as evidenced in the earlier chapters of this thesis (see Chapter 1), the public are regularly exposed to threat appeals. Therefore, the practical implications of the present study fall into two broad areas. Implications for research was discussed earlier in the present chapter, and this chapter will discuss implications for practitioners.

Whilst this research approach is novel and, as will be discussed in Section 8.3, requires replication and further investigation, there are some significant implications for practitioners. Perhaps the most important implication for practitioners in the area is the clear evidence that specific message characteristics can be manipulated to have specific effects. Importantly, practitioners need to understand that it is not appropriate to assume that response emotions can somehow be ‘encoded’ into a threat appeal so that all individuals will experience that response. Rather, different characteristics and combinations of characteristics can be manipulated to have specific effects.

Further, the general reframing of responses to threat appeals as a decision making situation has major implications for the type of responses that these threat appeals should be designed to influence. For example, prior research in the area has implied that immediate emotions such as fear are important in creating the intended effect of the threat appeal. However, the present study suggests (and finds evidence for) the idea that this may be somewhat illogical. Specifically, it is often the case that the individual is exposed to the threat appeal at a time when they are *not* engaging in the specific behaviour in question (although it is recognised that at times this may not be the case). In such a situation, the intended effect of the threat appeal must logically be some sort of behaviour change in the *future*. As such, the present study shows that a focus on immediate responses such as fear is less important than influencing future-oriented emotions such as anticipated and anticipatory emotions.

The present research also provides a number of interesting implications as to the *specific* responses that interested practitioners should aim to influence. Importantly, it seems that influencing immediate emotions such as fear is less important in changing future behaviour than influencing anticipated emotions such as anticipated regret (which influenced behavioural intentions), anticipated depressed feelings (which influenced behavioural expectation), and anticipated fear and responsibility (which influenced scores on the decision task). Cognitions such as susceptibility, self-efficacy, and response efficacy were all found to influence the future oriented behavioural concepts of expectation and intention, while perceptions of severity and self-efficacy influenced the decision task. Since (as shown above) this present study provides clear evidence as to which specific message characteristics can be manipulated consistently to effect individual response in terms of these variables, this study should prove of significant use to practitioners who wish to design evidence-based threat appeals. Similarly, it was also found (although not specifically hypothesized), that the specific message characteristics of message frame and graphicness had an important direct influence on behavioural intentions. Combined with the results of the other analysis, this suggests the strong importance of changing the design emphasis of threat appeals from 'generating fear', to instead combining specific message characteristics for specific purposes.

With this in mind, a number of the unexpected results reported in section 8.1 suggest the possibility that different combinations of message characteristics are more or less useful for different specific threat appeal contexts. While this was not explicitly tested, due to the single context used (and consequently will be discussed as a key direction for future research in section 8.3), it may be the case that specific 'types' of consequence (e.g. facial injuries or more generally consequences visible to others) may be more able to influence key variables such as anticipated humiliation, and graphic images may actually be able to access elaboration mechanisms more than is suggested by prior research in such cases. It is also important for practitioners to note the findings of the present study regarding what threat appeals of this type can *not* do. Specifically, it seems that because of the difficulty in operationalizing any positive information in such a context, threat appeals may struggle to generate any positive anticipated emotions. However, the present results suggest that anticipated home and delight may be important influences on future behaviour as found herein. This suggests that practitioners in the area may wish to combine different types of campaign with the more traditional threat appeal, to take advantage of various possible effect pathways.

### 8.3 Study limitations and directions for future research

The present study adopts a novel approach to understanding responses to threat appeals, and as a consequence of a detailed review of existing relevant literature presents a new conceptual framework that conceptualizes threat appeals as part of a decision making process regarding future behaviour. This appears to be a more useful perspective from which to examine the influence and intended effect of threat appeals than the models that generally guide existing work. Whilst the results from this initial study are promising, the framework is designed for threat appeals in general, and as such it is necessary to replicate findings, in particular across different appropriate topics (e.g. smoking or binge drinking). Furthermore, it is also necessary to replicate the specific *relationships* uncovered in this study, in particular the effects of anticipated emotions, as these have rarely if ever been tested in the general context before.

This thesis has demonstrated that the rationale for widening considerations of emotional responses to threat appeals has significant merit. However, there are specific limitations associated with the various methods employed, although when taken in context they represent the most appropriate way of examining the hypothesized model. In particular, there are well-known limitations of self-report measurement of emotions. Of particular relevance to this study is the difficulty in distinguishing self-report measures of immediate and anticipatory (note, not anticipated) fear, which are conceptualized herein as different types of emotion, as discussed throughout the thesis. Indeed, a similar issue is present regarding the differentiation between all visceral responses and anticipatory emotions as they are all experienced immediately but have a differing focus (i.e. fear of an immediate event right now, versus fear of a future event occurring). This issue is not new, but it is important to acknowledge it as a limitation. Of course, it may be possible in future to provide greater objectivity in the measurement of emotion by using techniques such as those from psychophysiology or neuroscience, but these techniques are not a panacea either, and are subject to key limitations (e.g. Lee et al, 2007). While there are limitations to the use of self-report measures, their key advantages are their wide applicability and comparability with existing work, as well as their ease of use for respondents, which allows a larger sample size to be conducted, as well as a greater range of emotions to be tapped. This is perhaps why self-report measures have proved overwhelmingly popular in research within the threat appeals and social marketing field. Taken together, it is therefore considered that the use of self-report measures of emotion is appropriate presently, as long as the limitations are recognised, and steps are taken to minimize their impact (see Chapter 5 for more discussion).

In addition, while a large sample was taken, which increases the power of the analysis to examine the research hypotheses, it was also necessary to utilise a snowball-type sample rather than use a sampling frame drawn from an accurate list of the entire population. Of course, this limitation is not unique to the present study, and again is extremely common in research within the relevant fields. When considering this issue, it is felt that the power afforded from the larger sample size, which in practical terms was a result of the enhanced response rate helped by the snowball method, outweighs this. Further, a key advantage of this particular sample is that it does not rely on student subjects, as so much research in the area does. While student samples may have certain internal validity advantages that are not available to the snowball approach used here, the increase in external validity is considered to be significantly more useful herein.

As this research outlines a novel approach to the conceptualization of threat appeals, the opportunities for future research are consequently numerous. In particular, three specific intrinsic message characteristics were identified for this study (message frame, message direction, and message graphicness), however, future research could widen the consideration out to other message characteristics and examine the influence of these on responses to threat appeals. One avenue that seems particularly ripe with potential is the type of threat; which for example could include physical versus psychological threats. When combined with other message characteristics as explored herein, it seems likely that interesting findings will result.

Equally, whilst a wide range of specific emotional responses have been measured in this study (e.g. fear, disgust, anger) future work could include other appropriate emotions and examine the effects of various intrinsic message characteristics on these. Of course, it was necessary for the purposes of practicality to restrict consideration of various responses to a manageable level. However, future research should not consider itself restricted to only the emotions and cognitions tested here, as a number of fruitful avenues for research are likely to suggest themselves with further research.

As well as this, a number of the specific response variables examined in the present study look likely to justify detailed future research. In particular, based on the findings of the research study (as outlined in chapter 7) the role of anticipated regret, both in terms of the message characteristics that evoke regret and the influence of anticipated regret on outcome variables appears a key area for future scholars to focus on.

In a general sense, the model proposed here should best be seen as a baseline for a novel approach to future work and as such, it may require further testing and refinement. However, it is evident from the results presented in this thesis that it seems to be a good starting point for future research. In particular, further research concerning the outcome variables will be valuable. Indeed, longitudinal work to examine the decision making explored herein (i.e. behavioural intention, expectation, and the decision task) and then following up to measure the actual execution (or not) of behaviour change would enable a deeper understanding of the influence of threat appeals on behaviour – which after all is the ultimate objective of almost all threat appeal campaigns. However, such research will be difficult, and is likely to require significant support from key constituencies (such as policy makers of third-sector organizations) to enable such work to be conducted.

Also, the proposed framework could be examined in terms of the specific order of the constructs in the model. This suggestion is inherently linked to a greater examination of the temporal dimension that underpins the present decision-based approach. Indeed, the model presented in this thesis re-frames the consideration of responses to threat appeals as a decision about future behaviour, but at this point it is not specified how far into the future the behaviour is likely to occur (or not), and whether this variable may have an influence on the effects suggested herein. Indeed, it could be argued that there are multiple points at which we make decision about a future behaviour, including immediately prior to engaging in that behaviour. Therefore future research could investigate decision making about behaviours that are likely to occur in the short term and the longer term. In addition examining multiple decision points and how these influence behaviour would be beneficial.

In addition, further research concerning single and multiple advertisement exposures would be beneficial. This is an issue that has received considerable debate in the advertising and marketing literature (e.g. Weitz and Wensley, 2002). The current research is based on a single exposure to a threat appeal, however a longitudinal research design with multiple exposures may influence behaviour in a different manner. Indeed, given that the government and charities regularly use threat appeals as part of integrated campaigns examining how the print threat appeal element of an integrated communication campaign influences behaviour is an option for future research.

Finally, studies which tap the interactions between different ‘types’ of appeal aimed at the same basic objective are likely to offer major insights. More specifically, while the model of threat appeals examined here focuses on future behaviour as a decision process, it could be that the most effective way to achieve the campaign objectives is to actually combine

such appeals with different types of appeals. For example, taking the speeding context examined herein, the primary threat appeal here is the threat appeal advertisement, which necessarily is viewed at a different point than the behaviour of interest will take place. While the present study has provided significant insight into how to design such a campaign effectively, it could be the case that *reinforcing* the campaign with one focused on immediate response, presented in context where the behaviour *is* taking place (e.g. as motorway billboards) may lead to even more effective results.

In summary, it is hoped that the findings of the present study will stimulate other researchers to examine the ideas and concepts presented here, and conduct further research in the area. To this end, the suggestions presented above should provide future researchers with some preliminary directions and a platform for future research.

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## Appendices

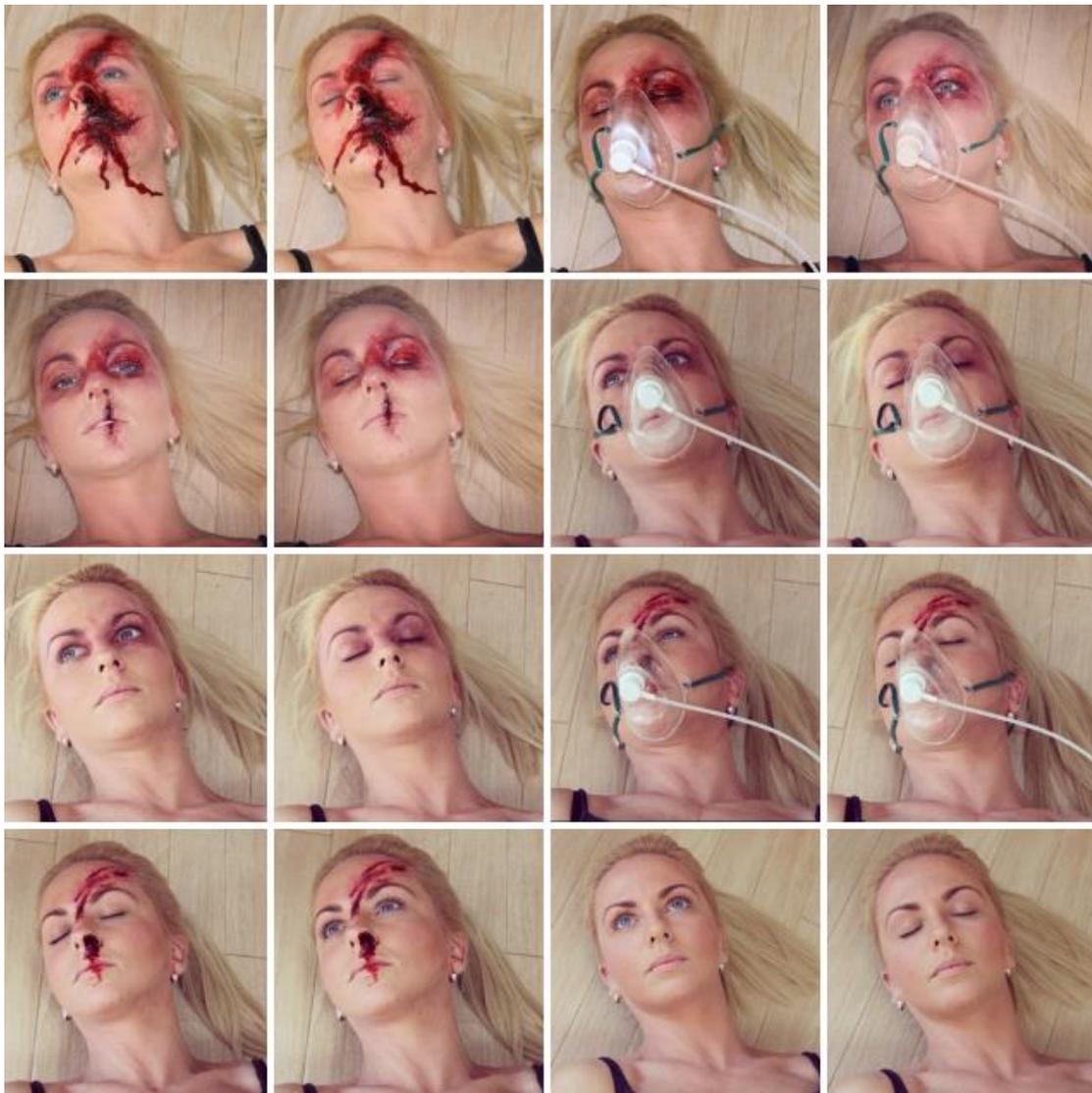
### Appendix 5.1 - Table with examples of prior topics employed by research studies

Topic	Selected References
AIDS	Dillard et al (2007); LaTour and Pitts (1989); Marchand and Filiatrault (2002); Muthusamy et al (2009)
Anti-Drug	Stephenson and Palmgreen (2001); Banerjee et al (2011); Dillard et al (2007)
Anti-Smoking	Adams et al (2011); Arthur and Quester (2004); Leshner et al (2011); Davis et al (2011); Dickinson and Holmes (2008); Dickinson-Delaporte and Holmes (2011); Dunlop et al (2008); Erceg-Hurn and Steed (2011); Gallopel-Morvan et al (2009); Kees et al (2010); Keller and Block (1996); Lee et al (2011); Leshner et al (2009); Leshner et al (2010); Maddux and Rogers (1983); Michaelidou et al (2007); Miller et al (2007); Nixon et al (2008);
Binge Drinking	Dillard et al (2007); Jessop and Wade (2008); Lee and Shin (2011)
Breast Cancer	Harris and Napper (2005); Jones and Owen (2006)
Caffeine consumption	Nestler and Egloff (2012); Block and Williams (2002)
Charitable giving	Dillard et al (2007); Hibbert et al (2007)
Child abuse	Bagozzi and Moore (1994)
Climate change	O'Neill and Nicholson-Cole (2009)
Computer equipment	Cochrane and Quester (2005); Johnston and Warkenten (2010)

Dangerous driving/ Road Safety	Carey and Sarma (2011); Algie and Rossiter (2010); Taubman Ben-Ari et al (2000); Block (2005); Cauberghe et al (2009); Dillard et al (2007); Goldenbeld et al (2008); Hunt and Shehryar (2002); Janssens and De Pelsmacker (2007); Lewis et al (2007); Lewis et al (2007b); Megia et al (2011); Mowen et al (2004); Neilson and Shapiro (2009)
Developing community	Dillard et al (2007)
Downloading music	Levin et al (2007)
Environment	Cornelissen et al (2007); Meijnders et al (2001)
Exercise	Dillard et al (2007); Milne et al (2002)
Finance/ Credit card	Chebat et al (1995)
Flossing	Dillard et al (2007)
Genetically modified food	Laros and Steenkamp (2004)
Health news	(STD, Heart attack, Cancer): Hong (2011)
Homeless children	Basil et al (2008)
Influenza	Dillard and Anderson (2004)
Obesity/ Healthy eating	Passyn and Sujana (2006); Chan et al (2009)
Olestra (health)	Block and Williams (2002)
Parenting	Dillard et al (2007)
Pharmaceuticals	Kavadas et al (2007)
Politics and terrorism	De Castella et al (2009); Dean, (2005)
Radon	LaTour and Tanner (2003)
Rape	LaTour and Rotfeld (1997); LaTour et al (1996)
Repetitive strain injury	de Hoog et al (2005)
Safe sex/ STDs	Armitage and Talibudeen (2010); Block and Keller (1997); Block and Keller (1998); Keller (1999); Mewborn and Rogers (1979)

Skin cancer	Block and Keller (1997); Boer et al (2006); Mukherjee and Dube (2012); Dunlop et al (2008); Hevey et al (2010); McMath and Prentice-Dunn (2005); Passyn and Sujan (2006)
Stress	Das et al (2003)
Testicular cancer	Eppright et al (2002)
Tetanus vaccination	Leventhal et al (1965); Ordonana et al (2009)
Violent crime	Henthorne et al (1993)

### Appendix 5.2 - Pictures commissioned from the make-up artist



## Appendix 5.3 - Pre-test information & Adverts

YOUR BEST FRIEND IS DRIVING ON A WINDING ROAD. THEY ARE LATE.  
BUT THEY DECIDE TO OBEY THE SPEED LIMIT



**YOUR BEST FRIEND COULD AVOID AN  
ACCIDENT AND SERIOUS INJURIES**

Obeying the speed limit significantly reduces accidents, drive responsibly.

YOU ARE DRIVING ON A WINDING ROAD. YOU ARE LATE. YOU DECIDE  
TO BREAK THE SPEED LIMIT



**YOU COULD HAVE AN ACCIDENT AND  
SERIOUS INJURIES**

Obeying the speed limit significantly reduces accidents, drive responsibly.

YOU ARE DRIVING ON A WINDING ROAD. YOU ARE LATE. BUT YOU  
DECIDE TO OBEY THE SPEED LIMIT



**YOU COULD AVOID AN ACCIDENT AND  
SERIOUS INJURIES**

Obeying the speed limit significantly reduces accidents, drive responsibly.

YOUR BEST FRIEND IS DRIVING ON A WINDING ROAD. THEY ARE  
LATE. THEY DECIDE TO BREAK THE SPEED LIMIT



**YOUR BEST FRIEND COULD HAVE AN  
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Obeying the speed limit significantly reduces accidents, drive responsibly.

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**YOUR BEST FRIEND COULD AVOID AN ACCIDENT AND SERIOUS INJURIES**

Obeying the speed limit significantly reduces accidents, drive responsibly.

YOU ARE DRIVING ON A WINDING ROAD. YOU ARE LATE. BUT YOU DECIDE TO OBEY THE SPEED LIMIT



**YOU COULD AVOID AN ACCIDENT AND SERIOUS INJURIES**

Obeying the speed limit significantly reduces accidents, drive responsibly.

YOU ARE DRIVING ON A WINDING ROAD. YOU ARE LATE. YOU DECIDE TO BREAK THE SPEED LIMIT



**YOU COULD HAVE AN ACCIDENT AND SERIOUS INJURIES**

Obeying the speed limit significantly reduces accidents, drive responsibly.

YOUR BEST FRIEND IS DRIVING ON A WINDING ROAD. THEY ARE LATE. THEY DECIDE TO BREAK THE SPEED LIMIT



**YOUR BEST FRIEND COULD HAVE AN ACCIDENT AND SERIOUS INJURIES**

Obeying the speed limit significantly reduces accidents, drive responsibly.

## Appendix 5.4 - Measures Table

### Mediating variables

<b>Construct</b>	<b>Scale</b>	<b>Items</b>
Immediate Emotions	Anger	Frustrated Angry Irritated
	Fear	Scared Afraid Panicky Fearful
	Happy	Happy Pleased Joyful Delighted Glad
	Disgust	Disgusted Repulsed Revolted Nauseated
	Uncomfortable	Uncomfortable
Anticipatory Emotions	Worry	Nervous Worried Tense
	Guilt	Guilty Accountable Bad Responsible
	Optimism	Optimistic Encouraged Hopeful Excited
	Pride	Proud
	Relief	Relieved
	Satisfaction	Satisfied
	Anxiety	Anxious

Construct	Scale	Items
	Anticipated Emotions	Anticipated Optimism Anticipated Encouragement Anticipated Hope Anticipated Happiness Anticipated Pleased Anticipated Joy Anticipated Delight Anticipated Gladness Anticipated Excitement Anticipated Pride Anticipated Relief Anticipated Satisfaction Anticipated Self assurance Anticipated Frustration Anticipated Anger Anticipated Irritation Anticipated Depressed Anticipated Sadness Anticipated Miserable Anticipated Scared Anticipated Afraid Anticipated Panic Anticipated Fear Anticipated Embarrassment Anticipated Ashamed Anticipated Humiliation Anticipated Guilt Anticipated Accountable Anticipated Bad Anticipated Responsible Anticipated Upset Anticipated Disappointment Anticipated Uncomfortable Anticipated Anxiety Anticipated Regret Anticipated Sorry
Elaboration	Mental Imagery	The advert made me imagine or picture something in my mind The imagery which occurred was clear The imagery that occurred was detailed The imagery that occurred was vivid I really only experienced one image I imagined a number of things Many images came to my mind

Construct	Scale	Items
Cognitive Processes	Defensive Avoidance	When I drive I tend to avoid thoughts of speeding accidents When I speed I tend to avoid thoughts of speeding accidents
	Susceptibility	I am at risk of having an accident from speeding It is likely that I will have an accident from speeding It is possible that I will have an accident from speeding
	Severity	I believe that having an accident from speeding is severe I believe that having an accident from speeding has serious negative consequences I believe that having an accident from speeding is extremely harmful
	Response Efficacy	Obeying the speed limit is effective in preventing accidents Obeying the speed limit works in preventing accidents If I obey the speed limit I am less likely to have an accident
	Self-Efficacy	I am able to obey the speed limit to prevent getting having an accident I have the ability to obey the speed limit to prevent having an accident I can easily obey the speed limit to prevent having an accident

### Dependent variables

Construct	Scale	Items
Behaviour	Behavioural intention	To what extent do you <u>intend</u> to drive over the speed limit in the near future?
	Behavioural expectation	How <u>likely</u> is it that you will drive over the speed limit in the near future?
	Decision Task	<p>Imagine you are going to an interview for an exciting new job that you really want.</p> <p>You are running 10 minutes late to set out for this really important interview which is 20 miles away.</p> <p>You know the roads well and have taken the journey before so you estimate the journey should take approximately 30 minutes.</p> <p>The speed limit is 40 miles an hour for the entirety of the journey.</p> <p>The conditions are dry and visibility is good. You know there are no speed cameras on the journey and you have never seen a police officer on these roads before.</p> <p>Please indicate the average speed you would travel for this journey using the speed slider below.</p> <p>As you move this slider you will see how much time you could gain or lose in the box below. Please select the average speed you would travel at for the journey to the interview and click on the arrow at the bottom of the page.</p>

## Control variables

Construct	Scale	Items
	Social Desirability	<p>I am always courteous, even to people who are disagreeable</p> <p>There have been occasions when I took advantage of someone.</p> <p>I sometimes try to get even rather than forgive and forget</p> <p>I sometimes feel resentful when I don't get my own way.</p> <p>No matter who I'm talking to, I'm always a good listener.</p>
Attitude to Speeding		<p>Unacceptable – Acceptable</p> <p>Foolish- wise</p> <p>Wrong – right</p> <p>Unfavourable – favourable</p> <p>Bad – Good</p> <p>Risky – safe</p>
Anxiety Sensitivity		<p>It is important to me not to appear nervous</p> <p>When I cannot keep my mind on a task, I worry that I might be going crazy</p> <p>It scares me when I feel “shaky” (trembling)</p> <p>It scares me when I feel faint</p> <p>It is important to me to stay in control of my emotions</p> <p>It scares me when my heart beats rapidly</p> <p>It embarrasses me when my stomach growls</p> <p>It scares me when I am nauseous</p> <p>When I notice my heart is beating rapidly, I worry I might have had a heart attack</p> <p>It scares me when I become short of breath</p> <p>When my stomach is upset I worry that I might be seriously ill</p> <p>It scares me when I am unable to keep my mind on a task</p> <p>Other people notice when I feel shaky</p> <p>Unusual body sensations scare me</p> <p>When I am nervous I worry that I might be mentally ill</p> <p>It scares me when I am nervous</p>

Construct	Scale	Items
Style of Processing		<p>Visual items</p> <p>There are some special times in my life that I like to revive by mentally "picturing" just how everything looked.</p> <p>When I'm trying to learn something new, I'd rather watch a demonstration than read how to do it.</p> <p>When I'm trying to learn something new, I'd rather watch a demonstration than read how to do it.</p> <p>I like to daydream.</p> <p>I generally prefer to use a diagram rather than a written set of instructions.</p> <p>I like to "doodle".</p> <p>I find it helps to think in terms of mental pictures when doing many things.</p> <p>After I meet someone for the first time I can usually remember what they look like but not much about them</p> <p>When I have forgotten something I frequently try to form a mental "picture" to remember it.</p> <p>I prefer activities that don't require a lot of reading.</p> <p>I seldom daydream.</p> <p>My thinking often consists of mental "pictures" or images.</p> <p>Verbal items</p> <p>I enjoy doing work that requires the use of words</p> <p>I can never seem to find the right word when I need it</p> <p>I do a lot of reading</p> <p>I think I often use words in the wrong way</p> <p>I enjoy learning new words</p> <p>I often make written notes to myself</p> <p>I like to think of synonyms for words</p> <p>I like learning new words</p> <p>I prefer to read instructions about how to do something rather than have someone show me</p> <p>I spend very little time attempting to increase my vocabulary</p>

Construct	Scale	Items
Construal level		<p>Independent</p> <p>My personal identity, independent of others is very important to me</p> <p>I enjoy being unique and different from others</p> <p>Being able to take care of myself is a primary concern for me</p> <p>I take responsibility for my own actions</p> <p>Speaking up at work/ task group/ class is not a problem for me</p> <p>Having a lively imagination is important to me</p> <p>I'd rather say "no" directly then risk being misunderstood</p> <p>I am comfortable being singled out for praise or rewards</p> <p>I am the same person at home that I am at work/ university</p> <p>I act the same way no matter who I am with</p> <p>I feel comfortable using someone's first name soon after I meet them, even when they are much older than I am</p> <p>I prefer to be direct and forthright when dealing with people I have just met</p> <p>I value being in good health above everything</p> <p>Interdependent</p> <p>My relationships with those in my group are more important than my personal accomplishments</p> <p>My happiness depends on the happiness of those in my group</p> <p>I am careful to maintain harmony in my group</p> <p>I would sacrifice my self-interests for the benefit of the group</p> <p>I will stay in a group if they need me, even if I'm not happy with the group</p> <p>I respect the decisions made by my group</p> <p>If my brother or sisters fail, I feel responsible</p> <p>I have respect for authority figures with whom I interact</p> <p>I respect people who are modest about themselves</p> <p>Even when I strongly disagree with group members I avoid an argument</p>
Perspective Taking		<p>Before criticising somebody, I try to imagine how I would feel in their place</p> <p>If I'm sure I'm right about something, I don't waste much time listening to other people's arguments</p> <p>I sometimes try to understand my friends better by imagining how things look from their perspective</p> <p>I believe there are two sides to every question and try to look at them both</p> <p>I sometimes find it difficult to see things from the "other guy's" point of view</p> <p>I try to look at everybody's side of a disagreement before I make a decision</p> <p>When I'm upset at someone, I usually try to "put myself in his shoes" for a while</p>
Empathetic Concern		<p>When I see someone being taken advantage of, I feel kind of protective toward them</p> <p>When I see someone being treated unfairly, I sometimes don't feel very much pity for them</p> <p>I often have tender, concerned feelings for people less fortunate than me</p> <p>I would describe myself as a pretty soft-hearted person</p> <p>Sometimes I don't feel sorry for other people when they are having problems</p> <p>Other people's misfortunes do not usually disturb me a great deal</p> <p>I am often quite touched by things that I see happen</p>

<b>Construct</b>	<b>Scale</b>	<b>Items</b>
Confound		The message was clearly written I clearly understood this message I learned a lot about speeding from this message The quality of the arguments in the message were good
Perceived Manipulation		The message was manipulative The message was misleading The message tried to manipulate me This message was exploitative
Message Derogation		This message was exaggerated This message was distorted This message was overblown This message was overstated

### Manipulation checks

<b>Construct</b>	<b>Scale</b>	<b>Items</b>
Direction		You – your best friend
Graphicness		Shocking Scary Frightening Vivid Intense Powerful Graphic Unpleasant Highly arousing Gruesome
Severity of injury		Not serious at all – very serious
Message Frame		Breaking the speed limit and having an accident – obeying the speed limit and avoiding an accident

## Appendix 5.5 - Screenshot of decision task

Imagine you are going to an interview for an exciting new job that you really want.

You are running **10 minutes late** to set out for this **really important interview** which is 20 miles away.

**You know the roads well and have taken the journey before** so you estimate the journey should take approximately 30 minutes.

**The speed limit is 40 miles an hour for the entirety of the journey.**

The conditions are **dry** and **visibility is good**. You know there are **no speed cameras** on the journey and you have **never seen a police officer** on these roads before.

Please indicate **the average speed you would travel** for this journey using the speed slider below.

As you move this slider **you will see how much time you could gain or lose** in the box below. Please select the average speed you would travel at for the journey to the interview and click on the arrow at the bottom of the page.



Travelling at this speed you would arrive...

**...10 minutes and 0 seconds late**

## Appendix 5.6 - Copy of the measurement instrument

Thank you very much for agreeing to participate in this study. The questionnaire will take approximately 15 minutes to complete. Please note that participation in this research is voluntary and you are free to withdraw at any time. The principal researcher for this study is Laura Chamberlain (Aston University) under the supervision of Professor John Rudd (Aston University) and Professor Nick Lee (Loughborough University). Please use a computer or laptop to fill out this questionnaire and not a mobile device. Please read the information below: **TERMS AND CONDITIONS:** The following information outlines the procedure for this study. Participation is voluntary and everyone is free to withdraw from the study at any time. Please read the following information and if you agree to participate in this study please tick the box below. If you have any questions please do not hesitate to ask Laura Chamberlain at L.M.Chamberlain1@aston.ac.uk. Please note that some of the images used in the stimuli may be graphic and you may find them shocking (for example, showing pictures of individuals with severe injuries). In addition you will be asked to provide some personal information about experiences you may or may not have had in your lifetime. These answers will not involve detailed description and will not be linked to your identity in any way, if you feel uncomfortable at any point or do not wish to complete the task, please stop what you are doing and close your internet browser window. If any of the following images or questions cause you upset or distress and you are an Aston student or staff member please follow the appropriate link below in order to get the support you may need. If you are not an Aston student or staff member please contact the principal researcher Aston University Staff: <http://www1.aston.ac.uk/staff/counselling/?OriginalPath=/staff/counselling/> Aston University Students: <http://www1.aston.ac.uk/current-students/counselling/> The study is structured as follows: - At the first stage you will be asked to demonstrate your understanding of; the instructions, your right to withdraw from the study and your consent to partake in the study by ticking the box provided on the computer screen. You will then be asked some questions about yourself. Answers to these questions will be recorded by ticking the relevant box displayed on the computer screen using the mouse. - At the next stage you will be asked to view an advertisement which will be displayed on your computer screen. - After you have viewed the advertisement we would like you to answer some questions about the advert you have seen which will be displayed on the computer screen. Answers to these questions will be recorded by ticking the relevant box displayed on the computer screen using the mouse. **Confidentiality of information** This research study is one component of a PhD being undertaken by Laura Chamberlain. It is important to note that the data generated by this study may, if applicable, be used for publications. The confidentiality of personal information and the anonymity of all volunteers involved in this investigation will be preserved in the following ways: We will only ask for your contact details, with your consent, to enter you into the prize draw. This information will not be linked to the questionnaire data collected during the study. This information will be kept in a secure location which can only be accessed by Laura Chamberlain and will be destroyed six weeks after your participation in this study. Details that would allow you to be identified will not be published or made available to anyone other than Laura Chamberlain. It will not be possible to identify you from any information generated by the research study. **Volunteer's statement** I have read and understand the above explanation. I agree to take part in the study outlined above and I have been informed that I am free to withdraw my participation from this study at any time. We are offering participants of this study the opportunity to enter a prize draw. The prizes on offer are as follows: One lucky winner will win the 1st Prize; a iPad mini 3 16GB Wi-Fi Two lucky winners will win 2nd Prizes; a Kindle Fire 6 HD Tablet 16GB each Four lucky winners will win 3rd Prizes; a £50 Amazon gift voucher each If you would like to enter this prize draw please enter your e mail address in the box provided at the end of the study. Please note you are not able to enter the prize draw unless you complete the study but you can complete the study and chose not to enter in to the prize draw. Please tick the box at the bottom of this page to demonstrate you have read and understand this statement and you agree to continue with this study. Once you have done this please use the arrow in the bottom right hand corner to proceed to the next stage of the study.

I have read the information and agree to continue with this study (1)

Q2 We would like to know a little more information about you, your lifestyle and the experiences you have had in your life. Please indicate your answers to the following questions. Are you over the age of 18?

Yes (1)

No (2)

If No Is Selected, Then Skip To Unfortunately you are not eligible to...

Q3 Have you or anyone you are close to been in a traumatic car accident causing serious injury or death?

Yes (1)

No (2)

If Yes Is Selected, Then Skip To Unfortunately you are not eligible to...

Answer If We would like to know a little more information about you, your lifestyle and the experiences yo... <span style="font-size:13px;">No</span> Is Selected Or Have you or anyone you are close to been in a car accident causing serious injury or death?... <span style="font-size:13px;">Yes</span> Is Selected

Q4 Unfortunately you are not eligible to participate in this study. Thank you for taking the time to attempt to participate. If you have any questions regarding this study please contact the principal researcher at L.M.Chamberlain1@aston.ac.uk. It would be helpful if you could send the link for this questionnaire to people you know who would be willing to fill it out. If you would like to do this please copy and paste the link to the questionnaire into an e mail. Thank you very much for your time.

If Unfortunately you are not e... Is Displayed, Then Skip To End of Survey

Q5 We would like to know a little more information about you, your lifestyle and the experiences you have had in your life. All answers you provide to these questions are confidential. Please read the questions and use your mouse to click on your answer. You must answer all questions in this section. If any of the following questions cause you upset or distress please follow the appropriate link in order to get the support you may need. Aston University Staff

- Please tick this box to indicate you understand these instructions (1)

Q6 Please indicate what you think about breaking the speed limit whilst driving

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Unacceptable:Acceptable (1)	<input type="radio"/>						
Foolish:Wise (2)	<input type="radio"/>						
Wrong:Right (3)	<input type="radio"/>						
Unfavourable:Favourable (4)	<input type="radio"/>						
Bad:Good (5)	<input type="radio"/>						
Risky:Safe (6)	<input type="radio"/>						

Q7 Are you male or female?

- Male (1)  
 Female (2)

Q8 What is your current age?

- Less than 18 (1)  
 18 - 25 (2)  
 25 to 34 (3)  
 35 to 44 (4)  
 45 to 54 (5)  
 55 to 64 (6)  
 65 or over (7)

Q9 What is your nationality?

Q10 What is your ethnicity?

- White British (1)  
 White Irish (2)  
 Any other white background (3)  
 Mixed (4)  
 Asian British (5)  
 Asian (6)  
 Black British (7)  
 Black Caribbean (8)  
 Black African (9)  
 Any other black background (10)  
 Chinese (11)  
 Other (12)

Q11 What is the highest qualification you have achieved?

- CSE/GCSE (1)  
 A Level or equivalent (2)  
 BA/BSc (3)  
 MA/MSc (4)  
 PhD (5)  
 Other (6)

Q12 What is your current relationship status?

- Single (1)
- In a relationship but not living together (2)
- Living with partner (3)
- Civil partnership (4)
- Married (5)
- Separated (6)
- Divorced (7)
- Widowed (8)

Q13 Do you have a child or children?

- Yes (1)
- No (2)

Q14 Do you have a driving licence?

- Yes (1)
- No (2)

Q15 Do you own a car?

- Yes (1)
- No (2)

Q16 Do you drive a car?

- Yes (1)
- No (2)

Q17 How often do you drive a car?

- Daily (1)
- A couple of times a week (2)
- Once a week (3)
- Once a fortnight (4)
- Once a month (5)
- Less than once a month (6)
- Never (7)

Q18 How often do you break the speed limit in a 30mph zone?

- Every time (1)
- Almost every time (2)
- Frequently (3)
- About half the time (4)
- Occasionally (5)
- Rarely (6)
- Almost never (7)
- Never (8)

Q19 How often do you break the speed limit in a 60mph zone?

- Every time (1)
- Almost every time (2)
- Frequently (3)
- About half the time (4)
- Occasionally (5)
- Rarely (6)
- Almost never (7)
- Never (8)

Q20 How often do you break the speed limit in a 70mph zone?

- Every time (1)
- Almost every time (2)
- Frequently (3)
- About half the time (4)
- Occasionally (5)
- Rarely (6)
- Almost never (7)
- Never (8)

Q21 How many times have you been caught speeding by a speed camera, the police or another authority?

- 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- More than 5 (7)
- Prefer not to say (8)

Q22 How many car accidents have you been involved in?

- 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- More than 5 (7)
- Prefer not to say (8)

Q23 Of these accidents, how many of these required the attendance of the emergency services?

- 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- More than 5 (7)
- Prefer not to say (8)

Q24 Of these accidents, how many have involved some injury to a person?

- 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- More than 5 (7)
- Prefer not to say (8)

Q25 The aim of this next section is to find out more about you. Please answer the following questions openly, as there is no right or wrong answer. We ask that you provide honest and accurate answers. Please answer Each question by clicking on one of the possible

responses linked to each statement that reflects your thoughts, feelings or behaviours most accurately. Please answer all the questions.

Q26 Please indicate the extent to which you agree with the following statements by clicking on your answer.

	Definitely true 1 (1)	Mostly true 2 (2)	Don't know 3 (3)	Mostly false 4 (4)	Definitely false 5 (5)
I am always courteous, even to people who are disagreeable (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There have been occasions when I took advantage of someone. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes try to get even rather than forgive and forget (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes feel resentful when I don't get my own way. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No matter who I'm talking to, I'm always a good listener. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q27 Please indicate the extent to which you agree with the following statements by clicking on your answer.

	Strongly disagree 1 (1)	Disagree 2 (2)	Neither agree or disagree 3 (3)	Agree 4 (4)	Strongly agree 5 (5)
It is important to me not to appear nervous (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I cannot keep my mind on a task, I worry that I might be going crazy (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It scares me when I feel "shaky" (trembling) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It scares me when I feel faint (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to me to stay in control of my emotions (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It scares me when my heart beats rapidly (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It embarrasses me when my stomach growls (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It scares me when I am nauseous (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I notice my heart is beating rapidly, I worry I might have had a heart attack (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It scares me when I become short of breath (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When my stomach is upset I worry that I might be seriously ill (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It scares me when I am unable to keep my mind on a task (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people notice when I feel shaky (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unusual body sensations scare me (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am nervous I worry that I might be mentally ill (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It scares me when I am nervous (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q28 Please indicate the extent to which you agree with the following statements by clicking on your answer.

	1 (1)	2 (2)	3 (3)	4 (4)
I enjoy doing work that requires the use of words (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are some special times in my life that I like to revive by mentally "picturing" just how everything looked. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can never seem to find the right word when I need it. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do a lot of reading. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm trying to learn something new, I'd rather watch a demonstration than read how to do it. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think I often use words in the wrong way. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy learning new words. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to picture how I could fix my apartment or a room if I could buy anything I wanted. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often make written notes to myself. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to daydream. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I generally prefer to use a diagram rather than a written set of instructions. (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to "doodle". (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find it helps to think in terms of mental pictures when doing many things. (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After I meet someone for the first time I can usually remember what they look like but not much about them. (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to think of synonyms for words. (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I have forgotten something I frequently try to form a mental "picture" to remember it. (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like learning new words. (18)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to read instructions about how to do something rather than have someone show me. (19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I prefer activities that don't require a lot of reading. (20)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I seldom daydream. (21)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I spend very little time attempting to increase my vocabulary. (22)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My thinking often consists of mental "pictures" or images. (23)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q29 Please indicate the extent to which you agree with the following statements by clicking on your answer.

	Strongly disagree 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Strongly agree 7 (7)
My personal identity, independent of others is very important to me (30)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My relationships with those in my group are more important than my personal accomplishments (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy being unique and different from others (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My happiness depends on the happiness of those in my group (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being able to take care of myself is a primary concern for me (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am careful to maintain harmony in my group (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take responsibility for my own actions (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speaking up at work/ task group/ class is not a problem for me (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a lively imagination is important to me (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would sacrifice my self-interests for the benefit of the group (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will stay in a group I they need me, even if I'm not happy with the group (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'd rather say "no" directly then risk being misunderstood (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am comfortable being singled out for praise or rewards (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I respect the decisions made by my group (15)	<input type="radio"/>						
I am the same person at home that I am at work/ university (17)	<input type="radio"/>						
I act the same way no matter who I am with (18)	<input type="radio"/>						
If my brother or sisters fail, I feel responsible (19)	<input type="radio"/>						
I have respect for authority figures with whom I interact (20)	<input type="radio"/>						
I respect people who are modest about themselves (21)	<input type="radio"/>						
I feel comfortable using someone's first name soon after I meet them, even when they are much older than I am (22)	<input type="radio"/>						
I prefer to be direct and forthright when dealing with people I have just met (23)	<input type="radio"/>						
I value being in good health above everything (24)	<input type="radio"/>						
Even when I strongly disagree with group members I avoid an argument (25)	<input type="radio"/>						

Q30 Please indicate the extent to which you agree with the following statements by clicking on your answer.

	Strongly disagree 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Strongly agree 7 (7)
Before criticising somebody, I try to imagine how I would feel in their place (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I'm sure I'm right about something, I don't waste much time listening to other peoples arguments (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes try to understand my friends better by imagining how things look from their perspective (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe there are two sides to every question and try to look at them both (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes find it difficult to see things from the "other guy's" point of view (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to look at everybody's side of a disagreement before I make a decision (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset at someone, I usually try to "put myself in his shoes" for a while (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I see someone being taken advantage of, I feel kind of protective toward them (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I see someone being treated unfairly, I sometimes don't feel very much pity for them (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I often have tender, concerned feelings for people less fortunate than me (10)	<input type="radio"/>						
I would describe myself as a pretty soft-hearted person (9)	<input type="radio"/>						
Sometimes I don't feel sorry for other people when they are having problems (13)	<input type="radio"/>						
Other people's misfortunes do not usually disturb me a great deal (14)	<input type="radio"/>						
I am often quite touched by things that I see happen (15)	<input type="radio"/>						

Q31 You will now view a mock advertisement which will be displayed on your computer screen. The advert is not in finished form but is a draft example of a marketing communication that may be used in the public sphere. After viewing the advertisement you will be asked to answer a questionnaire which will ask you about your reactions to the advertisement. Please view the advertisement at your own pace. The rest of the questionnaire should take approximately 5 minutes. Please view the advertisement at your own pace and when you have finished please click on the arrow underneath the advertisement to continue to the questionnaire. You cannot go back to look at the advert again so please view the advert at your own pace. The advert may take a couple of seconds to load, please do not click on the screen until you see the picture. Please remember if you feel uncomfortable at any time and wish to discontinue the study please exit the questionnaire by closing your internet browser.

EXPERIMENTAL TREATMENT HERE

Q48 The aim of this section is to find out your reactions to the advertisement you have just seen. Please answer the following questions openly as there is no right or wrong answer. We ask that you provide honest and accurate answers. Please answer each question by clicking on one of the possible responses linked to each statement that reflects your thoughts or feelings most accurately.

Q49 How did this advert make you feel?

	Not at all 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Very much so 7 (7)
Frustrated (1)	<input type="radio"/>						
Angry (2)	<input type="radio"/>						
Irritated (3)	<input type="radio"/>						
Scared (4)	<input type="radio"/>						
Afraid (5)	<input type="radio"/>						
Panicky (6)	<input type="radio"/>						
Fearful (7)	<input type="radio"/>						
Depressed (8)	<input type="radio"/>						
Sad (9)	<input type="radio"/>						
Miserable (10)	<input type="radio"/>						
Happy (11)	<input type="radio"/>						
Pleased (12)	<input type="radio"/>						
Joyful (13)	<input type="radio"/>						
Delighted (14)	<input type="radio"/>						
Glad (15)	<input type="radio"/>						
Uncomfortable (16)	<input type="radio"/>						
Disgusted (17)	<input type="radio"/>						
Repulsed (18)	<input type="radio"/>						
Revolted (19)	<input type="radio"/>						
Nauseated (20)	<input type="radio"/>						
Unfulfilled (21)	<input type="radio"/>						
Discontented (22)	<input type="radio"/>						
Nervous (23)	<input type="radio"/>						
Worried (24)	<input type="radio"/>						
Tense (25)	<input type="radio"/>						
Embarrassed (26)	<input type="radio"/>						
Ashamed (27)	<input type="radio"/>						
Humiliated (41)	<input type="radio"/>						
Optimistic (28)	<input type="radio"/>						
Encouraged (29)	<input type="radio"/>						
Hopeful (30)	<input type="radio"/>						
Excited (31)	<input type="radio"/>						
Guilty (32)	<input type="radio"/>						
Accountable (33)	<input type="radio"/>						
Bad (34)	<input type="radio"/>						
Responsible (35)	<input type="radio"/>						
Upset (36)	<input type="radio"/>						
Proud (37)	<input type="radio"/>						
Relieved (38)	<input type="radio"/>						
Satisfied (39)	<input type="radio"/>						
Anxious (40)	<input type="radio"/>						

Q50 Please indicate whether the message in this advert was about...

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Breaking the speed limit and having an accident:Obeying the speed limit and avoiding an accident (1)	<input type="radio"/>						

Q51 How serious is the injury displayed in the advertisement?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Not serious at all:Very serious (1)	<input type="radio"/>						

Q52 The information in this advert focuses on...

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Suffering serious injuries as a result of speeding and having an accident:Avoiding suffering serious injuries as a result of obeying the speed limit and avoiding an accident (1)	<input type="radio"/>						

Q53 Please indicate whether the advert was about how speeding could hurt...

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
You:Your Best Friend (1)	<input type="radio"/>						

Q54 The information in this advert focuses on...

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
You:Your Best Friend (1)	<input type="radio"/>						

Q55 Please rate the extent to which this picture was

	Not at all 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Definitely 7 (7)
Shocking (1)	<input type="radio"/>						
Scary (2)	<input type="radio"/>						
Frightening (3)	<input type="radio"/>						
Vivid (4)	<input type="radio"/>						
Intense (5)	<input type="radio"/>						
Powerful (6)	<input type="radio"/>						
Graphic (7)	<input type="radio"/>						
Unpleasant (8)	<input type="radio"/>						
Highly arousing (9)	<input type="radio"/>						
Gruesome (10)	<input type="radio"/>						

Q56 The aim of this section is to find out your reactions to the advertisement you have just seen. Please answer the following questions openly as there is no right or wrong answer. We ask that you provide honest and accurate answers. Please answer each question by clicking on one of the possible responses linked to each statement that reflects your thoughts or feelings most accurately. Please answer the following questions with the driving advert you just read in mind.

	Not at all 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Definitely 7 (7)
To what extent do you intend to drive over the speed limit in the near future? (1)	<input type="radio"/>						

Q57 Please indicate your answer to the following question

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
How likely is it that you will drive over the speed limit in the near future? (1)	<input type="radio"/>						

Q58 Please indicate the extent to which you agree with the following statements

	Strongly disagree 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Strongly agree 7 (7)
The advert made me imagine or picture something in my mind (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The imagery which occurred was clear (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The imagery that occurred was detailed (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The imagery that occurred was vivid (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really only experienced one image (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I imagined a number of things (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Many images came to my mind (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q59 Please indicate the extent to which you agree with the following statements

	Strongly disagree 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Strongly agree 7 (7)
When I drive I tend to avoid thoughts of speeding accidents (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I speed I tend to avoid thoughts of speeding accidents (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q60 When I was reading the message and looking at the pictures, my instinct was to:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Want to protect myself from speeding accidents:Not want to protect myself from speeding accidents (1)	<input type="radio"/>						
Want to think about speeding accidents:Not want to think about speeding accidents (2)	<input type="radio"/>						

Q61 Please indicate the extent to which you agree or disagree with each of the following statements

	Strongly disagree 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Strongly agree 7 (7)
I am at risk of having an accident from speeding (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is likely that I will have an accident from speeding (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is possible that I will have an accident from speeding (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that having an accident from speeding is a severe problem (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that having an accident from speeding has serious negative consequences (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that having an accident from speeding is extremely harmful (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Obeying the speed limit is effective in preventing accidents (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Obeying the speed limit works in preventing accidents (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I obey the speed limit I am less likely to have an accident (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to obey the speed limit to prevent getting having an accident (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to obey the speed limit to prevent having an accident (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I can easily obey the speed limit to prevent having an accident (12)	<input type="radio"/>						
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Q62 Please rate the advert you have just seen according to the following statements

	1 (1)	2 (2)	3 (3)	4 (8)	5 (9)	6 (10)	7 (11)
The message was clearly written (1)	<input type="radio"/>						
I clearly understood this message (2)	<input type="radio"/>						
I learned a lot about speeding from this message (3)	<input type="radio"/>						
The quality of arguments in this message were good (4)	<input type="radio"/>						
The message was manipulative (5)	<input type="radio"/>						
The message was misleading (6)	<input type="radio"/>						
The message tried to manipulate me (7)	<input type="radio"/>						
This message was exploitative (8)	<input type="radio"/>						
This message was exaggerated (9)	<input type="radio"/>						
This message was distorted (10)	<input type="radio"/>						
This message was overblown (11)	<input type="radio"/>						
This message was overstated (12)	<input type="radio"/>						

Q63 Imagine the next time you drive your car you obey the speed limit and avoid an accident. How would you feel?

	Not at all 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (8)	Very much so 9 (9)
Optimistic (1)	<input type="radio"/>								
Encouraged (2)	<input type="radio"/>								
Hopeful (3)	<input type="radio"/>								
Happy (4)	<input type="radio"/>								
Pleased (5)	<input type="radio"/>								
Joyful (6)	<input type="radio"/>								
Delighted (7)	<input type="radio"/>								
Glad (8)	<input type="radio"/>								
Excited (9)	<input type="radio"/>								
Proud (10)	<input type="radio"/>								
Relieved (11)	<input type="radio"/>								
Satisfied (12)	<input type="radio"/>								
Self- assured (13)	<input type="radio"/>								

Q64 Imagine the next time you drive your car you break the speed limit and have an accident. How would you feel?

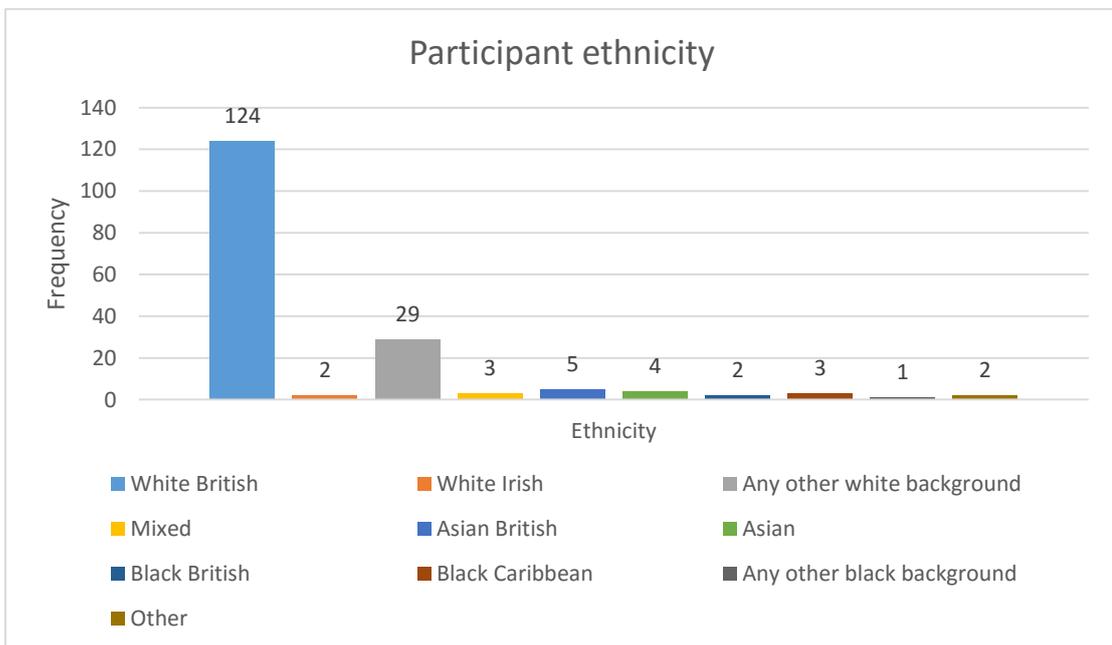
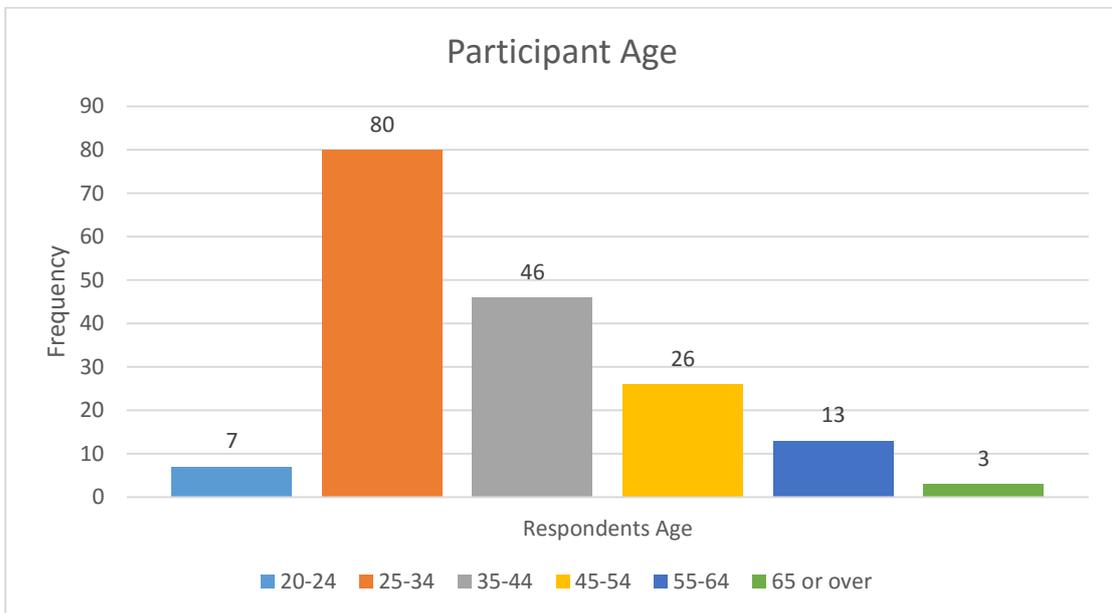
	Not at all 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (12)	Very much so 9 (13)
Frustrated (1)	<input type="radio"/>								
Angry (2)	<input type="radio"/>								
Irritated (3)	<input type="radio"/>								
Depressed (4)	<input type="radio"/>								
Sad (5)	<input type="radio"/>								
Miserable (6)	<input type="radio"/>								
Scared (7)	<input type="radio"/>								
Afraid (8)	<input type="radio"/>								
Panicky (9)	<input type="radio"/>								
Fearful (10)	<input type="radio"/>								
Embarrassed (11)	<input type="radio"/>								
Ashamed (12)	<input type="radio"/>								
Humiliated (13)	<input type="radio"/>								
Guilty (14)	<input type="radio"/>								
Accountable (15)	<input type="radio"/>								
Bad (16)	<input type="radio"/>								
Responsible (17)	<input type="radio"/>								
Upset (18)	<input type="radio"/>								
Disappointed (19)	<input type="radio"/>								
Uncomfortable (20)	<input type="radio"/>								
Anxious (21)	<input type="radio"/>								
Regretful (22)	<input type="radio"/>								
Sorry (23)	<input type="radio"/>								

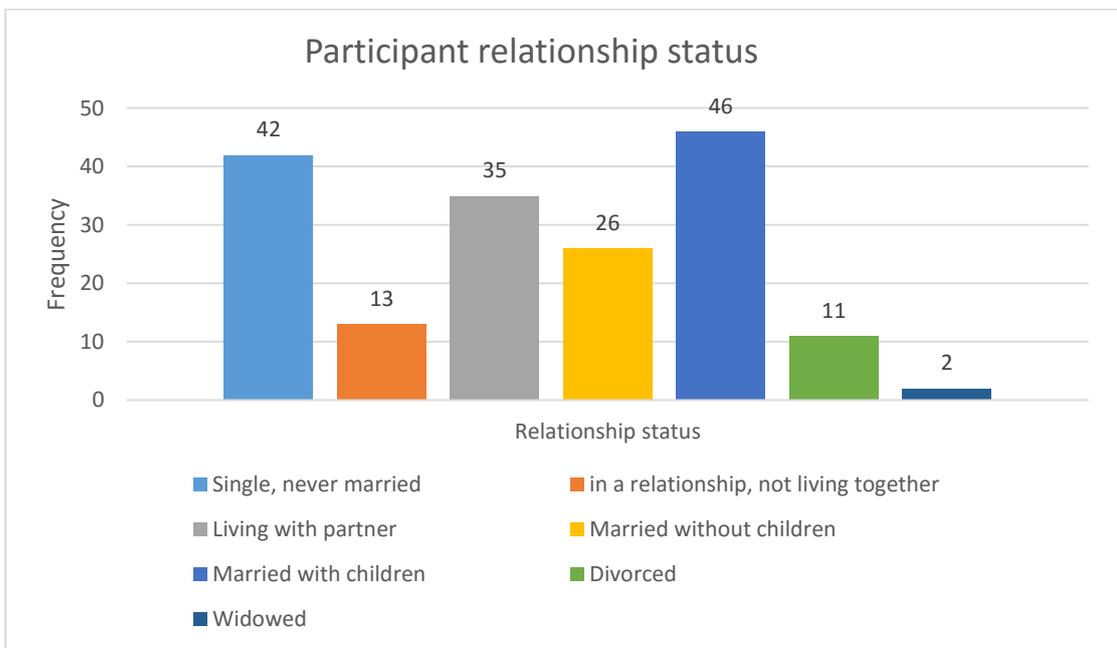
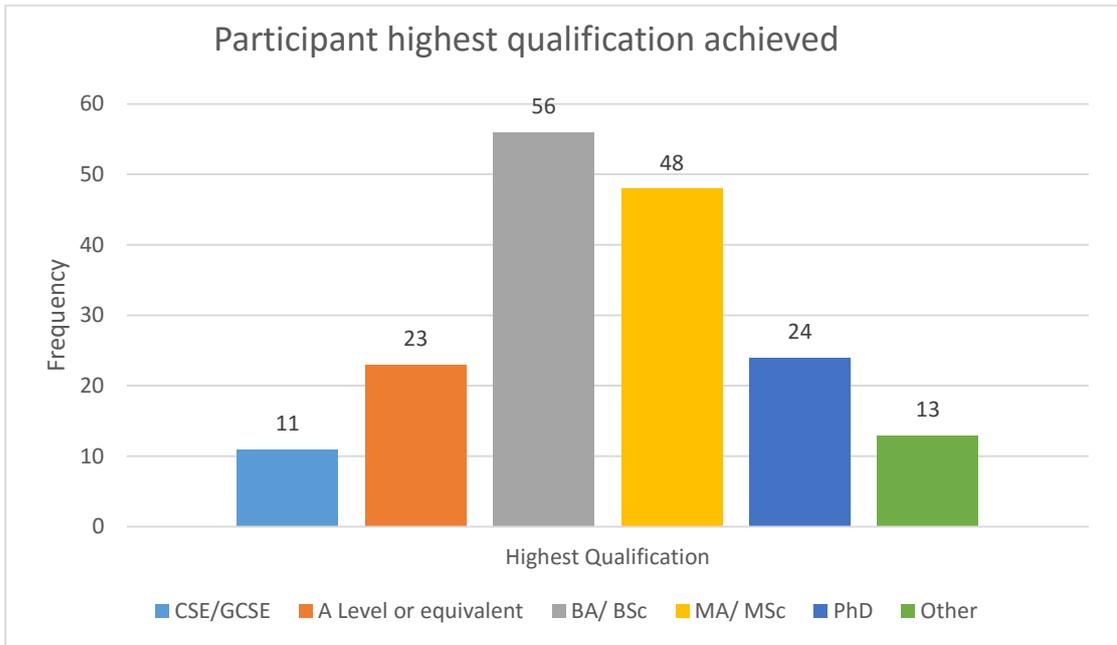
SLIDER QUESTION HERE

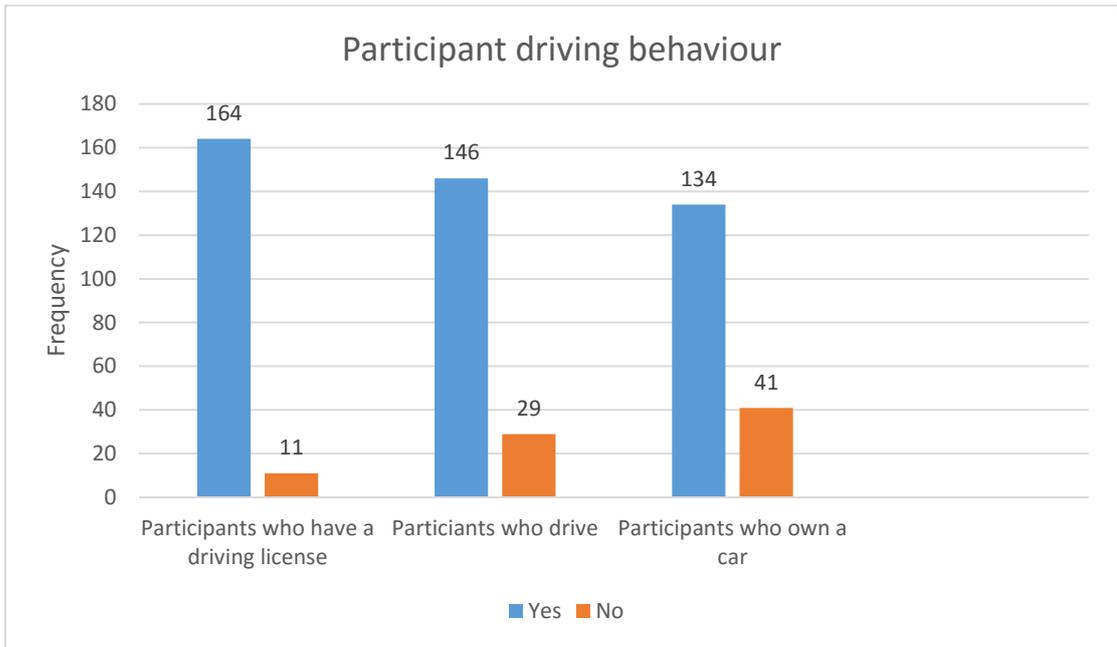
Q109 Thank you for answering this section of the questionnaire. If you would like to be entered into the prize draw for a chance to win the following prizes, please enter your e mail address in the box below. Prize Draw: One lucky winner will win the 1st Prize; a iPad mini 3 16GB Wi-Fi Two lucky winners will win 2nd Prizes; a Kindle Fire 6 HD Tablet 16GB each Four lucky winners will win 3rd Prizes; a £50 Amazon gift voucher each Once you have entered your e mail address please click on the arrow in the bottom right hand corner. If you would not like to enter the prize draw, please click on the arrow to proceed E mail:

Q110 Thank you very much for agreeing to participate in this study. Winners of the prize draw will be notified by e mail. If you have any questions regarding this study please contact the principal researcher at L.M.Chamberlain1@aston.ac.uk It would be helpful if you could send the link for this questionnaire to people you know who would be willing to fill it out. If you would like to do this please copy and paste the link to the questionnaire into an e mail. Thank you very much for your time. PLEASE CLICK ON THE ARROW BELOW TO SUBMIT YOUR QUESTIONNAIRE

## Appendix 5.7 - Pre-test demographic profile of participants results







## Appendix 5.8 - Pre-test Exploratory Factor Analysis results

### Graphicness

The exploratory factor analysis results indicated that the items loaded onto one factor. Whilst the correlation matrix obtained from the factor analysis displayed nine coefficients above .3, one item; highly arousing did not load at all. This is shown below.

Coding number	Items	Factor 1
1	Shocking	.910
2	Scary	.830
3	Frightening	.797
4	Vivid	.885
5	Intense	.894
6	Powerful	.819
7	Graphic	.854
8	Unpleasant	.795
9	Highly arousing	
10	Gruesome	.846

*Principal Axis Factoring. 1 factor extracted. 5 iterations required*  
KMO = .900  
Bartlett's test = 1748.192  
df: 45  
 $p= 0.000$

Given the above results, the factor analysis was repeated with item 9, highly arousing suppressed. Cronbach's alpha was .985 higher than the threshold of 0.7 (Nunnally, 1978). The correlation matrix obtained from the factor analysis displayed all nine coefficients above .3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor thus the nine items were retained. This is shown below.

Coding number	Items	Factor 1
1	Shocking	.835
2	Scary	.861
3	Frightening	.851
4	Vivid	.812
5	Intense	.839
6	Powerful	.747
7	Graphic	.788
8	Unpleasant	.652
10	Gruesome	.732

*Principal Axis Factoring. 1 factor extracted. 5 iterations required*  
KMO = .900  
Bartlett's test = 1727.442  
df: 36  
 $p = 0.000$

### **Mental Imagery**

Mental imagery was measured using the seven item mental imagery scale. However, the exploratory factor analysis results indicated that the items loaded onto two factors. Four of the original items loaded onto one factor and the other four items loaded onto the second factor. The pattern matrix for the two factors is presented below.

Coding number	Items	Factor 1	Factor 2
1	The advert made me imagine or picture something in my mind		-.579
2	The imagery which occurred was clear	.837	
3	The imagery that occurred was detailed	.899	
4	The imagery that occurred was vivid	.855	
5	I really only experienced one image	.325	.323
6	I imagined a number of things		-.896
7	Many images came to mind		-.903
<p><i>Principal Axis Factoring. Rotation converged in 15 iterations</i>  KMO = .775  Bartlett's test = 905.518  df: 21  p= 0.000</p>			

Analysis of the pattern matrix suggested that the first factor represented clarity of image items and the second factor represented imagination / mind items. As the item "I only really experienced one image" was low and loaded onto both the factors this was suppressed. As such, the items were split into two, omitting the fifth item. For the clarity of image items Cronbach's alpha was .934, higher than the threshold of .7 (Nunnally, 1978). The correlation matrix obtained from the factor analysis displayed all coefficients above 0.3. For the imagination/mind factor Cronbach's alpha was .881, higher than the threshold of .7 (Nunnally, 1978). The correlation matrix obtained from the factor analysis displayed all coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining x of variance, thus all six items were retained. This analysis is shown below.

Coding number	Items	Factor 1	Factor 2
1	The advert made me imagine or picture something in my mind		.584
2	The imagery which occurred was clear	.899	
3	The imagery that occurred was detailed	.947	
4	The imagery that occurred was vivid	.847	
6	I imagined a number of things		.948
7	Many images came to mind		.984

*Principal Axis Factoring. Rotation converged in 5 iterations*  
KMO = .769  
Bartlett's test = 877.159  
df: 15  
 $p= 0.000$

### Confound

The exploratory factor analysis indicated results loaded onto one factor. Cronbach's alpha was .839, higher than the threshold of .7 (Nunnally, 1978). The correlation matrix obtained from the factor analysis displayed all coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining variance, thus all four items were retained. This analysis is shown below.

Coding number	Items	Factor 1
1	The message was clearly written	.819
2	I clearly understood this message	.768
3	I learned a lot about speeding from this message	.628
4	The quality of arguments in this message were good	.795

*Principal Axis Factoring. 1 Factor extracted, 6 iterations required*  
KMO = .718  
Bartlett's test = 323.088  
df: 6  
 $p= 0.000$

## Perceived manipulation

The exploratory factor analysis indicated results loaded onto one factor. Cronbach's alpha was .821, higher than the threshold of .7 (Nunnally, 1978). The correlation matrix obtained from the factor analysis displayed all coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining variance, thus all four items were retained. This analysis is shown below.

Coding number	Items	Factor 1
1	The message was manipulative	.851
2	The message was misleading	.486
3	The message tried to manipulate me	.856
4	The message was exploitative	.739

*Principal Axis Factoring. 1 Factor extracted, 7 iterations required*  
KMO = .752  
Bartlett's test = 288.268  
df: 6  
 $p= 0.000$

## Message derogation

Message derogation was measured using xxx. The exploratory factor analysis indicated results loaded onto one factor. Cronbach's alpha was .916, higher than the threshold of .7 (Nunnally, 1978). The correlation matrix obtained from the factor analysis displayed all coefficients above 0.3. In addition the KMO and Bartlett's test were both indicative of an appropriate data set. Exploratory factor analysis extracted one factor explaining variance, thus all four items were retained. This analysis is shown below.

<b>Coding number</b>	<b>Items</b>	<b>Factor 1</b>
<b>1</b>	This message was exaggerated	.778
<b>2</b>	This message was distorted	.741
<b>3</b>	This message was overblown	.964
<b>4</b>	This message was overstated	.939

*Principal Axis Factoring. 1 Factor extracted, 6 iterations required*  
KMO = .810  
Bartlett's test = 585.295  
df: 6  
 $p= 0.000$

## Appendix 6.1 - Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Anger (1)	1													
Fear (2)	.527**	1												
Uncomfortable (3)	.395**	.583**	1											
Disgust (4)	.541**	.630**	.626**	1										
Worry (5)	.503**	.807**	.626**	.635**	1									
Guilt (6)	.385**	.464**	.419**	.461**	.543**	1								
Relief (7)	.143**	.152**	0.054	.144**	.177**	.386**	1							
Ant'd. Hope (8)	.223**	0.277	.250**	.205**	.258**	.223**	.035	1						
Ant'd. Relief (9)	.101**	.217**	.238**	.136**	.199**	.122**	-.032	.608**	1					
Ant'd. Delight (10)	.184**	.253**	.176**	.198**	.217**	.186**	.061	.774**	.638**	1				
Ant'd. Depres. (11)	.176**	.238**	.229**	.166**	.227**	.165**	.023	.307**	.260**	.268**	1			
Ant'd. Fear (12)	.126**	.315**	.257**	.182**	.276**	.141**	-.041	.302**	.347**	.285**	.652**	1		
Ant'd. Shame (13)	.036	.093*	.152**	.073	.102**	.090*	.028	.176**	.242**	.165**	.601**	.592**	1	
Ant'd. Humiliation (14)	.132**	.206**	.195**	.163**	.186**	.160**	.026	.240**	.210**	.226**	.618**	.650**	.778**	1
Ant'd. Resp. (15)	.013	.068	.163**	.030	.078*	.084*	-.044	.224**	.283**	.191**	.496**	.547**	.683**	.558**
Ant'd. Regret (16)	.006	.112**	.183**	.063	.117**	.041	-.056	.199**	.295**	.185**	.575**	.634**	.715**	.586**
Mental Imagery (17)	.186**	.289**	.372**	.293**	.278**	.209**	.023	.187**	.136**	.145**	.104**	.111**	.072	.147**
Def. Avoid. (18)	-.011	.107**	.100**	.056	.088*	.051	.041	-.022	-.041	.026	-.050	-.039	-.033	-.058
Susceptability (19)	.067	.118**	.122**	.138**	.130**	.223**	.042	.051	.082*	.063	.083*	.103**	.037	.037
Severity (20)	-.008	.096*	.189**	.099**	.113**	.032	-.097*	.177**	.186**	.142**	.235**	.293**	.236**	.251**
Resp.Eff. (21)	.025	.127**	.114**	.075*	.096*	.070	-.040	.194**	.188**	.156**	.203**	.246**	.254**	.253**
Self Eff. (22)	-.006	.048	.055	.013	.030	-.032	-.050	.115**	.150**	.099*	.171**	.191**	.241**	.196**
Att. to Speed'g (23)	-.065	-.143**	-.114**	-.115**	-.099**	-.033	-.002	-.171**	-.176**	-.142**	-.176**	-.201**	-.199**	-.222**
Anx. Sens. Men.I (24)	.279**	.406**	.238**	.245**	.303**	.202**	.104**	.104**	.074	.070	.168**	.157**	-.004	.108**
Anx. Sens. Phys. (25)	.164**	.307**	.273**	.214**	.282**	.124**	.003	.191**	.205**	.145**	.213**	.279**	.123**	.179**
Vis.Process. (26)	.055	.131**	.050	.033	.083*	.054	.016	.163**	.146**	.137**	.131**	.121**	.062	.076*
Verb. Process.I (27)	.015	.100**	.012	.067	.083*	.053	.094*	.006	-.054	.053	-.060	-.074	-.130**	-.104**
Indep. Const. (28)	.031	-.081*	.072	-.071	-.041	-.088*	-.156**	.086*	.075*	-.018	.115**	.054	.106**	.066
Inter. Const. (29)	.028	.099**	.138**	.035	.120**	.075*	-.019	.091*	.055	.058	.130**	.101**	.152**	.131**
Persp. Tak. (30)	.056	.084*	.132**	.042	.106**	-.003	-.005	.173**	.179**	.129**	.234**	.230**	.223**	.194**
Emp. Concern (31)	-.026	.075	.165**	.036	.107**	.029	-.164**	.195**	.260**	.159**	.220**	.291**	.209**	.205**
Confound (32)	.148**	.326**	.253**	.211**	.301**	.203**	.027	.256**	.163**	.211**	.176**	.183**	.159**	.186**
Perc'd Manp. (33)	.203	.034	.116**	.186**	.073	.092*	.116**	-.051	-.076*	-.063	-.052	-.086*	-.054	-.035

<b>Msg. Derog. (34)</b>	.150**	.035	.039	.171**	.044	.051	.103**	-.074	-.138**	-.057	-.082*	-.131**	-.156**	-.112**
<b>Beh. Int. (35)</b>	-.034	-.132	-.112**	-.070	-.108**	.000	-.003	-.141**	-.139**	-.065	-.115**	-.198**	-.178**	-.174**
<b>Beh.I Exp. (36)</b>	-.082	-.178**	-.099**	.115**	-.132**	-.011	.004	-.178**	-.125**	-.076*	-.117**	-.154**	-.093*	-.124**
<b>Slider (37)</b>	-.106**	-.089*	-.071	-.106**	-.073	-.069	-.043	-.069	-.078*	-.052	-.106**	-.139**	-.119**	-.115**

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Correlation Matrix (continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Anger (1)																
Fear (2)																
Uncomfortable (3)																
Disgust (4)																
Worry (5)																
Guilt (6)																
Relief (7)																
Ant'd. Hope (8)																
Ant'd. Relief (9)																
Ant'd. Delight (10)																
Ant'd. Depres. (11)																
Ant'd. Fear (12)																
Ant'd. Shame (13)																
Ant'd. Humiliation (14)																
Ant'd. Resp. (15)	1															
Ant'd. Regret (16)	.742**	1														
Mental Imagery (17)	.113**	.066	1													
Def. Avoid. (18)	-.049	-.046	.084*	1												
Susceptability (19)	.070	.074	.025	.016	1											
Severity (20)	.246**	.293**	.105**	.016	.150**	1										
Resp.Eff. (21)	.214**	.238**	.086*	-.008	-.009	.372**	1									
Self Eff. (22)	.171**	.190**	.030	-.001	-.063	.387**	.615**	1								
Att. to Speed'g (23)	-.114**	-.171**	-.057	.092*	.091*	-.220**	-.403**	-.344**	1							
Anx. Sens. Men.I (24)	-.065	-.034	.146**	-.073	.087*	-.020	.009	-.017	-.057	1						
Anx. Sens. Phys. (25)	.072	.124**	.133**	-.021	.067	.096*	.097*	.077*	-.112**	.548**	1					
Vis.Process. (26)	.091*	.110**	.136**	.017	.009	.057	.063	.054	-.007	.117**	.136**	1				
Verb.Process.I (27)	-.145**	-.098*	.011	.086*	.098*	-.051	-.030	-.079*	-.034	.061	.053	-.099**	1			
Indep. Const. (28)	.180**	.171**	.108**	.043	-.037	.135**	.080*	.114**	.013	-.036	.015	.214**	-.300**	1		
Inter. Const. (29)	.114**	.174**	.103**	.006	.086*	.107**	.033	.011	-.002	.108**	.160**	.163**	-.068	.203**	1	
Persp. Tak. (30)	.236**	.250**	.082*	-.062	-.003	.158**	.148**	.177**	-.110**	.045	.147**	.200**	-.236**	.313**	.317**	1
Emp. Concern (31)	.250**	.305**	.150**	-.033	.067	.215**	.149**	.122**	-.101**	.036	.217**	.186**	-.158**	.258**	.297**	.409**
Confound (32)	.115**	.107**	.348**	.049	.036	.217**	.320**	.206**	-.184**	.082*	.087*	.069	.001	.003	.059	.088*
Perc'd Manp. (33)	-.016	-.077*	.024	.029	.030	-.044	-.182**	-.202**	.148**	.071	-.015	.004	-.066	.005	-.025	-.045
Msg. Derog. (34)	-.159**	-.172**	-.027	.082*	.028	-.132**	-.303**	-.256**	.155**	.140**	.041	.018	.033	-.055	-.052	-.092*

<b>Beh. Int. (35)</b>	-0.124**	-0.157**	-0.020	.075	.126**	-.212**	-.370**	-.351**	.554**	-.092*	-.204**	-.052	.070	-.016	-.056	-.157**
<b>Beh.I Exp. (36)</b>	-.057	-.053	-.085*	.107**	.243**	-.137**	-.359**	-.351**	.566**	-.097*	-.164**	-.027	.022	.008	-.019	-.102**
<b>Slider (37)</b>	-.005	-.071	-.036	.094*	.044	-.033	-.238**	-.256**	.398**	-.079*	-.065	.008	-.014	.035	.003	-.045

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Correlation Matrix (continued)

	31	32	33	34	35	36
Anger (1)						
Fear (2)						
Uncomfortable (3)						
Disgust (4)						
Worry (5)						
Guilt (6)						
Relief (7)						
Ant'd. Hope (8)						
Ant'd. Relief (9)						
Ant'd. Delight (10)						
Ant'd. Depres. (11)						
Ant'd. Fear (12)						
Ant'd. Shame (13)						
Ant'd. Humiliation (14)						
Ant'd. Resp. (15)						
Ant'd. Regret (16)						
Mental Imagery (17)						
Def. Avoid. (18)						
Susceptability (19)						
Severity (20)						
Resp.Eff. (21)						
Self Eff. (22)						
Att. to Speed'g (23)						
Anx. Sens. Men.l (24)						
Anx. Sens. Phys. (25)						
Vis.Process. (26)						
Verb. Process.l (27)						
Indep. Const. (28)						
Inter. Const. (29)						
Persp. Tak. (30)						
Emp. Concern (31)	1					
Confound (32)	.072	1				
Perc'd Manp. (33)	-.139**	-.138**	1			
Msg. Derog. (34)	-.208**	-.220**	.693**	1		
Beh. Int. (35)	-.184**	-.185**	.121**	.177**	1	

<b>Beh.I Exp. (36)</b>							
<b>Slider (37)</b>		-0.105**	-0.189**	.123**	.148**	.747**	1
		-0.071	-0.146**	.059	.074	.410**	.435**

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

## Appendix 7.1 - Homogeneity of regression slopes

Construct (DV)	.Sig	Control Covariates
Anger	.592	Attitude to Speeding, Independent Construal, Interdependent Construal (anger has to have a focus) perceived manipulation perspective taking empathetic concern
Fear	.763	Attitude to Speeding, Independent Construal, Interdependent Construal (fear has to have a focus) Anxiety Sensitivity Mental, Anxiety Sensitivity Physical (Anxiety is conceptually related to fear and therefore we must control for how anxiety prone individuals are) perceived manipulation
Uncomfortable	.589	Attitude to Speeding, Independent Construal, Interdependent Construal (fear has to have a focus) Anxiety Sensitivity Mental, Anxiety Sensitivity Physical (Anxiety is conceptually related to discomfort and therefore we must control for how anxiety prone individuals are) perceived manipulation
Disgust	.852	Attitude to Speeding, , Style of Processing Visual, Style of Processing Verbal. (Disgust has to have a focus but also because the graphic element of the advert is the picture we need to control for visual or verbal processing of information) anx mental anx physical perc manip
Worry	.840	Perceived Manipulation, Attitude to Speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Independent Construal Interdependent Construal (worry has to have a focus) (Anxiety is conceptually related to worry and therefore we must control for how anxiety prone individuals are)
Guilt	.788	Perceived Manipulation, Attitude to Speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Independent Construal Interdependent Construal (guilt has to have a focus)
Relief	.373	Perceived Manipulation, Attitude to Speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Independent Construal Interdependent Construal
Mental Imagery	.791	Attitude to Speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Style of processing visual, style of processing verbal. (Arguably these constructs may influence the amount or vividness of mental imagery), perceived manipulation, empathetic concern, Independent Construal, Interdependent Construal

Susceptibility	.149	Attitude to Speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity, perceived manipulation
Severity	.380	Attitude to Speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity, perceived manipulation
Response Efficacy	.379	Attitude to Speeding, Independent Construal, Interdependent Construal, perceived manipulation
Self-efficacy	.182	Attitude to Speeding, Independent Construal, Interdependent Construal, style of processing visual, style of processing verbal, empathetic concern, perspective taking
Anticipated Hope	.384	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Focus.
Anticipated Relief	.702	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Focus.
Anticipated delight	.065	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Focus.
Anticipated depressed	.569	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Anxiety sensitivity mental, anxiety sensitivity physical, perspective taking, empathetic concern
Anticipated fearful	.130	Attitude to speeding perceived manipulation, Independent Construal, Interdependent Construal. Anxiety sensitivity mental, anxiety sensitivity physical, perspective taking, empathetic concern, style of processing verbal, style of processing visual
Anticipated ashamed	.457	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Anxiety sensitivity mental, anxiety sensitivity physical, perspective taking, empathetic concern, style of processing verbal, style of processing visual
Anticipated Humiliation	.581	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Anxiety sensitivity mental, anxiety sensitivity physical, perspective taking, empathetic concern, style of processing verbal, style of processing visual
Anticipated responsible	.074	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Anxiety sensitivity mental, anxiety sensitivity physical, perspective taking, empathetic concern,

Anticipated regret	.126	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Anxiety sensitivity mental, anxiety sensitivity physical, perspective taking, empathetic concern,
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<b>Dependent Variable</b>	<b>Sig</b>	<b>Control Covariates</b>	<b>Mediating Covariates</b>
Behaviour Intention	.906	Attitude to speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Style of Processing Visual, Style of Processing Verbal, Independent Construal, Interdependent Construal, Perspective Taking, Empathetic Concern.	Anger, Fear, Disgust, Worry, Guilt, Mental Imagery, Defensive avoidance, Susceptibility, Severity, Response Efficacy, Self-efficacy, Anticipated Hope, Anticipated delight, Anticipated depressed, Anticipated fearful  Anticipated ashamed, Anticipated responsible, Anticipated regret
Behaviour Expectation	.776	Attitude to speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Style of Processing Visual, Style of Processing Verbal, Independent Construal, Interdependent Construal, Perspective Taking, Empathetic Concern.	Anger, Fear, Disgust, Worry, Guilt, Mental Imagery, Defensive avoidance, Susceptibility, Severity, Response Efficacy, Self-efficacy, Anticipated Hope, Anticipated delight, Anticipated depressed, Anticipated fearful  Anticipated ashamed, Anticipated responsible, Anticipated regret

## Appendix 7.3 - Covariate variables in the ANCOVA analysis

<b>Dependent Variable</b>	<b>Control Covariates</b>	<b>Mediating Covariates</b>
<b>Anger</b>	Attitude to Speeding, Independent Construal, Interdependent Construal, Perceived manipulation Perspective taking, Empathetic concern	
<b>Fear</b>	Attitude to Speeding, Independent Construal, Interdependent Construal, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical Perceived manipulation	
<b>Uncomfortable</b>	Attitude to Speeding, Independent Construal, Interdependent Construal, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Perceived manipulation	
<b>Disgust</b>	Attitude to Speeding, Style of Processing Visual, Style of Processing Verbal, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Perceived manipulation	
<b>Worry</b>	Perceived Manipulation, Attitude to Speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Independent Construal Interdependent Construal	
<b>Guilt</b>	Perceived Manipulation, Attitude to Speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Independent Construal Interdependent Construal	
<b>Relief</b>	Perceived Manipulation, Attitude to Speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Independent Construal Interdependent Construal	
<b>Mental Imagery</b>	Attitude to Speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Style of processing visual, style of processing verbal. Perceived manipulation, empathetic concern, Independent Construal, Interdependent Construal	
<b>Defensive avoidance</b>	Attitude to Speeding, Independent Construal, Interdependent Construal	
<b>Susceptibility</b>	Attitude to Speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity, perceived manipulation	
<b>Severity</b>	Attitude to Speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity, perceived manipulation	
<b>Response Efficacy</b>	Attitude to Speeding, Independent Construal, Interdependent Construal, perceived manipulation	

<b>Dependent Variable</b>	<b>Control Covariates</b>	<b>Mediating Covariates</b>
<b>Self-efficacy</b>	Attitude to Speeding, Independent Construal, Interdependent Construal, style of processing visual, style of processing verbal, empathetic concern, perspective taking	
<b>Anticipated Hope</b>	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal.	
<b>Anticipated Relief</b>	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal.	
<b>Anticipated delight</b>	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal.	
<b>Anticipated depressed feelings</b>	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Anxiety sensitivity mental, anxiety sensitivity physical, Perspective taking, Empathetic concern	
<b>Anticipated fear</b>	Attitude to speeding perceived manipulation, Independent Construal, Interdependent Construal. Anxiety sensitivity mental, anxiety sensitivity physical, perspective taking, empathetic concern, style of processing verbal, style of processing visual	
<b>Anticipated ashamed</b>	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Anxiety sensitivity mental, anxiety sensitivity physical, perspective taking, empathetic concern, style of processing verbal, style of processing visual	
<b>Anticipated Humiliation</b>	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Anxiety sensitivity mental, anxiety sensitivity physical, perspective taking, empathetic concern, style of processing verbal, style of processing visual	
<b>Anticipated responsible feelings</b>	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Anxiety sensitivity mental, anxiety sensitivity physical, perspective taking, empathetic concern,	
<b>Anticipated regret</b>	Attitude to speeding, perceived manipulation, Independent Construal, Interdependent Construal. Anxiety sensitivity mental, anxiety sensitivity physical, perspective taking, empathetic concern,	

<b>Dependent Variable</b>	<b>Control Covariates</b>	<b>Mediating Covariates</b>
<b>Behaviour Intention</b>	Attitude to speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Style of Processing Visual, Style of Processing Verbal, Independent Construal, Interdependent Construal, Perspective Taking, Empathetic Concern.	Anger, Fear, Disgust, Worry, Guilt, Mental Imagery, Defensive avoidance, Susceptibility, Severity, Response Efficacy, Self-efficacy, Anticipated Hope, Anticipated delight, Anticipated depressed, Anticipated fearful  Anticipated ashamed, Anticipated responsible, Anticipated regret
<b>Behaviour expectation</b>	Attitude to speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Style of Processing Visual, Style of Processing Verbal, Independent Construal, Interdependent Construal, Perspective Taking, Empathetic Concern.	Anger, Fear, Disgust, Worry, Guilt, Mental Imagery, Defensive avoidance, Susceptibility, Severity, Response Efficacy, Self-efficacy, Anticipated Hope, Anticipated delight, Anticipated depressed, Anticipated fearful  Anticipated ashamed, Anticipated responsible, Anticipated regret
<b>Decision Task</b>	Attitude to speeding, Anxiety Sensitivity Mental, Anxiety Sensitivity Physical, Style of Processing Visual, Style of Processing Verbal, Independent Construal, Interdependent Construal, Perspective Taking, Empathetic Concern.	Anger, Fear, Disgust, Worry, Guilt, Mental Imagery, Defensive avoidance, Susceptibility, Severity, Response Efficacy, Self-efficacy, Anticipated Hope, Anticipated delight, Anticipated depressed, Anticipated fearful  Anticipated ashamed, Anticipated responsible, Anticipated regret