



Quantifying the Impact of Message Framing on Consumer Attitudes Towards the Consumption of Meat Products in Cape Town: A Consumer Neuroscience Approach

by

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ABSTRACT

Is it more effective to evoke negative emotions in social advertisements than positive emotions? This study compared positive and negative message framing strategies in social marketing advertisements that aimed to encourage a reduction in meat consumption. This project explored how each strategy influences consumers' attitudes toward the recommended behaviour and investigated the role of emotional and attentional responses to each message framing strategy. The purpose of this research was to determine whether negatively framed messages are more effective than positively framed messages in influencing consumers' attitudes, emotions, and attention. The motivation of the study was to provide formative research for the design of social marketing interventions to effectively influence consumers' attitudes towards advertised causes with the use of message framing, and to advance theoretical understanding of how consumers respond to social marketing interventions. Furthermore, this research attempted to resolve differences between results obtained in previous framing research in the social marketing context.

This study uniquely proposed the use of cutting-edge consumer neuroscience techniques to develop a clearer understanding of consumers' emotional and attentional responses to social marketing advertisements. The results were presented from a mixed-method approach, which combined quantitative and qualitative research methods. An experiment was conducted by using two social marketing print advertisements aimed at encouraging a reduction in meat consumption, by highlighting the impact of consuming meat products on animal welfare. Respondents involved in the experiment viewed an advertisement that was either positively framed or negatively framed. The research applied self-reporting methods, as well as consumer neuroscience methods, including facial coding, galvanic skin response (GSR), and eye-tracking, to explore the proposed research framework.

The combination of these methods allowed the collection of data on attitudinal, emotional, and attentional responses. The results of this research demonstrated that negatively framed advertisements are more effective in changing consumers' attitudes towards reducing meat consumption than positively framed advertisements. Thus, messages aimed at encouraging a reduction in consumption should highlight the negative consequences of participating in certain behaviours. Neither emotion nor attention were found to mediate the relationship between message framing and attitude. However, positively framed advertisements elicit significantly higher levels of emotional valence; and negatively framed advertisements elicit significantly higher levels of disgust and attention. Social marketers should, therefore, leverage these feelings of disgust; and they should implement negative framing strategies to increase the attention paid to an advertisement. However, educational social marketing interventions should be considered, in combination with negative message framing, to effectively influence consumers' attitudes towards social issues.

These findings have provided research for better developing message framing strategies for the communication of sustainable consumption. Furthermore, these strategies contributed to the existing social marketing literature by addressing the lack of information on marketing efforts aimed at reducing meat consumption. This research also filled important gaps in the literature regarding positive versus negative message framing strategies, and social marketing interventions can now be implemented with an increased understanding of how consumers respond to different message framing strategies.

Keywords: Consumer attitudes; consumer neuroscience; neuromarketing; emotion; attention; meat consumption; positive message framing; negative message framing; social marketing

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1 CHAPTER 1: THE INTRODUCTION

1.1 INTRODUCTION

Social marketers often frame their advertisements by emphasizing either the positive consequences, or the negative consequences, of behaving in a certain way – in the hope of influencing the attitude or the behaviour of their audience. For example, an advertisement encouraging individuals to stop smoking may highlight the positive health benefits that would be experienced if they stopped smoking, or it may highlight the negative health consequences that would be experienced if they will not stop smoking. This is referred to as message framing (Bester & Jere, 2012; Yang, 2018). Social marketing refers to the promotion of socially beneficial concepts and causes, with the aim of fostering change in health behaviour, social behaviour, or sustainable behaviour (Fox & Kotler, 1980; Gordon, Carrigan & Hastings, 2011).

While processing information that may be presented in a social marketing advertisement, responses to persuasive marketing strategies may be influenced by emotional responses and by the amount of attention paid to an advertisement (Bagozzi, Gopinath & Nyer, 1999; Sanchez & Alley, 2016). It is, therefore, important for social marketing practitioners to understand how message framing can influence emotional and attentional responses, in addition to the role that emotion and attention play in influencing the attitudes that consumers have of participating in a social cause.

Meat production in South Africa is rising; and concerns about factory farming in the country are considered as the social issues that affect food security, human health, the environment, and ethics, thereby making this an important issue for social marketers (Jankielsohn, 2015). Although there is extensive academic literature on social marketing regarding issues such as smoking, drinking, and recycling (Fox & Kotler, 1980; Loroz, 2007; Gordon, Carrigan & Hastings, 2011), little has been researched on the social marketing of issues related to meat consumption (Bakker & Dagevos, 2012; Mathur, Robinson, Reichling, Gardner, Nadler, Bain & Peacock, 2020).

Research that has addressed social marketing regarding meat consumption was conducted by Bergmann, von der Heidt & Maller (2010) and Palomo-Vélez, Tybur & van Vugt (2018). Furthermore, there is much debate in social marketing on communicating specific appeals that would positively influence consumers (Yfantidou, 2018). According to Tversky & Kahneman (1981), the way in which information is presented influences individual responses; and this can increase the effectiveness of messages (Moon, Bergey, Bove & Robinson, 2016; Chédotal, Berthe, de Peyrelongue & Le Gall-Ely, 2017). Research conducted by Loroz (2007), Brennan & Binney (2010) and Anghelcev & Sar (2014) has addressed social marketing in relation to message framing. However, little focus has been placed on positive message framing and negative message framing by using the social consequences as persuasive tools to reduce harmful behaviours, since most of this research focuses on personal health outcomes (Kareklas, Carlson & Muehling, 2012; Yang, 2018). Moreover, existing research on message framing in social marketing has provided inconsistent results. This research endeavours to address these social consequences.

Consumers' attitudes guide their thoughts and influence their feelings, thus affecting behaviours, and causing a shift in values and attitudes is considered a requirement for behavioural change (Gordon, Carrigan & Hastings, 2011; Anilkumar & Joseph, 2012). Previous studies that have explored social marketing in relation to the influence of message framing on attitudes, include those by Lord (1994);

Loroz (2007) and Sciulli, Bhagat & Bebko (2012). According to Anilkumar & Joseph (2012), emotion is one of the sources for consumers' attitude-formation and change. Previous research has addressed the emotional responses to message framing in social marketing (Bagozzi & Moore, 1994; Martínez-Fiestas, Del Jesus, Sánchez-Fernández & Montoro-Rios, 2015), as well as the relation to the influence of emotion on attitude (Morris, Woo, Geason & Kim, 2002; Allen, Machleit, Kleine & Notani, 2005; Wang, 2008).

However, much of the research on emotion is not related to its influence on the attitudes towards promoted behaviours; rather it is focused on its influence on the attitudes towards advertisements. Research has also suggested that the amount of attention paid to an advertisement influences how effective that advertisement is in changing consumer attitudes (Sanchez & Alley, 2016). However, few studies exist with the focus on attention in relation to its influence on attitude. Some of the existing research, which has also addressed the attentional responses to social marketing, in terms of message framing, includes that of Sciulli, Bhagat & Bebko (2012), Santos, Lobos, Muñoz, Romero & Sanhueza (2017) and Yang (2018). In addition, past research has placed the focus on the emotional and attentional responses to social marketing of other issues, such as smoking, recycling, or drinking and driving. Little is known about the responses to anti-meat social marketing. These gaps in the existing literature highlight the need for research to gain an improved understanding of consumers' responses to social marketing in terms of reducing meat consumption.

Moreover, since many existing studies have used traditional self-reporting methods (Moore, Harris & Chen, 1995; Collymore & McDermott, 2016; Bettiga, Lamberti & Noci, 2017), and some studies include the use of consumer neuroscience techniques (Guerreiro, Rita & Trigueiros, 2015; Kim, Tussyadiah & Jago, 2019), existing studies differ in their methodologies when exploring emotional and attentional responses to marketing communications. Self-reporting measures may be subject to bias, since consumer reactions to stimuli, such as emotion and attention, are not accurately measured when using self-reporting methods on their own, as these responses are not wholly ruled by our cognitive reasoning; they are automatic responses to stimuli (Bolls, Lang & Potter, 2001; Cialdini & Goldstein, 2004; Schupp, Stockburger, Codispoti, Junghöfer, Weike & Hamm, 2007; Guerreiro, Rita & Trigueiros, 2015; Yang, 2018).

Consumer neuroscience is an evolving field that connects the study of consumer behaviour to that of neuroscience (Morin, 2011). Consumer neuroscience methods have the potential to significantly increase the effectiveness of advertising messages globally, since they provide researchers with the ability to measure unconscious reactions to stimuli (Morin, 2011; Sebastian, 2014a). Although consumer research has been a leading and innovative field for many years, without the addition of neuroscience, researchers have not been able to determine the underlying processes that guide consumers' behaviour (Blum, 2016).

The gaps and inconsistencies in the existing literature regarding the relationships between message framing, attitudes, and emotional and attentional responses in the social marketing context highlight the need for research to gain a better understanding of these concepts. It is important to address these gaps and inconsistencies in framing research, so that social marketers can implement clear strategies to increase the effectiveness of their campaigns in influencing attitudes towards social causes. In contributing towards existing theory, this study has made use of consumer neuroscience techniques of facial coding, galvanic skin response and eye-tracking, in addition to the quantitative and qualitative self-reporting techniques, to widen the existing knowledge on emotional and attentional responses to message framing in social marketing, and how these influence attitude. Emotional response and

consumer engagement with advertisements have been shown to be influential tools for social marketing communications (Bennett, 2015; Kim, Tussyadiah & Jago, 2019).

It is important for social marketers to evoke appropriate emotional responses within meat eaters, and to minimise the emotions that would be considered undesirable, when attempting to influence attitudinal changes (Bennett, 2015). Ultimately, understanding the mental processes behind attitude formation allows social marketers to get their audience's attention and increase interest outcome thereof (Bettiga, Lamberti & Noci, 2017). The following section outlines the constructs relevant in the background of the study; and it presents an overview of the theoretical framework that influenced this study.

1.2 THE BACKGROUND OF THE STUDY

The following section explains each of the key aspects related to the theory of this research study. Firstly, the topic of meat consumption is discussed in terms of the South African market, and the important role of social marketing. Secondly, the use of message framing in marketing is discussed, including how it is used in social marketing. This is followed by the emotional and attentional responses that may be evoked by different message framing strategies. Lastly, the theory of attitudes is outlined, since this research investigates how social marketing communications can influence attitudinal changes in an audience.

1.2.1 The Consumption of Meat Products and Social Marketing

“Meat” is defined in this study as edible animal flesh (Mathur et al., 2020). Meat production in South Africa is rising, and the demand for meat and animal products in developing African countries is expected to increase in the coming years (Jankielsohn, 2015; Delpont, Louw, Davids, Vermeulen & Meyer, 2017; Ransome, 2018). With increasing wealth, urbanisation, and an expanding middle class, South Africans are consuming more animal products (Jankielsohn, 2015). South Africa is among those countries with the highest meat-consumption statistics; with poultry consumption being the highest at 34 kilograms consumed per capita for 2019, and beef and veal consumption as the second highest at 12.4 kilograms per capita for 2019 (Organization for Economic Cooperation and Development [OECD], 2020). Pork and mutton consumption comprised 3.4 kilograms and 2.6 kilograms consumed per capita respectively, in 2019 (OECD, 2020). To prevent the negative outcomes of extravagant meat consumption, previous studies have highlighted the necessity to change attitudes and behaviour towards reducing meat consumption (Joyce, Dixon, Comfort & Hallett, 2012; Hayley, Zinkiewicz & Hardiman, 2015; Ransome, 2018).

The necessity to address intensive animal farming and meat consumption is reinforced by strong evidence regarding their harmful impact on the health of society (e.g. the role that meat consumption plays in obesity and coronary heart disease) (Wang & Beydoun, 2009; Micha, Michas & Mozaffarian, 2012; Bogueva, Marinova & Raphaely, 2017), on social justice (e.g. food security issues) (Gardner, 2013; Foley, 2017; Ransome, 2018), on animal welfare (Raphaely & Marinova, 2014; Mathur et al., 2020), and on environmental justice, including the harmful impacts on water, air and biodiversity, as well as their contribution to greenhouse gas emissions (World Health Organisation, 2003; Steinfeld, Gerber, Wassenaar, Castel, Rosales & de Haan, 2006; Garnett, 2009).

Within South Africa, there exists both agricultural animal farming, and concentrated animal-feeding operations (CAFOs), which are often called intensive animal-feeding systems or factory farms (Jankielsohn, 2015). On CAFO farms, the focus is on maximising production and profits; therefore, the

livestock are farmed using modern industrial processes, which optimize the use of resources and space (Jankielsohn, 2015). Traditional agricultural farms are not able to support the growing demand for meat and dairy products, and they are gradually being replaced with CAFOs (Jankielsohn, 2015). Slaughterhouses in various developing countries are more focused on increasing profits than on animal welfare, or product quality and safety (Annan-Prah, Mensah, Akorli, Asare & Kumi-Die, 2012; Fuseini & Sulemana, 2018). The South African Feedlot industry is booming; it generates about 75% of all the beef produced in the country (Jankielsohn, 2015; Kotze & Rose, 2015). The consumption of meat has been identified as a vital area to be targeted, if humans are to adopt more sustainable behaviours in the future (D. Pimentel & M. Pimentel, 2003; Schösler, de Boer & Boersema, 2012; Ransome, 2018). Therefore, the topic of influencing consumer attitudes and behaviours towards reducing meat consumption is an issue for social marketing.

Social marketing has been described as a shift in focus from marketing products and services to the promotion of socially beneficial concepts (Fox & Kotler, 1980). Numerous social marketing interventions have attempted to shift values and attitudes, in order to influence behaviours (Gordon, Carrigan & Hastings, 2011). Social marketing is used to communicate ‘the other side of the story’, to inspire consumers to adopt healthier behaviours (Fox & Kotler, 1980). Many consumers are unaware of the negative effects of consuming meat; therefore, counter-marketing plays an important role. Consequently, communications that include animal welfare appeals may have the unique ability to shift general ethical concerns regarding the suffering of animals into attitudinal and behavioural change (Mathur et al., 2020). However, Fox & Kotler (1980:25) stated that social advertising is “a shot in the dark” if it is not guided by meticulous market research. South Africa is a promising location for research on social marketing efforts aimed at changing consumers’ attitudes towards reducing meat consumption. Like many other industries, animal agriculture is based on supply and demand, and by reducing the demand for these products (by consuming less meat), production of meat products can be decreased (Jankielsohn, 2015).

1.2.2 The Message Framing of Advertisements

Message framing has been defined as the way in which a message is delivered, relating to whether a message emphasises positive factors or negative factors (Bester & Jere, 2012; Yang, 2018). For many years, market researchers have been concerned themselves with the comparative effects of positive versus negative message framing on consumers’ choices to adopt a specific behaviour (Loroz, 2007). To reach consumers and to have an impact on their attitudes, framing the message in advertising provides the ability to encourage certain interpretations (Olsen, Slotegraaf & Chandukala, 2014). According to Tversky & Kahneman (1981), framing theory suggests that the way in which information is presented influences individuals’ responses, and this could increase the effectiveness of messages (Moon et al., 2016; Chédotal et al., 2017).

It is imperative for social marketing practitioners to make informed decisions of whether to use the elements of either positive or negative valence when designing advertisements, as consumers may respond differently to them (Martínez-Fiestas et al., 2015). However, there is much debate in social marketing regarding communicating specific appeals that would positively influence consumers (Yfantidou, 2018). Positive message framing represents a safer option than negative message framing; however, research has shown that negative framing is becoming ever more popular (Pervan & Vocino, 2008). In terms of positive message framing, changing values and attitudes, to influence behaviour, can be achieved by promoting the advantages of transforming values and social norms (Gordon, Carrigan & Hastings, 2011). Roberts (1996) has stated that to motivate change, it is necessary for consumers to

be convinced that their behaviour has an impact (Tanner & Kast, 2003). In addition, Ransome (2018) suggested that social marketing practitioners should keep in mind that consumers are more likely to adopt meat-reduced diets if it makes them feel good.

In terms of negative message framing, according to Yfantidou (2018), negative messages and imaging evoke feelings of threat among consumers, which results in action. This is common in fear-driven theory, which has been the focus of negative framing research in past studies (Yang, 2018). Moreover, disgust in negatively framed messages may effectively influence the attitudes towards meat, revealing that the use of disgusting negative message framing may be effective (Palomo-Vélez, Tybur & van Vugt, 2018). Rozin & Fallon (1987) describe disgust as representing revulsion at the idea of consuming an offensive item, and they further state that nearly all disgusting sensations are of animal source (Shimp & Stuart, 2004). This type of imagery can be used in advertising to cause emotional arousal, to gain the attention of an audience, and to promote certain attitudinal formation or behaviour; however, limited research exists regarding the role of disgust in persuasion (Morales, Wu & Fitzsimons, 2012).

1.2.3 The Importance of Emotion and Attention

It is possible that a better understanding of how advertising regarding social issues resonates with consumers can lead to enhanced targeting and thereby to an increased impact for campaigns (M.R. Stafford, T.F. Stafford & Chowdhury, 1996). Emotions play a vital role in consumer responses, as mediators or moderators towards brand attitude, and as potential factors in anti-consumption behaviour (Holbrook & Batra, 1987; Bagozzi, Wong & Yi, 1999; Morris et al., 2002; Castellanos, Ausin, Guixeres & Bigné, 2018). In the past, consumer research has investigated how emotional responses can influence attitudes and behaviours (Agrawal & Duhachek, 2010).

According to Anilkumar & Joseph (2012), emotions are one of the sources of consumer attitude formation and change. They have a strong impact on consumers' reasoning and decision-making process, as well as being considered a predictor of advertising effectiveness (Poels & Dewitte, 2006; Al Pop, Iorga & Pelau, 2013). Davidson, Scherer & Goldsmith (2009) define emotion as a momentary occurrence of corresponding cerebral, physiological, and behavioural changes that enable a response to an external or internal stimulus (Venkatraman, Dimoka, Pavlou, Vo, Hampton, Bollinger, Hershfield, Ishihara & Winer, 2015). Previous findings have shown that positive and negative message frames can impact emotional responses differently. Emotional valence and emotional arousal have been used in previous research to explain emotion (Lang, 1995; Kuppens, Tuerlinckx, Russell & Barrett, 2013; Castellanos et al., 2018). Valence refers to either pleasant or unpleasant emotional responses during an exposure to some form of stimulus (the degree to which an emotional reaction is positive or negative) (Bolls, Lang & Potter, 2001; Potter & Bolls, 2012). Arousal is described as the level of intensity of the emotions elicited by a stimulus (the level of intensity linked to an emotional response) (Bolls, Lang & Potter, 2001).

In addition to emotional responses, the way a message is framed can affect resource allocation in terms of attention (Bolls, Lang & Potter, 2001). Emotions guide attention towards the object of emotion (Meinhardt & Pekrun, 2003). According to Guerreiro, Rita & Trigueiros (2015), attentional processing of information is fundamental in judgement. Attention refers to the ability to focus on specific features of an environment, and ignore others, or the extent to which individuals focus on stimuli within their range of exposure (Solomon, Bamossy, Askegaard & Hogg, 2006; Venkatraman et al., 2015). In the modern environment of media and information overload, attracting consumer attention has become progressively difficult (Simmonds, Bellman, Kennedy, Nenycz-Thiel & Bogomolova, 2020). The more

attention an individual dedicates to a persuasive message, the more likely it is that the message will have an influence on that person's opinions or beliefs (Cialdini, Petty & Cacioppo, 1981; Sanchez & Alley, 2016). This concept remains fundamental in present advertising practices (Cialdini, Petty & Cacioppo, 1981; Sanchez & Alley, 2016). Previous studies have established that the amount of attention paid towards an advertisement influences the advertisement's effectiveness in terms of shifting consumer attitudes (Sanchez & Alley, 2016).

Overall, understanding how to convey messages that resonate with a target audience is based on the ability to accurately recognize how they are feeling and thinking (Harrell, 2019). This can be achieved by exploring emotional and attentional responses to message framing strategies.

1.2.4 Consumers' Attitudes

A common theme in research involves evaluating advertising effectiveness by identifying the attitude that a message creates (Martínez-Fiestas et al., 2015). Attitude is an aspect of consumer behaviour, and it forms the basis of cognition, emotion, and intentions (Anilkumar & Joseph, 2012). Concerning the attitudes toward a behaviour, such as reducing meat consumption, attitude is determined by the belief that reducing the consumption of meat products would result in either good outcomes, leading to positive attitudes, or result in bad outcomes, leading to negative attitudes (Ransome, 2018). Bergmann, von der Heide & Maller (2010) recommended that social marketing research should focus on investigating the drivers of behavioural change, specifically the values and attitudes that bring about cognitive dissonance. Cognitive dissonance is "an uncomfortable and unsettling feeling that arises when conflicting ideas or ideas and behaviour occur simultaneously" (Bergmann, von der Heide & Maller, 2010:2). Loughnan, Bratanova & Puvia (2012) explained that individuals who consume meat products may experience tension (conscious or unconscious), since their beliefs do not match their actions (Ransome, 2018). In other words, meat eaters may experience cognitive dissonance since their behaviour of eating meat does not match their opinions that animals do not deserve to be hurt.

Over the years, consumer research has explored how emotional experiences influence attitudes and behaviours (Agrawal & Duhachek, 2010). Ethics, animal welfare, conservation, and human health, are all related; they have been found to significantly influence changes in attitudes to meat consumption (Fiddes, 1991). Furthermore, the knowledge of negative consequences of the production of meat on animal welfare, has been shown to influence attitudes towards meat consumption (Cordts, Nitzko & Spiller, 2014). This may be explained by Festinger (1957), in that humans often attempt to prevent the experience of cognitive dissonance by altering their behaviours, attitudes and beliefs, or by either rationalising and justifying their behaviours and attitudes or actively avoiding circumstances or information that increases cognitive dissonance (Bergmann, von der Heide & Maller, 2010). Therefore, the way a message is framed may play a role in influencing consumer attitudes, thereby by evoking cognitive dissonance.

Social marketing campaigns have the potential to influence attitudes, as well as behaviour (Fox & Kotler, 1980). Consumers' attitudes guide their thoughts and influence their feelings, thus affecting behaviours (Anilkumar & Joseph, 2012). The Theory of Reasoned Action (TRA) proposes that consumer behaviour is predicted by consumer intention to adopt that behaviour, and that intention is predicted by consumer attitude towards the behaviour, as well as the subjective norms regarding the behaviour (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980; Ransome, 2018). Influencing a shift in values and attitudes is typically a requirement for behavioural change (Gordon, Carrigan & Hastings, 2011). Therefore, attitude is an important construct in social marketing research.

1.2.5 Theoretical Framework

The theoretical framework used in this study acted as a foundation on which the research was based. This framework drew theoretical foundations from two supporting models that shared key elements within the research. The first supporting study was by Trendel, Mazodier & Vohs (2018). The key aspects from their research that were relevant to the current study was the testing of the mediating effects of valence of visual imagery (positive or negative) on implicit attitude change (Trendel, Mazodier & Vohs (2018). With this, they found that the valence of the visual imagery did mediate the change in implicit attitudes; therefore, this research was adapted to compare the valence of message framing in social marketing in influencing attitudes. The comparison of negative versus positive message framing as the independent variable was adapted from their comparison of two versions of information (text versus image-based) as the independent variable.

The second supporting study was by Guerreiro, Rita & Trigueiros (2015). The aim of their study was to describe how cognitive and emotional reactions may have an impact on decisions to purchase cause-related products (Guerreiro, Rita & Trigueiros, 2015). Their aim was to clarify the role of autonomic responses (emotional arousal, pleasure, and attention) in the success of emotion-evoking marketing interventions. Consequently, the current study drew its theoretical foundations by investigating the role of emotional responses and attentional responses in the effectiveness of positively framed, or negatively framed, social marketing communications in influencing attitudes towards the reduction of meat consumption.

Moreover, Guerreiro, Rita & Trigueiros (2015) made use of neuromarketing techniques to conduct this research, as they stated that autonomic responses may not be accurately recorded with surveys and rationalised intentions, but they have been proven to have an impact on consumer decisions (Poels & Dewitte, 2006; Vieira, 2013; Guerreiro, Rita & Trigueiros, 2015). Therefore, the study of Guerreiro, Rita & Trigueiros (2015) provided a good foundation for the current research. In summary, the theoretical framework of this research was drawn from a combination of previous studies. Ultimately, this study proposed that when an individual is exposed to a social marketing advertisement, positive message framing and negative message framing would influence attitudes differently. Additionally, it was predicted that this relationship may be mediated by emotional and attentional processes during advertisement exposure.

1.3 THE PROBLEM STATEMENT

The necessity for reduction in meat consumption is supported by strong evidence regarding its harmful impacts globally; including its impact on health, on social and environmental justice, on animal welfare, on water and air biodiversity, and on contributions to greenhouse gas emissions (Steinfeld et al., 2006). Researchers are increasingly calling for the promotion of more rational meat eating and flexitarian diets (Smil, 2013; Raphaely & Marinova, 2014; Bogueva & Phau, 2016). However, meat eaters express strong pro-meat consumption opinions, and their determination to maintain their meat consumption is strong and complex (Bergmann, von der Heide & Maller, 2010). Bogueva & Phau (2016:264) stated that “the power of marketing is within the context of whether marketing has a role to play in decreasing rather than perpetuating meat consumption.”

The extent of consumers’ attitudes and behaviours can be greatly influenced by marketing communication (Tanner & Kast, 2003). It is argued that consumers should be thought of as allies, and that they should be included in the process of realizing more sustainable ways of consuming protein (de

Bakker & Dagevos, 2012). Kolandai-Matchett (2009) states that more needs to be done to create more effective strategies with message framing to promote sustainable consumption, as this topic seems to be overlooked in previous consumer research. However, social marketers face the challenge of promoting new concepts, such as responsible and sustainable consumption, or consumption reduction (K. Peattie & S. Peattie, 2009).

This involves the challenging task of promoting these concepts with social marketing, in such a way that they are acceptable to consumers (K. Peattie & S. Peattie, 2009). In addition, social marketers face the challenge of advertisement avoidance, as many consumers are determined to resist persuasion and, therefore, employ different strategies to mitigate attitudinal change (Fransen, Verlegh, Kirmani & Smit, 2015). According to Knowles & Linn (2004), resistance is a motivational state in which consumers intend to limit attitudinal change (Fransen et al., 2015). Therefore, more information is needed to improve the effectiveness of social marketing communications.

Social marketers also face the challenge of evoking the appropriate emotions with message framing based on their desired responses. In other words, it is important to minimise the emergence of emotions that would be considered undesirable, when attempting to influence attitudinal changes (Bennett, 2015). Collymore & McDermott (2016) have shown that positive emotions are sometimes not effective in social marketing, as consumers have indicated feeling comfortable with their current behaviour. On the other hand, there is evidence that negative emotions elicited by negative message framing may cause consumers to deny that they are the cause of the negative consequences highlighted in the message, due to the desire to reduce the negative emotions that they are experiencing (Agrawal & Duhachek, 2010).

Therefore, information is needed to further understand meat eaters' emotional responses to social marketing communications. In addition to the challenges of understanding consumers' emotional responses, it is also an increasing challenge to attract consumers' attention with the range of media available and information overload experienced in the present day (Simmonds et al., 2020). Competition for consumers' limited attention is intense, and it is therefore crucial to understand how consumers devote attention to advertising stimuli (Yfantidou, 2018). Consequently, more information is needed in terms of how consumers devote attention to social marketing communications. The following section thus outlines the research question and the objectives of this study.

1.4 THE RESEARCH QUESTION AND THE OBJECTIVES

The purpose of this research was to address the problem statement discussed in the previous section by answering the following primary research question:

Does negative message framing of a social marketing advertisement influence Cape Town meat eaters' attitudes towards the reduction of meat consumption, better than positive message framing?

Thus, in accordance with the research question, this research had the following primary objective:

- I. To determine whether negative message framing of a social marketing advertisement influences Cape Town meat eaters' attitudes towards the reduction of meat consumption, better than positive message framing.*

In addition to the primary objective, this research had the following secondary objectives:

- I. *To determine whether elicited emotions mediate the relationship between the message framing strategy and Cape Town meat eaters' attitudes towards the reduction of their meat consumption.*
- II. *To determine whether there is a significant difference between the emotions elicited by positively framed advertisements, and the emotions elicited by negatively framed advertisements.*
- III. *To determine whether attention mediates the relationship between the message framing strategy and Cape Town meat eaters' attitudes towards the reduction of their meat consumption.*
- IV. *To determine whether there is a significant difference between attention towards positively framed advertisements and attention towards negatively framed advertisements.*

Thus, the purpose of this study was: 1) To compare how positive message framing versus negative message framing influences attitudes toward the reduction of meat consumption; 2) to assess the mediating effects of emotion and attention on the relationship between message framing and attitude; and 3) to explore the differences in emotion and attention elicited by positively framed advertisements versus negatively framed advertisements. These objectives contribute to social marketing research, as they seek to clarify the inconsistencies in previous framing research in the social marketing context.

1.5 THE RESEARCH METHODOLOGY

The research methodology presents the steps that were taken to conduct this research, as well as justification for each of these steps. This section provides a summary of the research philosophy and strategy, the target population and sampling, data collection methods and the data analysis.

1.5.1 Research Philosophy and Strategy

The various beliefs held by researchers often lead to them implementing either a qualitative, quantitative, or a mixed-method approach to their research; a researcher's activities are guided by a basic set of principles, which collectively form the foundation of a paradigm (Creswell, 2014; Desai, 2017). The assumptions for both a positivist worldview and an interpretivist worldview hold true more for quantitative research and qualitative research, respectively (Creswell, 2014). This study was guided by a mixed method approach. Mixed methods research involves the combination of elements of qualitative and quantitative research approaches (Harrison & Reilly, 2011; Johnson, Onwuegbuzie & Turner, 2007). Paradigmatically, mixed method research makes use of pragmatism as a system of philosophy.

This study made use of a mixed-method approach, with quantitative empirical research methods used to measure consumers' attitudes, emotions, and attentions, as well as qualitative methods, to gain deeper insights on emotional responses (Harris, Ciorciari & Gountas, 2018). The two methods complement each other, and frequently, qualitative research is conducted to clarify the findings obtained from a quantitative research project (Malhotra, 2010). The quantitative component of this study followed a conclusive, causal research design, as it aimed to explain cause and effect relationships between message framing techniques, emotion and attention, and the impact these have on consumers' attitudes (Malhotra, Nunan & Birks, 2017).

This was done by using experimentation, as this is the main method of causal research; it attempts to determine whether a certain treatment influences an outcome (Creswell, 2014; Malhotra, Nunan & Birks, 2017). It followed a quasi-experimental research design, specifically a two-group pre-test-post-test design. The qualitative component of this research followed an exploratory research design, as it aimed to provide insights and understanding (Malhotra, Nunan & Birks, 2017).

1.5.2 Target Population and Sampling

The target population for this study consisted of consumers between the ages of 18 to 34, residing in Cape Town, and who consume meat products. This age range included millennials, as it had the most potential for attitude change regarding meat consumption. This study aimed to target meat eaters so that future social marketing messages could focus on these individuals to encourage a reduction in the consumption of meat, and thereby to try and influence the attitudes of consumers who currently eat meat. It was important to better understand meat eaters' responses, to determine which type of framing strategy was more effective in influencing their attitudes towards reducing their meat consumption.

Convenience sampling was a suitable non-probability sampling technique for this study, as this method aims to find a sample of convenient elements, in which the selection of respondents is left largely to the researcher (Malhotra, Nunan & Birks, 2017). This was the fastest and most economical sampling technique, as the respondents were easily accessible, easy to measure, and cooperative (Malhotra, Nunan & Birks, 2017). In addition, snowball sampling took place to some extent. With snowball sampling, the original respondents that were selected were asked to point out others who belonged to the target population (Malhotra, Nunan & Birks, 2017). Subsequent respondents were chosen on the basis of these referrals. A sampling frame was used which entailed a set of guidelines for choosing suitable respondents for the study, such that the sample fulfilled the target population parameters (Malhotra, Nunan & Birks, 2017). Thus, the respondents were all within the parameters of the target audience.

The target sample comprised sixty respondents; however, due to the Covid-19 lockdown in South Africa that started during the data collection period, only fifty-six responses were obtained (South African Government, 2021). This sample consisted of two experimental groups; the group exposed to the positively framed advertisement consisted of 28 respondents, while the group exposed to the negatively framed advertisement consisted of 28 respondents. Due to the nature of the research being experimental, a small sample was necessary, since the data collection process was time-consuming (Bercea, 2012). Consequently, the minimum acceptable sample size was still achieved (Bolls, Lang & Potter, 2001; Royne, Martinez, Oakley & Fox, 2012; Guerreiro, Rita & Trigueiros, 2015). Previous consumer neuroscience studies, which had utilised similar methods to conduct research, had sample sizes as small as 17, 18, 19 or 20 (Banks, Bellerose, Douglas & Jones-Gotman, 2012; Khushaba, Wise, Kodagoda, Louviere, Kahn & Townsend, 2013; Cuesta, Martínez-Martínez & Niño, 2018; Meyerding, 2018). Thus, the minimum acceptable sample size was achieved, the sample was large enough for power, and the objectives of the study were addressed through the data obtained.

1.5.3 Data Collection Methods and Data Analysis

The data collection was conducted via two approaches: self-reporting and consumer neuroscience methods. Self-reporting methods were used to collect the quantitative data on the respondents' explicit attitudes. Two structured questionnaires were used; the first was presented to respondents before exposure to a stimulus, while the second was presented after exposure to a stimulus. Self-reporting

methods were also used to collect the qualitative data; during stimulus exposure, the respondents were asked three personal interview questions regarding their emotions and feelings in terms of the stimuli. However, conscious self-reporting does not allow for the true assessment of complex emotions (Harris, Ciorciari & Gountas, 2018).

To avoid self-reporting measurement bias, the consumer neuroscience data collection methods were used, since the respondents had very little influence on these measurements (Solnais, Andreu-Perez, Sánchez-Fernández & Andréu-Abela, 2013; Yang, 2018). Facial coding was used to measure the valence and disgust dimensions of emotion; this involved the measuring of human emotions via facial expressions (iMotions, n.d.a). Galvanic skin response (GSR) was used to measure the arousal dimension of emotion; GSR measures skin conductivity, to indicate the autonomic nervous system arousal in response to sensory and emotionally stimulating marketing stimuli (Ohme, Reykowska, Wiener & Choromanska, 2009; Harris, Ciorciari & Gountas, 2018; iMotions, n.d.b). Eye-tracking was used to collect data on visual attention, by measuring where the respondents were looking, for how long they were looking, and the path of their view, while they viewed the stimuli (Zurawicki, 2010; Bercea, 2012; Sebastian, 2014a).

In total, five types of measurement instruments were used for this study: Structured questionnaires to measure the explicit attitudes, a structured personal interview to obtain verbal responses, eye-tracking technology, facial coding software, and GSR sensor units were used to obtain the consumer neuroscience measures of emotion and attention. The measurement instruments are explained in more detail in Chapter 3: The Research Methodology.

The quantitative data obtained in this study were prepared and analysed by using Microsoft Excel and the Statistical Package for the Social Sciences (SPSS). SPSS software assisted with the analysis of the descriptive statistics and the hypothesis testing. The qualitative data were prepared by using Microsoft Excel, and they were analysed with the thematic analytical technique. While the quantitative research involves numbers and what they represent, qualitative data analysis is not directed by as many rules and standard procedures, and it involves the analysis of words rather than numbers (Malhotra, 2010).

1.6 JUSTIFICATION AND CONTRIBUTIONS OF THIS STUDY

There is an urgent need for the demarketing of meat, and research has shown that the advertising industry has the power to influence consumers' food choices (Bakker & Dagevos, 2012; Bogueva, Marinova & Raphaely, 2017). According to Mathur et al. (2020), social marketing interventions, involving animal welfare appeals, may have the exceptional potential to tap compelling psychological levers. However, little has been researched on these types of interventions aimed at reducing meat consumption, and there is limited literature on what drives consumer choices regarding meat consumption (Bakker & Dagevos, 2012; Bogueva, Marinova & Raphaely, 2017 Mathur et al., 2020).

Therefore, this gap in the existing literature is indicative of the significance of this study's contribution to developing a better understanding of how consumers respond to social marketing, aimed at reducing meat consumption. Moreover, there is much debate in social marketing, regarding communicating specific appeals that could positively influence consumers (Yfantidou, 2018). There is little research available to guide the design of social marketing interventions, and that research, which is available is contradictory (Mathur et al., 2020).

Some researchers have claimed that positive framing in social marketing, highlighting the positive consequences of adopting a specific behaviour, is more effective (Maheswaran & Meyers-Levy, 1990; Loroz, 2007; Martínez-Fiestas et al., 2015), while others support negative framing (Zhang & Buda, 1999; Biener, Ji, Gilpin & Albers, 2004; Collymore & McDermott, 2016). A clear message strategy is necessary to increase the effectiveness of social marketing communications; however, there is a lack of information regarding positive message framing that aims to persuade consumers to reduce harmful behaviours, since research on message framing has focused its attention on negative framing techniques by using guilt and shock (Dahl, Frankenberger & Manchanda, 2003; Agrawal & Duhachek, 2010; Collymore & McDermott, 2016). Furthermore, much of the research that exists on positive message framing, or on negative message framing, focuses on the personal benefits or consequences of adopting a personal behaviour, indicating thereby a lack of research by using social benefits, or consequences, as persuasive tools (Kareklas, Carlson & Muehling, 2012; Yang, 2018). This, therefore, indicates a gap in the current knowledge base, and it emphasizes this study's contribution to social marketing research.

This study also used an innovative approach to exploring emotion and the attention elicited by social marketing advertisements, with the use of consumer neuroscience methods. Marketing research often uses self-reporting to assess the emotional and attentional responses; however, conscious self-reporting does not allow for the true assessment of complex reactions to stimuli (Harris, Ciorciari & Gountas, 2018). Consumer neuroscience research has the potential to significantly increase the effectiveness of advertising messages globally, as it provides researchers with the ability to measure unconscious reactions to stimuli, such as emotional valence, levels of disgust, emotional arousal, and attention (Morin, 2011; Sebastian, 2014a). Moreover, consumer neuroscience provides the ability to quantify consumers' emotional, cognitive, and behavioural reactions to develop effective strategies that are based on science, rather than merely on opinions (Bitbrain, 2018). Therefore, this study widens the existing knowledge base of emotional and attentional responses to message framing strategies by using novel research methods.

The effects of positive emotions on consumer engagement with advertising remain largely unexplored (Teixeira, Wedel & Pieters, 2012). In addition, interventions evoking disgust have received little academic attention, and there has been limited focus on understanding disgust's role in persuasion (Nabi, 1999; Shimp & Stuart, 2004; Morales, Wu & Fitzsimons, 2012; Collymore & McDermott, 2016; Feinberg, Kovacheff, Teper & Inbar, 2019; Mathur et al., 2020). Research has explored the influence of emotions in framing messages; however, little focus has been placed on research of the emotions elicited by message framing in the social marketing context (Brennan & Binney, 2010). These gaps in the existing literature indicate the significance of the contribution made by this study towards developing a better understanding of emotional responses to message framing in social marketing, and it widens the existing literature on the role of disgust (Morales, Wu & Fitzsimons, 2012; Collymore & McDermott, 2016). According to M.R. Stafford, T.F. Stafford & Chowdhury (1996), a better understanding of how advertising regarding social issues resonates with consumers could lead to enhanced targeting, and thus increased impact for social marketing campaigns.

M.R. Stafford, T.F. Stafford & Chowdhury (1996) suggested that for advertisers to make the most out of their output, research is required to identify and understand the audience-response to social marketing appeals. This study has contributed to delivering substantial insights into the way consumers respond to social marketing interventions that could guide social marketing practitioners in developing strategic interventions that are more effective in influencing positive change in consumers' attitudes toward participating in recommended behaviours. It has contributed towards developing a combination of elements that are most effective for influencing consumers' attitudes towards ethical consumption

practices. Therefore, this study can guide the design of effective, evidence-based social marketing messages that can be used to positively impact human, animal, and environmental well-being.

1.7 ORGANIZATION OF THE STUDY

Following the introduction of this study (Chapter 1), which provides a comprehensive overview of what this research involves, and it familiarises the reader with the topic, the remaining chapters of this study are presented as follows. Chapter 2 presents the theoretical framework and a review of the literature relevant to the research topic. The literature review provides a deeper understanding of the various constructs illustrated in the theoretical framework, and it outlines the relevance of these constructs to this study. These discussions provide the findings obtained in previous research that are relevant to the current topic, and thereafter present the research hypotheses of this study. Chapter 3 presents the research methodology, which describes the methods that were used in the execution of the study in detail, and it justifies why the methods used were best suited for this research. Chapter 4 consists of the presentation of the results obtained from the data. This chapter presents the outputs from the data analysis and the conclusions of hypothesis testing, which either prove or disprove the study's hypotheses. The final chapter, Chapter 5, presents conclusions, summaries of the findings, and the managerial implications and recommendations guided by the findings. Chapter 5 also outlines the limitations of the research, and some suggestions for future research in this area.

2 CHAPTER 2: THE THEORETICAL FRAMEWORK AND THE LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents an explanation of the theoretical works underpinning this study, and how they were integrated to provide the foundation that guided this research. Following this, the literature review is presented, providing a deeper understanding of the available research in the topic area, and it summarises the relevant findings from the previous literature. These discussions further explain the various constructs illustrated in the theoretical framework, and they outline the relevance of such to this study, as well as the gaps in the literature. Lastly, the conceptual model that guided this research is presented.

2.2 THE THEORETICAL FRAMEWORK

This study has focused on message framing appeals in social marketing, in the form of advertisements aimed at reducing meat consumption. The purpose was to investigate the differences between positive framing and negative framing, in influencing the attitudes towards reducing meat consumption, and the relationships between message framing, emotion, attention, and attitude. The existing theory on emotions, attention, and the attitudinal responses towards the behaviour promoted in social marketing interventions has not provided any empirically tested theoretical framework that specifically explores the relationship between these variables.

Therefore, this study has adapted the models of two theoretical works, to develop an integrated theoretical framework. The theoretical framework presented in this section has acted as the foundation on which this research was based. The framework was used to guide the literature review of the study.

2.2.1 Theoretical Works Underpinning This Study

The theoretical framework used in this study was adapted from two supporting models that shared key elements within the research. The first model was from a study by Trendel, Mazodier & Vohs (2018) on *Making Warnings About Misleading Advertising and Product Recalls More Effective: An Implicit Attitude Perspective* (see Figure 1 below). The authors of this study compared image-based information versus text-based information in influencing change in implicit attitudes (Trendel, Mazodier & Vohs, 2018).

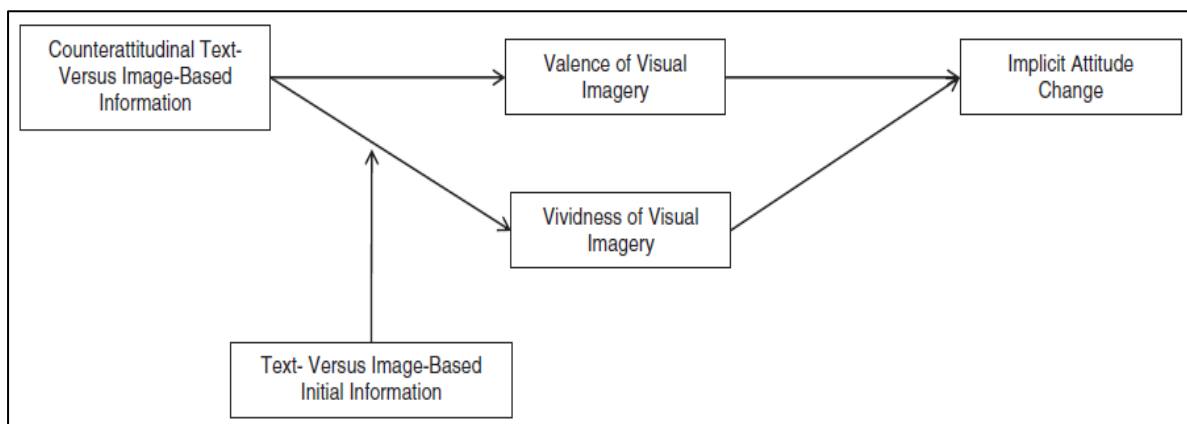


Figure 1: Implicit attitude change conceptual model (Trendel, Mazodier & Vohs, 2018)

Trendel, Mazodier & Vohs (2018) examined corrective information, specifically warnings about misleading advertising and product-recall notices, as this is a commonly utilised and key method in efforts to influence attitudes. An attitude can exist at two different levels. Explicit attitudes refer to evaluative judgements about an object or behaviour, and implicit attitudes refer to automatic evaluative responses that are triggered when exposed to a target (Trendel, Mazodier & Vohs, 2018). Dual-process theories state that there are two different systems of reasoning that influence consumer attitudes (Rydell & McConnell, 2006; Trendel, Mazodier & Vohs, 2018). These include System 1 processes, which are automatic, unconscious, and associative, that motivate implicit attitudes; while System 2 processes are controlled, conscious, and rule-based, and they motivate explicit attitudes (Rydell & McConnell, 2006; Trendel, Mazodier & Vohs, 2018).

Implicit attitudes can be changed by measures in which an attitude item is presented with either positive or negative stimuli (Trendel, Mazodier & Vohs, 2018). Since System 2 processes necessitate rule-based processing, they usually do not change implicit attitudes (Gawronski & Bodenhausen, 2006; Trendel, Mazodier & Vohs, 2018). However, System 1 processes typically have an effect on System 2 processes (Rydell & McConnell, 2006; Trendel, Mazodier & Vohs, 2018).

Trendel, Mazodier & Vohs (2018) proposed that visual imagery is vital when attempting to change implicit attitudes. They outlined three dimensions of visual imagery: valence (positiveness or negativeness), vividness (clarity), and quantity (number of visual images aroused by a stimulus) (Bone & Ellen, 1992; Miller, Hadjimarcou, & Miciak, 2000; Trendel, Mazodier & Vohs, 2018). Trendel, Mazodier & Vohs (2018) included the valence of visual imagery and the vividness of visual imagery in their theoretical framework as mediators. This implies that visual imagery valence should mediate the effect of the type of counter-attitudinal information on implicit attitude change (Trendel, Mazodier & Vohs, 2018). This concept was adapted to guide the current study. Additionally, they hypothesised that the vividness of visual imagery would also explain changes in implicit attitudes (Trendel, Mazodier & Vohs, 2018).

Their study found that corrective information, presented as images or imagery-evoking text, influenced implicit attitudes more than plain, descriptive text, which is the typical warning technique used at present (Trendel, Mazodier & Vohs, 2018). Imagery-based information influenced both explicit and implicit attitudes; whereas stimuli that did not involve imagery only influenced explicit attitudes (Trendel, Mazodier & Vohs, 2018). Their findings also revealed that images are more effective than text because images evoke mental visuals of counter-attitudinal valence (Trendel, Mazodier & Vohs, 2018).

Trendel, Mazodier & Vohs (2018) recommended that image-based interventions are most effective in terms of conveying messages that protect consumers from advertisements and products that could cause harm. Additionally, the experiments conducted by Trendel, Mazodier & Vohs (2018) showed that the valence of visual imagery mediated the shift in implicit attitudes, while visual imagery vividness also mediated the effect of images on implicit attitudinal change, only when individuals have a poor vivid visual image of a brand to begin with. The current study applied their model to the context of comparing positive message framing and negative message framing in social marketing, in terms of their effectiveness in influencing explicit attitudes, and further adapted the mediation aspects of their model to the context of emotion and attention, as mediators. Moreover, this research applied the model to the context of the relationship between message framing and the attitudes towards the promoted behaviours in social marketing.

The second supporting model was from a study by Guerreiro, Rita & Trigueiros (2015) on *Attention, Emotions and Cause-Related Marketing Effectiveness* (see Figure 2 below). The aim of their research was to determine how cognitive and emotional responses can impact decisions to purchase cause-related products (Guerreiro, Rita & Trigueiros, 2015). They made use of consumer neuroscience techniques to conduct their research, as they stated that autonomic responses may not be captured by surveys and rationalised intentions; nevertheless, they have been proven to impact final purchasing choices (Poels & Dewitte, 2006; Vieira, 2013; Guerreiro, Rita & Trigueiros, 2015).

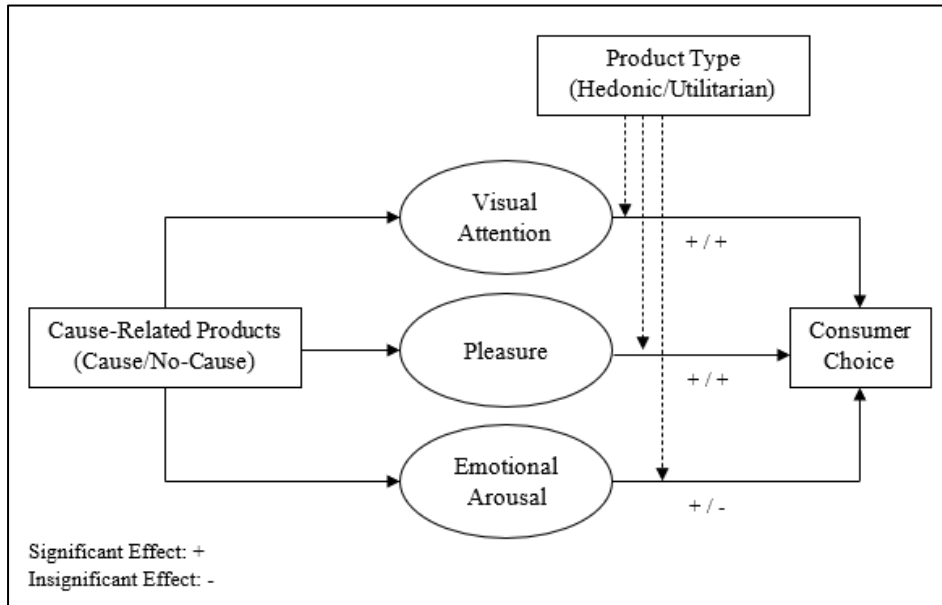


Figure 2: Attention-emotion conceptual model (Guerreiro, Rita & Trigueiros, 2015)

Guerreiro, Rita & Trigueiros (2015) made use of eye-tracking and skin conductance measurement in their experimental design. The aim was to clarify how autonomic responses (such as emotional arousal, pleasure, and attention) impact the effectiveness of emotional marketing messages. This concept was adapted to guide the current study. The theoretical framework underlying their study was that of Mehrabian & Russel’s (1974) Stimulus-Organism-Response (S-O-R) theory (Guerreiro, Rita & Trigueiros, 2015). Using this theory, several authors (e.g. Vieira, 2013) have proven noteworthy effects of emotional responses on consumer decision-making (Guerreiro, Rita & Trigueiros, 2015). According to the S-O-R framework, the environment contains informational cues or stimuli (S) that influence peoples’ internal or organismic states by affecting their cognitive and affective reactions (O), which, therefore, cause approach- or avoidance-responses (R) (Mehrabian & Russell, 1974; Vieira, 2013). Refer to Appendix F for a visual representation of Mehrabian & Russel’s (1974) Stimulus-Organism-Response (S-O-R) theory.

The organism component includes “prior experiences, knowledge, beliefs, attitudes, predispositions, intentions, values, cognitive networks, schema, scripts, motives, the individual's personality, feelings...images...” (Jacoby, 2002:54; Bigné, Chatzipanagiotou & Ruiz, 2020). Based on the S-O-R framework of Mehrabian & Russell (1974), Guerreiro, Rita & Trigueiros (2015) used an experimental design to clarify how autonomic responses direct altruistic choices in a simulated-shopping environment. Altruistic motivations are those that involve wider social concerns, contrasting egotistic motivations that stem from an individual’s self-interest (Birch, Memery & Kanakarathne, 2018).

Previous research has suggested that altruistic or selfless behaviour is motivated by moral emotions, such as pride, guilt, and disgust (Kim & Johnson, 2013; Guerreiro, Rita & Trigueiros, 2015).

Eye-tracking and skin conductance measures were used to determine decisions of hedonic or utilitarian cause-related, or of unrelated products (Guerreiro, Rita & Trigueiros, 2015). Cause-related marketing refers to the development of commercial campaigns that allow charities to profit from an exchange between the customer and the company (Varadarajan & Menon, 1988; Guerreiro, Rita & Trigueiros, 2015). Accordingly, unrelated products refer to those that are not linked to a cause. A study on cause-related marketing effectiveness on a set of various product categories was done by Strahilevitz & Myers (1998), where they referred to hedonic products as frivolous luxuries and utilitarian products as practical necessities. Noteworthy variations in cause-related marketing effectiveness are anticipated between hedonic products, such as designer clothes, and utilitarian products, such as soap (Guerreiro, Rita & Trigueiros, 2015).

The autonomic reactions measured by the study of Guerreiro, Rita & Trigueiros' (2015) were emotional arousal, pleasure, and attention. Organismic responses occur according to one's emotional state, and they occur along three dimensions: arousal, pleasure, and dominance, as well as through cognitive perceptions, such as attention (Donovan & Rossiter, 1982; Guerreiro, Rita & Trigueiros, 2015). Guerreiro, Rita & Trigueiros (2015) found that emotional arousal, pleasure, and attention to the cause-related bundle were linked with altruistic behaviour in hedonic choices (Guerreiro, Rita & Trigueiros, 2015). When faced with utilitarian choices, respondents focused on the brand logo and the donation amount while experiencing pleasure, but this emotional arousal did not improve the marketing effectiveness (Guerreiro, Rita & Trigueiros, 2015). The results of this study highlighted the significance of automatic responses in consumer decision making (Guerreiro, Rita & Trigueiros, 2015). Guerreiro, Rita & Trigueiros (2015) claim that their study pioneered the use of eye-tracking combined with skin conductance, in experimental designs intended to clarify the role of emotional arousal, pleasure, and attention in the effectiveness of emotion-evoking marketing interventions.

The current study explored the use of Guerreiro, Rita & Trigueiros' (2015) model of how attentional and emotional responses effect the relationship between a categorical independent variable and the consumers' responses, and it applied the model to the context of the relationship between message framing (positive/negative) and the attitudes towards promoted behaviours in social marketing. The integrated theoretical framework is discussed in the following section, outlining which elements of the supporting models are key in the integrated theoretical framework.

2.2.2 The Integrated Theoretical Framework

The theory that guided this research combined aspects from the work of Trendel, Mazodier & Vohs (2018) and Guerreiro, Rita & Trigueiros (2015). The integrated framework proposed that when a consumer is exposed to a meat-reduction social marketing advertisement, the type of message framing strategy used influences the attitudes toward the promoted behaviour differently. Additionally, it was predicted that emotion and attention elicited by the message framing strategy impact the relationship between message framing and attitude formation.

In essence, social marketing is about promoting social change, with the aim of encouraging a shift in health, social, or sustainable behaviour (Gordon, Carrigan & Hastings, 2011). Guerreiro, Rita & Trigueiros' (2015) experimental design, to clarify how autonomic reactions determine altruistic choices, tied in with the social marketing aspect of the current study, as altruistic motivations are those that

involve wider social concerns (Birch, Memery & Kanakaratne, 2018). However, Guerreiro, Rita & Trigueiros' (2015) study had a focus on cause-related marketing effectiveness, which should not be confused with social marketing, since cause-related marketing involves promoting a cause that is not necessarily associated with the brand or to any product; it is rather a collaboration between a for-profit and a non-profit company (Barone, 2007; Yfantidou, 2018).

The concept of cause-related marketing involves promoting a charity while increasing sales (Yfantidou, 2018). Fox & Kotler (1980) described social marketing as a shift in focus from marketing products and services to the promotion of various socially beneficial concepts and causes. Since social marketing focuses on the promotion of socially beneficial concepts, it is linked to concepts, such as ethical obligations and ethical self-identity. This refers to the degree to which an individual is motivated by ethics when making consumption choices (Shaw, Shiu & Clarke, 2000; Shaw & Shiu, 2002a; Birch, Memery & Kanakaratne, 2018). Ethical consumption is defined as "people purchasing and using products and resources according not only to the personal pleasures and values they provide, but also to ideas of what is right and good, versus wrong and bad, in a moral sense" (Starr, 2009:916; Birch, Memery & Kanakaratne, 2018). The fundamental drivers of ethical consumption choices consist of concern for animal welfare, human welfare, environmental protection, or fair prices (Wheale & Hinton, 2007; Michaelidou & Hassan, 2008; Birch, Memery & Kanakaratne, 2018). This directly links to the research of social marketing effectiveness in the current study, with a focus on animal welfare.

Message framing is described as the way in which a message is delivered; this involves whether a message highlights positive factors or negative factors (Bester & Jere, 2012; Yang, 2018). To investigate social marketing effectiveness, a comparison between a positively framed advertisement and a negatively framed advertisement was made. Hence, the treatment in this experiment involved changing the type of message framing (positive or negative). Trendel, Mazodier & Vohs (2018) indicated in their research that the valence (goodness or badness) of visual imagery mediated a change in implicit attitudes.

The model established by Trendel, Mazodier & Vohs (2018) was useful when creating the integrated theoretical framework since their model compared the two versions of information (text versus image-based information); consequently, this was adapted to compare the valence of message framing, as the independent variable, with the aim of determining which of these was more effective in influencing attitudes. Additionally, their study included the valence and vividness of visual imagery, as the mediators in the model, which was adapted to explore emotion and attention as mediators in the present study. Successful manipulation of information to influence attitudes and behaviours is central to social marketing (Yang & Ma, 2011; Yang, 2018).

In terms of positive message framing, it was proposed that, in order to motivate a change in consumer attitude, it may be necessary for consumers to be convinced that by consuming less meat individually, they would save the lives of many animals. When creating negative appeals, this research proposed that by generating discomfort, consumers would be inspired to act to reduce those feelings of discomfort, thereby making negative message framing more effective (Brennan & Binney, 2010). The inclusion of emotion and attention as mediators assisted in testing whether the emotions elicited by the negatively framed advertisement and the attention elicited by the negatively framed advertisement changed attitudes more than did the emotion elicited by the positively framed advertisement and the attention elicited by the positively framed advertisement.

The model by Trendel, Mazodier & Vohs (2018) included the final construct of ‘implicit attitude change’. Attitude change was a key element in the integrated theoretical framework; however, the current study examined the changes in explicit attitude. In the case of this research, the final construct serves to measure a change in consumer attitude, which has been described by Anilkumar & Joseph (2012) as a long-lasting evaluation of an object of consumption, issue, person, or an act. Thus, the focus of this study was not on the implicit attitudes, but rather on the explicit consumer attitudes. Explicit attitudes are controlled, conscious and rule-based; they are regarded as evaluative judgements that can be measured with conscious self-reporting methods (Rydell & McConnell, 2006; Trendel, Mazodier & Vohs, 2018).

Accordingly, adapted from the research of Guerreiro, Rita & Trigueiros’ (2015), the purpose of this study was to determine how cognitive and emotional responses influence consumer attitude. Consumers may experience different levels of emotion and attention when exposed to different stimuli, and due to the complexity of these responses, further research is necessary to determine how organismic responses influence the effectiveness of different message framing strategies. Emotional responses consist of arousal (intensity) and valence (positive or negative focus) dimensions; they are complex responses of the human body that are activated by some parts of the brain, as a response to actual or recalled stimuli (Guerreiro, Rita & Trigueiros, 2015; Trendel, Mazodier & Vohs, 2018). The level of emotional arousal experienced varies from a mild to an elevated state, and this level of emotional arousal can impact consumers’ evaluations (Choi, Jung, Oyunbileg & Yang, 2016).

According to Guerreiro, Rita & Trigueiros (2015), in addition to emotion, attention is also a central element in consumer decision-making, due to the restricted processing resources of the brain. The results of their study highlighted the prominence of automatic reactions of emotion and attention in customers’ choices (Guerreiro, Rita & Trigueiros, 2015). This study therefore predicted that the emotions and the attention elicited by either positive message framing or negative message framing would mediate (cause change in) the relationship between message framing and attitude. The theoretical framework was adapted in this way as the narrow focus of examining attitude has grown, since researchers have begun considering the emotions experienced during advertisement exposure as a different type of response (Holbrook & O’Shaughnessy, 1984; Machleit & Wilson, 1988). This framework grounded the research hypotheses tested in the study, and it guided the research to answer the research question and the objectives. Each of the key elements in the theoretical framework is discussed in some detail in the review of the existing literature in the following sections.

2.3 SOCIAL MARKETING

Over time, the field of marketing has broadened to include social marketing; this involves the promotion of non-profit organisations and meaningful social causes (Fox & Kotler, 1980). The matters of social marketing are generally more complex than those found in product marketing (Fox & Kotler, 1980). Social marketing is utilised by many non-profit and governmental organizations to promote socially important behaviours; however, these behaviours are not always relevant to the personal motivations of consumers (Brennan & Binney, 2010).

Social marketing methods are used often to create advertising messages that promote socially beneficial changes in consumer behaviour (Kotler & Lee, 2008; Martínez-Fiestas et al., 2015). Many social marketing campaigns have attempted to influence values and attitudes as a way to change behaviour (Gordon, Carrigan & Hastings, 2011). This has been successful in campaigns aimed at behaviours such as smoking and drinking and driving (Wakefield, Loken & Hornik, 2010; Gordon, Carrigan & Hastings,

2011). However, further research is necessary to explore the use of social marketing for sustainability issues (Gordon, Carrigan & Hastings, 2011).

2.3.1 The Motivation for Social Marketing Research

Based on previous research, reducing meat consumption is necessary, and humans need to rely on more sustainable ways of consuming protein (de Bakker & Dagevos, 2012; Bogueva, Marinova & Raphaely, 2017). However, there is limited research on what motivates consumer decisions regarding meat consumption (Bogueva, Marinova & Raphaely, 2017). Social marketing has been used effectively in public-health campaigns, such as smoking cessation, and similar social marketing approaches are needed to reduce meat consumption for the benefit of humans, the environment, and animals (Wakefield, Loken & Hornik, 2010; Bogueva, Marinova & Raphaely, 2017). The literature supports the role that advertising plays, as a critical role in consumers' decision-making (Yfantidou, 2018). However, for advertisers to make the most out of their output, research is necessary, in order to identify and understand the audience responses to these appeals (M.R. Stafford, T.F. Stafford & Chowdhury, 1996). Fox & Kotler (1980:25) believe that social advertising is "a shot in the dark" if it is not guided by detailed marketing research.

Research on the design of social marketing interventions is important, in order to reduce advertisement avoidance. Consumers often aim to resist persuasion, and they, therefore, use different strategies to avoid advertising messages and to maintain their current attitudes (Fransen et al., 2015). These strategies include physical avoidance, mechanical avoidance, and cognitive avoidance (Speck & Elliot, 1997; Fransen et al., 2015). Physical avoidance is aimed at not seeing or hearing an advertisement (e.g. leaving the room or turning the page), while mechanical avoidance involves zipping, zapping or muting commercials (Speck & Elliot, 1997; Fransen et al., 2015). Cognitive advertisement avoidance occurs when consumers do not pay attention to certain advertisements; this often occurs because individuals focus less attention on persuasive messages that might contradict their existing opinions (Knobloch-Westerwick & Meng, 2009; Fransen et al., 2015). Therefore, social marketing efforts need to be designed in such a way that they attract attention from consumers, since individuals tend to avoid messages that are incompatible with their current beliefs and attitudes (Fransen et al., 2015).

Advertisement avoidance can be active (conscious) or passive (unconscious) (Fransen et al., 2015). Active avoidance occurs when consumers force themselves not to see or listen to an advertisement, and passive avoidance does not require this and therefore, it calls upon different types of neutralizing strategies, such as contesting strategies and empowering strategies (Fransen et al., 2015). These neutralising strategies have the potential to reduce the effectiveness of social marketing advertisements. Contesting strategies involve consumers actively countering an advertisement by challenging it, either in terms of challenging the message itself (counter-arguing), challenging the source of the advertisement (source derogation), or challenging the persuasive tactics that are used in the advertisement (Fransen et al., 2015).

Empowering strategies are associated with the message recipients, rather than with advertisement, as these strategies involve consumers reassuring themselves of their existing attitudes (Fransen et al., 2015). This includes attitude bolstering (defending their current attitudes, instead of considering the presented argument), social validation (validating one's attitude by thinking of others that share their existing beliefs), and self-assertion (reminding themselves of their confidence regarding their attitudes, and that their current attitudes cannot be changed) (Fransen et al., 2015). These strategies make consumers less prone to the effect of dissonant messages (Fransen et al., 2015). Social marketing

research is, therefore, necessary to explore how consumers are avoiding anti-meat advertisements, and how to make these more effective in the future.

According to Fox & Kotler (1980), social marketing campaigns have the potential to influence attitudes, as well as behaviour. These initiatives are used to increase the probability of consumers adopting the desired behaviour (Bergmann, von der Heide & Maller, 2010). It is possible that a better understanding of how advertising regarding social issues resonates with consumers can lead to enhanced targeting, and thereby to increased impact for campaigns (M.R. Stafford, T.F. Stafford & Chowdhury, 1996).

There is much debate in social marketing regarding communicating specific appeals that would positively influence consumers, and marketers are continuously asked to justify their selection of specific advertising appeals (Yfantidou, 2018). Consequently, research is necessary for social marketers to justify the use of certain advertising appeals used to promote ethical consumption behaviour. The different appeals that could be used to promote a reduction in meat consumption are presented in the following section.

2.3.2 Social Marketing as a Tool for Promoting Anti-Consumption

In countries all around the world, companies promote the consumption of products that are controversial and harmful, such as cigarettes, alcohol, and highly refined foods (Fox & Kotler, 1980). However, meat products also fall into this category (Fiddes, 1991). Within the bounds of sustainable food production and consumption, the consumption of meat products has been identified as the most vital area to be addressed (D. Pimentel & M. Pimentel, 2003; Schösler, de Boer & Boersema, 2012; Ransome, 2018). This is supported by strong evidence regarding the harmful impacts that meat consumption has on human health, on social and environmental justice, on animal welfare, and on water and air biodiversity, as well as its contributions to greenhouse gas emissions (Steinfeld et al., 2006).

Crucial changes in human behaviour are necessary to reduce the consumption of animal products, in order to alleviate these problems. Around 70 billion animals are slaughtered for meat worldwide annually (Our World in Data, 2018; Sanders, 2018). According to Ilea (2009) and Jankielsohn (2015), farm animal production will double by 2050. Human survival does not rely on the consumption of animals, yet humans continue to exploit and consume animals out of habit (Jankielsohn, 2015). The world's growing population, combined with increasing disposable incomes, has caused a worldwide increase in meat consumption (de Boer & Aiking, 2011; Schösler, de Boer & Boersema, 2012; Ransome, 2018). These high levels of consumption are increasingly criticized for ethical, environmental, and social reasons (Apostolidis & McLeay, 2016; Ransome, 2018).

Despite all research evidence regarding meat's damaging effects, it is still believed to be vital for health and wellbeing (Bogueva, Marinova & Raphaely, 2017). This is primarily due to the aggressive promotion of meat consumption by the livestock sector and related industries (Bogueva & Phau, 2016; Bogueva, Marinova & Raphaely, 2017). To reassure consumers about the 'wholesome simplicity' of meat products, the meat industry promotes the idea of natural, timeless tradition, while the reality of livestock farming is sheltered from the public (Fiddes, 1991). This highlights the important role that social marketing has in promoting anti-consumption. Many consumers are unaware of the negative effects of consuming meat, and this is where counter-marketing plays an important role. The findings in previous research have emphasised a lack of awareness regarding the connection between meat consumption and the health of the environment, the general inaccuracy of health messages associated with the consumption of meat, the persuasiveness of the meat industry in encouraging excessive meat

consumption, and the urgent necessity for social marketing interventions and for the demarketing of meat (Bogueva, Marinova & Raphaely, 2017).

Bergmann, von der Heide & Maller (2010) found that the most typical response strategy of individuals to avoid unsettling feelings of cognitive dissonance is to justify their meat consumption. However, much of this reasoning is based on incomplete knowledge and misinformation, and it highlights the lack of awareness of animal experience, of the negative effects of factory farming, of the nutritional value of plant-based meals, and of ways to prepare plant-based meals (Bergmann, von der Heide & Maller, 2010). This is often addressed with common social marketing techniques (Bergmann, von der Heide & Maller, 2010). Social marketing interventions can leverage cognitive dissonance to encourage the reduction of meat consumption (Bergmann, von der Heide & Maller, 2010). With this, Bergmann, von der Heide & Maller (2010) recommended that future research should focus on exploring the motivations behind behavioural change, particularly the values and attitudes that give rise to cognitive dissonance. To successfully progress towards sustainability, it is necessary to develop more intensive solutions than the creation of product substitutions for consumers (K. Peattie & S. Peattie, 2009).

It requires solutions that include the marketing and the acceptance of concepts such as responsible consumption, consumption reduction, voluntary simplicity, and sustainable lifestyles (K. Peattie & S. Peattie, 2009). This applies to both industrialised markets and to those less industrialised societies that have fast growing economies and populations (K. Peattie & S. Peattie, 2009). The anti-consumption challenge raises questions regarding how to effectively promote these concepts so that they are acceptable to consumers, and how social marketing should play a role in this process (K. Peattie & S. Peattie, 2009). There are various reasons why consumers should reduce the amount of meat that they consume. These include health concerns, the rejection of animals for food, environmental issues, changes in family structure, as well as food security (Baker, Thompson & Palmer-Barnes, 2002).

Overall, according to Mathur et al. (2020), developing effective campaigns to encourage a reduction in meat consumption can benefit human health, animal welfare and the environment. The following appeals can be used in social marketing interventions to promote a reduction in meat consumption.

2.3.2.1 Health appeals

In terms of health concerns, research has shown that high meat consumption is not only unnecessary, but it is also harmful to human health (Fiddes, 1991; Bogueva, Marinova & Raphaely, 2017). Connections have been made between meat consumption and various cancers (Fiddes, 1991; Baker, Thompson & Palmer-Barnes, 2002; Choi, Song, Song & Lee, 2013). In 2015, the International Agency for Research on Cancer, of the World Health Organisation, categorised the consumption of red meat as a Group2A carcinogen (grouped with substances, such as the weed killer glyphosate), meaning that red meat is considered highly probably carcinogenic to humans (World Health Organisation, 2015; Bogueva, Marinova & Raphaely, 2017). Additionally, there is evidence that the consumption of meat plays a significant role in coronary heart disease, increasing antibiotic immunity, allergic reactions, diabetes, hypertension, gallstones, and obesity (Fiddes, 1991; Baker, Thompson & Palmer-Barnes, 2002; Wang & Beydoun, 2009; Micha, Michas & Mozaffarian, 2012).

Despite this evidence of the damaging effects meat has on human health, consumers still believe it is essential (Bogueva, Marinova & Raphaely, 2017). The inconsistent results of health appeals in social marketing may be a result of consumers weighing the perceived protein and iron deficiency linked to a vegetarian diet, more than they weigh the negative health consequences of consuming meat (Lea &

Worsley, 2001; Palomo-Vélez, Tybur & van Vugt, 2018). According to Bogueva & Phau (2016) and Bogueva, Marinova & Raphaely (2017), this is a result of nutritional advice which incorrectly or unnecessarily portrays red meat as a healthy option. A study conducted by Clonan, Wilson, Swift, Leibovici & Holdsworth (2015) highlighted that human health and animal welfare are the more common drivers in reducing red meat and processed meat consumption, compared to environmental motivations. Direct appeals involving human health have proven to be successful in reducing meat consumption; however, relatively little focus has been placed on animal welfare appeals (Bianchi, Dorsel, Garnett, Aveyard & Jebb, 2018; Mathur et al., 2020). Furthermore, according to Baker, Thompson & Palmer-Barnes (2002), health was not found to be an influential motivator of vegetarianism. Thus, the following section presents animal welfare appeals.

2.3.2.2 Animal welfare appeals

Messages that connect behaviour to ethical values and social movements may be significantly more compelling and long-lasting than health concerns (Robinson, 2010). Emerging literature on the psychology of meat consumption indicates that animal welfare appeals may have significant potential to successfully leverage aspects of human psychology (Palomo-Vélez, Tybur & van Vugt, 2018; Mathur et al., 2020). Animal welfare refers to the condition of an animal relative to its environment (Broom, 1991; Fuseini & Sulemana, 2018). Social marketing messages involving animal welfare appeals may have the unique ability to change widespread ethical concerns regarding the suffering of animals into actual behavioural change and may have the ability to impact potential psychological levers, such as disgust and cognitive dissonance (Mathur et al., 2020). However, marketing efforts such as these have been somewhat neglected in academic research (Mathur et al., 2020).

Rollin (2006) argues that there are no morally sound justifications for excluding the treatment of animals from moral conversation, if it is granted that humans are genuine agents of moral concern (Jankielsohn, 2015). There is extensive acknowledgement of animal sentience by animal welfare organizations, animal rights organizations, by governments and the public (Jankielsohn, 2015). It is important to recognize that the situations where animals are kept in concentrated animal feeding operations (CAFO's) are inadequate, and they contrast natural environments; due to the multitude of animals in feedlots, the environment is overcrowded, and the animals are viewed as property rather than sentient beings (Jankielsohn, 2015). In these restricted conditions with insufficient space and companionship, the animals suffer physical and psychological deprivation, since they cannot move freely, and they are put under a lot of stress (Jankielsohn, 2015). Animals raised in such environments, therefore, do not have the liberty to express even the most basic typical behaviour (Jankielsohn, 2015).

Previous studies have shown that animal welfare concerns some of the influential factors motivating meat-reduced diets (Cordts, Nitzko & Spiller, 2014; Fuseini & Sulemana, 2018). A 2019 global survey conducted by Vomad on non-meat eaters, revealed that 68.1% of the participants stopped consuming animal products, due to animal welfare concerns (McCormick & Mahdi, 2019). Additionally, the results of a study conducted by Bogueva, Marinova & Raphaely (2017) showed that concern regarding animal welfare was one of the main reasons why consumers choose to avoid meat. Reducing meat consumption could reduce the extensive suffering of factory farm animals (Mathur et al., 2020). Thus, a common strategy used by social marketers is to increase public awareness about the fact that what is advertised in the meat industry shows little similarity to the reality of the conditions in which most livestock are raised (Fiddes, 1991).

Feinberg et al. (2019) showed that perceived animal suffering, feelings of compassion, and viewing animals and humans as similar, all influenced consumers towards the moralization of the issue of consuming meat. According to Fuseini & Sulemana (2018), individuals who are worried about the welfare of animals tend to consume meat less frequently or to consume no meat at all. However, hedonic motivations, such as the tastiness of meat and the perceptions about the naturalness of eating meat, which are often used by meat eaters to reduce cognitive dissonance, pulled individuals away from moralization (Feinberg et al., 2019). The meat industry is continuously emphasises the importance of supposedly rational aspects of meat consumption, such as health and economies, rather than emotive ethical arguments (Fiddes, 1991). However, the choice to consume meat products is not entirely rational; rather, it is influenced by a combination of emotional, social, and nutritional messages (Bogueva, Marinova & Raphaely, 2017). Stoll-Kleemann & Schmidt (2017) suggest that communicating emotionally arousing messages or promoting new social norms can address resistance to messages that promote a reduction in meat consumption. This section justifies the use of animal welfare appeals in this study. The following section outlines the environmental appeals that could be used to promote a reduction in meat consumption.

2.3.2.3 Environmental appeals

In addition to health and animal welfare concerns, the increasing demand for meat products is expected to have an increasingly damaging effects on the environment, and the impact of meat production on land and water is becoming a major concern, as the growing demand for meat and dairy products results in more intensive livestock production systems (World Health Organisation, 2003). Meat has been identified as the most environmentally damaging food product (Garnett, 2009; Ransome, 2018). Meat products are among the most energy-intensive and ecologically demanding foods, and the eating of animal products is a deliberate, environmentally damaging decision – not only contributing to climate change, but also resulting in significant land and soil deterioration, biodiversity loss and water misappropriation (Dagevos, & Voordouw, 2013; Raphaely & Marinova, 2014; Bogueva, Marinova & Raphaely, 2017).

An Oxford University study proposed that if consumers were to halve their meat intake, their individual carbon footprints would be reduced by more than 35% (Scarborough, Appleby, Mizdrak, Briggs, Travis, Bradbury & Key, 2014; Bogueva, Marinova & Raphaely, 2017). The production of beef is predominantly harmful, as it results in about 12, 6 and 50 times more greenhouse gas emissions than potatoes, rice, or wheat, respectively (Eshel, Shepon, Makov & Milo, 2014; Bogueva, Marinova & Raphaely, 2017). Beef also requires about 290, 295 and 117 times more land, and 8, 4 and 40 times more water than potatoes, rice, and wheat, respectively (Eshel et al., 2014; Bogueva, Marinova & Raphaely, 2017). The demand for land, for both grazing and to grow animal feed, is a primary cause of global deforestation (Fiddes, 1991). In addition, it was estimated that when rainforest is destroyed for livestock, each hamburger produced in the first year costs the equivalent of half a tonne of mature forest; mature forest supports about 800 000 kilograms of plants and animals per hectare, while the same amount of land would yield about 1600 hamburgers if it is used for raising cattle (Fiddes, 1991). The loss of forest also has many related consequences, such as rapid soil loss and reduced rainfall in tropical areas (Fiddes, 1991).

Past research has recommended that attitudes towards the environment can influence food choice and sustainable behaviours (Tanner & Kast, 2003; Birch, Memery & Kanakaratne, 2018). However, while there is a general acceptance of the necessity to replace fossil fuels to alleviate climate change, the recognition of the contribution made by meat consumption is unfortunately limited (Bogueva, Marinova

& Raphaely, 2017). The meat industry's significant environmental impact is underestimated, and other issues linked to environmental protection are perceived to be more important than reductions in meat consumption (Truelove & Parks, 2012; Macdiarmid, Douglas & Campbell, 2016; Palomo-Vélez, Tybur & van Vugt, 2018). With this, a previous study by Honkanen, Verplanken & Olsen (2006) found that animal welfare motives have a significant influence on attitude, together with environmental motives (Michaelidou & Hassan, 2008). The following section presents food security as a motivating appeal to reduce meat consumption.

2.3.2.4 Food security appeals

According to many consumers, meat production represents an unreasonable and excessive use of natural resources (Baker, Thompson & Palmer-Barnes, 2002). A country experiences food security if all citizens have access to enough affordable and nutritious food (Jankielsohn, 2015). As we approach the year 2050, humankind will face substantial growth in the demand for food, motivated by the growing population, economy, and urbanisation (Gardner, 2013; Searchinger, Hanson, Ranganathan, Lipinski, Waite, Winterbottom, Dinshaw & Heimlich, 2014; Ransome, 2018). Africa will experience an extraordinary increase in the demand for animal products by 2050, driven by population growth paired with improved living standards (Delpont et al., 2017; Ransome, 2018). The United Nations Food and Agriculture Organisation (FAO) predicted that by 2015, the consumption of meat and dairy products will increase by 82% (Searchinger et al., 2014; Ransome, 2018). Although livestock farming can have a positive impact on food security in some areas, concentrated livestock systems, which contribute towards 45% of the world's meat supply, interrupt food security since they use up to about one third of the world's total grain supply for animal feed (Garnett, 2010; Ransome, 2018).

About half of the world's crop calories go towards feeding humans, while the rest go towards feeding livestock or they are converted into biofuels and industrial products (Foley, 2017; Ransome, 2018). Additionally, only small portion of the calories consumed by livestock make their way into the meat products that are consumed by humans (Foley, 2017; Ransome, 2018). According to Nellemann, MacDevette, Manders, Eickhout, Svihus, Prins & Kaltenborn (2009), if all the crops farmed to feed livestock went towards feeding humans, an additional 3.5 billion humans could be fed (Ransome, 2018). To convert grain into meat necessitates about 10 calories for every calorie provided for human consumption, or 5 grams of protein input to produce 1 gram of meat protein (Fiddes, 1991). For beef production, the production of 1kg of beef protein uses up to 22kgs of grain protein (Fiddes, 1991; Baker, Thompson & Palmer-Barnes, 2002). With this, researchers claim that reducing meat consumption would free key resources for producing food to alleviate hunger and malnutrition (Fiddes, 1991; Baker, Thompson & Palmer-Barnes, 2002). According to Oxfam (2014), although South Africa produces enough calories to feed everyone in the country, one in four people suffer from hunger regularly (Jankielsohn, 2015).

The disproportion resulting in food insecurity is caused because of how maize is distributed (Jankielsohn, 2015). About two thirds of the maize produced in South Africa is consumed by the local market, with 50% used for human consumption, 40% going towards the animal feed industry, and the remaining 10% goes towards seed and industrial use (Jankielsohn, 2015; Kotze & Rose 2015). Maize is an important crop in South Africa as it is the staple diet of millions of South Africans, it is inexpensive, and it is plentiful source of protein (Jankielsohn, 2015). The protein in plant-based food is enough to support humans' daily protein requirements (Jankielsohn, 2015). Generally, South Africans are unable to afford meat as a source of protein in their everyday diet; by consuming grain directly, rather than converting that protein to meat, they would be much better served financially (Jankielsohn, 2015). Foley

(2017) suggested that it would be possible to feed 9 billion people by 2050, if more of the crops grown ended up in human stomachs (Ransome, 2018).

2.3.2.5 History and culture appeals

According to previous literature, there are some more profound and symbolic explanations supporting reductions in meat consumption; these explanations argue that meat has a symbolic value linked to its representation of human power over nature (Fiddes, 1991; Baker, Thompson & Palmer-Barnes, 2002). With this, Rothgerber (2012) explained that norms of dominance and competitiveness have led humans, particularly men, to believe that they are at the top of a hierarchy and, therefore, that they are intended to eat animals. Rothgerber (2012) therefore suggests that to merely convey informational messages regarding the benefits of a vegetarian diet likely neglects the fundamental reason why men eat meat: It makes them feel like real men (Rothgerber, 2012). Moreover, social marketing promoting a reduction in meat consumption may be more successful, when different appeals are used to target men and women separately (Rothgerber, 2012).

However, this literature is more aligned with the topic of the psychology of men and masculinity. There is a general acceptance of the belief that human domination has now gone too far, and the celebration of dominance of man over nature is decreasing in importance (Fiddes, 1991; Baker, Thompson & Palmer-Barnes, 2002). The consumption of red meat once represented the concept that humans had topped the natural hierarchy; however, it now is indicative of a more barbarous and insensitive history (Baker, Thompson & Palmer-Barnes, 2002). The following section explains how message framing can be used in social marketing to influence change in consumers' attitudes.

2.4 THE MESSAGE FRAMING OF ADVERTISEMENTS

One of the main challenges for a social marketer is deciding how to frame messages (Pervan & Vocino, 2008). Message framing has been defined as the presentation of semantically different, but objectively equivalent message information (Levin, Schneider & Gaeth, 1998; Pervan & Vocino, 2008). Message framing is an important factor to think about when developing messages to influence attitudes towards meaningful prosocial behaviours (Loroz, 2007). Several studies on social marketing have emphasized communication strategies as an important topic for research and understanding (M.R. Stafford, T.F. Stafford & Chowdhury, 1996). According to Anghelcev & Sar (2014), a clear message strategy is necessary to improve the effectiveness of social marketing communications. To reach consumers and to have an impact on their attitudes, framing the message in advertising provides the ability to encourage certain interpretations (Olsen, Slotegraaf & Chandukala, 2014).

In other words, it refers to the way in which a message is delivered, relating to whether a message is focused on positive factors or on negative factors (Bester & Jere, 2012; Yang, 2018). According to Tversky & Kahneman (1981), framing theory suggests that the way in which information is presented influences individuals' responses, and this could increase the effectiveness of messages (Moon et al., 2016; Chédotal et al., 2017). Additionally, research results indicate that a message may not be universally understood, as was intended by message framing (Zhang & Buda, 1999). Numerous factors can influence the understanding of messages, irrespective of framing (Zhang & Buda, 1999).

The valence framing effect of 'goal framing' is relevant to the current research (Levin, Schneider & Gaeth, 1998; Pervan & Vocino, 2008). Goal framing refers to the presentation of information in terms of the outcome of an action or behaviour (Levin, Schneider & Gaeth, 1998; Pervan & Vocino, 2008).

Positive frames may highlight an objective of obtaining a benefit, while negative frames emphasize the objective of avoiding a loss (Levin, Schneider & Gaeth, 1998; Pervan & Vocino, 2008). The example used in this study emphasizes the number of cows that could be saved by eliminating meat products from one's diet versus the gruesome reality of what happens to cows when one continues to consume meat. The literature states that goal framing is the most frequently used technique among advertisers; however, the findings regarding this technique are mixed (Levin, Schneider & Gaeth, 1998; Chandy, Tellis, MacInnis & Thaivanich, 2001; Pervan & Vocino, 2008). Levin, Schneider & Gaeth (1998) highlight the fact that goal framing can be deployed in many variations (Pervan & Vocino, 2008). Social marketers commonly focus on composing messages emphasizing the benefits or the disadvantages of different kinds of behaviours (Fox & Kotler, 1980). In the context of this research, the benefits emphasized are those of eating less meat and the disadvantages emphasized are those of consuming meat.

An important dimension of message framing is the use of positive and negative framing valence effects. Advertising messages can be described in terms of their valence (Bolls, Lang & Potter, 2001). The valence of a message reflects whether the message is focused on positive factors or on negative factors (Bester & Jere, 2012; Yang, 2018). It is important for social marketing practitioners to choose whether to use the elements of either positive or negative valence when designing advertisements, as consumers may respond differently to each appeal (Martínez-Fiestas et al., 2015). Previous findings have shown that there is a relationship between emotional appeals and donor intentions (Bebko, Sciulli & Bhagat, 2014). Therefore, it may be true that the emotional appeals used in message framing strategies can influence the thoughts and attitudes towards the reduction of meat consumption.

Trendel, Mazodier & Vohs (2018) stated that the valence of the visual imagery in the advertisements has a significant influence on implicit attitudinal change. Additionally, previous research has proven that the valence of a message effects resource allocation and attention (Bolls, Lang & Potter, 2001). Both positive and negative emotional appeals in messages activate a response in individuals (Taute, Mcquitty & Sautter, 2011; Santos et al., 2017). However, it is of interest to explore the difference in responses to positive versus negative appeals.

Positive message framing is a safer option compared to negative framing; however, research has shown that marketing practitioners are using negative message framing more often (Pervan & Vocino, 2008). Research has shown that in situations where stimuli are framed in a positive manner, an audience tends towards a risk-averse mindset, if viewing the benefits to be gained; however, the opposite is true for stimuli which are framed negatively, in that an audience tends towards risk-seeking behaviour, if faced with a potential loss (Maheswaran & Meyers-Levy, 1990). Previous studies exploring message framing effects have delivered mixed, and often contradictory, outcomes. Some studies claim that positive framing is more effective, while others support negative framing (Maheswaran & Meyers-Levy, 1990; Bester & Jere, 2012; Santos et al., 2017). However, the influence of message framing on consumers' attitudes and behaviours has not been extensively researched (Maheswaran & Meyers-Levy, 1990). The following were hypothesised in terms of message framing:

- *H1_A: Negatively framed advertisements influence Cape Town meat eaters' attitudes towards the reduction of meat consumption better than positively framed advertisements.*
- *H1_{B1}: There is a significant difference between Cape Town meat eaters' attitudes towards the reduction of meat consumption pre-exposure to the positively framed advertisement and pre-exposure to the negatively framed advertisement.*

- *H1_{B2}: There is a significant difference between Cape Town meat eaters' attitudes towards the reduction of meat consumption post-exposure to the positively framed advertisement and post-exposure to the negatively framed advertisement.*

2.4.1 Positive Message Framing

Influencing values and attitudes, as a step towards changing behaviour, can be accomplished by emphasising the advantages of a shift in values and social norms (Gordon, Carrigan & Hastings, 2011). Advertisers use a range of benefits to appeal to their intended target consumer (Royne et al., 2012; Yfantidou, 2018). Research by Martínez-Fiestas et al. (2015) on “green” social causes found that messages designed with a positive valence are more influential than those that are negatively framed, when attempting to encourage environmentally friendly behaviour, as these messages achieve persuasion. Thus, there is evidence that environmental marketing is more effective when it promotes success, rather than when it promotes failure, emphasizing the benefits of making a change (Yfantidou, 2018). The results from a study by Loroz (2007) indicated that in marketing aimed at encouraging change aimed at personal benefits, negative frames may be most effective; however, the maximum utility comes from positive framing when emphasising both personal and community benefits.

Therefore, it follows that positive framing may be more effective when the benefits to animals are emphasized in social marketing efforts. Roberts (1996) has stated that to motivate change, it is necessary for consumers to be convinced that their behaviour has an impact on the environment, or that their behaviour would be more effective in reducing environmental degradation (Tanner & Kast, 2003). In this way, consumers believe that they can contribute to solving a problem. Although most consumers believe that they do not have the power to influence changes in animal welfare practices, consumers are the market drivers for many businesses (Fuseini & Sulemana, 2018). Therefore, to motivate a change in consumer attitude, it was predicted that it may be necessary for them to be convinced that by consuming less meat individually, they could save the lives of many animals. Yang (2018) supports this, by suggesting that to increase motivation to change, messages including benefits and hope are the foundation of successful communication. For example, highlighting the immediate advantages of quitting smoking, such as good breath, rather than the disadvantages of smoking, could result in positive emotional experiences by enhancing self-esteem, and, thus, increasing the motivation to adopt the desired behaviour (Maheswaran & Meyers-Levy, 1990; Yang, 2018).

Maheswaran & Meyers-Levy (1990) recommended employing negative message framing when the target consumers are highly involved with a topic. However, when the target consumer is only casually interested in the issue, positively framed messages are recommended (Maheswaran & Meyers-Levy, 1990). With this, it is interesting to note that Batra & Stayman (1990) found that positive moods and low involvement suppress counter-argumentation. Therefore, positively framed advertisements may induce less counter-argumentation among meat eaters.

In terms of the current study, meat eaters are assumed to have a casual interest in the issue of animal welfare; therefore, they may be more influenced by positively framed messages. Therefore, messaging encouraging a reduction in meat consumption should highlight the benefits of doing so (Ransome, 2018). In addition, Ransome (2018) suggested that marketing practitioners must remain aware that consumers are more likely to adopt meat-reduced diets if they feel good about it. According to Mathur et al. (2020), the act itself of participating in a social movement can be motivating to consumers, beyond the possible outcomes that may result from participation. This could additionally decrease concerns of perceived individual failure by outlining the significant success of involvement (Robinson, 2010). By

recognising the important social and moral aspects underlying the consumption of meat products, academic research has led to promising results in terms of enhanced intervention strategies using animal welfare appeals (Loughnan, Bastian & Haslam, 2014; Mathur et al., 2020).

According to Casado-Aranda, Sánchez-Fernández & Montoro-Ríos (2017), there is a distinction between preventative behaviours, which are considered as low-risk (e.g. sunscreen use), and detection behaviours, which are considered as short-term high-risk (e.g. testing for HIV) (Banks, Salovey, Greener, Rothman, Moyer, Beauvais & Epel, 1995). Previous research has found that negative frames are more successful in promoting detection behaviour and positive frames are more successful in promoting preventative behaviour (Banks et al., 1995; Rothman, Bartels, Wlaschin & Salovey, 2006; Casado-Aranda, Sánchez-Fernández & Montoro-Ríos, 2017). According to Spence & Pidgeon (2010), sustainable behaviour is a prevention action, as sustainable consumption behaviour aims to prevent potential negative consequences (Casado-Aranda, Sánchez-Fernández & Montoro-Ríos, 2017).

Therefore, it is expected that promoting sustainable consumption would be easier if positive message framing is used (Martínez-Fiestas et al., 2015; Casado-Aranda, Sánchez-Fernández & Montoro-Ríos, 2017). The findings by Lord (1994) revealed that positively framed messages led to a more favourable attitude towards recycling than did negative appeals. However, in a study conducted by Collymore & McDermott (2016), respondents felt happy, satisfied, and comfortable with their current drinking behaviour when they were exposed to positively framed messages, indicating that positive frames may not be the most effective strategy to use when encouraging consumers to change their behaviour. Casado-Aranda, Sánchez-Fernández & Montoro-Ríos (2017) found that messages stating social benefits (e.g. animal welfare benefits) may be processed differently, than those reporting individual benefits (e.g. personal health). However, much of the literature on positive message framing focused on personal benefits, as persuasive tools, indicating the lack of literature on using social benefits as persuasive tools (Kareklas, Carlson & Muehling, 2012).

The following was hypothesised for positive message framing:

- *H1c: Cape Town meat eaters' attitudes towards the reduction of meat consumption significantly differ pre-exposure to the positively framed advertisement, and post-exposure to the positively framed advertisement.*

2.4.2 Negative Message Framing

Negative message framing aims to cause an emotional imbalance, in which consumers can adopt the recommended behaviour to reduce feelings of discomfort (Brennan & Binney, 2010). The findings of Moon et al. (2016) suggested that negatively framed educational messages were effective in leveraging the social desirability of product adoption. In addition, a study by Zhang & Buda (1999) revealed that among individuals with a low need for cognition, negative message framing was more influential than positive message framing. Previous research has stated that highly graphic stimuli are of great importance in persuasion and communication effectiveness (Andrews, Netemeyer, Kees & Burton, 2014). According to Yfantidou (2018), negative messages and negative imaging create a sense of threat among consumers, which leads to them acting.

This is common in fear-driven theory, which has been the focus of negative framing research in past studies (Yang, 2018). Messages that perpetuate a fearful message convey severity and probability of the event occurring more clearly and, thus, result in an improved response-efficiency and self-efficacy;

therefore, consumers' motivation to avoid negative outcomes by changing their attitude and behaviour increases (Yang, 2018). However, Brennan & Binney (2010) stated that it is possible that negative frames will result in self-protection instead of compliance. They, therefore, recommend that social marketers should carefully consider the use of negative appeals to motivate action, since their study mentions an overuse of negatively framed messages (Brennan & Binney, 2010). Brennan & Binney (2010) stated in their study that participants felt saturated by negative emotional appeals, and they would 'switch off' from negatively framed messages.

Recent literature proposes that an entirely different motivator in negative framing might encourage reduced meat consumption: the emotion of disgust (Palomo-Vélez, Tybur & van Vugt, 2018). Previous research has indicated that disgust and animal welfare messages impact attitudes towards meat more significantly than do health and environmental concerns (Palomo-Vélez, Tybur & van Vugt, 2018). Disgust is an emotion that has been neglected by advertising researchers, since it is unstudied to a large extent (Shimp & Stuart, 2004; Yfantidou, 2018). Therefore, for the purposes of this study, a disgust appeal was utilized, to explore the effects of negative message framing.

Consumers are not frequently exposed to graphic and gruesome images in day-to-day advertising, and these appeals might, therefore, be considered more carefully; this may increase the thoughts of reducing meat consumption (Biener et al., 2004; Andrews et al., 2014). Rozin & Fallon (1987) describe disgust as representing revulsion at the idea of consuming an offensive item; they further state that nearly all disgust sensations are of animal source (Shimp & Stuart, 2004). Disgusting imagery includes references to blood, body parts or secretions, orifices, particularly urinary/faecal, gases, odours, diseases, parasites, bodily harm, death, and decay (Dahl, Frankenberger & Manchanda, 2003). This type of imagery can be used in advertising to cause emotional arousal, to gain the attention of an audience, and to promote certain attitude formation or behaviour; however, knowledge of disgust's role in persuasion is limited (Morales, Wu & Fitzsimons, 2012). Recent research has found that advertising images including fear and the emotion of disgust positively influence persuasion and compliance associated with avoiding unlawful drug use, shunning bottled water with chemicals, and promoting the use of sunscreen (Morales, Wu & Fitzsimons, 2012; Andrews et al., 2014).

A study by Collymore & McDermott (2016) found that disgust-evoking messages were most effective in terms of influencing consumers to drink moderately, while gain-frames were least effective. Therefore, similar results may be found in negative framing aimed at reducing meat consumption. Shimp & Stuart (2004) stated that food is a fitting subject matter for 'disgust' research, since food, the animals from which certain foods come, and disgust are often linked. Disgust is triggered more easily with meat than with vegetables, and disgust-eliciting images are more effective in influencing attitudes towards meat than they are in influencing attitudes towards vegetables (Tybur, Laakasuo, Ruff & Klauke, 2016; Palomo-Vélez, Tybur & van Vugt, 2018). Food disgust is more closely linked to perceptions regarding the origin of a food item, than to sensory-affective reactions to consuming an item (Rozin, Haidt, McCauley, Dunlop & Ashmore, 1999; Shimp & Stuart, 2004). Furthermore, many messages involving animal suffering are themselves physically disgusting, perhaps thereby further leveraging the moral-physical disgust connection (Mathur et al., 2020).

A general decrease in the disgust threshold, as a result of the civilization process, could contribute to the reduction in what is termed the 'threshold of repugnance' (Mennell, 1985), as consumers become progressively resistant to consider the process of food origins (Baker, Thompson & Palmer-Barnes, 2002). Additionally, a study by Andrews et al. (2014), on the effect of graphic visual health warnings on young smokers' thoughts of quitting, suggests that the use of graphic visual warnings is effective,

but the effects are reduced for those who smoke excessively (Andrews et al., 2014). This suggests that the visual imagery presenting disgust, combined with meat consumption, may have a weaker effect on meat eaters than positive imagery. Andrews et al. (2014) also stated that individuals who smoke a lot are more likely to respond with self-protection, and to ignore the visual images that result in negative emotional experiences. With this, it is possible that consumers who eat a lot of meat might respond defensively and ignore the visual images portrayed in negatively framed advertisements.

Research on disgust is predominantly within the health message framing literature; in general, there has been limited research conducted to explore the role of disgust in persuasion (Nabi, 1999; Shimp & Stuart, 2004; Collymore & McDermott, 2016; Yfantidou, 2018). There is a lack of research on negatively framed messages that are not related to health issues; Yang (2018) stated that negative appeals are more successful when they are used for preventative health issues, such as anti-smoking behaviour, female breast self-examination, fastening seat belts while driving, and skin cancer prevention inspection. However, Izard (1977) states that disgust with pollution, the defacing of wilderness and the waste of natural resources may help to provide motivation for a healthier atmosphere and ecology. Additionally, research on negative framing often focuses on fear, guilt, and shame, and it neglects other negative emotions (Collymore & McDermott, 2016; Chédotal et al., 2017). In this study, the intention was to present disgust in a way that could be combined with the consumption of meat. The following was hypothesised for negative message framing:

- *H1D: Cape Town meat eaters' attitudes towards the reduction of meat consumption significantly differ pre-exposure to the negatively framed advertisement and post-exposure to the negatively framed advertisement.*

2.5 EMOTIONAL RESPONSES TO ADVERTISING

Strategies involving emotional appeals are helpful to improve the persuasiveness of advertising messages (Sciulli, Bhagat & Bebko, 2012). Due to the frequent use of emotionally charged advertisements, research has focused a lot of attention towards exploring the relationship between emotional marketing messages and consumers' emotional and cognitive reactions to those messages (Bolls, Lang & Potter, 2001). Consumers may experience emotions as a result of exposure to emotion-evoking advertisements (Bolls, Lang & Potter, 2001). Emotional response and engagement with media messages have been successful tools for social initiatives (Bennett, 2015; Kim, Tussyadiah & Jago, 2019). Furthermore, it is important for social marketers to evoke appropriate emotional responses in meat eaters, and to limit the experience of undesirable emotions, when attempting to influence a change of attitude (Bennett, 2015).

According to Anilkumar & Joseph (2012), emotional experiences are contributing factors in consumer attitude formation and change. Given marketing's central focus on consumers, emotions play a critically important role in influencing consumer reactions (B.J. Babin, Darden & L.A. Babin, 1998). They have a strong impact on consumers' reasoning and decision-making process, as well as being considered a predictor of advertising effectiveness (Poels & Dewitte, 2006; Al Pop, Iorga & Pelau, 2013). According to Bagozzi, Gopinath & Nyer (1999), it is important to gain a better understanding of the role of emotion in marketing, as consumer responses to advertising stimuli are influenced by emotional experiences.

There are various definitions of emotion, subject to the context from which it is mentioned (P.R. Kleinginna & A.M. Kleinginna, 1981). For example, emotions have been defined as reactions to stimuli that affect a human's immediate sensory environment (Hamelin, Moujahid & Thaichon, 2017).

Schachter & Singer (1962:380) define emotion, as “a state of physiological arousal and of cognition appropriate to this state of arousal” (Cabanac, 2002). Cabanac (2002:2) defines emotion as “any mental experience with high intensity and high hedonic content” (pleasant or unpleasant). Lang & Bradley (2008) state that emotion and motivation are fundamental processes driving the mental activity that allow us to effectively process and adaptively respond to all forms of stimuli and information encountered in a highly complex social world (Potter & Bolls, 2012). According to Krosschell (2020), a consistent definition for emotion does not exist; the concept fluctuates within the conceptual underpinnings which tie emotion to psychological and neuroscientific usage with regards to emotion, mood and feeling.

According to Bagozzi, Gopinath & Nyer (1999) and Sciulli, Bhagat & Bebeko (2012), the amount of emotional appeal delivered by a social marketing intervention may influence involvement in the social-cause initiative. Moreover, Wang (2008) found that emotions evoked by advertisements mediated differences in the effectiveness of social marketing advertising appeals and improved the favourability of viewers’ attitudes towards an issue (Bennett, 2015). Consumers’ moral emotions can significantly influence purchase intention for social-cause products (Kim & Johnson, 2013). Moral emotions refer to “those emotions that are linked to the interests or welfare, either of society as a whole, or at least of persons other than the judge or agent” (Haidt, 2003:853; Kim & Johnson, 2013). They play an important role as these emotions can determine how consumers make choices, based on an evaluative feeling regarding what behaviours are good and what are bad (Haidt, 2007; Kim & Johnson, 2013).

Therefore, it may be true that consumers’ attitudes toward reducing meat consumption may be influenced by moral emotions. Feinberg et al. (2019) showed that individuals moralized the issue of meat consumptions, as a consequence of the arousal of moral emotions (disgust, guilt and outrage) and due to moral piggybacking, where the respondents linked the issue of meat consumption with the existing moral principles they held. Recent research has investigated the influence of emotions in message framing; however, little of this research was conducted in the field of social marketing (Brennan & Binney, 2010).

Affect, although often used as another word for emotion, refers to the outward expression of an emotion. Clore & Schnall (2005) stated that emotion is a form of affect. The feelings that individuals may subjectively experience, while they view the advertisement, are referred to as affective reactions (Madden, Allen & Twible, 1988). The affective process is a natural and unconstrained response which does not require conscious effort; it involves a set of emotional responses closely related to what Mehrabian & Russel (1974) theorize as the dimensions of pleasure (pleasant versus unpleasant experience), arousal (excitement versus calmness), and dominance (dominant versus submissive) (Eroglu, Machleit, & Davis, 2001; Wang & Minor, 2008). The findings of Morris et al. (2002) showed that affect as measured by emotional response, and that it is a dominant dimension in accounting for variance towards conative (behavioural) attitude.

A large amount of the previous literature on emotion has included the use of this dimensional theory of emotion that looks at the underlying dimensions of emotional experience (Lang, Greenwald, Bradley & Hamm, 1993; Bolls, Lang & Potter, 2001). Lang et al. (1993) stated that the biological organization that acts as the foundation of their dimensional model explains a large amount of the variance in evaluative judgements behind emotional responses (Bolls, Lang & Potter, 2001). This model suggests three fundamental dimensions of emotional response: valence (the positiveness or negativeness of an emotional response), arousal (the level of intensity accompanying the emotional response) and dominance (ranging from a sense of being in control during an emotional experience to a sense of being

controlled by the emotion) (Lang et al., 1993; Bolls, Lang & Potter, 2001). However, the dimension of dominance is not as stable as the other dimensions of emotion, and it is the least reliable to measure (Bradley & Lang, 1994; Bolls, Lang & Potter, 2001). Additionally, the factor analysis of behavioural, self-reporting, and physiological data have steadily supported the use of only the two dimensions of arousal and valence (Lang et al., 1993; Bolls, Lang & Potter, 2001).

Thus, previous studies have used a two-dimensional model to describe the affective process, and they argue that affect, in the context of advertising, can be broadly classified into two dimensions: valence and arousal (Wang & Minor, 2008; Venkatraman et al., 2015). Gorn, Pham & Sin (2001) stated that valence and arousal are the components of affective states. Valence and arousal have been used to describe emotion in past research (Lang, 1995; Kuppens et al., 2013; Castellanos et al., 2018). These two dimensions are discussed in more detail in the following sections.

2.5.1 Emotional Valence

Since emotional appeals in advertising can be noted by their valence as positive or negative, in terms of message framing, these different appeals may elicit different emotional responses (Taute, Mcquitty & Sautter, 2011). The valence of an emotional reaction refers to the degree to which an emotional response is positive or negative (Bolls, Lang & Potter, 2001). Potter & Bolls (2012) used a measure of valence to analyse fluctuations in the experience of pleasant and unpleasant emotions during exposure to some form of media content. Positive emotions arise when consumers are supported in reaching their goals, and negative emotions arise when an individual's goal is disrupted (Bagozzi, Gopinath & Nyer, 1999; Chohan, 2013). As shown by the findings from Choi et al. (2016), the experience of positive emotions and negative emotions influence product evaluations differently.

According to Teixeira, Wedel & Pieteras (2012), positive emotions result in a tendency to approach or to retain the affecting stimulus, while negative emotions have the opposite effect. However, previous research on emotional valence has revealed conflicting results (Choi et al., 2016). A study by Teixeira, Wedel & Pieters (2012) discussed how arousing positive emotional responses is considered a powerful strategy to engage consumers. Guerreiro, Rita & Trigueiros (2015) confirmed that pleasure has a large influence on the choice of cause-related products. However, the effects that precise positive emotions have on consumer engagement, with advertising, are still largely unexplored (Teixeira, Wedel & Pieters, 2012).

Schwarz & Bless (1991) stated that while positive emotions are associated with heuristic processing, resulting in a reduced ability for self-control, they are also known to create more efficient responses, thereby increasing processing efficiency (Herr, Page, Pfeiffer & Davis, 2011; Choi et al., 2016). Research also suggests that positive emotional responses elicited by an advertisement are transferred to what is being advertised, and they increase opportunity for favourable evaluations, resulting in more positive attitudes (Isen, Daubman & Nowicki, 1987; Bettiga, Lamberti & Noci, 2017). Thus, if positive arousal is elicited in consumers, this may positively influence their attitude (Bettiga, Lamberti & Noci, 2017). Additionally, Holbrook & Batra (1987) found that pleasure, or positive valence, mediates the effects of advertising content on the attitudes towards both advertisements and towards brands.

On the other hand, negative emotional arousal in response to a context or product may negatively influence attitudes (Bettiga, Lamberti & Noci, 2017). Negatively valenced emotions involve unpleasant experiences, and consumers are therefore driven to eliminate them (Agrawal & Duhachek, 2010). Negative emotions are linked with systematic processing, motivating individuals to remove the root

cause of the problem (Schwarz & Bless, 1991, Choi et al., 2016). Regarding social causes, Bagozzi, Gopinath, and Nyer (1999) stated that strong negative emotions activate empathetic experiences and, therefore, motivation to help (Santos et al., 2017). Allen et al. (2005) found that the negative emotions of fear and sadness influenced the attitudes of donors. Additionally, findings have shown that negative emotions and empathy have mediated the effects of viewing negative emotional advertisements on the choice to help child-abuse victims (Bagozzi & Moore, 1994; Bagozzi, Gopinath & Nyer, 1999).

The negative emotion of 'disgust' is of specific importance to the current research. Disgust is an example of an emotion that evokes avoidance behaviour (Collymore & McDermott, 2016). The results of a study by Morales, Wu & Fitzsimons (2012) connect the persuasiveness of the emotion of disgust to its immediate and significant avoidance reaction. They found that including disgust in fear appeals improves the persuasiveness of messages beyond that of appeals which only focus on fear (Morales, Wu & Fitzsimons, 2012). Physical disgust has a clear and potent impact on consumer food choices (Rozin & Fallon, 1980); therefore, although this topic has received minimal academic focus, eliciting morally motivated disgust related to the suffering of animals may be significant means of influencing food choices (Feinberg et al., 2019; Mathur et al., 2020).

The results from Palomo-Vélez, Tybur & van Vugt's (2018) research support previous findings on disgust, thereby signifying that the emotion of disgust can steer consumers away from certain foods, with disgust and animal welfare appeals significantly impacting attitudes towards meat. However, there is evidence that consumers may ignore the concept that their actions result in the negative consequences portrayed in the advertisement, due to the desire to minimise the experience of negative emotions (Agrawal & Duhachek, 2010).

Mathur et al. (2020) posit that the experience of physical disgust can play an amplification role regarding negative ethical judgements. This occurs even in instances where the sources of disgust are completely dissimilar (such as in the case of viewing a disgusting scene as opposed to the behaviour of cheating) (Mathur et al., 2020). Nabi (1998) stated that disgust may either enhance or inhibit an attitudinal change towards animal experimentation. Research by Nabi (1999) found that the elicited emotion of 'disgust' has a negative linear relationship with attitudinal change, when associated with the message's advocated position. Disgust research conducted by Shimp & Stuart (2004), found that feelings of disgust mediated the effect of advertising content on purchase intentions, and the feelings of disgust resulted in a negative effect on advertising effectiveness (Shimp & Stuart, 2004).

It is important to note here, that the advertisements in Shimp & Stuart's (2004) research were not intended to elicit disgust and to reduce purchase intentions; hence, a negative effect of advertising effectiveness was found. However, in the context of the current research, the negative effect of disgust on purchase intentions would indicate advertising effectiveness in terms of advertisements promoting anti-consumption. On the contrary, Clifford & Wendell (2016) found no indication that disgust has an effect on attitudes toward smoking and drug laws, and that disgust did not motivate attitudes towards behaviours relating to personal responsibility, such those involving drugs, cigarettes, and junk food. Taute, Mcquitty & Sautter (2011) found that both positive and negative emotions impact attitudes toward advertisements and responses to public service announcements. As evidenced by the literature in this section, much of the previous research on valence and attitudes is focused on attitudes towards advertisements and attitudes toward brands. This indicates a clear need for research on attitudes towards behaviours that are promoted in advertisements.

Previous findings have shown that the valence of the message frame used can impact emotional responses differently. Bolls, Lang & Potter (2001) found that emotional responses shown by facial expressions differed between positively framed messages, and negatively framed messages. Positively framed messages elicited higher amounts of positive expressions, and negatively framed messages elicited lower amounts of positive expressions (Bolls, Lang & Potter, 2001). Martínez-Fiestas et al. (2015) reported findings supporting this; facial muscle activity differed depending on the message presented to the respondents. Further, according to Bagozzi & Moore (1994), feelings of negative emotions, empathy, and decisions to help differed, when emotional appeals were viewed versus rational appeals promoting pro-social behaviour.

Research conducted by Stark, Walter, Schienle & Vaitl (2005) found that different emotional images elicited different levels of valence and disgust; subjective measures showed that disgust (or mutilation) images were associated with the lowest levels of valence and the highest levels of disgust. Valence ratings have been found to be significantly more positive for pleasant images compared with unpleasant images, and more negative for unpleasant images compared with pleasant images (Yartz & Hawk, 2002; Shen & Dillard, 2007). Therefore, the current research predicted that positive frames and negative frames would result in differences in the valence of emotional responses. It is important to note here that in the study by Shen & Dillard (2007), positive framing produced positively valenced emotions, while negative framing produced negatively valenced emotions. However, in Yartz & Hawk's (2002) study, valence was not negative for negative message framing; indicating that valence simply indicates the level of 'pleasantness' experienced for each advertisement. Thus, their findings showed that although the respondents had a less pleasant experience in negative framing than in positive framing, their experience was not unpleasant (Yartz & Hawk, 2002). The findings from Lang et al. (1993) also indicated slight increases in zygomatic activity (indicative of smiling) were elicited from disgusting/unpleasant stimuli of mutilated bodies. This indicates that facial expressions and facial muscle changes are not always a simple function of valence (Lang et al., 1993). The following hypotheses were developed regarding emotional valence and the level of disgust, a negative emotion:

- *H2_A: Emotional valence elicited by the advertisement will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher emotional valence will lead to more positive attitudes towards the reduction of meat consumption.*
- *H2_B: The level of disgust elicited by the advertisement will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher levels of disgust will lead to more positive attitudes towards the reduction of meat consumption.*
- *H3_A: There is a relationship between emotional valence elicited by the advertisement and post-exposure attitudes.*
- *H3_B: There is a relationship between the level of disgust elicited by the advertisement and post-exposure attitudes.*
- *H4_A: There is a significant difference between emotional valence elicited by positively framed advertisements and emotional valence elicited by negatively framed advertisements.*
- *H4_B: There is a significant difference between the level of disgust elicited by positively framed advertisements and the level of disgust elicited by negatively framed advertisements.*

2.5.2 Emotional Arousal

In addition to emotional valence, emotional arousal has been identified as a central feature of emotional tone in advertising messages (Bolls, Lang & Potter, 2001). There is substantial evidence supporting that

emotional arousal is an influential factor in the persuasiveness of advertisements (Biener et al., 2004). Emotional arousal is a complex, physical response that is activated by some parts of the brain when individuals are exposed to, or recall, some stimulus (Guerreiro, Rita & Trigueiros, 2015). According to Potter & Bolls (2012), emotional arousal reflects the level of activation within the appetitive and aversive emotional/motivational systems, representing emotional intensity. Advertising often leads to emotional arousal, and marketing practitioners can harness emotional arousal to connect with consumers, regardless of what is being promoted (Vainikka, 2015).

Although extensive research has been conducted on the importance of arousal in attitude formation and change, previous research on emotion and attitude mostly focused on arousal as simply a subjectively felt emotion (Bagozzi, Gopinath, & Nyer, 1999; Allen et al., 2005; Bettiga, Lamberti & Noci, 2017). This refers to the conscious experience of emotional intensity generated by the recognition of the source of those emotions (Bettiga, Lamberti & Noci, 2017). However, research has shown that consumers are not aware of many of the emotional experiences that guide thoughts and behaviour (Zaltman, 1997; Bettiga, Lamberti & Noci, 2017). Previous research is based on the influential idea that if arousal is the perception of bodily activity, and perceptions can be unconscious, arousal can be unconscious too, and it might be expressed unconsciously through physiological responses (James, 1884; Zaltman, 1997; Bettiga, Lamberti & Noci, 2017). Thus, arousal is fundamentally an unconscious bodily response, and the emotions felt by individuals are merely the cognitive identification of this physical response (Schachter & Singer, 1962; Bettiga, Lamberti & Noci, 2017). Despite recognition of the importance of physiological, unconscious arousal in guiding consumer attitudes, research on this topic has primarily been conducted in the fields of psychology and neuroscience, and limited research exists on this topic in the field of marketing (Lee, Broderick, & Chamberlain, 2007; Bettiga, Lamberti & Noci, 2017).

It has been proven that attitude development is influenced by the emotions aroused from an advertisement (Moore, Harris & Chen, 1995; Sciulli, Bhagat & Bebko, 2012). Arousal plays a significant role in guiding attitude formation for different contexts, including persuasive messages (Sanbonmatsu & Kardes, 1988; Bagozzi, Gopinath & Nyer, 1999; Bettiga, Lamberti & Noci, 2017). Hamelin, Moujahid & Thaichon (2017) found that individuals who were exposed to highly emotive marketing messages had a more positive attitude towards safe driving than those who were exposed to less emotive stimuli.

The level of emotional arousal experienced varies from a mild to an elevated state, regardless of the emotional valence; this level of emotional arousal impacts consumers' evaluations (Choi et al., 2016). This is supported by Moore, Harris & Chen (1995), who found that the intensity of affective reactions has both direct and indirect effects on attitudes. Furthermore, Sciulli, Bhagat & Bebko (2012) stated that both strong positive and negative emotional arousal will result in increased audience engagement and motivation to participate in a social cause. Bebko, Sciulli & Bhagat (2014) confirmed that there is a relationship between the intensity of emotional appeals and donor intention. Thus, as emotional intensity increases, attitude changes may occur, and therefore, consumer engagement with an advertisement will improve (Sciulli, Bhagat & Bebko, 2012; Sebastian, 2014a). Consequently, the level of emotional arousal caused by a stimulus may act as a catalyst for increased engagement levels and attitude formation (Bagozzi, Gopinath & Nyer, 1999; Taute, McQuitty & Sautter, 2011; Sciulli, Bhagat & Bebko, 2012). Supporting this, Holbrook & Batra (1987) and Guerreiro, Rita & Trigueiros (2015) found that emotional arousal significantly influences advertising effectiveness.

However, higher arousal has also been shown to diminish the processing capacity available for cognitive processes (Sanbonmatsu & Kardes, 1988; Bettiga, Lamberti & Noci, 2017). Gorn, Pham &

Sin (2001) and Choi et al. (2016) suggested that the elevated arousal polarises the evaluations more than the mild arousal does. As such, unconscious arousal itself may have a stronger impact on attitude favourability (Sanbonmatsu & Kardes, 1988; Bagozzi, Gopinath & Nyer, 1999; Bettiga, Lamberti & Noci, 2017). Additionally, Guerreiro, Rita & Trigueiros (2015) found that emotional arousal did not increase marketing effectiveness, while the respondents experienced pleasure, indicating that emotional arousal may not influence attitudes for certain message framing strategies.

Gorn, Pham & Sin (2001) stated that when an advertisement has a clear affective tone, the valence has less of an influence and the level of arousal has more of an influence on the evaluation of the advertisement. If the advertisement's primary affective tone is positive, evaluations should be more favourable, as arousal increases; and if the advertisement's primary tone is negative, evaluations should be less favourable as arousal increases (Gorn, Pham & Sin, 2001). However, previous research is lacking in terms of valence and arousal effects on evaluations of advertised causes, rather than evaluations of advertisements.

There is still much debate regarding how arousal effects the cognitive process itself and, thus, the degree of elaboration used during exposure to a stimulus (Bettiga, Lamberti & Noci, 2017). What is recognized is that it may influence attitude through changes in both the content of thought and in the depth of thought (Lerner, Li, Valdesolo & Kassam, 2015; Bettiga, Lamberti & Noci, 2017). The connection between arousal and emotional processing becomes clearer when the biological and physiological basis of these measures are considered (Potter & Bolls, 2012). Ultimately, unconscious arousal has the potential to influence attitude, with either positive or negative valence (Bettiga, Lamberti & Noci, 2017).

Previous research has suggested that arousal levels may differ between exposure to positive messages versus exposure to negative messages. Lang et al. (1993) stated that disgust resulted in increased skin conductance response, thereby indicating increased emotional arousal, while calm images of happy babies evoked less arousal. Supporting this, Stark et al. (2005) found that disgust/mutilation images resulted in high levels of arousal. However, Bolls, Lang & Potter (2001) found that positive advertisements resulted in significantly higher levels of arousal compared to negative advertisements. On the other hand, findings have also shown that positive messages and negative messages elicited emotional intensities of similar value (Martínez-Fiestas et al., 2015; Casado-Aranda, Sánchez-Fernández & Montoro-Ríos, 2017). This was also shown in research conducted by Moore, Harris & Chen (1995), who showed that when respondents were exposed to marketing stimuli, some strong affective responses were reported, regardless of whether the emotional experiences were positive or negative. Therefore, the previous findings are contradictory, and the following hypotheses were developed:

- *H2_C: Emotional arousal elicited by the advertisement will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher emotional arousal will lead to more positive attitudes towards the reduction of meat consumption.*
- *H3_C: There is a relationship between emotional arousal elicited by the advertisement and post-exposure attitudes.*
- *H4_C: There is a significant difference between emotional arousal elicited by positively framed advertisements and emotion arousal elicited by negatively framed advertisements.*

2.5.3 Measuring Emotional Response

Emotional responses to stimuli include three key elements: 1) Bodily symptoms, which are often unconscious and involuntary, such as skin conductance, 2) action tendencies to immediately exit from a dangerous situation, or to prepare a physical attack of the opponent, and 3) cognitive evaluations of events, stimuli, or objects (Krosschell, 2020). According to Lang (1979), data on emotional experiences can be collected in three different forms: physiological data, behavioural data, and self-reported data (Bolls, Lang & Potter, 2001). Physiological data involves measures of heart rate, skin conductance and facial electromyography collected during the experience of an emotion; thus, this data involves the measurement of bodily symptoms (Bolls, Lang & Potter, 2001). Behavioural data involves observations of facial expressions and behaviours such as laughing or crying (Bolls, Lang & Potter, 2001). Self-reporting involves verbal reports regarding how an emotion feels, reported by the person experiencing it; this data therefore provides an indication of cognitive evaluations (Bolls, Lang & Potter, 2001).

Emotions and affect have been considered in the past as merely a means for attracting attention; thus, they have often been reasoned with self-report measures, based on a set of emotional adjectives placed on a Likert scale (Poels & Dewitte, 2006; Venkatraman et al., 2015). Much of the literature found on emotional responses made use of Likert-type scales to measure emotion (e.g. Sanbonmatsu & Kardes, 1988; Bagozzi & Moore, 1994; Moore, Harris & Chen, 1995; Dahl, Frankenberger & Manchanda, 2003; Shimp & Stuart, 2004; Wang, 2008; Anghelcev & Sar, 2014; Choi et al., 2016; Collymore & McDermott, 2016; Bettiga, Lamberti & Noci, 2017; Feinberg et al., 2019).

These authors often make use of the Self-Assessment Manikin (SAM) Scale, which can be used to measure emotional valence or emotional arousal (e.g. Bradley & Lang, 1994; Bolls, Lang & Potter, 2001; Morris et al., 2002; Yartz & Hawk, 2002; Stark et al., 2005; Bebko, Sciulli & Bhagat, 2014; Guerreiro, Rita & Trigueiros, 2015; Martínez-Fiestas et al., 2015; Casado-Aranda, Sánchez-Fernández & Montoro-Ríos, 2017). SAM is commonly used in marketing research to measure emotional characteristics; this measure incorporates a nonverbal pictorial assessment method that directly measures the pleasure and arousal associated with affective reactions to stimuli (Bebko, Sciulli & Bhagat, 2014; Guerreiro, Rita & Trigueiros, 2015). Allen et al. (2005) also support self-reported measures of emotion, in that individuals' retrospections about emotional experience can offer unique information for predicting attitudes (e.g. Derbaix, 1995). Research conducted by Brennan & Binney (2010) made use of qualitative, self-reported emotional measures.

These self-report measures represent self-analysis about the affect experienced after exposure to stimuli has occurred; therefore, it may be distorted by a variety of factors, including higher cognitive processes and social response bias (Bolls, Lang & Potter, 2001; Venkatraman et al., 2015; Jensen, Jessen, Jørgensen, Laursen, Larsen & Wieland, 2017). Therefore, to avoid self-reporting measurement bias when measuring emotional responses, objective measures are used by means of consumer neuroscience, since the subjects cannot influence these measurements (Solnais et al., 2013; Yang, 2018). Existing literature investigating emotional responses has made use of consumer neuroscience measures, such as functional Magnetic Resonance Imaging (fMRI), electroencephalography (EEG), skin conductance response, heart rate, facial electromyography (fEMG) and facial expression analysis (e.g. Derbaix, 1995; Bolls, Lang & Potter, 2001; Stark et al., 2005; Guerreiro, Rita & Trigueiros, 2015; Martínez-Fiestas et al., 2015; Bettiga, Lamberti & Noci, 2017; Casado-Aranda, Sánchez-Fernández & Montoro-Ríos, 2017; Hamelin, Moujahid & Thaichon, 2017; Kim, Tussyadiah & Jago, 2019). These methods of measuring emotional responses in previous research have been used in combination with self-reporting measures, and they have also been used without self-reporting methods.

Most media psychology researchers, who utilise psycho-physiological measures to study how the mind processes emotional content, do so from what has become known as the dimensional theoretical perspective on human emotion – examining variation in the experiences of arousal and emotional valence occurring during media exposure (Lang, Potter & Bolls, 2009; Potter & Bolls, 2012). In the last ten years, marketing research has shifted to revolve around neuroscience, as the amount of research conducted with neuroscience and neurophysiological techniques to assess advertising effectiveness has increased (Bigné, 2016; Ausin-Azofra et al., 2017). Facial coding is one of the implicit ways to measure emotions, which can depict the valence of the emotional response (Ausin-Azofra et al., 2017). Initially, facial coding was done manually by experts, which is a time-consuming process (Derbaix, 1995; Triyanti Yassierli & Iridiastadi, 2019). However, automatic facial expression analysis can be conducted with the help of software, such as Affdex from Affectiva (Magdin & Prikler, 2017; Triyanti Yassierli & Iridiastadi, 2019). Research conducted by Hamelin, Moujahid & Thaichon (2017) showed that facial expression software can successfully recognize prominent emotional advertisements that influence attitudes.

Facial expressions are just one of many aspects of emotion, but it is possible that they are the most clearly visible or understood ones (Krosschell, 2020). Positive facial expressions recognized by facial coding software are closely related to amusement in response to advertising messages, and in response to attitudes towards an advertised brand (Lewinski, Fransen & Tan, 2014; Sung, Wilson, Yun & Lee, 2019). Researchers have proposed that disgust has a clearly recognizable facial expression, involving the opening of the mouth and closing of the nostrils, as well as a typical experience of the feeling of revulsion (Rozin, Haidt & McCauley, 1993; Morales, Wu & Fitzsimons, 2012). An example of the facial expression of disgust is presented in Appendix F (Izard, 1977). The complete expression of disgust involves the appearance of gagging (Izard, 1977). In addition, the expression of disgust is also indicated by the upward movement of the top lip and the wrinkling of the nose; this, in turn, makes the eyes appear as though they are squinting (Izard, 1977). Derbaix (1995) conducted a study on the impact of affective reactions on attitudes towards the advertisement and the brand, with both verbal measures of affective reactions and facial expression measures. Interestingly, it was found that verbal measures of affective reactions contributed, but facial expression measures did not (Derbaix, 1995).

Galvanic skin response (GSR) has been used to measure arousal; it refers to the phenomenon that the amount of conductivity occurring on the skin differs (resulting from the exposure to physical and emotional stimuli), due to changes in the activity of the eccrine (sweat) glands, following exposure to a certain stimulus (Potter & Bolls, 2012; Venkatraman et al., 2015; Bettiga, Lamberti & Noci, 2017). Many of the psychological states demonstrated to reliably evoke detectable changes in skin conductance are tied to the processing of the emotional characteristics of stimuli, such as pictures (Lang et al., 1993; Potter & Bolls, 2012). With this, both very pleasurable and very repellent messages can arouse significant skin conductance responses (Hopkins & Fletcher, 1994; Ohme et al., 2009). Thus, facial coding is often used in combination with GSR, due to the ability of facial coding to deliver measures of positive and negative valence (Isabella, Mazzon & Dimoka, 2015; Sung et al., 2019). The emotional response can be of positive or negative valence, and a combination of the different indicators allows a final evaluation of the degree of emotion, and whether it is positive or negative (Cuesta, Martínez-Martínez & Niño, 2018). The following section discusses the role of attention in advertising.

2.6 ATTENTIONAL RESPONSES TO ADVERTISING

Attention has previously been described as the ability to attract focus to a stimulus (Venkatraman et al., 2015). According to Guerreiro, Rita & Trigueiros (2015), attention is a central aspect of the decision-

making process, due to the limited processing resources of the brain. Competition for consumers' limited attention is intense, and it is therefore crucial to understand how consumers devote attention to advertising stimuli (Yfantidou, 2018). Every second, humans are exposed to more than eleven million pieces of information; however, humans are only able to process about 50 pieces of that information, and the rest is often overlooked (Wilson, 2002; Plassmann, Ramsøy & Milosavljevic, 2012). It is therefore necessary to use advertisements that attract the most attention. Marketers and advertisers are becoming more creative in their attempts to gain consumers' attention, since consumers are exposed to an abundance of advertising stimuli (Solomon et al., 2006).

Eye movement analysis is commonly used as a neurophysiological method to measure attention, and fixation has been directly related to attention in previous research (Pieters & Wedel, 2004; Guerreiro, Rita & Trigueiros, 2015; Sung et al., 2019); eye-tracking is explained in more detail in the following section, as a way of measuring attention. Past research has shown that attention guides what individuals fixate on, what they remember, and what they consider as significant in an advertisement (Mackenzie, 1986; Pieters & Wedel, 2004; Sanchez & Alley, 2016). The belief that an advertisement is likely to be more influential when more attention is dedicated that advertisement, is a fundamental concept of marketing (Cialdini, Petty & Cacioppo, 1981; Sanchez & Alley, 2016). According to Guerreiro, Rita & Trigueiros (2015), attentional processing of information is fundamental in judgement. Prior research has shown that the amount of attention focused an advertisement influences advertisement effectiveness, in terms of shifting consumer attitudes (Sanchez & Alley, 2016). Lee & Ahn (2012) showed that longer average fixation duration, indicative of attention, had a negative effect on attitude. Thus, individual differences in attention regulation can have an impact on how advertisements influence consumer attitudes (Sanchez & Alley, 2016). Furthermore, attention has been found to mediate cause-related marketing effectiveness (Guerreiro, Rita & Trigueiros, 2015).

Hamelin, Moujahid & Thaichon (2017) stated that when emotional appeals are used in advertisements, consumers' attention towards the advertisement increases. Therefore, the way a message is framed may impact attention differently. Previous research has explored the relationship between message valence and attention, and most of this research has been guided by the framework of limited capacity theory (Lang, 2000; Bolls, Lang & Potter, 2001). Limited capacity theory suggests that attention is controlled by both the audience member and the characteristics of the message (Bolls, Lang & Potter, 2001). Positive emotions are linked to more simplified, heuristic, and creative processing, characterised by little attention to detail (Schwarz & Bless, 1991; Nabi, 1999). However, Yang (2018) found that smokers exposed to positively framed messages focused more attention to the stimulus than those exposed to negatively framed messages. With this, smokers who were shown the negatively framed message were under "tired attention" which resulted in bad communication effects; hence, positively framed messages have the potential to empower smokers to adopt healthier behaviours (Yang, 2018).

On the contrary, previous research has found that with emotional objects, negative stimuli will attract the most attention, compared to neutral stimuli (Estes & Verges, 2008; Hamelin, Moujahid & Thaichon, 2017). Negative emotions are believed to induce more systematic processing (Choi et al., 2016). Findings by Dahl, Frankenberger & Manchanda (2003) indicate that shocking appeals used in advertisements significantly increase attention and have a positive influence on behaviour. This is because an individual's cognitive ability is greatest when they are moderately aroused (Vainikka, 2015). This is supported by findings from Bolls, Lang & Potter (2001), which indicated that negative messages receive more attention than positive ones. Bebko, Sciulli & Bhagat (2014) suggested that to encourage pro-social behaviours, such as recommending making donations, strong, negatively framed advertisements should be used to elicit the most ideal pattern of attention to the advertisement.

Additionally, Stark et al. (2005) showed that subjects looked at images that induced disgust for longer. However, Izard (1997) suggested that disgust may motivate attention to be focused elsewhere.

This indicates that attention may also differ between areas of interest on positive advertisements versus negative advertisements. Guerreiro, Rita & Trigueiros (2015) found that when an advertisement elicits pleasure (characterised by positive message framing), customers focus their attention on the brand logo and donation amount. Supporting this, Bebko, Sciulli & Bhagat (2014) suggested from their findings that in advertisements eliciting more positive emotions, time to first fixation (TFF) on the face and image increased, as viewers were drawn to other areas of the advertisement, such as the brand and logo. More positive emotions resulted in increased attention to the brand and to the logo (Bebko, Sciulli & Bhagat, 2014). This may be beneficial if the goal of the advertisement is brand awareness and donation; however, it may have negative effects if the goal is to draw attention to other areas of the advertisement, such as images or informative text.

Santos et al. (2017) showed that the amount of attention dedicated to the image of a social marketing advertisement differs to the amount of attention dedicated to the other areas of interest (AOIs), and that the image is the most popular area of interest. Furthermore, negative images are more effective than text and logos in attracting attention in social campaigns (Santos et al., 2017). Other research studies support these findings related to the use of images, and further suggest that the subject's face in advertisements receive the most attention (Pieters & Wedel, 2004; Sciulli, Bhagat & Bebko, 2012; Bebko, Sciulli & Bhagat, 2014). The following were hypothesised for attention:

- *H5_A: Attention to the whole advertisement will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes towards the reduction of meat consumption.*
- *H5_B: Attention to the headline will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes towards the reduction of meat consumption.*
- *H5_C: Attention to the image will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes towards the reduction of meat consumption.*
- *H5_D: Attention to the tagline will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes towards the reduction of meat consumption.*
- *H5_E: Attention to the logo will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes towards the reduction of meat consumption.*
- *H6: There is a relationship between attention paid to the advertisement and post-exposure attitudes.*
- *H7_A: There is a significant difference between attention to the positively framed advertisement and attention to the negatively framed advertisement.*
- *H7_B: There is a significant difference between attention to the headline of the positively framed advertisement and attention to the headline of the negatively framed advertisement.*
- *H7_C: There is a significant difference between attention to the image of the positively framed advertisement and attention to the image of the negatively framed advertisement.*
- *H7_D: There is a significant difference between attention to the tagline of the positively framed advertisement and attention to the tagline of the negatively framed advertisement.*

- *H7_E: There is a significant difference between attention to the logo of the positively framed advertisement and attention to the logo of the negatively framed advertisement.*

2.6.1 Measuring Attention

Attention is a significant measure in advertising research, because, according to consumer neuroscience methodologies, attention is associated with memory and attitude formation (Lee & Ahn, 2012; Goodrich, 2014; Santos et al., 2017). Common measures of attention are liking, informativeness, excitability and the relevance of an advertisement (Venkatraman et al., 2015). Some of the prior literature discussed in this literature review has measured attention with self-reporting methods (e.g. Dahl, Frankenberger & Manchanda, 2003; Choi et al., 2016; Sanchez & Alley, 2016). However, previous research has shown that attention is not necessarily conscious; therefore, physiological responses to advertising provide more reliable measures of attention (Rosbergen, Pieters & Wedel, 1997). Consumer neuroscience measures are therefore used in some previous studies to reliably measure attention (e.g. Bolls, Lang & Potter, 2001; Sciulli, Bhagat & Bebko, 2012; Bebko, Sciulli & Bhagat, 2014; Guerreiro, Rita & Trigueiros, 2015; Santos et al., 2017; Yang, 2018; Kim, Tussyadiah & Jago, 2019). This is often done with the use of eye-tracking, as this method offers a more direct measure of attention when compared to self-reporting (Boerman, van Reijmersdal & Neijens 2015; Venkatraman et al., 2015; Pozharliev, Verbeke & Bagozzi, 2017).

Eye-tracking is frequently used to measure attention, since the eye-mind hypothesis suggests that what is being fixated on is directly related what is being processed (Just & Carpenter, 1980; Bigné, Chatzipanagiotou & Ruiz, 2020). The amount of time taken to process information is, therefore, shown by gaze duration, which often signifies where a consumer's thoughts lie; however, this does not indicate the evaluative direction of these thoughts (Bigné, Chatzipanagiotou & Ruiz, 2020). Attention is therefore indicative of prolonged focus and shifts in focus over time; measures of attention are key in understanding which aspects of an advertisement capture attention, and which aspects do not receive as much attention (O'Connell, Walden & Pohlmann, 2011).

2.7 ATTITUDE

Anilkumar & Joseph (2012) stated that consumer attitudes, which are learned and memorized, play an important role in the consumer decision-making process (Anilkumar & Joseph, 2012). Consumers' attitudes guide their thoughts and influence their feelings, thereby affecting their behaviour (Anilkumar & Joseph, 2012). A common theme in research involves evaluating the effectiveness of advertisements by identifying attitudes produced by a stimulus (Martínez-Fiestas et al., 2015). Since attitudes are learned, they can also be unlearned and changed (Anilkumar & Joseph, 2012). With this, marketers often try to change consumer behaviour by altering important elements that affect attitude (Vainikka, 2015).

Consumer research has explored how emotional experiences influence attitudes and behaviours (Agrawal & Duhachek, 2010). The message framing strategy used can also influence attitudes, and marketers often use positive frames to communicate with consumers; however, some strategies also implement negative appeals to influence attitude change (Vainikka, 2015). Bettiga, Lamberti & Noci (2017) state that if an advertisement generates positive emotional arousal, this may have a positive influence on attitude; accordingly, negative arousal could have a negative influence on attitude. The way in which emotion influences attitude depends on whether the attitude is towards an action, or towards an object (Clore & Schnall, 2005; Najmi, Atefi & Mirbagheri, 2012). If attitude formation is

based on an object, then the positive or negative emotional experience may be transferred to the object (Clore & Schnall, 2005; Najmi, Atefi & Mirbagheri, 2012). If attitude formation is based on behaviour or action, the emotional experience influences information processing (Clore & Schnall, 2005; Najmi, Atefi & Mirbagheri, 2012). The extent of consumers' attitudes and behaviours can be greatly influenced by marketing communication (Tanner & Kast, 2003). Thus, it is argued that consumers should be thought of as allies, that should be involved in identifying more sustainable ways of consuming protein (de Bakker & Dagevos, 2012).

Attitude is an element of consumer behaviour, and it incorporates cognition, emotion, and intentions (Anilkumar & Joseph, 2012). According to Najmi, Atefi & Mirbagheri (2012), there are two major perspectives regarding attitudinal structure. The first perspective is that attitudes are evaluative responses influenced by beliefs (Najmi, Atefi & Mirbagheri, 2012). This is a narrower view of attitudes, with some authors describing them as evaluative judgements and beliefs towards objects, people, or events, rather than emotional states (Bagozzi, Gopinath & Nyer, 1999; Scherer, 2005; Chohan, 2013).

Based on Fishbein & Ajzen's (1975) expectancy-value model, attitude is the combination of all evaluative beliefs about the attitudinal object (Najmi, Atefi & Mirbagheri, 2012). The second perspective is the three-component model of attitudes, which states that in addition to the cognitive component of attitudes (beliefs), attitudes also include affective and behavioural components (Breckler, 1984; Maio, Esses, Arnold & Olson, 2004; Scherer, 2005; Najmi, Atefi & Mirbagheri, 2012). The cognitive component describes beliefs regarding the attitude object, the affective component includes differential valence, and the behavioural component details the action tendency concerning the object (approach or avoidance behaviour) (Breckler, 1984; Scherer, 2005).

Fishbein & Ajzen (1975) stated that attitudes form from the beliefs that people hold about the object of the attitude (Ajzen, 1991; Ransome, 2018). Each belief connects the attitude to either a favourable or unfavourable outcome (Fishbein & Ajzen, 1975; Ransome, 2018). Specifically, individuals' beliefs about the likelihood and the consequences of adopting a recommended behaviour influence the attitude towards that behaviour (Pinho & Soares, 2011). With respect to the behaviour of reducing meat consumption, attitude is determined by the belief that reducing the consumption of meat products would result in either good outcomes, leading to positive attitudes, or bad outcomes, leading to negative attitudes (Ransome, 2018). Attitude refers to the evaluative affect towards a specific behaviour (Pinho & Soares, 2011). Causing a shift in values and attitudes is often the first step in achieving behavioural change (Gordon, Carrigan & Hastings, 2011). This is discussed in more detail in the following section.

2.7.1 Attitude in Behaviour Prediction Theories

The importance of measures of attitude in research is based on the notion that attitude influences behaviour (Fishbein & Ajzen, 1975; Bettiga, Lamberti & Noci, 2017). Yzer (2012) suggested that, when designing messages to promote a desired behaviour, it is necessary to first understand the underlying determinants of that behaviour (Ransome, 2018). Therefore, this section details the usefulness of behavioural prediction theory as an intervention tool, and how attitude plays a significant role in these theories. The two most applied behavioural prediction theories are the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB) (Ajzen & Fishbein, 1980; Ajzen, 1991; Ransome, 2018).

The TRA involved attitudes towards behaviours, rather than the more traditional attitudes towards objects, people, or institutions (Ajzen, 1985). Thus, theory claims that consumer behaviour is

determined by intention to perform that behaviour, and that intention is determined by attitude towards the behaviour and the subjective norms regarding the behaviour (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980; Ransome, 2018). After the development of the TRA, Ajzen (1985, 1991) found that behaviour was not completely controlled by an individual; hence, perceived behavioural control was included as the third variable, resulting in the development of the TPB (Ajzen, 1991; Ransome, 2018).

A general rule for the TPB model is that the more favourable the attitude is toward the behaviour, the stronger an individual's intention is to adopt the recommended behaviour (Ajzen, 1991; Yzer, 2012; Ransome, 2018). With this, the stronger an individual's intention is to adopt a recommended behaviour, the more likely they are to perform that behaviour (Ajzen, 1991). Thus, attitudes have the potential to influence ethical consumption, as attitude is a strong determinant of behavioural intention, and thus, behaviour per the TPB (Ajzen 1991; Michaelidou & Hassan, 2008; Fuseini & Sulemana, 2018). The TPB assumes three conceptually independent predictors of intention to perform a recommended behaviour: attitude towards the behaviour, subjective norms, and perceived behavioural control (Ajzen, 1991). However, for the current research, attitude was considered in isolation (Ajzen, 1991).

'Attitude towards the behaviour' is described as the extent to which a consumer has a favourable or an unfavourable evaluation or judgement regarding a particular behaviour (Ajzen, 1991). In this case, the behaviour in question is the consumption of meat products. Previous literature highlights the importance of attitude, when examining advertising that is aimed at changing a certain behaviour. It is important to note here that in Ajzen's (1991) research, the attitudes towards several behaviours made significant contributions to the prediction of intentions, whereas the results for subjective norms were unclear. Ultimately, consumer behaviour can be predicted by intention, which is predicted by attitude (Anilkumar & Joseph, 2012).

The findings from Ransome's (2018) study revealed that direct measures of attitude were important when understanding intentions reduce meat consumption, and that attitude is a significant determinant of behavioural intention to reduce meat consumption. Thus, attitude is important for marketers seeking to encourage meat-reduced diets. This research, therefore, focused on attitudinal change as a foundational step to behavioural change. In line with the TPB, Bianchi et al. (2018) stated that attitudes towards reducing meat consumption generally mirrored consumers' intentions to do so. However, according to Bogueva, Marinova & Raphaely (2017), it is unlikely that attitudes and behaviours will change without well-researched and impactful social marketing communications. This emphasises the need for research to develop impactful and informative social marketing interventions to influence a change in consumers' attitudes.

2.7.2 Attitudes Towards the Consumption of Meat Products

Data from the USDA Foreign Agriculture Service (2015) has shown that South Africans' preference for meat has been increasing over the last ten years (Gaille, 2018). In 1994, the average South African consumed about 41 kilograms of meat every year; twenty years later, in 2014, the average South African consumed about 65 kilograms of meat each year (USDA Foreign Agriculture Service, 2015; Gaille, 2018). Results from a study by Bergmann, von der Heide & Maller (2010) on cognitive dissonance regarding factory farmed meat consumption indicated that motivations for maintaining meat consumption are strong, varied, and complex. However, ethics, welfare, conservation and even health, have all been significantly influential in changing attitudes towards meat consumption (Fiddes, 1991). Furthermore, the knowledge of the negative consequences of the production of meat on animal welfare has been found to influence attitudes towards meat consumption (Cordts, Nitzko & Spiller, 2014). The

findings from Ransome's (2018) study revealed that attitude is positively correlated with behavioural intention to reduce meat consumption, and that social marketers should be aware of the significance of perceived advantages or disadvantages of reducing meat consumption (Ransome, 2018).

Critical attitudes towards animal welfare are associated with a reduction of meat consumption (de Boer, Hoogland & Boersema, 2007; Cordts, Nitzko & Spiller, 2014). Supporting this, Dubé & Cantin (2000) found that attitudes towards foods can be influenced more effectively if they are based on emotion, rather than on cognition (Cabanac, 2002). The results of Bogueva, Marinova & Raphaely's (2017) study showed that the decision to consume meat is not completely rational, but it is a result of a combination of emotional, social, and nutritional aspects. The study by Michaelidou & Hassan (2008) found that ethical self-identity determines attitudes towards ethical issues and, therefore, influences consumption choices as a function of attitude. Shaw & Shiu (2002a) provided supporting evidence that ethical concerns have unique potential to contribute to attitude formation. Their finding is relevant in terms of the current research, since many consumer attitudes and behaviours that are considered important in recent times are strongly influenced by both personal gain as well as ethical concern (Shaw & Shiu, 2002a). When consumers identify with an ethical issue, it is highly probable that it will result in empathy, followed by a more positive attitude toward the associated ethical behaviour (Shaw & Shiu, 2002a). Furthermore, Palomo-Vélez, Tybur & van Vugt (2018) found that changes in attitudes toward meat were motivated by both disgust and ethical concern.

Therefore, ethical influences may encourage feelings of empathy and, therefore, the formation of positive attitudes towards ethical issues (such as animal welfare), leading to more ethical consumption choices (Shaw & Shiu, 2002b; Michaelidou & Hassan, 2008). This may be due to the experience of cognitive dissonance. The paper by Bergmann, von der Heide & Maller (2010) explains cognitive dissonance and how consumers try to avoid it. As mentioned previously, cognitive dissonance is "an uncomfortable and unsettling feeling that arises when conflicting ideas or ideas and behaviour occur simultaneously" (Bergmann, von der Heide & Maller, 2010:2).

Festinger (1957) explains that consumers attempt to avoid cognitive dissonance with three different strategies: by changing their behaviours, attitudes, and beliefs, by rationalising and justifying them, or by actively avoiding circumstances that result in cognitive dissonance (Bergmann, von der Heide & Maller, 2010). According to Loughnan, Bratanova & Puvia (2012), meat eaters may experience tension (conscious or unconscious), since their beliefs do not match their actions (Ransome, 2018). This tension causes cognitive dissonance, resulting in meat eaters either changing their consumption behaviour or changing their beliefs about animals to fit their behaviour (Loughnan, Bratanova & Puvia, 2012; Ransome, 2018). The labelling of animals shows a clear example of how meat-consumers ease their cognitive dissonance, as meat eaters often change their frame of reference for individual animals, for example a dog is seen as a pet, a horse is seen as a tool, and a cow is seen as food (Loughnan, Bratanova & Puvia, 2012; Ransome, 2018). It can be argued that this has widespread consequences in terms of how animals are treated in their respective roles (Bratanova, Loughnan & Bastian, 2011; Ransome, 2018).

This phenomenon has received little attention in social marketing research (Bergmann, von der Heide & Maller, 2010). However, previous findings indicate that consumers' attitudes towards the farming of animals can be measured along a continuum (Bergmann, von der Heide & Maller, 2010). Fiddes (1991) says that to understand the meat industry in its ethical context, it is helpful to place issues on a spectrum, instead of isolating each issue for consideration. In this way, a variety of attitudes can be identified, ranging from narrow and conservative attitudes held by individuals who argue that humans have social

responsibilities only for ourselves and our families and, thus, the exploitation of any being beyond this sphere is valid, to more broad and liberal attitudes held by individuals who see a responsibility of humans to care for their whole environment, living and non-living (Fiddes, 1991).

Cognitive dissonance has helped better understand the attitudes towards factory farming and audience segmentation (Bergmann, von der Heide & Maller, 2010). A study conducted by de Backer & Hudders (2015) found that the more someone is concerned about animal welfare, the less meat they consume. Baker, Thompson & Palmer-Barnes (2002) made use of Means-End analysis to explore the underlying motivations of three consumer groups: meat eaters, meat reducers and vegetarians. The different categories of meat consumption behaviour can be explained based on how consumers try to avoid cognitive dissonance, as each group sought different terminal values (Baker, Thompson & Palmer-Barnes, 2002). The following sections describe those groups which indicate different attitudes towards meat consumption.

2.7.2.1 Meat eaters

Meat eaters can be defined as consumers who think of meat as a typical part of their diet (Baker, Thompson & Palmer-Barnes, 2002). These individuals express strong pro-meat consumption views, and they seem to reduce their cognitive dissonance by justifying that those animals that are raised for food only suffer for a short duration, or that animals are incapable of suffering at all (Bergmann, von der Heide & Maller, 2010). These consumers are the least concerned about animal welfare (de Backer & Hudders, 2015). If the suffering of animals is acknowledged, then it is often justified that this suffering is appropriate to feed humans (Bergmann, von der Heide & Maller, 2010). However, social marketing appeals that increase mind attribution to meat animals could defuse this dissonance-reduction strategy, thereby decreasing the desire to eat meat (Kunst & Hohle, 2016).

According to Baker, Thompson & Palmer-Barnes (2002), in order to successfully promote meat-reduced diets among this segment, social marketing would either have to place the focus on personal benefits or on the consequences of consuming meat, such as health issues, or by changing the means by which meat eaters satisfy their enduring terminal values, or by attempting to change those enduring values. The complexity of contributing aspects to the food that consumers eat, such as social, cultural, aesthetic, symbolic, moral, health-related, environmentally appropriate, religious, and spiritual values, makes shifting meat consumption behaviours more challenging (Bogueva, Marinova & Raphaely, 2017). For this reason, this research in no way attempts to convert meat eaters to become vegetarians; rather, it attempts to better understand their attitudes and responses, aiming to allow for more effective social marketing efforts.

2.7.2.2 Meat reducers

Meat reducers can be defined as individuals who say that they intentionally endeavour to eat less meat (Baker, Thompson & Palmer-Barnes, 2002). To prevent the negative consequences of extravagant meat consumption for generations to come, research has highlighted the necessity to influence consumer attitudes and behaviour towards meat-reduced diets (Joyce et al., 2012; Hayley, Zinkiewicz & Hardiman, 2015; Ransome, 2018). Meat-reduced diets reduce the frequency, type, and quantity of meat in a consumer's average diet; meat-reduced diets vary between low-meat diets, plant-based diets, and semi-vegetarianism (Hayley, Zinkiewicz & Hardiman, 2015; Ransome, 2018). These practices involve reduced consumption of unhealthy levels of animal products and increased consumption of healthy,

plant-based foods, including fruit, vegetables, legumes, nuts, and seeds (Hayley, Zinkiewicz & Hardiman, 2015; Ransome, 2018).

However, the concept of reducing meat consumption is relatively new in academic research; therefore, this behaviour has not yet been clearly defined (Ransome, 2018). Baker, Thompson & Palmer-Barnes (2002) state that the interpretation that meat reducers are semi-vegetarians is disputed by the discovery that their fundamental motivations are like those of meat eaters, and they contrast with those of vegetarians. This group of individuals express concern regarding animal welfare, yet they focus their rationalisation on things such as health or the environment (Bergmann, von der Heide & Maller, 2010). Moreover, Forestell, Spaeth & Kane (2012) stated that flexitarians are primarily motivated by personal health issues (de Backer & Hudders, 2015). However, meat reducers are more concerned about animal welfare than full-time meat eaters are, but not as concerned as vegetarians (de Backer & Hudders, 2015). This group provides opportunity for social marketers to transform meat consumption patterns (de Bakker & Dagevos, 2012). Meat-reducers might support the consumption of meat, but they have started questioning the process and considering alternatives; however, this does not necessarily translate to behavioural changes (Bergmann, von der Heide & Maller, 2010). Reducing the amount of meat that consumers have in their diet is potentially a more realistic goal for individuals than the complete exclusion of meat (Penny, Swift & Salter, 2015).

2.7.2.3 Vegetarians and vegans

Baker, Thompson & Palmer-Barnes (2002) define vegetarians as consumers who do not eat red meat or white meat. However, according to Beardsworth & Keil (1997), the concept of vegetarianism is not sharply defined, and the term is relatively new. Consumers who refer to themselves as vegetarians may have varying dietary patterns (Beardsworth & Keil, 1997). Beardsworth & Keil (1997) use a linear scale to describe vegetarianism in terms of its strictness. On the least strict end of the scale are self-defined vegetarians, who might consume fish, dairy products, eggs, and occasionally even white meat (Beardsworth & Keil, 1997). When moving to the right of the scale, there are consumers who do not eat any meat or fish but may still consume eggs and dairy products (Beardsworth & Keil, 1997). Further to the right is veganism. Veganism requires refraining from consuming any animal products at all; however, veganism can also be placed on a linear scale in terms of strictness (Beardsworth & Keil, 1997).

Vegetarians differ from meat reducers in that they have a more conscious, explicit, and intense inspiration to cut meat out of their diet, due to their attitude towards animal welfare (de Backer & Hudders, 2015). This group of individuals have settled their cognitive dissonance by acknowledging the value of animals, and they use this as their guiding principle (Bergmann, von der Heide & Maller, 2010). Vegetarians still experience cognitive dissonance; however, these consumers make the most effort to translate their attitudes and values into their consumption behaviour (Bergmann, von der Heide & Maller, 2010). These consumers are the most concerned with animal welfare (de Backer & Hudders, 2015). Despite the practical, aesthetic, moral and physiological motivations for reducing meat consumption, Beardsworth & Kiel (1997) found that vegetarians continually emphasised that their decision to cut out meat is an effort to regain 'peace of mind' (Baker, Thompson & Palmer-Barnes, 2002). Ethical self-identity, although left out in previous research as influencing factor of attitude, has been found to determine both attitudes and behavioural intention (Michaelidou & Hassan, 2008).

2.7.3 Measuring Consumer Attitudes

Attitude development is an essential process in influencing behaviour that may have significant consequences for individuals and for society (Reid, 2006). Therefore, the process of measuring attitude is imperative, and it necessitates valid and accurate approaches to provide valuable insights (Reid, 2006). Likert (1932) developed a simple approach of questioning respondents that is one of the most common forms of questions used in academic research (Reid, 2006). Likert used questions that prompt responses ranging from “strongly agree” to “strongly disagree” on a 7-point scale (Reid, 2006). The amount of research conducted using self-reporting techniques, such as the use of Likert scales, indicates that under most conditions, respondents are honest and consistent in their responses regarding attitude (Reid, 2006). The most important contribution to attitude measurement, however, was the development of the semantic differential by Charles Osgood and his colleagues (Osgood, Suci & Tannenbaum, 1957; Ajzen & Fishbein, 1980). The semantic differential is a relatively simple measure that is used frequently (Osgood, Suci & Tannenbaum, 1957; Ajzen & Fishbein, 1980). Quantitative measures of the quantitative process typically include measures of cognition, such as beliefs, knowledge, attitudes, attention, memory, and recall (Eroglu, Machleit, & Davis, 2001; Wang & Minor, 2008).

Explicit attitudes are deliberate evaluations formulated through reasoning; thus, quantitative self-reporting techniques are often used for measuring explicit attitudes (Walla, Koller & Meier, 2014). Much of the existing literature on attitude relevant to the topic of this study has made use of these measures (e.g. Maheswaran & Meyers-Levy, 1990; Lord, 1994; Moore, Harris & Chen, 1995; Morris et al., 2002; Loroz, 2007; Wang, 2008; Sanchez & Alley, 2016; Bettiga, Lamberti & Noci, 2017; Casado-Aranda, Sánchez-Fernández & Montoro-Ríos, 2017; Palomo-Vélez, Tybur & van Vugt, 2018; Trendel, Mazodier & Vohs, 2018). Furthermore, some previous research has used qualitative methods to measure these attitudes (e.g. that of Brennan & Binney, 2010).

However, there are also methods to measure non-conscious attitudes of consumers, as used in research conducted by Casado-Aranda, Sánchez-Fernández & Montoro-Ríos (2017) and Trendel, Mazodier & Vohs (2018). Much of the non-conscious attitude measurement involves measuring implicit attitudes as they are non-conscious, and some interesting discussion exists of the use of psychophysiological measures as implicit measures of attitudes (Cunningham, Packer, Kesek, & Van Bavel, 2009; Potter & Bolls, 2012). However, the measuring of explicit attitudes is the focus of this research, as they are enduring attitudes; they are influenced by explicit processing goals, and they uniquely predict behavioural intentions (Rydell & McConnell, 2006). Since explicit attitudes are controlled, conscious and rule-based, these are evaluative judgements that can be measured with conscious self-reporting methods (Rydell & McConnell, 2006; Trendel, Mazodier & Vohs, 2018)

Although some researchers have suggested that implicit attitudes can shift relatively quickly in response to stimuli (Dasgupta & Greenwald, 2001; Barden, Maddux, Petty & Brewer, 2004; Rydell & McConnell, 2006), other researchers have proven that implicit attitudes are relatively difficult to change with standard efforts, and that implicit attitudes were unaffected by dissonance manipulations (Gawronski & Strack, 2004; Gregg, Seibt & Banaji, 2006; Rydell & McConnell, 2006).

2.8 A CONCEPTUAL MODEL

Based on the key elements of the literature review, the following conceptual model was developed to guide the research (see Figure 3 below). Each construct that is presented the conceptual model has been critically discussed in the literature review.

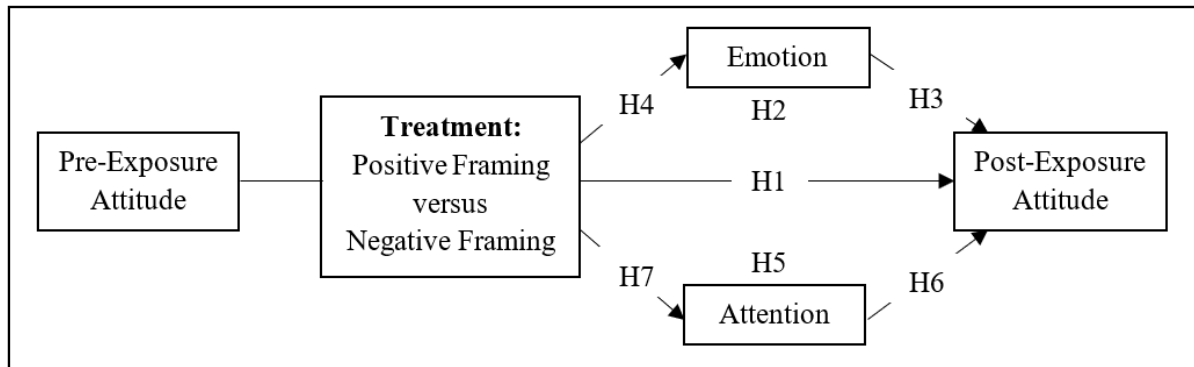


Figure 3: Conceptual model adapted from Trendel, Mazodier & Vohs (2018) & Guerreiro, Rita & Trigueiros (2015)

The present study adapted the models from Trendel, Mazodier & Vohs (2018) and Guerreiro, Rita & Trigueiros (2015) to fit the context of message framing and attitudes. The conceptual model for this study summarises that one type of message framing strategy in social marketing advertisements may influence attitudes better than the others, and the type of message framing strategy used may also lead to differences in emotional and attentional responses to the stimuli, which, in turn, can have an effect on attitude.

As evidenced in the literature review, the way in which information is presented influences individuals' responses (Tversky & Kahneman, 1981; Moon et al., 2016; Chédotal et al., 2017). However, previous research has proven to be contradictory in terms of which message framing strategy is more effective in influencing attitudes (Maheswaran & Meyers-Levy, 1990; Bester & Jere, 2012; Olsen, Slotegraaf & Chandukala, 2014; Martínez-Fiestas et al., 2015; Casado-Aranda, Sánchez-Fernández & Montoro-Ríos, 2017; Santos et al., 2017).

Previous research has shown that emotions play an important role in changing attitudes, as mediators, or as persuaders of anti-consumption (Holbrook & Batra, 1987; Bagozzi, Wong & Yi, 1999; Morris et al., 2002; Anilkumar & Joseph, 2012; Castellanos et al., 2018;). Attitude development has been confirmed to be influenced by the emotions evoked from a message (Moore, Harris & Chen, 1995; Sciulli, Bhagat & Bebeko, 2012). Additionally, advertising messages framed either positively or negatively, are said to enhance the responses to advertising (Taute, Mcquitty & Sautter, 2011). In terms of attention, it is possible that the more attention that consumers dedicate to the processing of persuasive social marketing advertisements, the more likely it is that those advertisements will influence the opinions and beliefs of those consumers (Cialdini, Petty & Cacioppo, 1981; Sanchez & Alley, 2016). The literature review evidences that the amount of attention paid to an advertisement could influence the advertisement's effectiveness, in terms of changing consumer attitudes (Sanchez & Alley, 2016). Additionally, research has shown that the emotional tone of a message (positive or negative framing) can influence attention (Bolls, Lang & Potter, 2001).

2.9 CONCLUSION

This chapter has provided the theory grounding this research, which guided the development of the hypotheses. It has presented a complete review of the existing literature on social marketing, message framing, emotional responses, attentional responses, and consumer attitudes, that present the existing research and findings relevant to the present study. The literature available regarding message framing in social marketing revealed contradictory findings, indicating the necessity for research on effective social marketing interventions. Previous literature has shown how the use of message framing in social marketing can influence consumers' responses, and how it can ultimately influence the attitudes they form towards the behaviours in question, and the research on emotion and attention has suggested that these unconscious responses can cause changes in attitude.

Thus, the literature review highlighted the importance of the constructs that were measured in this research, and how each construct relates to attitude change. It has provided further explanation of related concepts that may impact the research. In conclusion, there is limited literature in relation to attitudes towards the reduction of meat products, and much of the literature was found from research on similar relevant topics. Based on the review of the available literature, the conceptual framework was presented.

3 CHAPTER 3: THE RESEARCH METHODOLOGY

3.1 INTRODUCTION

The following section describes the steps that were followed when conducting this research, and it justifies the methods that were used. The research methodology includes the research philosophy, the research strategy and design, the target population and sampling, and discussions regarding the stimulus treatments, measurement instruments, data collection, data analysis and ethical considerations.

3.2 THE RESEARCH PHILOSOPHY

A researcher's activities are guided by a basic set of principles, which collectively form the foundation of a paradigm; thus, the types of beliefs held by researchers would probably lead to them implementing either a qualitative, quantitative, or mixed method approach to their research project (Creswell, 2014; Desai, 2017). With the purpose of gaining understanding, interpretivism concentrates on the exploration of complex social phenomena (Desai, 2017). Qualitative researchers work mainly in the interpretivist paradigm (Rossman & Rallis, 2012).

Positivism supports the application of approaches of the natural sciences to the study of social reality (Bryman & Bell, 2011). It holds that empirical evidence is the single source of defensible scientific findings (Easterby-Smith, Thorpe & Jackson, 2012; Ransome, 2018). This approach consists of two important principles. Firstly, the causes of human behaviour need to be isolated, analysed and understood (Desai, 2017). It is thought that if what initiated behaviour is understood, then human behaviour can be explained and predicted (Bryman & Bell, 2011; Creswell, 2014). The second principle is objectivity. A positivist research methodology is typically quantitative, and it involves using sampling, measurement and scaling, statistical analysis, questionnaires, focus groups, or interviews (Easterby-Smith, Thorpe & Jackson, 2012; Ransome, 2018). The issues explored by positivists reflect the need to identify and test cause-and-effect relationships (Creswell, 2014). This study was guided by a mixed method approach.

Mixed methods research involves the combination of elements of qualitative and quantitative research approaches (Harrison & Reilly, 2011; Johnson, Onwuegbuzie & Turner, 2007). Mixed method research, with its pragmatic approach, does not align itself with a single system or philosophy (Creswell, Plano Clark, Gutmann, & Hanson, 2003; Harrison & Reilly, 2011), it is rather driven by the research question (Harrison & Reilly, 2011; Johnson & Onwuegbuzie, 2004). Paradigmatically, mixed method research makes use of pragmatism as a system of philosophy. This philosophy includes the use of induction (discovery of patterns), deduction (testing of theories and hypotheses), and abduction (uncovering and relying on the best of a set of explanations for understanding one's results) (Harrison & Reilly, 2011; Johnson & Onwuegbuzie, 2004; Morgan, 2007).

3.3 THE RESEARCH STRATEGY AND THE DESIGN

This study made use of a mixed method approach with quantitative empirical research methods to measure conscious and unconscious responses to stimuli, as well as qualitative methods to measure the conscious responses to stimuli (Harris, Ciorciari & Gountas, 2018). Qualitative research offers insights for a deeper understanding of the topics being investigated, while quantitative research pursues to quantify the data by conducting statistical analyses (Malhotra, 2010; Malhotra, Nunan & Birks, 2017). The two methods complement each other, and frequently qualitative research is often conducted to

clarify the findings of quantitative research (Malhotra, 2010). Qualitative research has been described as an in-depth investigation of what activates certain responses, including an exploration of their feelings, perceptions, and decision-making processes (Bercea, 2013). This provides opportunity for richer knowledge of the target audience’s thought process; however, the results of qualitative data are not generalizable (Bercea, 2013). Consequently, this study combined the two methods, with the focus being on quantitative analysis, involving hypothesis testing. This is followed by non-statistical analyses of the verbal data. According to Bercea (2013), each approach has its drawbacks; however, the solution comes in successfully combining elements of both quantitative and qualitative methods. The inclusion of a series of qualitative questions in quantitative studies allows for a more complete investigation of why treatment groups differ in their responses (Malhotra, Nunan & Birks, 2017). This provides the opportunity to analyse data from multiple approaches, thus making it easier to recognize possible biases (Malhotra, Nunan & Birks, 2017).

The quantitative component of this study followed a conclusive, causal research design, as it aimed to explain the cause-and-effect relationships between message framing techniques, emotion, and attention, as well as the impact these have on consumers’ attitudes (Malhotra, Nunan & Birks, 2017). Causal research involves the manipulation of independent variables in a relatively controlled environment (Malhotra, 2010). This was done by using experimentation, as this is the main method of causal research, since it seeks to find out whether a specific treatment causes a specific outcome (Creswell, 2014; Malhotra, Nunan & Birks, 2017).

This project has followed a quasi-experimental research design, specifically a two-group pre-test-post-test design. Quasi-experimental designs are helpful as they can be used for research where true experimentation is not possible (Malhotra, Nunan & Birks, 2017). The basic principle of a pre-test-post-test design is that it involves the collection of a pre-test measurement of the outcomes of interest before stimulus treatment, followed by the collection of post-test measurements, after exposure to a stimulus (Salkind, 2010). Pre-test-post-test designs used for quasi-experimental research can be used with, or without control groups (Salkind, 2010). The measurement before the treatment provides a control for several extraneous variables (Malhotra, 2010). The inclusion of a control group in this experiment would have resulted in repetition of the pre-test and, additionally, it would have reduced the sample size of the experimental groups. The research design of the current study is represented by the following:

$$\begin{array}{cccc} R & O_1 & X_1O_2 & O_3 \\ R & O_4 & X_2O_5 & O_6 \end{array}$$

The symbolic arrangement of the experimental design above indicates that the respondents were randomly assigned (R) to two independent treatment groups (X₁ and X₂). The ‘X’ represents the exposure of a group to a treatment (Malhotra, 2010). O₁ and O₄ represent the process of observation or measurement before the treatment (baseline measurement for both experimental groups) and O₂, O₃, O₅ and O₆ represent the process of observation or measurement of the dependent variables, during or after treatment exposure, on the groups of test units. The difference (O₃ – O₁) and (O₆ – O₄) are the treatment effects. O₂ and O₅ represent additional consumer neuroscience measurements that may play a mediating role. However, the treatment and the responses measured in O₂ and O₅ are not the only possible explanations for the differences (O₃ – O₁) and (O₆ – O₄).

Internal validity measures whether the manipulation of the independent variables caused the effects on the dependent variable(s) (Malhotra, Nunan & Birks, 2017). Internal validity is a basic requirement for experimentation, to allow conclusions to be drawn on treatment effects; this involves the control of

extraneous variables (Malhotra, Nunan & Birks, 2017). External validity indicates whether the cause-and-effect relationships found, as a result of experimentation, can be generalized to a larger population (Malhotra, Nunan & Birks, 2017). Although it is ideal for an experimental design to have both internal and external validity, it is often necessary to trade one type of validity for another in applied marketing research (Malhotra, Nunan & Birks, 2017). To control for extraneous variables, experiments were conducted in an artificial environment (Malhotra, Nunan & Birks, 2017). Hence, this enhanced the internal validity, but it may limit the generalizability of the results (Malhotra, Nunan & Birks, 2017). Despite these limitations to external validity, if an experiment lacks internal validity, it might not be worthwhile generalizing the results (Malhotra, Nunan & Birks, 2017).

Extraneous variables were controlled with randomization, matching and design control (Malhotra, Nunan & Birks, 2017). In terms of randomization, respondents were randomly assigned to treatment groups and the stimulus treatments were also randomly assigned to each group (Malhotra, Nunan & Birks, 2017). For matching, respondents were compared based on a set of background variables before assigning them to the treatment conditions (Malhotra, Nunan & Birks, 2017). In terms of design control, the experiments used were designed to control for specific extraneous variables (Malhotra, Nunan & Birks, 2017). For example, variables such as history, maturation and testing could be responsible for any observed difference between the pre-test and the post-test results (Salkind, 2010). The longer the duration of time between the pre-tests and the post-tests, the more challenging it is to reject alternative reasons for observed differences (Salkind, 2010). Thus, it was easier to rule out the extraneous variables in this research, as the time lapse between the pre-test and the post-test was relatively short (maximum of two minutes). The qualitative component of this research followed an exploratory research design, as it aimed to provide insights and understanding (Malhotra, Nunan & Birks, 2017).

3.4 SAMPLING

The following sections detail the sampling procedure followed in this study. This includes a description of the target population of this research, the sampling technique that was used, as well as the sampling frame.

3.4.1 The Target Population

The target population for this study consisted of consumers between the ages of 18 to 34, residing in Cape Town and who consume meat products. The population of consumers aged 18 to 34 in Cape Town is approximately 1.2 million (Western Cape Government, 2020). This age group was chosen as an article by Loria (2017) states that millennials are the largest demographic group saying no to meat; and 'young' consumers (18-24) appear to be more willing to reduce their meat consumption with the highest percentage of vegetarians and vegans, possibly suggesting a generational shift in attitudes towards the consumption of meat (Dibb & Fitzpatrick, 2014; Stoll-Kleemann & Schmidt, 2017).

According to Bollani, Bonadonna & Peira (2019), millennials are young adults born between 1980 and 1996, and this generation is considered important for assessing the consumption of goods. However, according to the United States Census Bureau (2015), millennials refer to those born between 1982 and 2000. This shows that there is limited consensus on who belongs in the millennial generation, and as such, there are many estimates of their age parameters, and the birth years differ slightly among studies reported in the literature (Donnison, 2007; Massaglia, Merlino & Borra, 2018). As such, the target population consisted of respondents aged 18 to 34, as a 2019 global survey conducted by Vomad revealed that majority of participants who stated they do not consume meat products were between the

ages of 18 and 34 (McCormick & Mahdi, 2019). Thus, this age range included millennials, since they had the largest potential for attitudinal change towards meat consumption. This study aimed to target meat eaters, so that future communications can effectively address these consumers to encourage a reduction in the consumption of meat and, thereby, influence the attitudes of consumers who currently eat meat. It was important to better understand their responses, to determine which type of framing strategy would be most effective in influencing their attitudes towards reducing their meat consumption.

3.4.2 The Sampling Technique

Convenience sampling was a suitable non-probability sampling technique for this study, as this technique seeks to find a sample of convenient elements, with the researcher being primarily responsible for the selection of respondents (Malhotra, Nunan & Birks, 2017). This was the fastest and most economical sampling technique, since the sampling units were accessible, easy to measure, and cooperative (Malhotra, Nunan & Birks, 2017). In addition, snowball sampling took place to some extent. With snowball sampling, the initial respondents that were selected were asked to point out others who also belonged to the target population (Malhotra, Nunan & Birks, 2017). Subsequent respondents were selected on the basis of their referrals.

Given that non-probability sampling techniques were used, the sampling and recruitment procedure was carefully considered to ensure a representative sample was used. Randomisation limited any selection biases that may occur, and gender and age were used to evaluate representativeness. In terms of gender, there are approximately 2.3 million females and approximately 2.3 males in Cape Town; therefore, matching in terms of gender ensured that each group was representative of the population (Malhotra, Nunan & Birks, 2017; Western Cape Government, 2020). Since the sampling techniques used were unbiased, the sample was representative of the population.

The targeted sample size comprised sixty respondents, with thirty in each group. However, due to the Covid-19 lockdown situation in South Africa that started during the data collection period, fifty-six responses were collected (South African Government, 2021). Despite this shortfall, the minimum acceptable sample size was still achieved (Bolls, Lang & Potter, 2001; Royne et al., 2012; Guerreiro, Rita & Trigueiros, 2015). This sample was divided into two experimental groups; the group exposed to the positively framed advertisement consisted of twenty-eight respondents, while the group exposed to the negatively framed advertisement consisted of twenty-eight respondents.

Because of the nature of the research being experimental, a small sample was acceptable, as a large sample would have been too time-consuming for the scope of this study (Bercea, 2012). The supporting literature suggests that a sample size of around 40 to 50 subjects is sufficient when conducting an experimental study, using neurophysiological measures with manipulated advertisements (Bolls, Lang & Potter, 2001; Royne et al., 2012; Guerreiro, Rita & Trigueiros, 2015). In addition to this, previous consumer neuroscience studies, which had utilised similar methods to conduct research, had sample numbers as small as 17, 18, 19 and 20 (Banks et al., 2012; Khushaba et al., 2013; Cuesta, Martínez-Martínez & Niño, 2018; Meyerding, 2018). Thus, the minimum acceptable sample size has been achieved and the objectives of the study have been addressed through the data obtained from the fifty-six respondents. However, a slightly larger sample size would have been pursued, had it not been for the adverse Covid-19 Lockdown situation in South Africa during the period when the fieldwork was being conducted (South African Government, 2021). Sampling was challenging under the Covid-19 situation experienced in South Africa during the year of 2020 (South African Government, 2021).

Regarding the recruiting process, potential respondents were approached personally by the researcher, and they were asked whether they were interested in signing up. A research invitation was also placed on the social media platforms of Facebook and Instagram by the researcher. In addition to this, a research invitation was sent to students at the University of Cape Town via email. The research invitation included a link for subjects to book their place for the experiment by selecting their preferred date and time for participation (Yfantidou, 2018). The subjects were told in advance that the experiment would last for a maximum of 20 minutes.

This study followed a traditional sampling approach, meaning that the sample requirement was selected before the data collection began (Malhotra, Nunan & Birks, 2017). This is the most common approach used in marketing research (Malhotra, Nunan & Birks, 2017). This study also involved sampling without replacement, which means that once respondents had participated in the experiment and the survey, they were not able to participate again (Malhotra, Nunan & Birks, 2017). Participation in the study was not incentivised.

3.4.3 The Sampling Frame

The sampling frame for this study entailed a set of instructions for choosing the appropriate respondents, such that the sample fulfilled the target population parameters (Malhotra, Nunan & Birks, 2017). This required that the respondents must be between 18 and 34 years old, reside in Cape Town, and include meat in their diets. Thus, the respondents were within the target audience parameters. Randomization took place, to ensure the comparability of the experimental groups (Malhotra, Nunan & Birks, 2017). Randomization involves the random assignment of respondents to treatment groups (Malhotra, Nunan & Birks, 2017). In addition to this, test units were matched, based on demographic variables, to ensure a balance of demographics between the two groups (Malhotra, Nunan & Birks, 2017). Both randomization and matching are both described as the various ways of controlling the extraneous variables, and they are both essential for making comparisons between the groups (Malhotra, Nunan & Birks, 2017).

3.5 THE DATA COLLECTION

With the combination of quantitative and qualitative research methods, this study made use of various data collection methods. The respondents were asked questions regarding their thoughts and feelings on both a quantitative Likert-type scale and with verbal, qualitative answers. In addition, consumer neuroscience methods were used to measure the unconscious responses to stimuli, which fall under the quantitative category. Thus, the data collection was conducted with two approaches: self-reporting and consumer neuroscience methods.

3.5.1 Self-Reporting Data Collection Methods

This study used traditional self-reporting data collection methods in the form of quantitative and qualitative data collection. Quantitative data collection methods were used to measure the respondents' explicit attitudes: pre-treatment attitudes and post-treatment attitudes; two structured questionnaires were used for this. The first questionnaire was presented to the respondents before exposure to a stimulus, while the second questionnaire was presented after exposure to a stimulus.

During stimulus exposure, the respondents were also asked three personal interview questions, in order to elicit increased facial expressions, to allow for better facial expression analysis. However, since they

were required to answer verbally, this was also a qualitative self-reporting data collection method, which collected the data on the respondents' emotions, feelings, and thoughts. Thus, a direct, non-disguised qualitative method was used. A direct approach means that the objectives of the study were revealed to the respondents, and these were clear, given the nature of the interview (Malhotra, Nunan & Birks, 2017). This data method supplemented the quantitative data collection that was conducted, and additionally, it allowed for deeper insights to be found, by investigating the self-reported thoughts behind the quantitative data that were collected. It helped the researcher to develop an understanding of underlying reasons and motivations (Malhotra, Nunan & Birks, 2017).

Marketing research frequently employs self-reporting techniques to measure responses to advertising stimuli. However, conscious self-reporting does not allow for true assessment of complex emotions (Harris, Ciorciari & Gountas, 2018). While these methods are simple and affordable, they can be defective in terms of misrepresenting emotional responses due to response bias, social desirability, or the desire to please (or not), in terms of the inability to capture initial unconscious responses to stimuli, and in terms of the difficulty of verbalizing emotions (Wilson & Schooler, 1991; Cialdini & Goldstein, 2004; Booth-Kewley, Larson & Miyoshi, 2007; Li, Scott & Walters, 2015; Ausin-Azofra et al., 2017; Sung et al., 2019; Yang, 2018). To avoid self-reporting measurement bias in social marketing, objective physiological measures were used by means of consumer neuroscience, since the subjects cannot influence these measurements (Solnais et al., 2013; Yang, 2018). These methods are discussed in the following section.

3.5.2 Consumer Neuroscience Data Collection Methods

Visual attention and emotional responses are not wholly ruled by cognitive rationale, as they are automatic responses to environmental stimuli (Schupp et al., 2007; Guerreiro, Rita & Trigueiros, 2015). Zaltman (2003:40) discussed how “almost 95% of the decision-making process is carried out at the subconscious level of humans' minds” (Al Pop, Iorga & Pelau, 2013). Humans are often unaware of their decision-making processes, and they are unable to actively influence these from a rational standpoint (Al Pop, Iorga & Pelau, 2013). Additionally, when an emotional or attentional response is triggered, it may or may not become consciously known, since consumers are not always aware of their unconscious bodily responses (Bettiga, Lamberti & Noci, 2017). On the other hand, an individual may become aware of a physical response, but may not be able to knowingly identify this response as an emotion (Smith & Lane, 2016; Bettiga, Lamberti & Noci, 2017). Therefore, although self-reporting methods are frequently used in marketing research, the hypotheses of this study required a combination of consumer neuroscience methods and self-reporting techniques. Consumer neuroscience methods were used to measure the unconscious responses to stimuli, which falls under the quantitative category. Consumer neuroscience techniques in consumer research produce results that cannot be obtained with self-reporting (Micu & Plummer, 2010; Martínez-Fiestas et al., 2015). In some circumstances, emotional and attentional responses cannot be avoided, which indicates the importance of the psychophysiological perspective (Poels & Dewitte, 2006; Martínez-Fiestas et al., 2015). These techniques provide an impartial and confidential measure of an individuals' response to a stimulus, since they analyse autonomic, involuntary reactions (Stewart & Furse, 1982; Martínez-Fiestas et al., 2015).

Psychophysiological measures are more objective, and they are not limited by participants' understanding, and they provide the ability to track real-time reactions in respondents, rather than relying only on memory and cognitive processing, thereby bypassing the conscious mind (Li, Walters, Packer & Scott, 2018; Sung et al., 2019). Consequently, attention and emotion are better measured by using consumer neuroscience measures (Guerreiro, Rita & Trigueiros, 2015). Psychophysiological and

neuroscientific measures are part of an evolving field of research for the study of consumers' emotional and cognitive reactions to stimuli (Sung et al., 2019). The current study used three established consumer neuroscience measures: facial coding, galvanic skin response (GSR), and eye-tracking (Guerreiro, Rita & Trigueiros, 2015). These methods involve consumer neuroscience technology that does not require the recording of brain activity; they are, therefore, non-invasive, and they involve fewer ethical questions (Bercea, 2012). With technology advancements, measures such as facial expression analysis and eye-tracking are used in marketing research, since they have become ever more effective and affordable (Isabella, Mazzon & Dimoka, 2015; Sung et al., 2019). Therefore, consumer neuroscience offers scientific research techniques to measure consumers' responses to advertising stimuli (emotional and attentional responses in terms of the current research), thereby providing the opportunity to uncover important information about the effects of message framing used in advertising.

The stimuli were displayed on a computer monitor with 1366 x 768 resolution, at approximately 60 cm from the respondents' faces. The screen was connected to a laptop in which all the sensors were connected. This setup allowed for the iMotions 7.2 software to collect and store the biometric and physiological data. The iMotions software combines measures of facial expression analysis, GSR, and eye-tracking to accurately analyse components of human emotion (iMotions, n.d.e). It is a comprehensive experimental platform that enables research processes to be conducted from study design and treatment exposure to data collection and analysis (iMotions, n.d.e). The iMotions software platform allowed for real-time synchronization of all the complementary sensors (Kim, Tussyadiah & Jago, 2019).

3.5.2.1 Facial coding

Facial coding involves the use of facial expressions to measure human emotions (iMotions, n.d.a). Facial expressions are easily observable, and they are the most distinctive of the emotional behaviours; since facial expressions are spontaneous, the measurement of them delivers real-time data (R.L. Hazlett & S.Y. Hazlett, 1999; Bercea, 2012). Facial expression analysis allows researchers to gain deeper insights of the expressed facial emotions (iMotions, n.d.a). This method was used to measure the valence and disgust dimensions of emotion. Three personal interview questions were developed regarding the respondents' feelings, specifically to elicit increased facial expressions, while the questions were answered verbally, to collect more valuable facial coding data. Facial coding is a reliable, non-invasive, and accurate method to analyse facial expressions (Ausin-Azofra et al., 2017; Krosschell, 2020). This method allows researchers to evaluate the effect of emotion-evoking stimuli (iMotions, n.d.a).

When combined with other consumer neuroscience measures and self-reporting data, facial expression analysis provides knowledgeable insights that otherwise might not be obtained (iMotions, n.d.a). This method quantifies emotions by measuring facial expressions via facial analysis software; this method has also been proven to explain emotion to a much greater extent than self-reporting measures (Hamelin, Moujahid & Thaichon, 2017; Sung et al., 2019). Computer-based facial coding collects valuable information on emotional expressions and on the valence of emotional responses (Krosschell, 2020). It involves the use of a video camera to measure micro-expressions that code non-conscious responses, based on facial muscle activity (Bercea, 2012). Lighting conditions are imperative in face detection; poorly lit faces or extreme backlights can lead to failure of face detection (Cheong, Brooks & Chang, 2019). Consequently, the researcher ensured that the respondents' faces were sufficiently illuminated. When software is used, it merely identifies facial expressions, but it is the researcher's responsibility to interpret them (Krosschell, 2020).

3.5.2.2 Galvanic skin response (GSR)

GSR measures skin conductivity as an indicator of autonomic nervous system arousal in response to sensory and emotionally stimulating marketing stimuli (Ohme et al., 2009; Harris, Ciorciari & Gountas, 2018; iMotions, n.d.b). This method was used to measure the arousal dimension of emotion in real time. According to LaBarbera & Tucciarone (1995), skin conductance is more effective in predicting market performance than self-reporting (Ohme et al., 2009; Bercea, 2012). The benefit of using GSR is that it measures the response of the autonomic nervous system, which cannot be controlled by consumers (LaBarbera & Tucciarone, 1995; Ohme et al., 2009).

Skin conductance changes are psychophysiological responses and are based the analysis of fluctuations in GSR, when the autonomic nervous system is activated (Ohme et al., 2009; Bercea, 2012). When consumers are exposed to emotionally charged stimuli, their skin becomes more conductive, because of changes in the sympathetic nervous system (Wang & Minor, 2008; Guerreiro, Rita & Trigueiros, 2015). Due to exposure to a stimulus, the sweat glands become more active and, thus, moisture on the skin increases, and a slight electrical current at the skin's surface can flow more freely, as the balance of positive and negative ions shifts in the secreted fluid (thereby increasing skin conductance) (iMotions, 2020).

GSR is often referred to as electrodermal activity (EDA); with this, GSR can measure the degree of arousal, when respondents are exposed to emotionally relevant stimuli (Ohme et al., 2009; Banks et al., 2012; Bercea, 2012; Harris, Ciorciari & Gountas, 2018). EDA is a successful measure of emotional arousal, as it has been used in guilt-detection polygraph monitoring and in academic research (Kroeber-Riel, 1979; Bolls, Lang & Potter, 2001; Wang & Minor, 2008; Elaad, 2009; Guerreiro, Rita & Trigueiros, 2015). However, one major limitation of GSR is that it is unable to indicate the valence of an emotional reaction, it only measures the level of arousal, which can either be positive or negative in valence (Hopkins & Fletcher, 1994; Ohme et al., 2009; Potter & Bolls, 2012; Venkatraman et al., 2015). Therefore, GSR is best used in combination with facial coding.

3.5.2.3 Eye-tracking

Eye-tracking is a non-invasive method that is useful to measure how long consumers fixate on information in a particular environment; this is indicated by fixation duration (Guerreiro, Rita & Trigueiros, 2015). This technique was used to collect data on visual attention. Eye-tracking allows researchers to study behaviour and cognition, without measuring brain activity, but by measuring where the participant is looking, for how long they have been looking, and the path of their view, while the participant looks at stimuli (Zurawicki, 2010; Bercea, 2012; Sebastian, 2014a). It uses infrared-light-emitting diodes to measure eye behaviour (Isabella, Mazzon & Dimoka, 2015; Sung et al., 2019).

Eye-movement analysis is useful for analysing marketing effectiveness and to gain a better understanding of consumers' decisions-making processes (Harris, Ciorciari & Gountas, 2018). Eye movements consist of two categories: fixations and saccades (Zurawicki, 2010; Bercea, 2012). Fixation refers to behaviours where eye movement pauses in a particular position, and a saccade refers to a shift to another position within an eye movement (Zurawicki, 2010; Bercea, 2012). A fixation is regarded as a gaze that is maintained within the same region for more than a passing moment; in this case, this can be defined as within a 1-degree radius of vision and lasting for over 100ms (Farnsworth, 2019). Fixation is a key measurement in eye-tracking studies, as conclusions can be made based on the psychological processes indicated by the number and duration of fixations on a stimulus (Li, Scott & Walters, 2015;

Sung et al., 2019). The series of fixations and saccades that results from eye-tracking is called a scan path (Zurawicki, 2010; Bercea, 2012). Heat maps, gaze plots and scan paths are developed from eye-tracking data in response to marketing stimuli (Harris, Ciorciari & Gountas, 2018).

Eye-tracking methodologies are favoured in cross-disciplinary and multi-disciplinary studies because they gather particularly detailed results (Wade & Tatler, 2011; Yfantidou, 2018). Eye-tracking methods are favoured compared to self-reporting methods because they can recognize voluntary and involuntary focus of attention in real time (Sung et al., 2019). The movements of the eyes indicate the attentional bias and the focus of visual attention, with more detail and accuracy than self-reporting methods (Du Plessis, 2011; Sebastian, 2014a). It assists in observing the way in which print influences attention and cognitive processing (Sebastian, 2014a). This method is useful in measuring visual fixation and attention for the purposes of this study, and it is a non-invasive method (Bercea, 2012). According to Guerreiro, Rita & Trigueiros (2015), the combination of eye-tracking and GSR measurements of consumer responses can provide better insight of the role of arousal and attention in influencing altruistic behaviour.

3.6 STIMULUS TREATMENTS

The stimulus treatments for this study were based on encouraging consumers to reduce the amount of meat products that they consume, with the use of animal welfare appeals. Although health appeals have been proven to effectively influence reductions in meat consumption, relatively little focus has been placed on animal welfare appeals (Bianchi et al., 2018; Mathur et al., 2020). Previous research on the psychology of meat consumption has recommended that animal welfare appeals have unique potential (Palomo-Vélez, Tybur & van Vugt, 2018; Mathur et al., 2020). There were two versions of the treatment, differing in the framing of the advertisements (positive and negative). The positively framed treatment included an advertisement stimulus aiming to make respondents feel positive about reducing their meat consumption (refer to Appendix C). The headline text attempted to highlight the benefits of reducing meat consumption, with the statement: “Switching to a plant-based diet saves at least 30 farm animals a year”. The aim was to emphasise that reducing meat consumption can, in fact, save animals; however, it probably saves far more than 30 farmed animals a year (Vegan Calculator, 2018). The negatively framed treatment included an advertisement stimulus focused on evoking disgust amongst the respondents (refer to Appendix C). The advertisements were created with several criteria in mind; the advertisements for each treatment group were consistent in terms of format and layout, to ensure the accuracy of the results when comparisons were made. Images were used in the advertisements, since image-based stimuli can cause attitude change, since they arouse vivid mental imagery of counter-attitudinal valence (Trendel, Mazodier & Vohs, 2018).

3.7 MEASUREMENT INSTRUMENTS

Five types of measurement instruments were used for this study. These included structured questionnaires to measure explicit attitudes and a structured personal interview to obtain verbal responses. In addition, eye-tracking technology, facial coding software and GSR sensor units were used to obtain consumer neuroscience measures of emotion and attention. The following sections outline these measurement instruments.

3.7.1 Structured Questionnaires

Structured questionnaire measurement instruments were established, in order to accurately and appropriately capture the data required. To measure attitudes towards the reduction of meat consumption, structured questionnaires made use of 7-point Likert-type scales. They were created via Qualtrics, an online survey platform. Since the respondents were required to answer two questionnaires, as well as a personal interview, the questionnaires were concise and to the point. The phrasing of the questions was simple to ensure that the respondents understood each question and to ensure that the responses were of high quality (Malhotra, Nunan & Birks, 2017).

The questionnaires were neat, professional, and to the point, with clear instructions (Malhotra, Nunan & Birks, 2017). The questions and instructions were not leading and were unbiased. If the questions were leading respondents to give specific answers, the findings would be inaccurate and, thus, the phrasing of the questions and instructions was an important aspect to consider (Malhotra, Nunan & Birks, 2017). A covering letter was presented on the front page of the questionnaire, to clarify why the research was being conducted and to provide details about the study that would be of interest to the respondents. This consisted of an introduction, which included administrative information that the respondents needed to be aware of, as well as an option to consent to continue with the experiment, or not to continue. The construct measured with the structured questionnaires was attitude, so that responses could be compared before stimulus exposure, and after stimulus exposure. The items in the questionnaires covered attitudinal aspects regarding behaviour targeted by the advertisement.

The pre-exposure questionnaire started with screening questions (A, B, C, D and E), to ensure that all the respondents who took part in the experiment were part of the target population, and to ensure that the respondents' vision was acceptable for the experiment (refer to Appendix D: Questionnaire 1). The questions in this pre-test evaluation were based on previously developed scales. This comprised 4 sections, including 17 attitudinal items in total. The post-exposure questionnaire included the same items as the pre-exposure questionnaire, with the purpose of measuring respondents' attitude after they had viewed the advertisement (refer to Appendix D: Questionnaire 2). However, the post-exposure questionnaire included an additional section (Section 5), which consisted of demographic questions. Demographic information was requested at the end of the second questionnaire, to generate a demographic profile of the sample.

3.7.2 Personal Interviews

A structured personal interview was used to obtain verbal responses regarding emotions, feelings, and thoughts, which further assisted in capturing the facial coding data. The personal interview took place during stimulus exposure. This interview included three structured, pre-composed open-ended questions (M.D. Gall, J.P. Gall & Borg, 2003; Mbumbwa, 2016). It consisted of three open-ended questions, which provided insight regarding the respondents' emotional responses to the stimuli (refer to Appendix D: Personal Interview). The open-ended questions allowed the respondents to answer however they pleased (Turner, 2010; Mbumbwa, 2016). A structured interview was selected for consistency, which assisted with the data-analysis (Mbumbwa, 2016).

The questions were displayed one after another on the screen, together with the stimulus. The questions were also read verbally by the researcher to the respondent during stimulus exposure, allowing a more natural verbal response and easier understanding of the question. This provided the ability to obtain facial coding data, based on the respondents' experiences while they viewed the stimulus. The personal

interview questions also allowed the collection of valuable qualitative data. Questions one and two were randomized and asked the respondents: “How does this advertisement make you feel?” and “What emotions does this advertisement evoke?”. Question three was fixed; it asked the respondents “Why do you feel this way?” Facial coding technology collected the facial-movement data in real-time, while the respondent answered the open-ended questions, and while the respondent viewed the stimulus.

3.7.3 Consumer Neuroscience Instruments

Technical instruments, often used in medicine, are used in consumer neuroscience research (Bercea, 2012). Facial coding, GSR (Galvanic Skin Response) and eye-tracking were used to measure the emotional and attentional responses and made use of the following consumer neuroscience research instruments. Facial coding was used to measure the emotional valence. A Logitech webcam was attached to the top of a computer monitor. Using a webcam, the facial emotions expressed by respondents were live synchronized with stimuli directly in the iMotions software (refer to Appendix D) (iMotions, n.d._a). It recorded the respondents’ faces during stimulus exposure, and while they answered the personal interview questions. The use of a webcam involves the limitation that it cannot be adjusted to account for head rotation or out-of-plane head motion (Cheong, Brooks & Chang, 2019). However, this is the most readily available and easy-to-implement option to record facial expressions (Cheong, Brooks & Chang, 2019). The respondents were therefore asked to keep their heads as still as possible during the experiment. Facial expressions were measured by using the iMotions Affectiva Affdex engine. Affdex is a software that was developed to identify human emotions, based on facial movements (Triyanti Yassierli & Iridiastadi, 2019). Affdex has a high validity in detecting faces, and it can be used easily, compared to other facial coding software, such as FaceReader (Triyanti Yassierli & Iridiastadi, 2019; Kulke, Feyerabend & Schacht, 2020). By using a computerised system, the processes of tracking, detection, and the measurement of movements can be done automatically and quickly (Triyanti Yassierli & Iridiastadi, 2019).

A Shimmer3 GSR+ device was used to measure emotional arousal. It was attached to the hand of respondents during stimulus exposure, to collect the real-time skin conductance data (refer to Appendix D). The Shimmer3 GSR+ monitors skin conductivity between reusable electrodes that are attached to the inner fingers of one hand (iMotions, n.d._f). These electrodes are linked to a galvanometer, which measures the sweat response of the skin and, hence, the intensity of the emotions experienced (emotional arousal) (LaBarbera & Tucciarone, 1995; Harris, Ciorciari & Gountas, 2018). This method, however, does not provide information regarding the direction of the emotion (positive or negative) (Potter & Bolls, 2012; Venkatraman et al., 2015). Thus, the combination of facial coding and GSR was beneficial.

A Tobii Pro Nano eye-tracker was mounted at the bottom of the computer screen to collect real-time eye-movement data (refer to Appendix D) (iMotions, n.d._c). This was used to measure the attention in terms of fixation duration. The Tobii Pro Nano is a screen-based eye-tracker, which has an accuracy of 0.3° at optimal conditions and captures gaze data at 60Hz (sampling rate) (iMotions, n.d._c). It is used for fixation-based studies (iMotions, n.d._c). Screen-based eye-tracking enables researcher to record and analyse attentional responses to stimuli, to find deeper insights into visual attention (iMotions, n.d._d).

3.8 SCALING

Scaling refers to the development of a continuum where measured objects are located (Malhotra, Nunan & Birks, 2017). The attitude scales used in this study used both 7-point Likert scales and a 7-point

semantic differential scale. All items in the questionnaires measured the construct 'attitude'. The Likert scales required the participants to specify their level of agreement or disagreement with a series of statements in reaction to a stimulus (Malhotra, Nunan & Birks, 2017). Items 1 through to 7 were placed on a 7-point Likert scale, ranging from strongly disagree to strongly agree (1 = strongly disagree; 7 = strongly agree), to collect the quantitative data on attitude. Likert scales are effective in terms of measuring attitudes towards specific issues (de Jager, 2009). Additionally, Likert scales are easy to use in that they minimize confusion and misunderstanding (de Jager, 2009).

The semantic differential scales required the respondents to rate objects on 7-point rating scale with bipolar labels that are related in terms of meaning (Malhotra, Nunan & Birks, 2017). Sections 3 and 4 used the semantic differential scale, which consisted of pairs of bipolar evaluative adjective scales (Ajzen & Fishbein, 1980). According to Ajzen & Fishbein (1980), typically, the adjectives in each pair are placed on opposite ends of a scale, and the respondents are required to rate their attitude according to each scale. These sections consisted of items 8 to 17, and they made use of a 7-point semantic differential scale ranging from a positive adjective at one extreme and a negative adjective at the other extreme. Section 3 included: *rewarding/punishing*, *wise/foolish*, *beneficial/harmful*, *useful/useless*, and *good/bad*. These items measured the evaluative attitudes. Section 4 included: *enjoyable/unenjoyable*, *pleasant/unpleasant*, *comfortable/uncomfortable*, *attractive/unattractive*, and *appealing/unappealing*. These items measured the affective attitudes. The participants were required to rate the extent to which each of the descriptions resonated with them. The respondents were scored from -3 on the negative side of each scale to +3 on the positive side; and the sum across all scales was a measure of the respondent's attitudes toward reducing meat consumption (Ajzen & Fishbein, 1980). There is general agreement that evaluation is the most important aspect of attitude; thus, it is suggested that attitudes should be perceived as overall evaluations and that bipolar evaluative dimensions are a good way to measure this (Ajzen & Fishbein, 1980). Thus, by measuring attitude towards a behaviour, this measures a consumer's evaluation of whether performing the behaviour is good or bad, and whether they are in favour of or are against adopting the recommended behaviour (Ajzen & Fishbein, 1980). The more favourable a person's attitude is towards a behaviour, the more likely they are to intend to adopt that behaviour; the more unfavourable the attitude is, the more they are to not intend to adopt that behaviour (Ajzen & Fishbein, 1980).

The scales used in this research were derived from previous studies, including those of De Jager (2009), Bearden, Netemeyer & Haws (2011), Ajzen & Fishbein (1980), Bagozzi, Lee & Loo (2001), and Bettiga, Lamberti & Noci (2017) (refer to the table in Appendix G, which presents the borrowed scales, and details the overall reliability of the borrowed scales). The borrowed scales were applied to both the pre-exposure questionnaire and the post-exposure questionnaire. A construct was considered reliable if the Cronbach Alpha value is greater than 0.6 (Malhotra, Nunan & Birks, 2017). All Cronbach Alphas in the borrowed scales were higher than 0.6; therefore, the scales were reliable in their original source formats.

3.9 THE DATA COLLECTION PROCEDURE

Pre-testing was conducted before the fieldwork took place. These tests were fundamental for interview preparation and assisted the researcher in finding any flaws in the data collection procedure. This process also assisted with establishing whether the advertisements elicited the appropriate responses, and to ensure that the questionnaire was appropriate. During the pre-testing stage, the researcher also tested the consumer neuroscience data collection methods. A few changes were made, following the pre-testing of the questionnaire, thereby proving it to be a beneficial process. The stimulus exposure

was lengthened from six seconds to twelve seconds, as six seconds was not enough time for the respondents to process the entire advertisement and to obtain valuable eye-tracking, GSR and facial coding data. Overall, the pilot study was a small-scale study used for quality assurance, to fine-tune the final measurement instrument, to determine whether the research instrument was ambiguous, whether the respondents understood it, and whether it provided relevant data for the study (Mbumbwa, 2016).

All data collection took place in a controlled environment under experimental conditions, so that external distractions were minimised (Malhotra, Nunan & Birks, 2017). This allowed control of extraneous stimuli that might have influenced the internal validity of the results, as it isolated the experiment in a carefully monitored environment (Malhotra, Nunan & Birks, 2017; Guerreiro, Rita & Trigueiros, 2015). The researcher was present throughout the entire experiment, and the fieldwork was conducted personally by the researcher. Each participant was received, informed about the study, and was asked to sign their consent to participate in the study. The respondents were then asked to answer a questionnaire before treatment to obtain the baseline data; this could be completed at their own pace. Their initial attitudes towards reducing meat consumption were assessed by means of this questionnaire, in which the respondents reported their attitudes towards the topic, by using the rating scales in the questionnaire. The respondents were randomly assigned to either the positive framing group, or to the negative framing group. Thereafter, the respondents viewed the stimuli through a screen with 1366 x 768 resolution. Those respondents requiring corrected vision were permitted to wear their eyeglasses or contact lenses.

The respondents were first shown a baseline blank stimulus for 3 seconds; thereafter, they were exposed to the advertisement for 12 seconds. The literature supports the view that an advertisement which is displayed for 6 seconds is more effective, and consumers normally spend 6 seconds or less viewing a successful advertisement (Boerman, Van Reijmersdal & Neijens, 2012; Yfantidou, 2018). For the purposes of this study, however, exposure was lengthened to ensure that sufficient data were collected with facial coding, GSR, and eye-tracking. GSR peaks occur within 1-5 seconds after the onset of a stimulus, and it is therefore recommended to present any material long enough for the respondents to process its content (iMotions, 2017). Facial coding, GSR, and eye-tracking data were collected automatically in real-time, while the respondents viewed the stimuli. Following this, three questions were displayed on the screen together with the advertisement for 30 seconds each. During this time, facial coding data were collected, while the respondents verbally answered the questions, in order to obtain the emotional data. These consumer neuroscience methods were the most effective methods for this research, as they offered the possibility to study in real time, they measured the physiological responses non-invasively, and they required smaller samples (Burgos-Campero & Vargas-Hernandez, 2013). Following the personal interview, the respondents answered the post-exposure questionnaire at their own pace, this being based on their experience during stimulus exposure. This measured the attitudes after viewing the stimuli, on a seven-point rating scale. The respondents were then debriefed after the experimental session. (Refer to Appendix E for a simplified chart outlining the data collection procedure.)

3.10 THE DATA ANALYSIS

The data obtained in this study were prepared and analysed by using Microsoft Excel and the Statistical Package for the Social Sciences (SPSS). SPSS software assisted with the analysis of the descriptive statistics and with the hypothesis testing. In quantitative research, descriptive statistics describe the sample, in order to establish how it reflects the target population; this simply describes what is going on in the data (Malhotra, 2010; Trochim, 2020). Descriptive statistics allow the researcher to summarise

the data in terms of location, variability, and shape (Malhotra, Nunan & Birks, 2017). The hypotheses of the study were tested by using inferential statistical techniques.

Linear regression was used to estimate the coefficients of a linear equation, involving one or more independent variables, that best predicted the value of the dependent variable (Malhotra, 2010). The paired samples t-test tested for differences in the means of the paired samples, in that the two sets of observations being compared relate to the same respondents (Malhotra, 2010). Logistical regression analysis for simple mediation analysis was used to study how the effect of an independent variable on the dependent variable might be indirectly transmitted through a mediating variable (Tofighi & Thoemmes, 2014). Logistical regression analysis is lenient towards data that do not hold a normal distribution; additionally, it enables an accurate test of small samples (Preacher & Hayes, 2008). Bivariate correlation is a technique that was used to determine whether there was a significant relationship between two variables (Allen, 2017). Lastly, independent sample t-tests were conducted on quantitative data that were normally distributed to compare the differences in sample means between the two groups (Salkind, 2010). Similarly, the independent samples Mann-Whitney U test compared the means of data that did not have a normal distribution (Malhotra, 2010; Malhotra, Nunan & Birks, 2017). Refer to Appendix G for a simplified presentation of the alternative hypotheses of this research, and the statistical techniques that were used to test them.

The iMotions Facial Expression Analysis Module uses leading automated facial coding engines, such as Affect, that allowed the researcher to gain insights via built-in analysis and visualization tools and allowed the exportation of the data for additional analyses with SPSS (iMotions, n.d.). Facial coding data for valence and disgust were analysed with inferential statistics. The iMotions software also allowed easy quantification of spikes in emotional arousal with automated peak detection in GSR, as well as simple exporting of raw data, metrics, and visualizations. The GSR data were analysed with inferential statistics, in terms of the frequency of peaks in arousal. The iMotions software also allowed for advanced analysis of eye-tracking by using tools such as heatmaps and areas of interest (AOIs), and output metrics, such as time to first fixation and fixation duration (iMotions, n.d.). The average fixation duration was used as the measure of attention, since this shows how long the average fixation lasted for, allowing the researcher to determine which areas were focused on more than others (Farnsworth, 2020). Each advertisement was divided into AOIs composed of the headline, the image, the tagline, and the logo. Thus, the advertisements had 4 AOIs each (refer to Appendix J). Eye-tracking data were therefore analysed with inferential statistics, as well as in terms of visualisation patterns, where similarities and differences were considered between the stimuli. This was done by observing the heat maps obtained from iMotions (Appendix J).

While the quantitative research involves numbers and what they represent, qualitative data analysis is not directed by as many rules and standard procedures, and it involves the analysis of words rather than numbers (Malhotra, 2010). The purpose of qualitative research is to interpret meaningful patterns and themes that emerged from the data (Malhotra, 2010). The qualitative data were analysed with the thematic analysis technique, by following the steps outlined by Braun & Clarke (2006). The researcher determined the “meaningfulness” of the patterns and themes regarding respondents’ emotional responses to the stimuli and respondents’ reasons for feeling a certain way. The researcher first transcribed the personal interviews by using an application called Otter, and she then chose which aspects of the data were emphasized or minimized. A visual interpretation of the data was then developed to help illuminate any patterns and inter-relationships within the data (Malhotra, 2010). Lastly, the meaning of the analysed data was then considered, and its implications were assessed for the objective at hand (Malhotra, 2010). The researcher was responsible for the determination of

meaningful categories for coding. Thus, the researcher conducted thematic analysis, by identifying, analysing, and reporting themes among the data acquired (Braun & Clarke, 2006; Mbumbwa, 2016). According to Braun & Clarke (2006), themes capture valuable insights about data (Mbumbwa, 2016). The results of the data analysis assisted in achieving the objectives of the study.

3.11 ETHICAL CONSIDERATIONS

During the research design stage, it was important to respect the concerns and rights of the respondents (Malhotra, 2010). Any scientific research activity involving human subjects should observe a series of ethical, moral, and legal principles (Sebastian, 2014b). Researchers should consider the protection of human subjects, as well as several aspects having to do with confidentiality. Thus, this study was designed with consideration for the respondents' right to safety, privacy, and choice, and the data were obtained by following high ethical standards.

In terms of consumer neuroscience, the Neuromarketing Science & Business Association (NMSBA, 2013) developed a code of ethics that presents a series of ethical aspects (Sebastian, 2014b). Emphasis was placed on the observance of the highest research standards, and for the duration of the research project, researchers were not to bring any kind of prejudice to the respondents, and they were careful not to take advantage of the respondents' poor knowledge in the field (NMSBA, 2013; Sebastian, 2014b). Human subjects should receive information on the research, and the researcher should obtain their consent to participate in the research as volunteers (Sebastian, 2014b). Thus, the respondents were provided an explanation of the research task, and they were informed that they may leave the experiment at any time (Malhotra, 2010). The focus was placed on making respondents feel comfortable by addressing any concerns they may have, and by providing adequate information about the project (Malhotra, 2010). Moreover, information on the data collection techniques was provided to the respondents, as outlined by the NMSBA (NMSBA, 2013; Sebastian, 2014b). It was the researcher's duty to explain the study protocol, as simply as possible, and the respondents were able to withdraw at any time (NMSBA, 2013; Sebastian, 2014b). Participation in the research was entirely voluntary and transparency regarding the research activity was as high as possible for the whole duration of the project (NMSBA, 2013; Sebastian, 2014b).

Since the causes supported in social marketing are usually of a sensitive nature, the respondents were explicitly warned before the experiment took place (Chédotal et al., 2017). This entailed a warning in the consent form before the respondents gave their consent to participate in the experiment. This stated that the stimuli used may contain sensitive content, which some people might find offensive, or disturbing. With this, the respondents were told that participation was voluntary, and respondents gave their consent to participate (Malhotra, Nunan & Birks, 2017). This warning was also indicated on the invitation to participate in the experiment. In terms of eye-tracking, facial coding and GSR, the data were acquired with permission from the respondents, and they will be stored for approximately 5 years. All the respondents were made aware that they would be recorded and videotaped, and the comfort level of the respondents was considered. All biometrics and facial coding data would be kept confidential. To ensure that the respondents were not overburdened, the questionnaire was not too long, as this could adversely affect the quality of the responses (Malhotra, 2010). The questions were simple, easy to understand and thoughtfully worded. Lastly, the questionnaire was designed in such a way that the required information would be obtained in an unbiased manner (Malhotra, Nunan & Birks, 2017). This research went through the process of ethics approval with the Ethics Committee and the Department of Student Affairs (DSA) to ensure that it aligned with all ethical requirements (refer to Appendix A).

3.12 CONCLUSION

Chapter 3 presented detailed explanations of the methods that were used to conduct this research, and it justified why they were the most suitable research methods for the objectives of this study. This chapter outlined the research philosophy, the research strategy and the design, sampling, the data collection methods, stimulus treatments, measurement instruments, scaling and the data collection procedures, as well as the data analysis techniques used, along with the ethical considerations.

This study aimed to target meat eaters, so that future communications can effectively address these consumers to encourage a reduction in the consumption of meat and, thereby, influence the attitudes of consumers who currently eat meat. It was important to better understand their responses, in order to determine which type of framing strategy was more effective in influencing their attitudes towards reducing meat consumption. The research methods included self-reporting and consumer neuroscience measures since conscious self-reporting does not allow for true assessment of complex emotions.

4 CHAPTER 4: PRESENTATION OF THE RESULTS

4.1 INTRODUCTION

This chapter presents the results that were obtained from both the quantitative and the qualitative data analysis. Firstly, this chapter presents the descriptive statistics; thereafter, the reliability and normality tests are presented. Next, the hypothesis tests are presented, with use of inferential statistics, followed by the results of the qualitative analysis. The results were obtained by using the Statistical Package for the Social Sciences (SPSS) and Microsoft Excel.

4.2 DESCRIPTIVE STATISTICS

Descriptive statistics assist with detailing the composition of the sample, by looking at the statistics that explain the demographics in terms of the target population. Additionally, the descriptive statistics of the interval data are presented.

4.2.1 Composition of the Sample

The filter questions at the start of the first questionnaire determined that all the respondents that took part in the study had signed the consent form, and they represented the target sample. 100% of the respondents were between the ages of 18 and 34. They were all residing in the Cape Town metropolitan at the time of the data collection, and they all defined themselves as meat eaters. Additionally, the filter questions confirmed that all the respondents either had normal vision, or they had corrected-to-normal vision, and none of the respondents were colour-blind. Thus, all the respondents met the requirements for the eye-tracking study.

The sample consisted of a total of 56 respondents, with the positive message framing group consisting of 28 responses (50%), and the negative message framing group consisting of 28 responses (50%) (refer to Appendix H). Thus, the minimum acceptable sample size was achieved in terms of the size of each sample group, and the objectives of the study have been addressed with the data obtained from the responses (Banks et al., 2012; Khushaba et al., 2013; Cuesta, Martínez-Martínez & Niño, 2018; Meyerding, 2018). The 56 respondents were made up of 48.2% males (27 males) and 50% females (28 females), and 1.8% identified as 'other' (1 respondent). The positive message framing group consisted of 46.4% males (13 males), 50% females (14 females) and 3.6% as 'other' (1 respondent). The negative message framing group consisted of 50% males (14 males) and 50% females (14 females) (refer to Appendix H). Of the 56 respondents, 53 provided their age. The ages of the respondents ranged from 18 to 34 years old, and the mean age was 22.32 years. The standard deviation (S.D.) for age was 4.04. In the positive message framing group, the mean age was 22.08, and the standard deviation was 3.72. The ages of the respondents ranged from 18-34. 2 respondents in this group did not provide their age. In the negative message framing group, the mean age was 22.56, and the standard deviation was 4.39. The ages of the respondents ranged from 18-33 years. 1 respondent in this group did not provide their age (refer to Appendix H).

4.2.2 Descriptive Statistics of the Interval Data

This section presents the descriptive statistics of the scale data used to measure attitude, attention, and emotion. The mean and the standard deviation of each item, pre-exposure, and post-exposure, for each experimental group, are presented in Appendix H. It is important to note that this included the means

prior to reverse coding, to allow direct interpretation of the items from the questions. The means were interpreted according to the questions used in the questionnaire, thus prior to reverse coding. It is interesting to note that the largest change in the mean attitude between pre-exposure and post-exposure to the positively framed advertisement was for Q2: *‘I think that consuming meat products is also a wise thing to do’* with a difference of 0.71. The respondents, on average, somewhat disagreed with this statement pre-exposure to the advertisement, and, on average, they were neutral to this statement post-exposure to the advertisement. Q13: *‘Enjoyable/Unenjoyable’* and Q14: *‘Pleasant/Unpleasant’* had the largest difference in attitude pre-exposure and post-exposure to the negatively framed advertisement, with differences of -0.93 and -0.90 respectively. For Q13, on average, the responses changed from neutral to somewhat enjoyable after viewing the negatively framed advertisement. Similarly, for Q14, on average, the responses changed from neutral to somewhat pleasant, after viewing the negatively framed advertisement.

Reverse coding was conducted to obtain a total mean attitude score for each group, both pre-exposure to the stimulus and post-exposure to the stimulus (refer to the coding sheets in Appendix I). This was done to ensure that a higher mean attitude score reflects a more positive attitude towards reducing meat consumption. The measures of pre-exposure and post-exposure attitude allowed a comparison to be made, to measure a change in attitude towards reducing meat consumption (see Table 1 below). The mean was used to analyse the measure of location, and the measures of variability were analysed with standard deviation. The measures of variability indicate the spread of data distribution (Malhotra, 2010).

Table 1: Attitude descriptive statistics

Attitude	Items	Total Sample		Positive Message Framing		Negative Message Framing	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
Pre-Exposure Attitude	17	4.09	0.49	3.98	0.37	4.19	0.57
Post-Exposure Attitude	17	4.20	0.57	4.01	0.41	4.39	0.65

The mean attitude score for the total sample was 4.09, before exposure to any treatment, and the standard deviation was 0.49; after exposure to the stimulus, the mean attitude score for the total sample was 4.20, while the standard deviation was 0.57 (Table 1). This indicates that on average, the respondents’ attitudes towards reducing meat consumption remained neutral. The mean attitude score for the positive message framing group was 3.98, before exposure to the stimulus, and the standard deviation was 0.37; after exposure to the stimulus, the mean attitude score for the positive framing group was 4.01, with a standard deviation of 0.41. The mean attitude score for the negative message framing group was 4.19, before exposure to the stimulus, with a standard deviation of 0.57; after exposure to the stimulus, the mean attitude score for this group was 4.39, with a standard deviation of 0.65.

The measures of emotional valence obtained when using facial coding were used to determine the ‘positiveness’ or the ‘negativeness’ of the respondents’ emotional responses, when viewing the advertisement (Salim, 2019). In addition, a measure of disgust, derived from the facial coding data, was used, since previous literature suggested that the emotion of disgust is a different motivator which may influence attitudes, enhance persuasion, or even decrease meat consumption (Nabi, 1999; Morales, Wu & Fitzsimons, 2012; Palomo-Vélez, Tybur & van Vugt, 2018). Measures of peak detection were obtained by using the Galvanic Skin Response (GSR). These measures were used to analyse the emotional arousal. The number of GSR peaks indicates how many GSR peaks occurred during a

recording condition, thereby indicating how emotionally evocative a stimulus is (iMotions, 2017; Salim, 2019). Descriptive statistics for emotional valence, the level of disgust, and the emotional arousal are presented in Table 2 below, for the total valid sample and for both experimental groups.

Table 2: Emotion descriptive statistics

Emotion	Total Sample		Positive Message Framing		Negative Message Framing	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Emotional Valence	13.24	25.92	17.33	26.95	9.06	24.25
Level of Disgust	2.84	5.73	2.21	4.87	3.49	6.44
Emotional Arousal	1.05	0.96	1.11	0.92	1.00	1.02

The mean emotional valence for the total sample was positive (13.24), and the average level of disgust detected for the total sample was 2.84 (Table 2). The facial coding data (emotional valence and level of disgust) were aggregated from exposure to the advertisement stimulus and from the personal interview, while the respondents described how they felt and why they felt (refer to Appendix H for the detailed descriptive statistics of the facial coding data). Verbal answers regarding the respondents' emotional experience during advertisement exposure allowed more movement of the facial muscles, and consequently the collection of higher quality facial coding data. The average number of peaks detected (emotional arousal) during exposure to the advertisement for the total valid sample was 1.05 (Table 2). The low number of average peaks is likely due to the short duration of the advertisement exposure (12 seconds), thereby limiting the number of peaks that could be experienced (iMotions, 2017).

Fixation data obtained from using eye tracking were used to objectively measure attention. This was measured on a continuous metric data scale in milliseconds per minute (ms/m). This indicated how long the respondents' eyes were fixated on certain areas of the advertisement. Both the positively framed advertisement and the negatively framed advertisement consisted of four AOIs, namely the headline text at the top right of the advertisement, the image in the middle of the advertisement, and the logo and the tagline at the bottom of the advertisement (refer to Appendix J). The fixation data were collected for the whole advertisement, as well as for these four AOIs, for the purpose of a more detailed comparison of visual attention between the two groups (see Table 3 below).

Table 3: Attention descriptive statistics

Fixation Duration	Total Sample		Positive Message Framing		Negative Message Framing	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
AOI 1 - Headline	202.39	48.23	188.57	43.99	216.21	49.08
AOI 2 - Image	249.80	98.98	224.73	91.89	274.87	101.03
AOI 3 - Tagline	192.25	56.30	211.41	61.25	171.97	43.59
AOI 4 - Logo	213.48	101.52	218.62	91.46	206.75	116.90
Whole Advertisement	228.89	62.50	209.03	54.30	248.76	64.74

From the total valid sample, the respondents fixated on the headline for an average of 202.39 ms/m (Table 3). The respondents from the positive message framing group fixated on the headline for an average of 188.57 ms/m, while those from the negative message framing group fixated on the headline for an average of 216.21 ms/m. Those respondents who viewed the positively framed advertisement fixated on the image for an average of 224.73 ms/m, and those who viewed the negatively framed

advertisement fixated on the image for an average of 274.87 ms/m. From the total valid sample, the respondents fixated on the tagline for an average of 192.25 ms/m, indicating that they paid the least attention to the tagline. The heatmaps presented in Appendix J provided further eye-tracking information. Heatmaps are visualizations, which show the general distribution of the gaze points (Farnsworth, 2020). They present the colour-gradient overlay on the stimuli; the red, yellow, and green colours represent the amount of gaze points that were directed towards parts of the image, in descending order (Farnsworth, 2020).

4.3 THE RELIABILITY OF THE SCALES

The following section presents the results from the reliability analysis, as well as those from the factor analysis. These tests show whether the scales were reliable indicators of the constructs, and whether the scales were valid.

4.3.1 Item Reliability

To evaluate the internal consistency reliability of the summated scales used in the questionnaire, the Cronbach's alpha was used as an indicator. Cronbach's alpha is a measure of internal consistency that determines how closely related a set of items are as a group (Malhotra, 2010). According to Malhotra, Nunan & Birks (2017), 0.6 tends to be the minimum cut-off Cronbach alpha value. Table 4 below presents the reliability results for each section from the questionnaire, measuring the attitude construct, for the total sample, from both the pre-exposure questionnaire and the post-exposure questionnaire.

Table 4: Item reliability results (total sample)

Construct	Source	Number of Items		Cronbach Alpha	
		Source	Present	Source	Present
Pre-Exposure Questionnaire					
Section 1: Attitude	De Jager (2009)	3	3	0.87	0.78
Section 2: Attitude	Bearden, Netemeyer & Haws (2011)	4	4	0.93	0.13
Section 3: Attitude	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	5	5	0.92	0.89
Section 4: Attitude	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	5	5	0.87	0.92
Post-Exposure Questionnaire					
Section 1: Attitude	De Jager (2009)	3	3	0.87	0.90
Section 2: Attitude	Bearden, Netemeyer & Haws (2011)	4	4	0.93	0.54
Section 3: Attitude	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	5	5	0.92	0.92
Section 4: Attitude	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	5	5	0.87	0.94

The scale Cronbach alphas for Section 1, Section 3 and Section 4 were larger than 0.6, and they were therefore deemed reliable (Table 4). The scale for Section 2 had a Cronbach alpha lower than 0.6 for both the pre-exposure questionnaire and the post-exposure questionnaire (0.13 and 0.54 respectively). Thus, Section 2, which included 4 items, was not considered internally consistent; therefore, it was not deemed reliable. The reliability results for each section of the pre-exposure and post-exposure questionnaires, for each experimental group, are presented in Appendix K. This showed that Section 2 was also unreliable when the data were separated into the two experimental groups. The Cronbach values of the Section 2 scales, if the items were deleted, indicated that the removal of specific items from Section 2 did not increase the Cronbach value to a reliable level (refer to Appendix K). After careful consideration of these four items, it was concluded that they were ambiguous, and they were not internally consistent; therefore, all 4 items were removed. Factor analysis in the following section further examined the scales.

4.3.2 Factor Analysis

Factor analysis assessed the validity of the scales used in this study. This allowed the researcher to examine whether multiple observed variables had similar responses, owing to their association with an underlying latent variable (Malhotra, 2010). A Varimax rotation was used to determine whether the items were loaded correctly (Malhotra, 2010). The results of the factor analysis are presented in Table 5 below.

Table 5: Factor analysis results (total sample)

Construct	Factor	Eigenvalues	Percentage of Variation	Cumulative Percentage of Variation
Pre-Exposure Questionnaire				
Section 1: Attitude	1	2.12	70.56	70.56
Section 2: Attitude	1	1.32	32.75	32.75
	2	1.09	27.40	60.15
Section 3: Attitude	1	3.54	70.77	70.77
Section 4: Attitude	1	3.82	76.40	76.40
Post-Exposure Questionnaire				
Section 1: Attitude	1	2.49	83.12	83.12
Section 2: Attitude	1	1.70	42.48	42.48
Section 3: Attitude	1	3.90	77.99	77.99
Section 4: Attitude	1	4.09	81.70	81.70

Using the eigenvalues, based on the Kaiser's criterion, the factors were extracted so that all the eigenvalues extracted were required to be greater or equal to 1 (Malhotra, 2010). This was true for all the scales of both questionnaires (Table 5). Section 1, Section 3, and Section 4 from the pre-exposure questionnaire each had items correctly loaded onto their relevant constructs, with one factor extracted for each section. Section 1 had an Eigenvalue of 2.12; this explained 70.56% of the variance in the data. Section 3 had an Eigenvalue of 3.54, and this explained 70.77% of the variance in the data. Section 4 has an Eigenvalue of 3.82, and this explained 76.40% of the data. For Section 2 of the pre-exposure questionnaire, two factors were extracted from the rotated factor analysis, both with Eigenvalues greater than 1, as specified by Kaiser's Criterion. Factor 1 had an Eigenvalue of 1.32, and it explained 32.75% of the variance in the data. Factor 2 had an Eigenvalue of 1.09, and it explained 27.40% of the variance

in the data. Section 1, Section 2, Section 3, and Section 4 from the post-exposure questionnaire all had items correctly loaded onto their relevant constructs, with one factor extracted for each section. Section 1 had an Eigenvalue of 2.49; this explained 83.12% of the variance in the data. Section 2 had an Eigenvalue of 1.70; this explained 42.48% of the variance in the data. Section 3 had an Eigenvalue of 3.90; this explained 77.99% of the variance in the data. Lastly, Section 4 has an Eigenvalue of 4.09, and this explained 81.70% of the data.

The factor analysis results for the scales of each experimental group are presented in Appendix K; these results showed that the scale of Section 2 was not valid when the data were split, according to the experimental groups. Due to a lack of internal consistency and validity in Section 2 of the questionnaire, and due to the ambiguous nature of the items, the four items in Section 2 of the questionnaire were removed from the data. Since all items in the questionnaire measured attitude, removing these items did not take away any valuable data. In conclusion, the items in Section 1, Section 3, and Section 4 of both questionnaires reliably measured the attitudes towards reducing meat consumption. Hence, the scales used in these sections were internally consistent, reliable, and valid. Due to the results of reliability and factor analysis, the items in Section 2 of the questionnaire were not included in the remaining statistical tests.

4.4 TESTS FOR NORMALITY

The normality of the data was tested with several methods. These methods included hypothesis testing by using the Kolmogorov-Smirnov statistic (since the sample size was larger than 50), Skewness and Kurtosis measures, histograms, and QQ plots. The results of the normality tests are summarized in the tables below. The following hypotheses were used to test normality: H_0 : *The data are normal*, H_1 : *The data are not normal*.

Table 6: The results of the normality tests (attitude)

Pre-Exposure Attitude	Kolmogorov-Smirnov	P-Value
	0.10	0.20
	Skewness	Kurtosis
	0.22	-0.10
Post-Exposure Attitude	Kolmogorov-Smirnov	P-Value
	0.08	0.20
	Skewness	Kurtosis
	0.28	0.44

The p-value was larger than 0.05 for both the pre-exposure attitude and the post-exposure attitude (Table 6). Thus, the null hypothesis could not be rejected at a 5% significance level with a p-value of 0.20 for both pre-exposure attitude and post-exposure attitude and a statistic of 0.10 and 0.08, respectively. Therefore, it could be concluded that the data were normally distributed. Normal distribution describes a probability distribution that is symmetrical about the mean, thereby indicating that data nearer to the mean occur more frequently than do the data further from the mean (Malhotra, 2010). Measures of shape indicate the symmetry of a distribution about the mean, as well as the relative flatness or peak of the frequency distribution curve (Malhotra, 2010). A normal distribution is depicted by a bell-shaped curve of distribution (Malhotra, Nunan & Birks, 2017). The histograms for pre-exposure attitude and post-exposure attitude showed a reasonably bell-shaped distribution with a slight positive skew (to the left) and a peak that is close to normal distribution; the QQ-plots showed a reasonably linear fit (refer

to Appendix K). Thus, the data were approximately normal for pre-exposure attitude and post-exposure attitude.

Table 7 below presents the results of the normality tests for the emotional data and the attentional data, indicated by emotional valence, level of disgust, emotional arousal, and fixation duration (attention). The following hypothesis was used to test the normality for all four measures: H_0 : *The data are normally distributed*; H_1 : *The data are not normally distributed*.

Table 7: The results of the normality tests (emotion and attention)

Emotional Valence	Kolmogorov-Smirnov	P-Value
	0.23	0.00
	Skewness	Kurtosis
	0.89	0.36
Level of Disgust	Kolmogorov-Smirnov	P-Value
	0.35	0.00
	Skewness	Kurtosis
	3.22	10.94
Emotional Arousal	Kolmogorov-Smirnov	P-Value
	0.24	0.00
	Skewness	Kurtosis
	0.78	0.40
Fixation Duration (Attention)	Kolmogorov-Smirnov	P-Value
	0.09	0.20
	Skewness	Kurtosis
	0.50	0.22

The null hypothesis for valence could be rejected at the 5% significance level, with a p-value of 0.00 and a statistic of 0.23 (Table 7). This indicated that the data were not normally distributed. Thus, the measures of skewness and kurtosis were considered. The skewness measure of 0.89 fell within the threshold of -1 and 1, and the kurtosis measure of 0.36 fell within the threshold of -1.5 and 1.5, indicating that the valence data were normally distributed. The histogram and the QQ-plot for the emotional valence data indicated a normal distribution, with a vague bell-shape present on the histogram and a slight s-shape deviation from the fitted QQ-plot line (refer to Appendix K).

The null hypothesis for disgust could be rejected at the 5% significance level with a p-value of 0.00 and a statistic of 0.35 (Table 7). This indicated that the data were not normally distributed. Thus, the measures of skewness and kurtosis were considered. The skewness measure of 3.22 did not fall between the threshold of -1 and 1, indicating that the data were skewed. Additionally, the kurtosis measure of 10.94 did not fall within the threshold of -1.5 and 1.5, indicating that the disgust data were not normally distributed. The histogram for the disgust data presented severely positively skewed data, and the QQ-plot for disgust was severely heavy-tailed (refer to Appendix K).

The null hypothesis for emotional arousal data (peak detection) could be rejected at the 5% significance level, with a p-value of 0.00 and a t-statistic of 0.24 (Table 7). This indicated that the data for peak detection were not normally distributed. Thus, the measures of skewness and kurtosis were considered. The skewness measure of 0.78 fell within the threshold of -1 and 1, while the kurtosis measure of 0.40 fell within the threshold of -1.5 and 1.5; thus, it may be concluded that the peak detection data were

normally distributed. The histogram for peak detection was slightly positively skewed, and the QQ-plot was slightly heavy-tailed with a mild deviation from the fitted line (refer to Appendix K).

The p-value of 0.20 for fixation duration (attention) was larger than 0.05, and the statistic was 0.09 (Table 7). Thus, the null hypothesis could not be rejected at a 5% significance level. It could therefore be concluded that the fixation duration data were normally distributed. The histogram for attention data was reasonably bell-shaped, and the QQ-plot showed a reasonably linear fit, thereby indicating a normal distribution (refer to Appendix K). In conclusion, the data for attitude, emotional valence, emotional arousal, and attention were normally distributed; hence, these constructs were tested with parametric statistical techniques. The data for the construct disgust were not normally distributed; hence, these data were tested with non-parametric statistical techniques.

4.5 THE RESULTS OF QUANTITATIVE DATA ANALYSIS: HYPOTHESIS TESTING

Inferential statistics were used to draw conclusions from the data. These included forms of data analysis from which inferences about the general population could be drawn. In this section, the hypotheses from the literature review were tested and the findings are presented.

4.5.1 Hypothesis 1

H1_A: Negatively framed advertisements influence Cape Town meat eaters' attitudes towards the reduction of meat consumption better than positively framed advertisements.

H1_A was tested using linear regression. Model significance was tested first with the following hypotheses: $H0: \beta_1 = \beta_2 = \dots = \beta_i = 0$; $H1: \text{At least one } \beta_i \neq 0$. The ANOVA presented in Appendix L shows that H0 could be rejected at the 5% significance level, with a p-value of 0.04 and an F-statistic of 4.50. Therefore, it could be concluded that the model was significant. The model fit was tested using R² and adjusted R². As shown in the model summary presented in Appendix L, the R² value was 0.077, which indicated that although the model was significant, it was weak. However, if the R² value is low but the independent variable is statistically significant, important conclusions can still be drawn about the relationship between the variables. This value indicated that 7.7% of the variation in post-exposure attitudes was explained by message framing. Therefore, there are other factors that may affect respondents' attitudes towards the reduction of meat consumption. The adjusted R² value indicates the amount of variation in Y explained by the model, adjusted for the number of predictors in the model. The adjusted R² value of 0.06 indicated that 6% of the variation in post-exposure attitudes was explained by the model. Following this, the model coefficients were examined (see Table 8 below).

Table 8: Model coefficient results for H1_A

H1_A: Linear Regression; Model Coefficients					
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	4.45	0.16		27.95	0.00
Message Framing (Dummy Variable)	0.48	0.23	0.28	2.12	0.04

The beta value was significant at the 5% significance level, with a p-value of 0.04 (Table 8). Therefore, it could be concluded that message framing significantly contributed to post-exposure attitudes. With the beta values presented in Table 8, the linear equation was as follows:

$$\text{Post-Exposure Attitude} = 4.45 + 0.48(\text{Message Framing Dummy Variable})$$

Therefore, with dummy variables: 0 = Positive Framing; 1 = Negative Framing, the linear equation for positive message framing was as follows:

$$\begin{aligned} \text{Post-Exposure Attitude} &= 4.45 + 0.48*0 \\ \text{Post-Exposure Attitude} &= 4.45 \end{aligned}$$

And the linear equation for negative message framing was:

$$\begin{aligned} \text{Post-Exposure Attitude} &= 4.45 + 0.48*1 \\ \text{Post-Exposure Attitude} &= 4.93 \end{aligned}$$

Therefore, a change from positive message framing to negative message framing increased post-exposure attitudes by 0.48. The equations displayed above indicated that, on average, respondents in the positive message framing group reported an attitude score that is 0.48 points lower than respondents in the negative message framing group. A lower attitude score indicated a less positive attitude, on average, towards the reduction of meat consumption. In other words, respondents who were exposed to the negatively framed advertisement reported more positive attitudes towards reducing meat consumption. The slope of the linear relationship between positive message framing and negative message framing is presented in Appendix L.

H1_{B1}: There is a significant difference between Cape Town meat eaters' attitudes towards the reduction of meat consumption pre-exposure to the positively framed advertisement and pre-exposure to the negatively framed advertisement.

H1_{B2}: There is a significant difference between Cape Town meat eaters' attitudes towards the reduction of meat consumption post-exposure to the positively framed advertisement and post-exposure to the negatively framed advertisement.

Table 9: H1_B Results

H1_B: Attitude; Independent samples t-test					
	Levene's Test	t-statistic	p-value	Conclusion	Mean Attitude
Pre-Exposure	p-value: 0.004 F-stat: 9.07 Equal variances not assumed	-1.54	0.13	Fail to reject H0	Positive Message Framing: 4.38 Negative Message Framing: 4.67
Post-Exposure	p-value: 0.03 F-stat: 5.34 Equal variances not assumed	-2.12	0.04	Reject H0	Positive Message Framing: 4.45 Negative Message Framing: 4.93

Equal variances were not assumed when testing the difference between the groups' pre-exposure attitudes (Table 9). The Levene's test for equal variance showed that *H0: Variances do not differ*, could be rejected at the 5% significance level, with a p-value of 0.004 and an F-statistic of 9.07. Therefore, it could be concluded that the variances differed, and thus equal variances were not assumed. With equal variances not assumed, H0 could not be rejected at the 5% significance level with a p-value of 0.13 and a t-statistic of -1.54. Therefore, it could be concluded that there was no significant difference between Cape Town meat eaters' attitudes towards the reduction of meat consumption, pre-exposure to either a positively framed stimulus or a negatively framed stimulus.

Equal variances were also not assumed when testing the difference between the groups' post-exposure attitudes (Table 9). The Levene's test for equal variance showed that *H0: Variances do not differ*, could be rejected at the 5% significance level, with a p-value of 0.03 and an F-statistic of 5.34. Therefore, it could be concluded that the variances differed, and thus equal variances were not assumed. Following from this, H0 could be rejected at the 5% significance level, with a p-value of 0.04 and a t-statistic of -2.12. Therefore, it could be concluded that there was a significant difference between Cape Town meat eaters' attitudes towards the reduction of meat consumption, post-exposure to the positively framed advertisement and post-exposure to the negatively framed advertisement. The mean values presented in Table 9 indicated that post-exposure attitudes towards the reduction of meat consumption were significantly higher in the negative message framing group, than in the positive message framing group (4.93 and 4.45, respectively). The mean values indicated that the post-exposure attitudes in the negative message framing group were closest to '5 – Somewhat Agree' with a value of 4.93, being the most positive attitude towards the reduction of meat consumption. Since there was no significant difference between the groups' pre-exposure attitudes, and there was a significant difference between the groups' post-exposure attitudes, this indicated that the treatment may have had some influence on Cape Town meat eaters' attitudes towards the reduction of meat consumption.

H1c: Cape Town meat eaters' attitudes towards the reduction of meat consumption significantly differ pre-exposure to the positively framed advertisement and post-exposure to the positively framed advertisement.

Table 10: H1c Results

H1c: Pre-Exposure Attitude vs. Post-Exposure Attitude; Paired Sample T-Test					
t-statistic	p-value	Mean	Std. Deviation	Conclusion	Mean Attitude
-0.91	0.37	-0.08	0.45	Fail to reject H0	Pre-Exposure: 4.38 Post-Exposure: 4.45

A paired samples t-test was conducted to test H1c. According to the results of the t-test (refer to Table 10 above), H0 could not be rejected at the 5% significance level, with a p-value of 0.37 and a t-statistic of -0.91. Therefore, it could be concluded that Cape Town meat eaters' attitudes towards the reduction of meat consumption did not significantly differ pre-exposure to the positively framed advertisement and post-exposure to the positively framed advertisement. This was further supported by the mean attitude values for each measure: 4.38 pre-exposure to the advertisement and 4.45 post-exposure to the advertisement.

H1_D: Cape Town meat eaters' attitudes towards the reduction of meat consumption significantly differ pre-exposure to the negatively framed advertisement and post-exposure to the negatively framed advertisement.

Table 11: H1_D Results

H1_D: Pre-Exposure Attitude vs. Post-Exposure Attitude; Paired Sample T-Test					
t-statistic	p-value	Mean	Std. Deviation	Conclusion	Mean Attitude
-2.21	0.04	-0.26	0.62	Reject H0	Pre-Exposure: 4.67 Post-Exposure: 4.93

A paired samples t-test was conducted to test H1_D. According to the results of the t-test (refer to Table 11 above), H0 could be rejected at the 5% significance level, with a p-value of 0.04 and a t-statistic of -2.21. Therefore, it could be concluded that Cape Town meat eaters' attitudes towards the reduction of meat consumption significantly differed pre-exposure to the negatively framed advertisement and post-exposure to the negatively framed advertisement. This was further supported by the mean attitude values for each measure: 4.67 pre-exposure to the advertisement and 4.93 post-exposure to the advertisement.

4.5.2 Hypothesis 2

A mediational model hypothesises that the exposure variable causes the mediator variable, which in turn, causes the outcome variable. Therefore, the mediator variable explains the nature of the relationship between the exposure and the outcome variable (MacKinnon, 2008; Valeri & VanderWeele, 2013). Mediation was tested using Hayes (2018) PROCESS macro on SPSS for logistic regression analysis (refer to Appendix M for output results).

H2_A: Emotional valence elicited by the advertisement will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher emotional valence will lead to more positive attitudes towards the reduction of meat consumption.

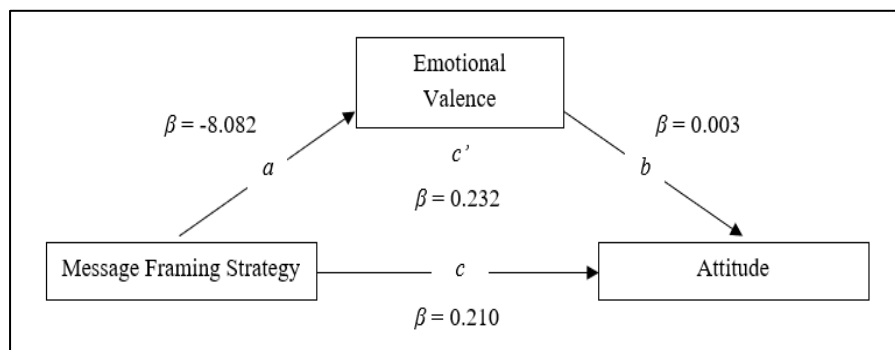


Figure 4: H2_A Mediation model

It is important to note that higher emotional valence refers to a more positive valence. The mediation model for H2_A shows the paths that tested emotional valence as a mediator (see Figure 4). The results indicated that the message framing

strategy was not a significant predictor of emotional valence (path *a*) at the 5% significance level, with $\beta = -8.082$ and p-value = 0.162. Additionally, emotional valence was not a significant predictor of attitude (path *b*) at the 5% significance level, with $\beta = 0.003$ and p-value = 0.456. The 95% upper and lower confidence interval (BOOTLLCI = -0.129, BOOTULCI = 0.035) range included 0, indicating that the indirect effect for H2_A of X: Message framing strategy on Y: Attitude transmitted through M: Emotional valence, was statistically insignificant. Furthermore, the direct effect (path *c'* - effect of the

message framing strategy on attitude), and the total effect (path c - composed of indirect effects $ab +$ direct effect c'), were also insignificant at a 5% level (p-value = 0.131 and p-value = 0.161 respectively). Therefore, it was concluded that emotional valence did not mediate the effect of the message framing strategy on attitude. In other words, a more positive emotional valence did not lead to more positive attitudes towards the reduction of meat consumption. Thus, the following hypothesis tested the mediating effects of disgust, which is associated with lower emotional valence. The PROCESS macro output for H2_A is presented in Appendix M.

H2_B: The level of disgust elicited by the advertisement will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher levels of disgust will lead to more positive attitudes towards the reduction of meat consumption.

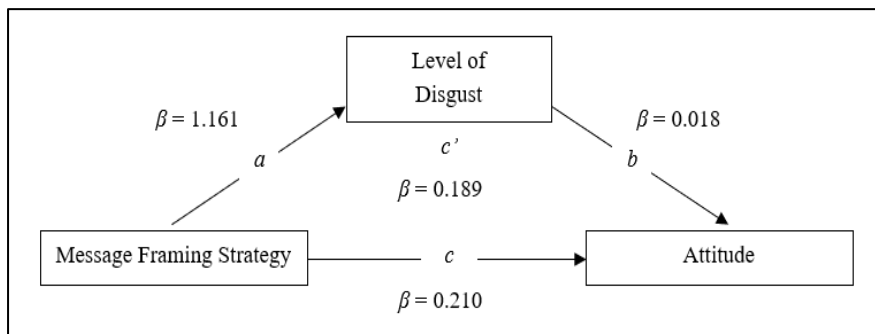


Figure 5: H2_B Mediation model

The mediation model for H2_B shows the paths that tested disgust as a mediator (Figure 5). It is important to note that a higher level of disgust is associated with a lower emotional valence. The results indicated that the message framing strategy was not a significant

predictor of level of disgust (path a) at the 5% significance level, with $\beta = 1.161$ and p-value = 0.320. Additionally, the level of disgust was not a significant predictor of attitude (path b) at the 5% significance level, with $\beta = 0.018$ and p-value = 0.308. The 95% upper and lower confidence interval (BOOTLLCI = -0.019, BOOTULCI = 0.143) range included 0, indicating that the indirect effect for H2_B of X: Message framing strategy on Y: Attitude transmitted through M: Level of disgust, was statistically insignificant. Furthermore, the direct effect (path c' - effect of the message framing strategy on attitude), and the total effect (path c - composed of indirect effects $ab +$ direct effect c'), were also insignificant at a 5% level (p-value = 0.210 and p-value = 0.161 respectively). Therefore, it was concluded that the level of disgust did not mediate the effect of the message framing strategy on attitude. In other words, a higher level of disgust did not lead to more positive attitudes towards the reduction of meat consumption. The PROCESS macro output for H2_B is presented in Appendix M.

H2_C: Emotional arousal elicited by the advertisement will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher emotional arousal will lead to more positive attitudes towards the reduction of meat consumption.

The mediation model for H2_C shows the paths that tested disgust as a mediator (see Figure 6 below). The results indicated that the message framing strategy was not a significant predictor of emotional arousal (path a) at the 5% significance level, with $\beta = -0.003$ and p-value = 0.990. Additionally, emotional arousal was not a significant predictor of attitude (path b) at the 5% significance level, with $\beta = 0.012$ and p-value = 0.879. The 95% upper and lower confidence interval (BOOTLLCI = -0.062, BOOTULCI = 0.024) range included 0, indicating that the indirect effect for H2_C of X: Message framing strategy on Y: Attitude transmitted through M: Emotional arousal, was statistically insignificant. Furthermore, the direct effect (path c' - effect of the message framing strategy on attitude), and the total effect (path c - composed of indirect effects $ab +$ direct effect c'), were also insignificant at a 5% level

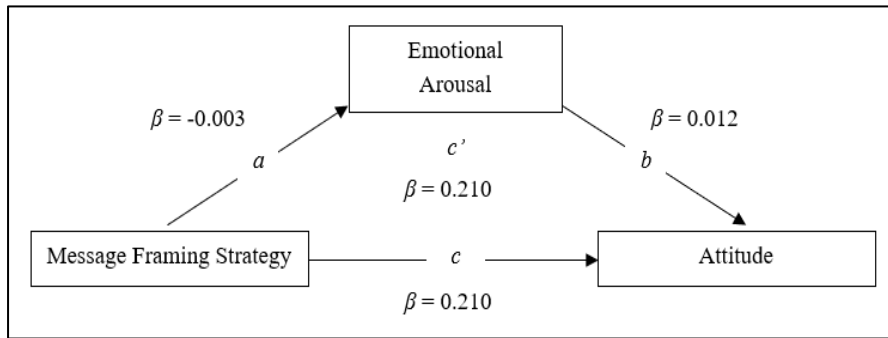


Figure 6: H2_C Mediation model

(p-value = 0.165 and p-value = 0.161 respectively). Therefore, it was concluded that emotional arousal did not mediate the effect of the message framing strategy on attitude. In other words, higher emotional arousal did not lead to more positive

attitudes towards the reduction of meat consumption. The PROCESS macro output for H2_C is presented in Appendix M.

4.5.3 Hypothesis 3

H3_A: There is a relationship between emotional valence elicited by the advertisement and post-exposure attitudes.

Table 12: H3_A Results

H3_A: Emotional Valence vs. Post-Exposure Attitude; Bivariate Correlation			
Stimulus Condition	Pearson's Correlation	p-value	Conclusion
Positive Message Framing	0.29	0.14	Fail to reject H0
Negative Message Framing	-0.12	0.53	Fail to reject H0
Total Sample	-0.02	0.86	Fail to reject H0

H3_A was tested using bivariate correlation (Pearson's correlation, two-tailed test). Table 12 indicates that for the positive message framing group, the negative message framing group, and the total sample, H0 could not be rejected at the 5% significance level, with a p-value of 0.14, 0.53 and 0.86, respectively. Therefore, it could be concluded that there was no significant relationship between emotional valence elicited by the advertisement and post-exposure attitudes.

H3_B: There is a relationship between the level of disgust elicited by the advertisement and post-exposure attitudes.

Table 13: H3_B Results

H3_B: Level of Disgust vs. Post-Exposure Attitude; Bivariate Correlation			
Stimulus Condition	Correlation Coefficient	p-value	Conclusion
Positive Message Framing	-0.22	0.27	Fail to reject H0
Negative Message Framing	0.23	0.23	Fail to reject H0
Total Sample	0.08	0.55	Fail to reject H0

H3_B was tested using bivariate correlation (Spearman's Rho, two-tailed test). Table 13 indicates that for the positive message framing group, the negative message framing group, and the total sample, H0 could not be rejected at the 5% significance level, with a p-value of 0.27, 0.23 and 0.55, respectively. Therefore, it could be concluded that there was no significant relationship between the level of disgust elicited by the advertisement and post-exposure attitudes.

H3_C: There is a relationship between emotional arousal elicited by the advertisement and post-exposure attitudes.

Table 14: H3_C Results

H3_C: Emotional Arousal vs. Post-Exposure Attitude; Bivariate Correlation			
Stimulus Condition	Pearson's Correlation	p-value	Conclusion
Positive Message Framing	-0.14	0.47	Fail to reject H0
Negative Message Framing	-0.22	0.26	Fail to reject H0
Total Sample	-0.20	0.15	Fail to reject H0

H3_C was tested using bivariate correlation (Pearson's correlation, two-tailed test). Table 14 indicates that for the positive message framing group, the negative message framing group, and the total sample, H0 could not be rejected at the 5% significance level, with a p-value of 0.47, 0.26 and 0.15, respectively. Therefore, it could be concluded that there was no significant relationship between the emotional arousal elicited by the advertisement and post-exposure attitudes.

4.5.4 Hypothesis 4

H4_A: There is a significant difference between emotional valence elicited by positively framed advertisements and emotional valence elicited by negatively framed advertisements.

H4_B: There is a significant difference between the level of disgust elicited by positively framed advertisements and the level of disgust elicited by negatively framed advertisements.

H4_C: There is a significant difference between emotional arousal elicited by positively framed advertisements and emotion arousal elicited by negatively framed advertisements.

Table 15: H4 Results

H4_A: Emotional valence; Independent samples t-test				
Levene's Test	t-statistic	p-value	Conclusion	Mean
p-value: 0.04 F-stat: 4.14 Equal variances not assumed	2.41	0.02	Reject H0	Positive Message Framing: 17.33 Negative Message Framing: 9.06
H4_B: Level of disgust; Independent Samples Mann-Whitney U Test (Non-parametric)				
t-statistic	p-value		Conclusion	Mean
7344.00	0.01		Reject H0	Positive Message Framing: 2.21 Negative Message Framing: 3.49
H4_C: Emotional arousal; Independent samples t-test				
Levene's Test	t-statistic	p-value	Conclusion	Mean
p-value: 0.99 F-stat: 0.00 Equal variances assumed	0.41	0.68	Fail to reject H0	Positive Message Framing: 1.11 Negative Message Framing: 1.00

Independent samples t-tests were conducted to compare emotional valence and emotional arousal elicited by the positively framed advertisement and the negatively framed advertisement. As shown in Table 15, equal variances were not assumed when testing the difference between the groups' valences. The Levene's test for equal variance showed that $H_0: \text{Variances do not differ}$, could be rejected at the 5% significance level, with a p-value of 0.04 and an F-statistic of 4.14. Therefore, it could be concluded that the variances differed, and thus equal variances were not assumed. For valence, the null hypothesis could be rejected at the 5% significance level, with a p-value of 0.02 and a t-statistic of 2.41. Therefore, it could be concluded that there was a significant difference between the valence of the positive message framing group and the valence of the negative message framing group. The mean value for valence of 17.33 for the positive message framing group was significantly higher than the mean for the negative message framing group (9.06), thereby supporting this conclusion.

H_{4B} was tested using the non-parametric independent samples Mann-Whitney U test, to compare the means of the two treatment groups (Table 15). The results of this test indicated that H_0 could be rejected at the 5% significance level, with a p-value of 0.01 and a t-statistic of 7344.00. Therefore, it could be concluded that there was a significant difference between the level of disgust elicited by the positively framed advertisement and the level of disgust elicited by the negatively framed advertisement. The mean value for disgust of 2.21 for the positive message framing group was therefore significantly lower than the mean value of 3.49 for the negative message framing group.

Equal variances were assumed when testing the difference between the groups' emotional arousal (Table 15). The Levene's test for equal variance showed that $H_0: \text{Variances do not differ}$, could not be rejected at the 5% significance level, with a p-value of 0.99 and an F-statistic of 0.00. Therefore, it could be concluded that the variances did not differ, and thus equal variances were assumed. For emotional arousal, the null hypothesis could not be rejected at the 5% significance level, with a p-value of 0.68 and a t-statistic of 0.41. Therefore, it could be concluded that there was no significant difference between emotional arousal elicited by the positively framed advertisement and emotional arousal elicited by the negatively framed advertisement.

4.5.5 Hypothesis 5

H_{5A} : Attention to the whole advertisement will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes towards the reduction of meat consumption.

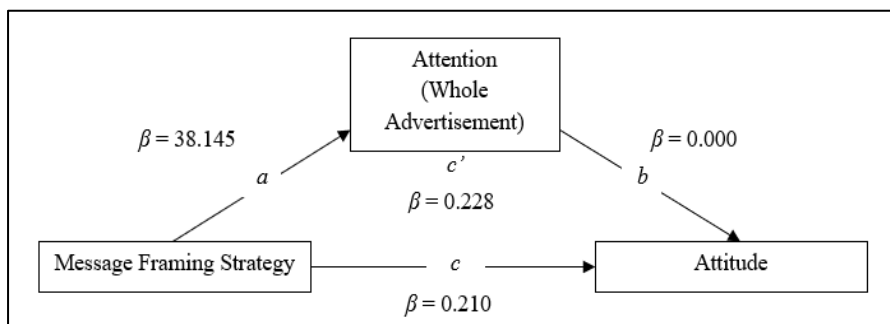


Figure 7: H_{5A} Mediation model

Mediation was tested using Hayes (2018) PROCESS macro on SPSS for logistic regression analysis. The mediation model for H_{5A} shows the paths that tested attention to the advertisement as a mediator (Figure 7). The results indicated that the

message framing strategy was a significant predictor of attention to the advertisement (path a) at the 5% significance level, with $\beta = 38.145$ and p-value = 0.024. However, attention to the advertisement

was not a significant predictor of attitude (path b) at the 5% significance level, with $\beta = 0.000$ and $p\text{-value} = 0.712$. The 95% upper and lower confidence interval (BOOTLLCI = -0.123, BOOTULCI = 0.070) range included 0, indicating that the indirect effect for H5_A of X: Message framing strategy on Y: Attitude transmitted through M: Attention to the advertisement, was statistically insignificant. Furthermore, the direct effect (path c' - effect of the message framing strategy on attitude), and the total effect (path c - composed of indirect effects $ab +$ direct effect c'), were also insignificant at a 5% level ($p\text{-value} = 0.151$ and $p\text{-value} = 0.161$ respectively). Therefore, it was concluded that attention to the advertisement did not mediate the effect of the message framing strategy on attitude. In other words, higher attention to the advertisement did not lead to more positive attitudes towards the reduction of meat consumption. The PROCESS macro output for H5_A is presented in Appendix M.

H5_B: Attention to the headline will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes towards the reduction of meat consumption.

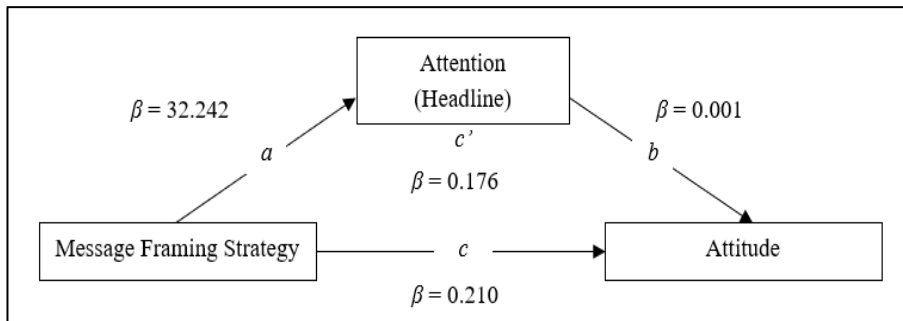


Figure 8: H5_B Mediation model

The mediation model for H5_B shows the paths that tested attention to the headline as a mediator (Figure 8). The results indicated that the message framing strategy was a significant predictor of attention to the

headline (path a) at the 5% significance level, with $\beta = 32.242$ and $p\text{-value} = 0.049$. However, attention to the headline was not a significant predictor of attitude (path b) at the 5% significance level, with $\beta = 0.001$ and $p\text{-value} = 0.408$. The 95% upper and lower confidence interval (BOOTLLCI = -0.038, BOOTULCI = 0.110) range included 0, thereby indicating that the indirect effect for H5_B of X: Message framing strategy on Y: Attitude transmitted through M: Attention to the headline, was statistically insignificant. Furthermore, the direct effect (path c' - effect of the message framing strategy on attitude), and the total effect (path c - composed of indirect effects $ab +$ direct effect c'), were also insignificant at a 5% level ($p\text{-value} = 0.258$ and $p\text{-value} = 0.161$ respectively). Therefore, it was concluded that attention to the headline did not mediate the effect of the message framing strategy on attitude. In other words, higher attention to the headline did not lead to more positive attitudes towards the reduction of meat consumption. The PROCESS macro output for H5_B is presented in Appendix M.

H5_C: Attention to the image will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes towards the reduction of meat consumption.

The mediation model for H5_C shows the paths that tested attention to the image as a mediator (see Figure 9 below). The results indicated that the message framing strategy was not a significant predictor of attention to the image (path a) at the 5% significance level, with $\beta = 46.008$ and $p\text{-value} = 0.088$. Attention to the image was not a significant predictor of attitude (path b) at the 5% significance level, with $\beta = 0.000$ and $p\text{-value} = 0.967$. The 95% upper and lower confidence interval (BOOTLLCI = -0.078, BOOTULCI = 0.080) range included 0, indicating that the indirect effect for H5_C of X: Message

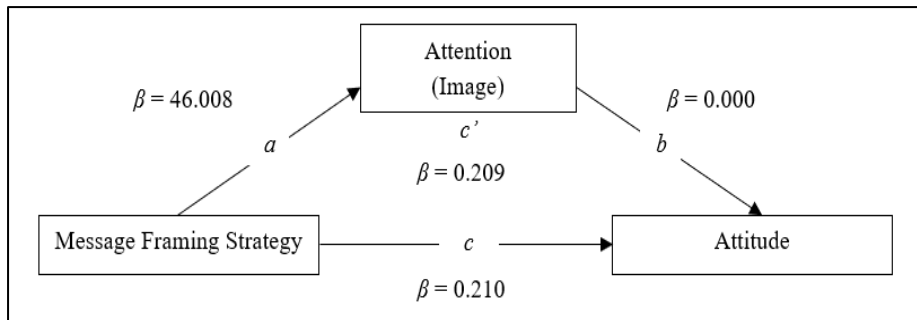


Figure 9: H5_C Mediation model

framing strategy on Y: Attitude transmitted through M: Attention to the image, was statistically insignificant. Furthermore, the direct effect (path c' - effect of the message framing strategy on

attitude), and the total effect (path c - composed of indirect effects ab + direct effect c'), were also insignificant at a 5% level (p-value = 0.180 and p-value = 0.161 respectively). Therefore, it was concluded that attention to the image did not mediate the effect of the message framing strategy on attitude. In other words, higher attention to the image did not lead to more positive attitudes towards the reduction of meat consumption. The PROCESS macro output for H5_C is presented in Appendix M.

H5_D: Attention to the tagline will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes towards the reduction of meat consumption.

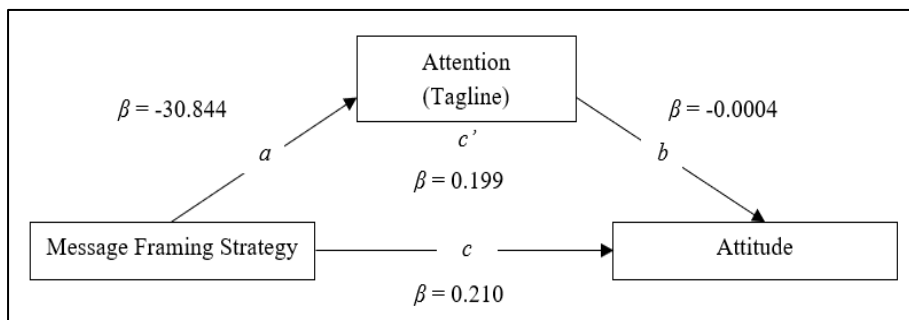


Figure 10: H5_D Mediation model

The mediation model for H5_D shows the paths that tested attention to the tagline as a mediator (Figure 10). The results indicated that the message framing strategy was not a significant predictor of attention to the

tagline (path a) at the 5% significance level, with $\beta = -30.844$ and p-value = 0.285. Additionally, attention to the tagline was not a significant predictor of attitude (path b) at the 5% significance level, with $\beta = -0.0004$ and p-value = 0.618. The 95% upper and lower confidence interval (BOOTLLCI = -0.044, BOOTULCI = 0.095) range included 0, indicating that the indirect effect for H5_D of X: Message framing strategy on Y: Attitude transmitted through M: Attention to the tagline, was statistically insignificant. Furthermore, the direct effect (path c' - effect of the message framing strategy on attitude), and the total effect (path c - composed of indirect effects ab + direct effect c'), were also insignificant at a 5% level (p-value = 0.192 and p-value = 0.161 respectively). Therefore, it was concluded that attention to the tagline did not mediate the effect of the message framing strategy on attitude. In other words, higher attention to the tagline did not lead to more positive attitudes towards the reduction of meat consumption. The PROCESS macro output for H5_D is presented in Appendix M.

H5_E: Attention to the logo will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes towards the reduction of meat consumption.

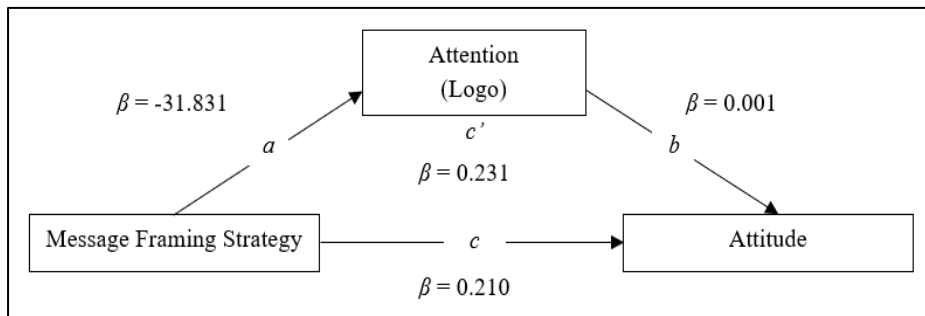


Figure 11: H5_E Mediation model

The mediation model for H5_E shows the paths that tested attention to the logo as a mediator (Figure 11). The results indicated that the message framing strategy was not a significant predictor of attention to the

logo (path *a*) at the 5% significance level, with $\beta = -31.831$ and $p\text{-value} = 0.377$. Additionally, attention to the logo was not a significant predictor of attitude (path *b*) at the 5% significance level, with $\beta = 0.001$ and $p\text{-value} = 0.257$. The 95% upper and lower confidence interval (BOOTLLCI = -0.143, BOOTULCI = 0.027) range included 0, indicating that the indirect effect for H5_E of X: Message framing strategy on Y: Attitude transmitted through M: Attention to the logo, was statistically insignificant. Furthermore, the direct effect (path *c'* - effect of the message framing strategy on attitude), and the total effect (path *c* - composed of indirect effects *ab* + direct effect *c'*), were also insignificant at a 5% level ($p\text{-value} = 0.126$ and $p\text{-value} = 0.161$ respectively). Therefore, it was concluded that attention to the logo did not mediate the effect of the message framing strategy on attitude. In other words, higher attention to the logo did not lead to more positive attitudes towards the reduction of meat consumption. The PROCESS macro output for H5_E is presented in Appendix M.

4.5.6 Hypothesis 6

H6: There is a relationship between attention paid to the advertisement and post-exposure attitudes.

Table 16: H6 Results

H6: Attention vs. Post-Exposure Attitudes; Bivariate Correlation			
Stimulus Condition	Pearson's Correlation	p-value	Conclusion
Positive Message Framing	-0.03	0.86	Fail to reject H0
Negative Message Framing	0.04	0.82	Fail to reject H0
Total Sample	0.10	0.44	Fail to reject H0

H6 was tested using bivariate correlation (Pearson's correlation, two-tailed test). For the positive message framing group, the negative message framing group, and the total sample, H0 could not be rejected at the 5% significance level, with a p-value of 0.86, 0.82 and 0.44, respectively (Table 16). Therefore, it could be concluded that there was no significant relationship between attention paid to the advertisement and post-exposure attitudes.

4.5.7 Hypothesis 7

H7_A: There is a significant difference between attention to the positively framed advertisement and attention to the negatively framed advertisement.

Table 17: H7_A Results

H7_A: Attention (whole advertisement); Independent samples t-test				
Levene's Test	t-statistic	p-value	Conclusion	Mean Fixation Duration (ms/m)
p-value: 0.36 F-stat: 0.87 Equal variances assumed	-2.49	0.02	Reject H0	Positive Message Framing: 209.03 Negative Message Framing: 248.76

Equal variances were assumed when testing the difference between the groups' attention, measured by fixation duration to the whole advertisement (Table 17). The Levene's test for equal variance showed that *H0: Variances do not differ*, could not be rejected at the 5% significance level, with a p-value of 0.36 and an F-statistic of 0.87. Therefore, it could be concluded that the variances did not differ, and thus equal variances were assumed. The null hypothesis for the entire advertisement could be rejected at the 5% significance level, with a p-value of 0.02 and a t-statistic of -2.49 (Table 17). Therefore, it could be concluded that there was a significant difference between attention paid towards the positively framed advertisement and attention paid towards the negatively framed advertisement. This conclusion was supported by the difference between the mean fixation durations for positive message framing and negative message framing (209.03 and 248.76 respectively). This indicated that, on average, respondents paid significantly more attention to the negatively framed advertisement. Since there was a significant difference between the two groups' attention to the whole advertisement, the same test was conducted on each AOI: headline, image, tagline, and logo.

H7_B: There is a significant difference between attention to the headline of the positively framed advertisement and attention to the headline of the negatively framed advertisement.

Table 18: H7_B Results

H7_B: Attention (headline); Independent samples t-test				
Levene's Test	t-statistic	p-value	Conclusion	Mean Fixation Duration (ms/m)
p-value: 0.23 F-stat: 1.46 Equal variances assumed	2.18	0.03	Reject H0	Positive Message Framing: 188.57 Negative Message Framing: 216.21

Equal variances were assumed when testing the difference between the groups' attention to the headline, measured by fixation duration to the headline (Table 18). The Levene's test for equal variance showed that *H0: Variances do not differ*, could not be rejected at the 5% significance level, with a p-value of 0.23 and an F-statistic of 1.46. Therefore, it could be concluded that the variances did not differ, and thus equal variances were assumed. The null hypothesis could be rejected at the 5% significance level, with a p-value of 0.03 and a t-statistic of 2.18. Therefore, it could be concluded that there was a significant difference between attention paid toward the headline of the positively framed advertisement and attention paid towards the headline of the negatively framed advertisement. This conclusion was supported by the mean for each group, as the mean fixation duration on the headline in the negative

message framing group was significantly higher than that for the positive message framing group (216.21 and 188.57, respectively).

H7_C: There is a significant difference between attention to the image of the positively framed advertisement and attention to the image of the negatively framed advertisement.

Table 19: H7_C Results

H7_C: Attention (image); Independent samples t-test				
Levene's Test	t-statistic	p-value	Conclusion	Mean Fixation Duration (ms/m)
p-value: 0.71 F-stat: 0.14 Equal variances assumed	1.94	0.06	Fail to reject H0	Positive Message Framing: 224.73 Negative Message Framing: 274.87

Equal variances were assumed when testing the difference between the groups' attention to the image, measured by fixation duration to the image (Table 19). The Levene's test for equal variance showed that *H0: Variances do not differ*, could not be rejected at the 5% significance level, with a p-value of 0.71 and an F-statistic of 0.14. Therefore, it could be concluded that the variances did not differ, and thus equal variances were assumed. The null could not be rejected at the 5% significance level, with a p-value of 0.06 and a t-statistic of 1.94. Therefore, it could be concluded that there was no significant difference between attention paid towards the image in the positively framed advertisement and attention paid towards the image in the negatively framed advertisement. The p-value was still low, and the negatively framed advertisement had a mean much higher than the positively framed advertisement (274.87 and 224.73, respectively). However, the difference is not considered significant.

H7_D: There is a significant difference between attention to the tagline of the positively framed advertisement and attention to the tagline of the negatively framed advertisement.

Table 20: H7_D Results

H7_D: Attention (tagline); Independent samples t-test				
Levene's Test	t-statistic	p-value	Conclusion	Mean Fixation Duration (ms/m)
p-value: 0.61 F-stat: 0.27 Equal variances assumed	-2.18	0.04	Reject H0	Positive Message Framing: 211.41 Negative Message Framing: 171.97

Equal variances were assumed when testing the difference between the groups' attention to the tagline, measured by fixation duration to the tagline (Table 20). The Levene's test for equal variance showed that *H0: Variances do not differ*, could not be rejected at the 5% significance level, with a p-value of 0.61 and an F-statistic of 0.27. Therefore, it could be concluded that the variances did not differ, and thus equal variances were assumed. The null hypothesis could be rejected at the 5% significance level, with a p-value of 0.04 and a t-statistic of -2.18. Therefore, it could be concluded that there was a significant difference between attention paid towards the tagline of the positively framed advertisement and attention paid towards the tagline of the negatively framed advertisement. The difference in the means for the positive message framing group and the negative message framing group supported this conclusion (211.41 and 171.97 respectively), indicating that respondents in the positive message

framing group fixated on the tagline significantly longer than did the respondents in the negative message framing group.

H7_E: There is a significant difference between attention to the logo of the positively framed advertisement and attention to the logo of the negatively framed advertisement.

Table 21: H7_E Results

H7_E: Attention (logo); Independent samples t-test				
Levene's Test	t-statistic	p-value	Conclusion	Mean Fixation Duration (ms/m)
p-value: 0.60 F-stat: 0.28 Equal variances assumed	-0.31	0.76	Fail to reject H0	Positive Message Framing: 218.62 Negative Message Framing: 206.75

Equal variances were assumed when testing the difference between the groups' attention to the logo, measured by fixation duration to the logo (Table 21). The Levene's test for equal variance showed that *H0: Variances do not differ*, could not be rejected at the 5% significance level, with a p-value of 0.60 and an F-statistic of 0.28. Therefore, it could be concluded that the variances did not differ, and thus equal variances were assumed. The null hypothesis could not be rejected at the 5% significance level, with a p-value of 0.76 and a t-statistic of -0.31. Therefore, it could be concluded that there was no significant difference between attention paid towards the logo in the positively framed advertisement and attention paid towards the logo in the negatively framed advertisement.

4.6 THE RESULTS OF THE QUALITATIVE DATA ANALYSIS

The qualitative analysis that was conducted assisted in comparing the responses in each group, and it provided a deeper understanding of the motivations behind the responses. The transcriptions of the personal interviews, for the positive message framing group and the negative message framing group, can be seen under Appendix N (Transcript 1 and Transcript 2, respectively). As outlined in the methodology, the researcher conducted coding of the keywords and phrases that were used in the interview for the positive message framing group and the negative message framing group (refer to Appendix N: Code Sheets 1 and 2 respectively). The researcher then created categories by bringing several codes together, and then decided which codes were most important. These broad categories were then compared with the positive message framing group and the negative message framing group, in order to investigate the differences and the similarities between the groups.

4.6.1 Self-Reported Emotion

The initial codes of emotional keywords were categorized into 9 broader themes (refer to Appendix O). These categories are as follows: *Positive Feelings, Negative Feelings, Strong Negative Feelings, Motivation to Change, Compassionate Feelings, Guilty Feelings, Angry Feelings, Mixed Feelings and Neutral Feelings*. The emotion categories are presented in order of importance under Appendix O. *Positive Feelings, Strong Negative Feelings, and Negative Feelings* were considered most important in terms of the objectives of this study since these could be linked to the emotional valence and the level of disgust measured with consumer neuroscience techniques. Following this, *Motivation to Change* was considered an important theme, since the goal of social marketing communications, such as those used in this study, is frequently to motivate changes in attitudes and behaviours (Gordon, Carrigan & Hastings, 2011). The goal of both the positively framed and the negatively framed stimulus was to

encourage consumers to reduce their meat consumption. Thus, it was important to note whether the respondents felt motivated by the stimuli.

Neutral Feelings were ranked next; these responses were still important in terms of the objectives of the study, since the stimuli aimed to elicit emotional responses and reports of neutral feelings could therefore indicate which message framing strategy was least effective in eliciting either a positive or a negative emotional response. Reports of *Compassionate Feelings*, *Guilty Feelings*, *Angry Feelings* and *Mixed Feeling* were ranked on the same level since these themes were not directly related to the emotional responses that this study focused on. Both *Compassionate Feelings* and *Guilty Feelings* indicated that the respondents either cared about the animal depicted in the advert, or they felt responsible for harming animals. However, these themes were not relevant to the objectives of the study. *Mixed Feelings* and *Angry Feelings* were also not relevant to the objectives of this study; however, they still provided some additional insights, and indicated topics for future research. For a detailed presentation of the contents of each category, refer to Appendix O. Figure 12 and Figure 13 below present the number of occurrences of these categories for the positive message framing group, and the negative message framing group, respectively.

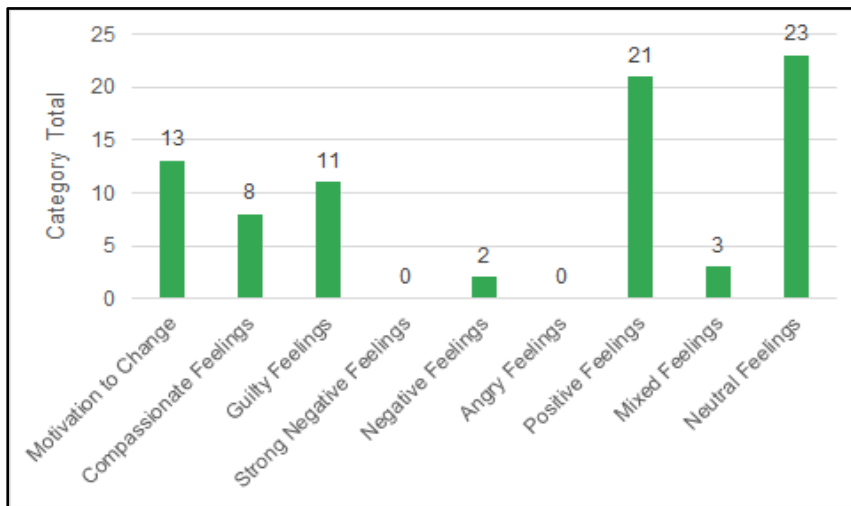


Figure 12: Emotional category (self-reported) occurrences in the positive message framing group.

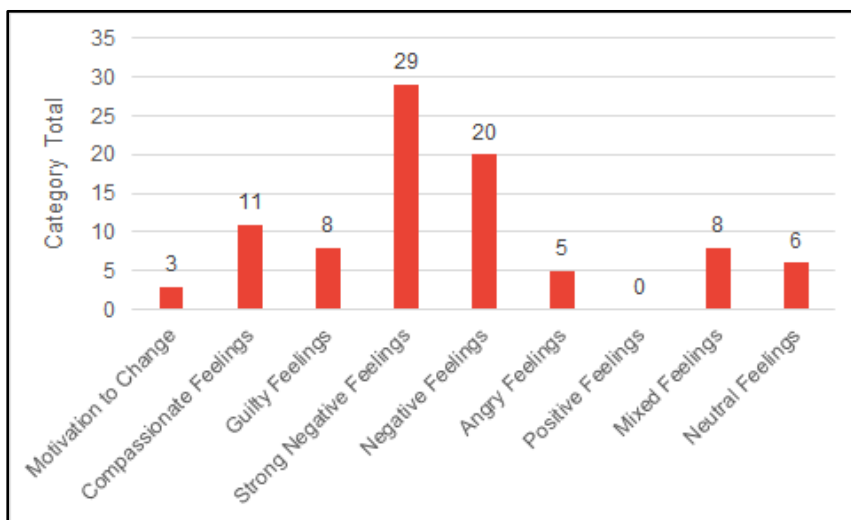


Figure 13: Emotional category (self-reported) occurrences in the negative message framing group.

The reported emotions indicating *Motivation to Change* meat consumption behaviour, *Guilty Feelings*, *Positive Feelings*, and *Neutral Feelings* were higher in the positive message framing group (Figure 12). Emotions indicating *Compassionate Feelings*, *Strong Negative Feelings*, *Negative Feelings*, *Angry Feelings*, and *Mixed Feelings* were higher in the negative message framing group (Figure 13). The conclusions of these findings are discussed in detail in Chapter 5: Conclusions and Recommendations.

4.6.2 Self-Reported Reasoning

The initial codes of respondents' reasoning for feeling certain ways were categorised into broader themes (refer to Appendix O). The broader categories are as follows: *Encouraged*, *Guilt*, *Indifference*, *Arguments for Meat Consumption (Pro Meat and Defeat)*, *Positive Nature of the Advert* and *Negative Nature of the Advert*. The reasoning categories are presented in the order of importance under Appendix O. These themes were not directly relevant to the objectives of this study; however, they offered valuable understanding of the responses to the stimuli. The explanations stated by respondents that were categorized as *Encouraged* were considered important because encouraging consumers to reduce their meat consumption is a positive response in terms of the purpose of the advertisements. For example, explaining that it is worth switching to a plant-based diet or explaining a desire not to harm animals were categorized as *Encouraged*. Moreover, this category could be discussed in combination with reported feelings of *Motivation to Change*. The explanations categorized as *Indifference* were ranked next, because these responses indicated little emotional 'arousal' evoked by the stimuli, which is relevant to the objectives of this study. Furthermore, *Indifference* could be discussed in combination with reports of *Neutral Feelings*. Following this, the category of *Guilt* was ranked, because this indicated that respondents felt remorse for consuming meat, and, although guilt was not the focus of this research, it could be discussed in combination with reports of *Guilty Feelings*, thereby providing additional insights and motivation for future research.

Arguments for Meat Consumption consisted of two sub-categories: *Pro Meat* and *Defeat*. This category was ranked second to last because these themes were not directly relevant to the objectives of the study, but they provided valuable insights on counterarguments used by meat eaters, in an effort to maintain their current attitudes or to reduce their cognitive dissonance. Explanations referring to either the *Positive Nature of the Advert* or the *Negative Nature of the Advert* were ranked last. These explanations were not considered to be very important in terms of the objectives of the study, since they merely confirmed whether the stimuli were positive or negative in nature; therefore, they did not provide much insight into the responses. Refer to Appendix O for a detailed presentation of the contents of each category. Figure 14 and Figure 15 below present the number of occurrences of these categories for the positive message framing group, and the negative message framing group, respectively.

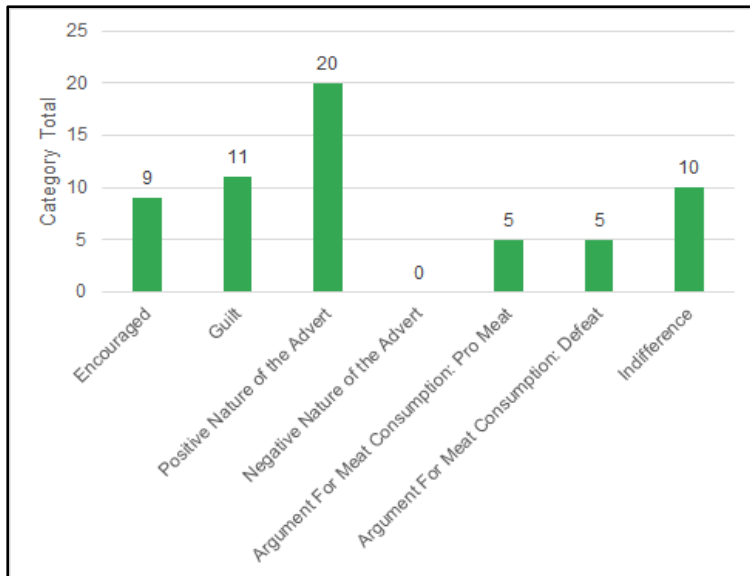


Figure 14: Reasoning category occurrences in the positive message framing group

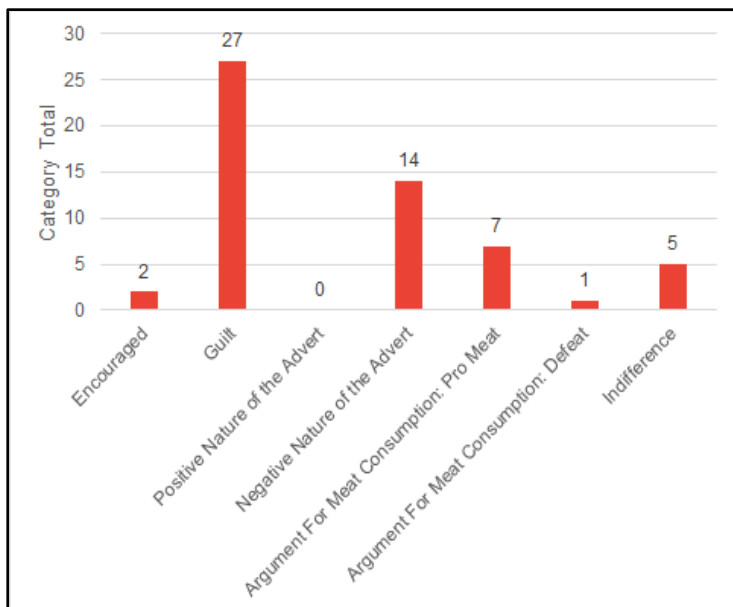


Figure 15: Reasoning category occurrences in the negative message framing group

Reasoning related to *Encouragement*, the *Positive Nature of the Advertisement*, *Arguments For Meat Consumption (Defeat)*, and *Indifference* were higher in the positive message framing group (Figure 14). Reasoning related to *Guilt*, the *Negative Nature of the Advertisement*, and *Arguments For Meat Consumption (Pro-Meat)* were higher in the negative message framing group (Figure 15). These findings are discussed in detail in Chapter 5: Conclusions and Recommendations.

4.7 CONCLUSION

Chapter 4 presented the results of the quantitative and qualitative analyses conducted in this study. Firstly, the chapter presented the descriptive statistics describing the composition of the sample. Thereafter, the descriptive statistics of the nominal and interval data were presented. Following this, reliability, validity, and normality results were presented. The results of the hypothesis testing were then presented, followed by the results of the qualitative data analyses.

With regard to the comparison of the effects of positive message framing and negative message framing on attitude, the testing of H1 found that those respondents who were exposed to the negatively framed advertisement reported more positive attitudes towards reducing meat consumption. The results also indicated that, while there was no significant difference between respondents' pre-exposure attitudes in the positive message framing group and the negative message framing group, the respondents' attitudes significantly differed between the two groups after being exposed to the stimulus. Furthermore, in the positive message framing group, attitudes did not significantly differ before exposure and after exposure to the stimulus. While, in the negative message framing group, the respondents' attitudes did significantly differ before exposure and after exposure to the stimulus.

With regard to emotional responses to the stimuli, which were examined through H2, H3 and H4, the following conclusions were reached. The emotional responses elicited by the stimuli (emotional valence, level of disgust and emotional arousal) did not mediate the effect of the message framing strategy on attitude. Additionally, there was no significant relationship between the emotional responses elicited by the stimuli (emotional valence, level of disgust and emotional arousal) and post-exposure attitudes. Despite these conclusions, it was found that there was a significant difference between the emotional valence elicited in the treatment groups. The emotional valence in the positive message framing group was significantly higher than that in the negative message framing group. Additionally, there was a significant difference found between the level of disgust elicited by positively framed advertisements and the level of disgust elicited by negatively framed advertisements, with the level of disgust being significantly higher in the negative message framing group.

Regarding the attentional responses to the stimuli, which were examined through H5, H6 and H7, the following conclusions were reached. Attention (to the whole advertisement, the headline, the image, the tagline, or the logo) did not mediate the effect of the message framing strategy on attitude. Additionally, there was no significant relationship found between the attention paid to the advertisement and post-exposure attitudes. However, there was a significant difference found between the attention paid towards the positively framed advertisement and the negatively framed advertisement; including attention paid towards the whole advertisement, attention paid towards the headline and attention paid towards the tagline. In terms of attention paid towards the whole advertisement and attention paid towards the headline, the respondents paid significantly more attention in the negative message framing group. However, the respondents in the positive message framing group paid significantly more attention to the tagline than did those in the negative message framing group.

The qualitative analysis conducted in Chapter 4 found that emotions indicating *Motivation to Change* meat consumption behaviour, *Guilty Feelings*, *Positive Feelings* and *Neutral Feelings* were higher in the positive message framing group; and emotions indicating *Compassionate Feelings*, *Strong Negative Feelings*, *Negative Feelings*, *Angry Feelings* and *Mixed Feelings* were higher in the negative message framing group. The respondents' reasoning related to *Encouragement*, the *Positive Nature of the Advertisement*, *Arguments for Meat Consumption (Defeat)*, and *Indifference* were higher in the positive message framing group. Reasoning related to *Guilt*, the *Negative Nature of the Advertisement*, and *Arguments for Meat Consumption (Pro-Meat)* were higher in the negative message framing group. The findings detailed in this chapter are discussed in more detail in Chapter 5. Further, Chapter 5 details recommendations, limitations, future research, and the conclusions reached in this study.

5 CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

Due to the lack of research conducted on the topic of social marketing for the reduction of meat consumption, there remains little literature in this field. This lack of literature has made it challenging for scholars and social marketing managers to create codes of best practices in terms of effective social marketing interventions. This research aimed to take an innovative approach to analyse consumers' responses and attitudes evoked by different message framing strategies in social marketing, in terms of reducing meat consumption. This was done by using consumer neuroscience technology of facial coding, galvanic skin response, and eye-tracking, in combination with traditional, self-reporting research methods to reveal quantitative and qualitative data of whether message framing, and one's subsequent unconscious emotional and attentional responses, may influence consumers' attitudes towards the reduction of meat consumption. This chapter presents discussions based on the objectives of this research, and it summarises the findings obtained with reference to previous findings in the topic area. Following the conclusions of the findings, implications and recommendations are provided for marketing managers in the social marketing context. The theoretical contributions this study makes to the marketing industry are then outlined, followed by the limitations that were faced and recommendations for future research. Lastly, a concluding section sums up the document.

5.2 THE FINDINGS OF THIS STUDY

The following section presents the findings of the study by addressing the research objectives, and it provides answers to the research question: *Does negative message framing of a social marketing advertisement influence Cape Town meat eaters' attitudes towards the reduction of meat consumption better than positive message framing?*

The findings of the study are discussed in terms of this study's overall objectives and hypotheses, and they are compared to the findings of previous studies conducted in the topic area. Some of the conclusions supported previous findings, while others offered new insights on the topic.

5.2.1 Primary Objective

The findings of this research assisted in reaching the primary objective of the study: *To determine whether negative message framing of a social marketing advertisement influences Cape Town meat eaters' attitudes towards the reduction of meat consumption better than positive message framing.*

The results showed that negative message framing of the social marketing advertisement influenced Cape Town meat eaters' attitudes towards the reduction of meat consumption better than positive message framing. In other words, H1_A showed that respondents who were exposed to the negatively framed advertisement reported more positive attitude changes towards reducing meat consumption than those exposed to the positively framed advertisement. With this, H1_{B1} and H1_{B2} indicated that while respondents' attitudes did not differ significantly between the two treatment groups before being exposed to the stimulus, their attitudes did differ significantly after being exposed to the stimulus, with attitudes being significantly more positive after exposure to the negatively framed advertisement. These results supported those of message framing research conducted by Banks et al. (1995), Zhang & Buda (1999), Moon et al. (2016), and Yang (2018), who found negative message frames to be more effective in several different contexts, such as educational messages and messages regarding preventive health

issues. Furthermore, since the negatively framed advertisement included disgusting imagery, and only negative framing caused a significant change in attitude, these results supported the findings of Palomo-Vélez, Tybur & van Vugt (2018), who found that disgust in animal welfare messages impacted attitudes towards meat consumption significantly.

The results of H1_C and H1_D showed that exposure to the positively framed advertisement did not cause a significant change in respondents' attitudes towards the reduction of meat consumption, and exposure to the negatively framed advertisement did result in a significant change in respondents' attitudes. This supported the findings of Collymore & McDermott (2016), who found that positive frames were least effective in terms of motivating people to change their behaviour. The current findings contrast with previous literature that showed positive frames to be more effective than negative frames, when trying to encourage pro-social behaviour and persuasion (Maheswaran & Meyers-Levy, 1990; Rothman et al., 2006; Loro, 2007; Sciulli, Bhagat & Bebeko, 2012; Martínez-Fiestas et al., 2015; Casado-Aranda, Sánchez-Fernández & Montoro-Ríos, 2017; Santos et al., 2017). Since the different message framing strategies aimed to elicit different emotions, the following section discusses the role of emotion in the relationship between message framing and attitudes.

5.2.2 1st Secondary Objective

The findings discussed in this section show the results obtained in reaching the first secondary objective of this study: *To determine whether elicited emotion mediates the relationship between the message framing strategy and Cape Town meat eaters' attitudes towards the reduction of meat consumption.*

H2_A, H2_B and H2_C tested emotional valence, the level of disgust and emotional arousal elicited by the stimuli as mediators, respectively. Each of the three statistical tests indicated that these constructs did not have any significant mediating effects on the relationship between the message framing strategy and Cape Town meat eaters' attitudes towards the reduction of meat consumption. Therefore, emotion did not mediate the relationship. Previous studies conducted by Holbrook & Batra (1987) and Morris et al. (2002) showed that emotional valence mediated consumers' attitudes and accounted for variance in consumers' attitudes, contrasting results of H2_A. In the current results, a higher emotional valence elicited by the stimuli did not lead to more positive attitudes towards the reduction of meat consumption. However, the measures of emotion in the studies conducted by Holbrook & Batra (1987) and Morris et al. (2002) differed to those in this study, since they did not use consumer neuroscience measures of emotional valence. This may explain why the current findings differ. Additionally, Bagozzi & Moore (1994) and Shimp & Stuart (2004) stated that negative emotions, such as disgust, mediated the effects of advertisements, which was not supported by the results of H2_B. A higher level of disgust elicited by the stimuli did not lead to more positive attitudes towards the reduction of meat consumption. However, the measures of disgust in the studies conducted by Bagozzi & Moore (1994) and Shimp & Stuart (2004) also did not use consumer neuroscience methods; therefore, the difference in methods of measuring disgust may again explain the contrasting findings. Lastly, the current findings contrasted with the previous literature that stated emotional arousal plays a significant mediating role (Holbrook & Batra, 1987; Sanbonmatsu & Kardes, 1988; Moore, Harris & Chen, 1995; Gorn, Pham & Sin, 2001). The results of H2_C showed that the higher emotional arousal elicited by the stimuli did not lead to more positive attitudes towards reducing meat consumption. Once again, the arousal measures by Holbrook & Batra (1987), Sanbonmatsu & Kardes (1988), Moore, Harris & Chen (1995), and Gorn, Pham & Sin (2001) were not obtained with the same measures used in this study; therefore, this may explain the contrasting results. The contradicting previous findings on emotional responses may have been subject to self-reporting bias.

The results of H3_A showed no significant relationship between the emotional valence elicited by the stimuli and post-exposure attitudes towards reducing meat consumption. The results of H3_A, therefore, did not support the findings of Guerreiro, Rita & Trigueiros (2015) and Choi et al. (2016), which suggested that there is a significant relationship between emotional valence and attitudes, or that emotional valence has an impact on the persuasion to participate in social-cause initiatives. However, the measures of emotional valence obtained in the studies of Guerreiro, Rita & Trigueiros (2015) and Choi et al. (2016) were self-report measures, which may explain why their results contradict the results found in this study obtained with consumer neuroscience measures.

The results of H3_B showed no significant relationship between the level of disgust elicited by the stimuli and post-exposure attitudes towards reducing meat consumption. These results supported the findings of Clifford & Wendell's (2016) regarding disgust, where there was no evidence that disgust influences attitudes toward reducing harmful behaviours. However, these results contradicted the findings of other previous studies that suggested significant influences of disgust and strong negative emotions on attitudes and persuasion in terms of social causes (Bagozzi, Gopinath & Nyer, 1999; Nabi, 1999; Shimp & Stuart, 2004; Allen et al., 2005; Morales, Wu & Fitzsimons, 2012; Palomo-Vélez, Tybur & van Vugt, 2018; Mathur et al., 2020). Disgust was measured with self-reporting methods in these studies, explaining why the current results using consumer neuroscience measures of disgust differed.

The results of H3_C supported the findings of Guerreiro, Rita & Trigueiros (2015), in that emotional arousal did not have any influence on advertising effectiveness for certain emotional appeals. The results of H3_C showed no significant relationship between emotional arousal elicited by the stimuli and post-exposure attitudes towards reducing meat consumption. This did not support much of the research conducted on the effects of emotional arousal, which found that emotional arousal plays an important role in influencing attitudes and advertising effectiveness for different contexts regarding social causes (Sanbonmatsu & Kardes, 1988; Bebko, Sciulli & Bhagat, 2014; Choi et al., 2016; Bettiga, Lamberti & Noci, 2017). It is possible that this is because the treatment stimuli used in this study were not emotionally arousing enough, and a video stimulus treatment, or longer exposure times, may achieve results of significant influence. However, the measures of emotional arousal in the studies by Sanbonmatsu & Kardes (1988), Bebko, Sciulli & Bhagat (2014) and Choi et al. (2016) differed from the arousal measures used in the current study, which may explain the differing results. Moreover, Bettiga, Lamberti & Noci (2017) found that only conscious arousal was shown to be a strong positive predictor of attitude. The results of the current study provide new insights in terms of emotional effects on attitude. It is possible that there are other factors, not included in this study, that caused changes in attitude. The fact that no significant relationships were found between the emotions elicited by the stimuli and post-exposure attitudes provided an explanation for the lack of mediating effects of these constructs. In conclusion, neither emotional valence, the level of disgust, nor emotional arousal, played any important role in influencing consumer attitudes towards the reduction of meat consumption. To supplement these findings, the following section further discusses the emotional responses between the two experimental groups. This information may provide additional insight into the role of emotions in this study.

5.2.3 2nd Secondary Objective

Both the quantitative results and the qualitative results of this research assisted in reaching the second secondary objective of the study: *To determine whether there is a significant difference between emotions elicited by positively framed advertisements and emotions elicited by negatively framed advertisements.*

The results of H4 provided quantitative findings with statistical tests of differences between groups, and the results of self-reported emotions provided qualitative findings by comparing the emotions reported between the treatment groups. The self-reported emotions experienced during stimulus exposure supplemented the analysis of the quantitative emotional data. This allowed for a more complete understanding of the respondents' emotions to draw more detailed conclusions regarding the research topic.

5.2.3.1 Quantitative findings: Consumer neuroscience measures

H4_A, H4_B and H4_C tested whether there was a significant difference between the treatment groups' emotional valence, level of disgust and emotional arousal, respectively. The results of H4_A showed that the positively framed advertisement elicited significantly more positive emotional valence than did the negatively framed advertisement (17.33 and 9.06, respectively). The results of H4_A therefore supported the findings shown by Lang et al. (1993), Bolls, Lang & Potter (2001), Yartz & Hawk (2002), Stark et al. (2005), Shen & Dillard (2007) and Martínez-Fiestas et al. (2015). These studies found similar results, in that emotional responses differed between positively framed messages and negatively framed messages, with positive frames eliciting more positive emotional responses (higher valence), while negatively framed stimuli resulted in more negative emotional responses (lower valence). However, Shen & Dillard (2007) found that negative framing produced negatively valenced emotions, whereas in the current findings, although negative framing elicited significantly lower valence, it was not negative. The current results are more like those of Yartz & Hawk (2002), who found that valence was not negative for negative framing, but it was lower than that of positive framing. The positive valence elicited by negative framing may be explained by a desire to reduce existing negative emotions, shown by positive facial expressions (Lang et al., 1993; Agrawal & Duhachek, 2010).

The results of H4_B showed that the level of disgust elicited by the positively framed advertisement was significantly lower than the level of disgust elicited by the negatively framed advertisement (3.49 and 2.21, respectively). These results supported the findings of Bagozzi & Moore (1994), which showed different levels of disgust elicited by different emotional stimuli. The results also supported the findings of Stark et al. (2005), in that negatively framed stimuli resulted in highest levels of disgust. The results of H4_C showed that emotional arousal did not significantly differ between the positive message framing group and the negative message framing group. This result did not support the findings of Lang et al. (1993), Bolls, Lang & Potter (2001) and Stark et al. (2005), who found differences in emotional arousal elicited by negative versus positive stimuli. Rather, the results are more consistent with those of Moore, Harris & Chen (2005) and Martínez-Fiestas et al. (2015), who found that both positive messages and negative messages elicited similar levels of emotional arousal. It is possible that this result is due to the nature of the stimuli, and video stimuli may elicit more notable differences in arousal. The qualitative findings on emotion, discussed in the following section, provide more detailed explanations of how respondents felt about the stimuli. The following discussion supplements the quantitative discussion.

5.2.3.2 Qualitative findings: Self-reported emotions

In terms of respondents' self-reported feelings, *Motivation to Change* was higher in the positive message framing group than in the negative message framing group (13 and 3 occurrences, respectively). The *Motivation to Change* category was compared to the *Encouraged* category, which involved respondents' reasoning for feeling a certain way (refer to Appendix O). With this, the category *Encouraged* was also higher in the positive message framing group than in the negative message framing group (9 and 2 respectively). The most commonly reported explanation in the positive message

framing group was: *It is easy to switch to a plant-based diet / We can contribute*, whereas no respondents in the negative message framing group reported on this. It is possible that the negatively framed advertisement did not place respondents in a position where they believed they could help the situation. For example, respondent 48 (Appendix N, Transcript 1) explained, after viewing the positively framed advertisement, that they felt as if they could do something to save the animals. Considering both *Motivation to Change* and *Encouraged*, it could be concluded that the positively framed advertisement was more effective in both categories. Reports of *Motivation to Change* and *Encouraged* in the positive message framing group could be linked to feelings of tension (conscious or unconscious), due to their belief that animals should not be harmed, which does not match their actions when consuming meat (Loughnan, Bratanova & Puvia, 2012; Ransome, 2018). These respondents showed signs of wanting to avoid this cognitive dissonance by adjusting their behaviours, this being one of the dissonance-reduction methods outlined by Bergmann, von der Heide & Maller (2010), Loughnan, Bratanova & Puvia (2012) and Ransome (2018). For example, when viewing the positively framed advertisement, respondent 41 (Appendix N, Transcript 1) reported feeling inspired to eat less meat, because they do not like killing animals. Although the positively framed advertisement was more effective in terms of *Motivation to Change* and *Encouraged* feelings, this did not translate to significantly more positive attitudes towards the reduction of meat consumption, according to the results of H1c. This may be due to the verbal nature of the qualitative data, as respondents may have said what they thought the researcher wanted to hear, since the researcher was listening, whereas it might have been easier to report their true feelings in the attitude questionnaire. It is also likely that the cognitive dissonance brought about by the positively framed advertisement, that led to increased *Motivation to Change* and *Encouraged* feelings, was not strong enough to result in any actual attitudinal changes.

The qualitative results showed that the respondents reported *Compassionate Feelings* elicited by the advertisements. Respondents in the negative framing group reported more compassionate feelings than did those in the positive message framing group (11 and 8 respectively). However, the difference between the groups is not large, since both advertisements elicited reports of compassion. Therefore, the success of the negatively framed advertisement in changing consumer attitudes cannot be confidently linked to any *Compassionate Feelings* elicited in respondents. The *Compassionate Feelings* reported were linked to the welfare of others, rather than themselves, indicating that they experienced moral emotions (Haidt, 2003; Kim & Johnson, 2013). Feinberg et al. (2019) demonstrated that the experience of moral emotions led individuals to moralize an issue. The qualitative data obtained on *Compassionate Feelings* supported this, as respondent 47 (Appendix N, Transcript 1) reported feeling pity when exposed to the positively framed advertisement, with the reasoning that it is not fair for the animal to die just so that humans can enjoy meat.

Respondents also reported *Guilty Feelings* elicited by the advertisements. The positive message framing group showed higher reports of *Guilty Feelings* than did the negative message framing group (11 and 8 respectively). However, the difference between the groups' *Guilty Feelings* is not large. *Guilt* was also reported as being one of the reasons as to why respondents felt certain ways about the stimuli. Cases of reasoning categorized as *Guilt* were much higher in the negative message framing group than in the positive message framing group (27 and 11, respectively). This *Guilt* category was compared to the *Guilty Feelings* category in the previous section (refer to Appendix O), which showed conflicting results. Since these categories report the same type of feelings, it was more beneficial to combine reports of *Guilt* and *Guilty Feelings*, to obtain valuable insights. With this, the negatively framed advertisement was more effective in eliciting guilt in respondents overall (refer to Appendix O). The most common reasonings from the negative message framing group in the *Guilt* category were that respondents felt it is *Unethical / Cruel / Inhumane* (10 cases) (referring to the depiction in the negatively framed

advertisement), and that the respondents made a *Negative contribution / Directly responsible* (8), where they felt that they have contributed to animal cruelty or explained that they felt directly responsible for killing animals. These emotional experiences reported were linked to the welfare of others rather than themselves, showing that these respondents experienced moral emotions (Haidt, 2003; Kim & Johnson, 2013). Feinberg et al. (2019) demonstrated that the experience of moral emotions led individuals to moralize an issue. The qualitative data obtained on *Guilty Feelings* and *Guilt* supported this, as respondent 38 (Appendix N, Transcript 2) reported feeling guilty when exposed to the negatively framed advertisement, and they moralized the issue by realizing that animals suffer, for humans to enjoy eating meat. Therefore, these results show that negative framing was more effective in bringing about the moralization of the issue, and guilty feelings may explain the success of the negatively framed advertisement.

As expected, no respondents in the positive message framing group reported *Strong Negative Feelings*. This was expected, due to the positive nature of the stimulus they were exposed to. There were 29 cases of *Strong Negative Feelings* in the negative message framing group. Since the negative framing involved shocking and disgusting imagery, this was to be expected. The most reported of the *Strong Negative Feelings* were the feelings of *Disgust* (11) in the negative framing group. This supported the findings from H4_B, which showed a significantly higher level of *Disgust* elicited in the negative message framing group, measured with facial coding. The higher the amount of *Disgust* reported may be a result of the lowering of the ‘threshold of repugnance’, since consumers are becoming less willing to contemplate the origins of their food (Mennell, 1985; Baker, Thompson & Palmer-Barnes, 2002). For example, respondent 42 (Appendix N, Transcript 2) reported feelings of disgust, and demonstrated how the negatively framed advertisement forced them to think about where their meat comes from. Respondent 42 referred to what animals must go through just for consumers’ enjoyment, and that those thoughts were suppressed until seeing the advertisement. This further supported Bagozzi, Gopinath, & Nyer (1999), Santos et al. (2017) and Feinberg et al. (2019), in that the experience of the moral emotion ‘disgust’ led individuals to moralize the issue. Interestingly, some respondents in the negative framing group laughed when explaining that they felt disgusted; this may have been a method to reduce any uncomfortable feelings elicited by the stimulus (refer to respondent 12 and respondent 14, Appendix N, Transcript 2). This provides an explanation for the positive valence of emotions elicited in the negative message framing group (H4_A). The combination of facial coding measures and self-reported feelings of *Disgust* provide a strong conclusion that the negatively framed advertisement elicited higher levels of disgust than the positively framed advertisement.

Similarly, the negative message framing group had more reports of *Negative Feelings* than the positive message framing group (20 and 2 respectively). The 2 *Negative Feelings* reported in the positive message framing group were *Sad* feelings, while 15 respondents in the negative message framing group reported feeling *Sad*. These results assist in explaining the lower valence of facial expressions found in H4_A. There were no cases of *Angry Feelings* reported in the positive message framing group, and there were 5 in the negative message framing group. The qualitative data showed that some respondents rationalised their negative emotions by explaining that they are angry because the animal could have been killed in a more humane way (refer to respondent 17 and respondent 20, Appendix N, Transcript 2). These respondents attempted to lower their cognitive dissonance, since they stated that they do not approve of animal cruelty, and then justified their meat-eating behaviour by reinforcing their beliefs that there are ‘good’ ways in which animals can be slaughtered for their meat.

For the *Positive Feelings* category, it was expected for cases to be higher in the positive message framing group than in the negative message framing group, due to the nature of the experiment. With

this, 21 respondents reported *Positive Feelings* in the positive message framing group, and there were no *Positive Feelings* reported in the negative message framing group. These results show that the positively framed advertisement made the respondents feel good. This supported the quantitative results of H4_A, which showed significantly more positive valence in the positive message framing group. However, making the respondents feel good did not result in more positive attitudes towards the reduction of meat consumption, thereby conflicting with the suggestions made by Ransome (2018). These results supported those of Collymore & McDermott (2016), who found that the respondents reported feeling most happy, satisfied, and comfortable with their current behaviour in positive message framing; therefore, they were not motivated by positive framing. Therefore, the higher reports of *Positive Feelings* in the positive message framing group may explain why the positive message framing did not cause significant changes in attitudes towards the reduction of meat consumption. In addition, the qualitative data showed that some respondents that viewed the positively framed advertisement laughed and indicated amusement regarding the advertisement (refer to respondents 3, 4, 13, and 34, Appendix N, Transcript 1).

The *Mixed Feelings* reported in this study were higher in response to the negatively framed advertisement, with 3 cases in the positive framing group and 8 cases in the negative framing group. It is not effective for a social marketing advertisement to elicit mixed feelings, as it is not necessarily helpful when attempting to persuade consumers to change their behaviour. Respondent 40 (Appendix N, Transcript 2) reported that they felt confused by the negatively framed advertisement, because they did not think the advertisement showed the full story of what was happening to the animal. Since *Mixed Feelings* included reports of the respondents feeling *Conflicted*, *Confused* or *Sceptical*, this indicated that these respondents employed passive advertisement avoidance in the form of contesting strategies, where they contested the content, or the source of the message, thereby dismissing the validity of the message. As result, the message lost its credibility to these respondents, which can reduce its impact. Despite the negative framing eliciting more *Mixed Feelings*, it was more successful in influencing the respondents' attitudes towards the reduction of meat consumption than did the positive framing.

It is not effective for a social marketing advertisement with either positive or negative framing strategies to elicit neutral feelings or indifference, since this implies that it has little effect on the consumers. Therefore, the results of the *Neutral Feelings* category can help in analysing what is not working effectively. *Neutral Feelings* were much higher in the positive message framing group than in the negative message framing group (23 and 6 respectively). Furthermore, some of the explanations regarding why respondents felt a certain way were categorised as *Indifference*. *Indifference* explanations were more common in the positive message framing group than in the negative message framing group (10 and 5 respectively). These results may be because it was more difficult to express neutral feelings or indifference, when exposed to a negatively framed advertisement, therefore negative framing was more successful in this regard. The descriptive statistics obtained from the quantitative data showed that the negatively framed advertisement was effective in improving the attitudes of respondents, on average, from feeling neutral about 'adopting a meat-free diet in the next six months' to rating it as 'somewhat enjoyable' and 'somewhat pleasant', further explaining that it may have been more difficult to express indifference when exposed to the disgusting image depicting what animals have to go through. When compared with the *Neutral Feelings* category in the previous section (refer to Appendix O), it can be concluded that more respondents in the positive message framing group reported neutral or indifferent feelings overall. This may explain why the positive message framing did not cause significant changes in attitudes towards the reduction of meat consumption. For example, respondent 53 (Appendix N, Transcript 1) reported that the positively framed advertisement did not make them feel any different. Respondent 4 and respondent 39 (Appendix N, Transcript 1) provided

the typical response, indicating indifference when exposed to the positively framed advertisement. In summary, self-reported emotional responses differed between the two experimental groups in many different aspects. Since some of the aspects discussed in this section were not detailed in the literature review, they were not directly related to the goals of this research, thereby offering aspects for future research. The following section discusses the findings related to attention, as both emotion and attention were important constructs of this study.

5.2.4 3rd Secondary Objective

The findings summarised in this section show the results obtained in reaching the third secondary objective of this study: *To determine whether attention mediates the relationship between the message framing strategy and Cape Town meat eaters' attitudes towards the reduction of meat consumption.*

The results of H5 showed that the amount of attention paid to any of the abovementioned areas of interest (AOIs) did not mediate the relationship between the message framing strategy and Cape Town meat eaters' attitudes towards the reduction of meat consumption. These results therefore did not support previous literature that suggests the more attention dedicated to an advertising message, the more likely the message would influence their beliefs and attitudes in terms of accepting persuasion messages (Cialdini, Petty & Cacioppo, 1981; Guerreiro, Rita & Trigueiros, 2015; Sanchez & Alley, 2016).

Additionally, the results of H6 showed that there was no significant relationship between attention to the stimuli and post-exposure attitudes towards the reduction of meat consumption. This explains the lack of mediation effects shown by H5. This result did not support the findings of Lee & Ahn (2012) and Sanchez & Alley (2016), which indicated that the amount of attention paid to an advertisement influences consumer attitude. It is possible that there are other factors, not included in this study, that caused increases in attitude in the negative message framing group. Behaviours regarding meat consumption are complex and are influenced by a range of factors, including stage of life, friends, entertainment, perceptions, beliefs, knowledge, norms, and values (Bogueva & Phau, 2016). The following section discusses further findings regarding differences in attention between the two experimental groups. The following discussion provides some further understanding of how respondents reacted to the stimuli.

5.2.5 4th Secondary Objective

The findings summarised in the following section assisted in reaching the fourth secondary objective of the study: *To determine whether there is a significant difference between attention towards positively framed advertisements and attention towards negatively framed advertisements.*

The results of H7_A showed that attention to the positively framed advertisement was significantly lower than attention to the negatively framed advertisement (fixation duration of 248.76 and 209.03 ms/m, respectively). This supported the previous findings, which showed that negative stimuli receive more attention than positive ones (Bolls, Lang & Potter, 2001; Estes & Verges, 2008; Martínez-Fiestas et al., 2015; Hamelin, Moujahid & Thaichon, 2017). However, these results did not support those of Yang (2018) who found that smokers exposed to positively framed messages showed greater attention than those exposed to negatively framed messages, since H7_A showed that meat eaters exposed to positively framed messages showed less attention than those exposed to negatively framed messages. Dahl,

Frankenberger & Manchanda's (2003) findings that shocking content significantly increases attention may explain the greater amount of attention dedicated to the negatively framed advertisement.

For both the positive framing group and the negative framing group, the most attention was focused on image in the advertisement compared to the other AOIs (224.73 and 274.87 ms/m, respectively). These results supported the previous findings that showed that the image attracts the most attention in social marketing advertisements (Pieters & Wedel, 2004; Sciulli, Bhagat & Bebko, 2012; Bebko, Sciulli & Bhagat, 2014; Santos et al., 2017). The results from H7_D showed that those respondents who were exposed to the positively framed advertisement paid significantly more attention to the tagline than those who were exposed to the negatively framed advertisement (fixation duration of 211.41 and 171.97 ms/m, respectively). Additionally, as shown from H7_E, the respondents paid more attention to the logo in the positively framed advertisement compared to the logo in the negatively framed advertisement (218.62 and 206.75 ms/m, respectively), although the difference was not significant. This supported the previous findings, which showed that positive advertisements, leading to more positive emotions, resulted in attention being drawn to areas other than the image, such as the brand and the logo (Bebko, Sciulli & Bhagat, 2014; Guerreiro, Rita & Trigueiros, 2015).

The results of H7_C supported this finding, where more attention was paid towards the image of the negatively framed advertisement than to the image of the positively framed advertisement (274.87 and 224.73 ms/m, respectively), although the difference was not significant. This result further supported previous findings, which showed that the respondents focused on disgusting images for longer (Stark et al., 2005); however, this did not support Izard's (1997) suggestion that disgust is more likely to motivate the turning of attention elsewhere (this was truer for the positively framed advertisement, where the respondents paid increased attention to the tagline and the logo). This may be because the image in the negatively framed advertisement was more 'novel', and it was therefore considered more carefully than other message features, resulting in less attention being drawn to the tagline and the logo (Biener et al., 2004; Andrews et al., 2014).

The results of H7_B showed that significantly more attention was focused on the headline of the negatively framed advertisement than on the positively framed advertisement (fixation duration of 216.21 and 188.57 ms/m, respectively). In the positive framing group, the headline AOI also received the least attention, compared to the other AOIs (188.57 ms/m), and for the negatively framed advertisement, the tagline received the least attention, compared to the other AOIs (171.97 ms/m). The heatmaps presented in Appendix J provide more insight into the attentional responses in this study. The eye-tracking metrics shown in the heat maps supported the results of H7. In addition to the attitudinal, emotional, and attentional responses investigated in this study, there were some additional findings that the researcher considered to be interesting in terms of this research. These are discussed in the following section.

5.2.6 Additional Findings

The qualitative results of the respondents' self-reported reasoning provided a deeper understanding of why they felt the way they did, when exposed to the stimuli. Some of the explanations provided by the respondents related to their reported emotions, and they supplemented the findings that assisted in reaching the second secondary objective. However, some of the explanations provided allowed the researcher to draw additional conclusions from this study. These explanations supplemented the findings of the research, by adding further insights drawn from the respondents' thoughts regarding the social marketing advertisements. Much of the self-reported reasoning found in the qualitative results

were based on the respondents' beliefs regarding reducing meat consumption. Therefore, these results contribute towards the cognitive component of their attitudes towards the reduction of meat consumption (Najmi, Atefi & Mirbagheri, 2012). These qualitative results provided valuable insights and a deeper understanding of how meat eaters feel about reducing meat consumption, since attitudes develop reasonably from the beliefs that people hold about the attitude object (Fishbein & Ajzen, 1975; Ajzen, 1991; Ransome, 2018).

The categories *Positive Nature of the Advert* and *Negative Nature of the Advert* indicated how often respondents referred to either the positive imagery and message in the positively framed advertisement, or the negative imagery and message in the negatively framed advertisement, respectively. Therefore, there were 20 explanations referring to the *Positive Nature of the Advert* in the positive framing group, and no cases in the negative framing group. This category was compared with *Positive Feelings* (refer to Appendix O), which showed that reports of *Positive Feelings* and the *Positive Nature of the Advert* supported each other. Similarly, there were no explanations referring to the *Negative Nature of the Advert* in the positive framing group and 14 among the negative framing group. This category was compared with *Strong Negative Feelings* and *Negative Feelings* (refer to Appendix O), which showed that the results of these categories supported each other. The results for the *Positive Nature of the Advert* and for the *Negative Nature of the Advert* confirm that the positively framed advertisement was considered positive in nature, while the negatively framed advertisement was considered negative in nature.

In terms of *Arguments for Meat Consumption: Pro Meat*, there were slightly more *Pro Meat* arguments in the negative message framing group than in the positive message framing group (7 and 5, respectively). Although the difference between the groups is small, this result supported the claim that the respondents are more likely to respond defensively and to discount the stimulus that would lead to negative emotions (Andrews et al., 2014). Furthermore, this supported the findings of Batra & Stayman (1990), who found that positive moods reduce counter argumentation. The descriptive statistics obtained from the quantitative data showed that the positively framed advertisement, on average, improved the attitudes of the respondents from somewhat disagreeing that 'consuming meat products is a wise thing to do' to feeling neutral about whether it is a wise thing to do or not. Positive framing was, therefore, somewhat more effective in convincing the respondents that eating less meat is a wise thing to do. Some of the *Pro Meat* arguments included: *There are better ways / Not the proper environment to kill an animal* (than what was depicted in the negatively framed advertisement), *Eating meat is necessary / A fact of survival*, there are *Health concerns* when one does not include meat in one's diet, consumers *Really like meat*, and that *There will always be enough animals*. Since both the positive and negative framing groups made arguments, such as these, this type of response may not necessarily be a result of the message framing strategy used, but rather a result of pre-existing attitudes that are used to scrutinize the argument presented.

The counterarguments arguments made to support meat consumption can be explained by feelings of tension (conscious or unconscious), since their beliefs that animals should not be harmed do not match their actions of consuming meat (Loughnan, Bratanova & Puvia, 2012; Ransome, 2018). These respondents showed signs of wanting to avoid cognitive dissonance by justifying their behaviours, attitudes, and beliefs, one of the dissonance-reduction methods outlined by Bergmann, von der Heide & Maller (2010), Loughnan, Bratanova & Puvia (2012) and Ransome (2018). These counterarguments indicated passive advertisement avoidance in the form of contesting strategies and empowering strategies. Some of the *Pro-Meat* arguments can be explained by respondents employing contesting strategies, since they involved contesting the content of the advertising message, where the arguments

presented were scrutinized and the respondents generated reasons to refute them, thereby decreasing agreement with the counter-attitudinal message (Fransen et al., 2015). For example, when viewing the negatively framed advertisement, Respondent 18 (Appendix N, Transcript 2) explained that they do not want to be cruel to animals, but they rationalized their meat-eating by stating that there are more decent ways to kill an animal than what was depicted in the advertisement, and that adopting a plant-based diet is not ideal for their health. This response conflicted with that of respondent 56, who believed that the slaughter depicted in the negatively framed advertisement was the more humane way of doing it (refer to Appendix N, Transcript 2); therefore, meat eaters show inconsistent beliefs regarding the ‘best’ way to slaughter animals.

The results showed that some respondents also attempted to maintain their existing attitudes by employing empowering strategies, which involved reassuring themselves of their existing attitude (Fransen et al., 2015). The explanation made by respondent 9 that they *Really like meat*, provided a good example of attitude bolstering, which is a type of empowering strategy that involves defending their existing attitudes, rather than challenging the message (Fransen et al., 2015) (refer to Appendix N, Transcript 1). This supported the findings of Feinberg et al. (2019), in that motivations involving the tastiness of meat pulled individuals away from moralizing the issue. There was also some evidence of self-assertion as an empowering strategy, which involves individuals reminding themselves that they are confident about their attitudes and behaviours, and nothing can be done to change them (Fransen et al., 2015). For example, respondent 21 (Appendix N, Transcript 1) stated that it is not their plan to switch to a plant-based diet.

There were more *Defeat* explanations in the positive message framing group than in the negative message framing group (5 and 1 respectively), contradicting the findings that more respondents in the positive framing group reported feelings of *Motivation to Change* and *Encouraged*. This result is surprising, since the positively framed advertisement was expected to persuade consumers that they can make a difference. However, the qualitative results show that some respondents still felt powerless after viewing the positively framed advertisement, and they were not convinced that their behaviour would have any impact. For example, respondent 2 and respondent 8 (Appendix N, Transcript 1) still believed that they do not have the ability to make a difference on an individual level, and they felt that defeat was a good justification to continue consuming meat products. This may provide some explanation as to why those respondents who viewed the positively framed advertisement did not experience significant attitude change, and perhaps it is feelings of defeat that play a more important role in consumers’ attitudes than the feelings of motivation (Roberts, 1996; Tanner & Kast, 2003). The most common explanation of *Defeat* was that *One person will not make a difference / Unrealistic to save all the cows*. It is interesting to note that more respondents in the positive message framing group reasoned with defeat, since these respondents directly contested the message in the advertisement. Although the concepts discussed in this section were not the focus of this research, they provide additional insights, recommendations, and thoughts to consider in future research conducted on this topic. The following section provides some practical implications and recommendations from this study.

5.3 PRACTICAL IMPLICATIONS AND RECOMMENDATIONS

Social marketing managers are challenged with a very difficult task, since social marketing is a central element in promoting concepts such as responsible consumption, consumption reduction, voluntary simplicity, and sustainable lifestyles (K. Peattie & S. Peattie, 2009). There is little research available to guide the design of social marketing interventions, and what research is available is contradictory (Mathur et al., 2020). This study has examined the effectiveness of different message framing strategies

in the social marketing context, by comparing the positive framing and the negative framing of advertisements aimed at reducing meat consumption, in terms of how they impact emotional responses, attentional responses, and attitudes towards the reduction of meat consumption. The findings of this research provide recommendations that social marketing organizations or initiatives can use to improve the success of their interventions.

5.3.1 Message Framing in Social Marketing Advertisements

The findings of this study indicated to social marketing managers that negatively framed social marketing advertisements are more effective than positively framed ones when attempting to change meat eaters' attitudes regarding reducing meat consumption. The results related to negative framing suggest that animal welfare messages depicting disgust should be used to positively impact attitudes toward reducing meat consumption. This is an important implication of this research, that is supported by Palomo-Vélez, Tybur & van Vugt (2018). Further, this study showed that negative message framing with disgusting content plays an important role in communication effectiveness in social marketing, supporting suggestions made by Morales, Wu & Fitzsimons (2012), Andrews et al. (2014), and Collymore & McDermott (2016). It is therefore recommended, despite contrary suggestions made by Ransome (2018), that messages encouraging reduction in meat consumption should highlight the negative consequences of consuming meat.

The results of this research also reveal that positively framed advertisements are not effective in influencing meat eaters' attitudes toward the reduction of meat consumption. Since Loroz (2007) suggested that when the consequences of others are emphasized in social marketing, positive message framing is more successful, the current findings proved otherwise. The recommendations made from this study contrast Maheswaran & Meyers-Levy's (1990) suggestion that positive frames should be utilised when the audience is assumed to have a more casual interest in the issue. Negative framing of anti-meat social marketing advertisements is more successful when the consequences to others (animals) are emphasized, and when the audience is assumed to have a casual interest in the issue of animal welfare (being meat eaters). The main implication of these inconsistencies is that the effects message framing in social marketing advertisements may differ depending on the issue at hand, since Maheswaran & Meyers-Levy (1990) and Loroz (2007) explored the effects of emphasizing benefits of recycling, benefits of preventing HPV and benefits of using a product. In other words, social marketers should be aware that responses to message framing in animal welfare and meat consumption-related advertisements may differ from responses to framing in other types of social advertisements. Therefore, it is recommended that social marketing managers should carefully select which message framing strategy to use depending on the topic of their advertisement. Furthermore, they should not apply generalized marketing recommendations to their advertising.

This study suggests that for social marketing advertisements involving animal welfare and meat consumption, marketers should implement negative message framing. Although the findings of this study and previous literature have shown that appeals related to animal welfare can successfully influence consumer attitudes, this is only true for certain types of appeals. Issues addressed with social marketing interventions are complex and advertisements should be carefully designed according to the marketing research findings (Fox & Kotler, 1980). Overall, the main implication of this research is that message framing is an important factor to consider when designing social marketing advertisements to change attitudes toward different pro-social behaviours.

5.3.2 Emotional Responses to Social Marketing Advertisements

This research revealed that emotional responses elicited by the treatment stimuli (emotional valence, level of disgust and emotional arousal) did not have mediating effects on the relationship between message framing and Cape Town meat eaters' attitudes towards the reduction of meat consumption. Additionally, the findings indicated that there was no significant relationship between these emotional responses to the stimuli and meat eaters' post-exposure attitudes. Therefore, the change in attitude that occurred after exposure to the negatively framed advertisement suggest that there are other influential factors not included in this study that social marketing managers should acknowledge, such as individual issues of agreement (Covey, 2014; Collymore & McDermott, 2016). According to Bogueva & Phau (2016), decisions to eat meat are complex, and they are influenced by a range of factors, such as the stage of life, friends, entertainment, perceptions, beliefs, knowledge, norms, and values. This is relevant to many different applications of social marketing, and managers should take these factors into consideration when designing campaigns. The results indicated that positive message framing strategies cause an audience to experience more positive emotions, and although negative message framing strategies cause an audience to experience fewer positive emotions, the emotional experience is not necessarily always negative. This suggests that the message framing strategy used influences the audience's emotional responses, and it is, therefore, important for social marketers to consider how they want the audience to feel, when designing social marketing interventions (Anilkumar & Joseph, 2012).

The findings of this research also offer implications beyond emotional valence differences. The results suggest that although positively framed social marketing messages make an audience feel more motivated and encouraged to participate in the recommended behaviour than negative frames, evoking these feelings does not necessarily translate to changes in their attitudes towards the issue, and therefore, an audience is not likely to act on those feelings. This indicated to social marketing managers that the cognitive dissonance brought about by positive framing in the social marketing context may not be strong enough to cause any attitudinal changes. Interestingly, even though the negative framing did not make respondents feel as if they could help the situation, it was more effective in influencing attitudes towards reducing meat consumption. Therefore, this is an important implication for social marketing managers, since making the audience feel good does not result in more positive attitudes towards participating in the cause, thereby contradicting the assumption made by Ransome (2018). This is explained by the current findings and by Collymore & McDermott (2016), as positive framing results in an audience feeling happy, satisfied, and comfortable with their current behaviour, or even amuses the audience, resulting in little motivation to change. Therefore, positive message frames do not evoke beneficial emotions, and social marketing managers should use negative message frames to evoke the appropriate emotions in persuasion. This can be applied to social marketing efforts in any topic area.

The results of this research also indicated that negative framing, including disgusting imagery, evokes a large amount of disgust. This type of framing used in the context of reducing meat consumption forces the audience to think about where their meat comes from, which is something consumers do not usually consider. The fact that individuals were disgusted by images of animals being slaughtered indicated that consumers are sheltered from the meat production process to the extent that they rarely think about it when they purchase meat products. This indicated that social marketers should leverage feelings of disgust to increase awareness, as consumers should always be mindful about where the products they purchase come from. As suggested by Kunst & Hohle (2016), this research recommends that social marketing managers should use appeals encouraging mind attribution to meat animals, in order to reduce the willingness to eat meat. Therefore, using disgusting imagery is an effective method for social marketing interventions that hope to persuade consumers from consuming meat.

Further emotional implications, beyond valence and disgust, were found in terms of compassion, guilt, mixed feelings, and indifference. Although these responses were not the focus of this study, the findings provide some useful recommendations for social marketing managers. Both positive framing and negative framing can evoke compassion; therefore, if this is the goal of a social marketing campaign, either of the framing strategies could be used. However, the current findings indicated that if the goal of a social marketing intervention is to evoke guilt in an audience, then negative message framing strategies are more effective. According to Haidt (2003), Haidt (2007) and Kim & Johnson (2013), feelings of compassion and guilt are considered to be moral emotions, and they therefore play an important role in explaining how individuals make decisions, based on an evaluative feeling concerning what behaviours are good and those that are bad. Therefore, framing strategies that elicit these moral emotions are useful to social marketing managers, since these moral emotions lead individuals to moralize the issue (Feinberg et al., 2019). Negative message framing is more effective, overall, in bringing about moral emotions, and therefore, the moralization of the issue. Negative message framing can be utilised to encourage an acknowledgement of cruelty and inhumanity among meat eaters, and this can be applied to other social marketing interventions, in order to bring about the moralization of other social issues.

The findings of this study also indicated that negative message framing in a social marketing context can bring about mixed feelings and scepticism in an audience, and although the negative framing was more successful than positive framing in changing attitudes, social marketing managers need to be careful to ensure that the content and the message they are sending is clear. Negative message frames can cause passive advertisement avoidance in terms of an audience contesting the content or the source of a message, thereby dismissing the validity of the message. As a result, this can reduce the impact of a social marketing advertisement (Fransen et al., 2015). When designing social marketing interventions relating to any social issue, whether positively or negatively framed, clear explanations with credible references should be included in the messages, in order to avoid confusion and to reduce source derogation.

The results on emotional arousal revealed that the advertisements used in this study did not elicit different levels of emotional arousal, and this research, therefore, recommends that social marketing managers should use more emotionally arousing stimuli (such as videos), since print advertisements did not elicit influential emotional arousal. Furthermore, communicating more emotionally arousing messages promoting new social norms can induce resistance to anti-consumption messages (Stoll-Kleemann & Schmidt, 2017).

The qualitative findings indicated that positive framing resulted in increased neutral and indifferent feelings, thereby showing that positive framing might not be motivating enough to influence consumer attitudes towards participating in social causes. Message framing in social marketing that is aimed at influencing attitude change should be designed in such a way as to avoid neutral and indifferent feelings in the audience. With this, the results indicated that it is more difficult for an audience to feel neutral or indifferent, when faced with a negatively framed message, including disgusting imagery. It is, therefore, not recommended to use positive framing strategies if the goal of a social marketing intervention is to elicit strong emotional responses. Although the emotional responses were not found to influence attitudes, the findings revealed that some emotional responses are beneficial, while some are hinderances. Therefore, these implications are important to social marketers, so that they know which emotional responses are elicited by positive and negative framing strategies. Social marketing managers should consider how they want the audience to feel when designing advertisements.

5.3.3 Attentional Responses to Social Marketing Advertisements

The findings of this research indicated that the amount of attention focused on a social marketing advertisement aimed at reducing meat consumption, or on certain areas of the advertisement, does not mediate the relationship between message framing and meat eaters' attitudes towards the reduction of meat consumption. In addition, the amount of attention paid towards the advertisement does not influence attitudes towards reducing meat consumption. This indicated to social marketers that consumers' attitudes and beliefs regarding social causes are strong (Bergmann, von der Heidt & Maller, 2010), and it takes more than attracting their attention to an advertisement to influence their attitudes. However, the findings indicated that the negative framing of social marketing advertisement attracts more attention than positive framing, and social marketers should implement negative framing strategies to increase attention to the advertisement (Santos et al., 2017). Managers should also use disgusting images in their social marketing interventions promoting anti-consumption, since the audience was found to focus on the disgusting image for longer (Santos et al., 2017). Furthermore, with higher amounts of attention focused on the headline text and image of the negatively framed advertisement, and less attention focused on areas below a negatively framed image, social marketing managers should include important persuasion information in the headlines of negatively framed advertisements, since the audience would be more likely to pay attention. Negative framing in social marketing interventions might be more impactful if the headline text included facts, with trustworthy references, that explain the image presented. Since attention did not lead to the positive attitudinal change in the negative framing group, including credible and informative text may result in attention being more influential towards attitude.

On the contrary, as suggested by Bebko, Sciulli & Bhagat (2014) and Guerreiro, Rita & Trigueiros (2015), the results indicated that when positive framing strategies are used, the audience focuses their attention below the image, and therefore, important information could be placed anywhere on the advertisement. However, social marketing managers should be careful when using positive framing strategies, as the findings indicated increased attention focused on the tagline and on the logo, which may be effective in product marketing, but is not necessarily the goal in social marketing, which aims to shift the focus from products and profit to socially beneficial causes (Fox & Kotler, 1980). However, whether positive or negative framing is used, the image in the advertisement attracts the most attention; therefore, images play an important role in social marketing advertisement design (Pieters & Wedel, 2004; Bebko, Sciulli & Bhagat, 2014; Santos et al., 2017). Thus, managers should use high-valence images that are highly relevant and impactful (Santos et al., 2017). These recommendations could be applied to many forms of social marketing interventions.

In conclusion, the findings of this study inform social marketing managers that the emotional tone of an advertisement affects resource allocation and attention, as suggested by Bolls, Lang & Potter's (2001). In accordance with Bebko, Sciulli & Bhagat's (2014) suggestion, it is recommended that strong, negatively framed advertisements should be used to attract attention, when persuading consumers towards participating in social causes (such as advertisements with disgusting imagery). However, since this increased attention did not influence any change in attitudes, there are other factors, not included in this study, that might play a more important role in influencing attitudes, which social marketing managers need to be aware of (such as individual factors). Overall, emotional responses and the attention evoked by social marketing advertisements may not be the reason why consumers changed their attitudes towards reducing meat consumption.

5.3.4 Additional Implications

This study obtained some additional findings from the qualitative data that have important implications for social marketing managers. One of the most important additional implications being that social marketing advertisements aimed at reducing meat consumption bring about several different ‘pro-meat’ arguments. The findings suggested that positive message framing somewhat reduces the amount of counter-argumentation (Batra & Stayman, 1990), but it was a prevalent response to react defensively to both message framing strategies (Andrews et al., 2014). This indicated that defensive counter-argumentation is not necessarily a result of the message framing strategy used, but rather a result of passive advertisement avoidance, with the goal of maintaining the existing attitudes (Fransen et al., 2015). These results suggest that social marketing managers should be aware when designing anti-consumption messages that the audience is likely to scrutinize the argument presented. An audience that is exposed to counter-attitudinal messages is likely to generate reasons to refute them (Fransen et al., 2015).

Additionally, the findings showed that some ‘pro-meat’ counterarguments sometimes contradicted each other, indicating that the reasons generated to refute social marketing aimed at reducing meat consumption are ill-informed, and marketing managers should design messages to better inform meat eaters to reduce ill-informed counter-argumentation. Examples shown by the findings of this study reveal that the rationalisations for meat consumption are based on incomplete knowledge and misinformation, and it highlights the lack of awareness of animal experience, of the negative effects of factory farming, of the nutritional value of plant-based meals, and of ways to prepare plant-based meals (Bergmann, von der Heidt & Maller, 2010). This research indicated the necessity for educational social marketing interventions that increase awareness among meat eaters and increase their understanding of the meat industry. It is therefore recommended to include more information in advertisements aimed at reducing meat consumption, or aimed at any other anti-consumption cause, with credible references. Furthermore, to avoid contesting strategies found in this research, social marketing managers could implement two-sided arguments (Fransen et al., 2015). In this way, advertisements can directly refute the counterarguments themselves, leaving less room to thereby rationalise harmful behaviours and to maintain current attitudes. Furthermore, the impact of the advertisement increases, when it includes some counter-information (Eisend, 2006; Fransen et al., 2015).

This research recommends that social marketing interventions aimed at reducing meat consumption should include educational aspects that address the following common counterarguments: That eating meat is necessary, that there are negative health consequences of plant-based diets, that the meat industry slaughters animals in ethical/humane ways, and that the animals reproduce, therefore, there would always be enough. Anti-meat campaigners should emphasise their efforts on making the public aware that what is advertised in the meat industry bears little resemblance to the reality of the conditions (Fiddes, 1991). Furthermore, motivations involving the tastiness of meat pull individuals away from moralization of the issue (Feinberg et al., 2019), and future social marketing interventions should address this argument with negative message framing emphasising that the taste of meat is not what matters in a bigger picture view.

The findings of this research also suggest that social marketing managers need to design interventions that reduce the likelihood of empowering strategies, which can reduce the effectiveness of advertisements. This can be done by focusing the message on the consumers, by reminding them of their important values (Fransen et al., 2015). According to Fransen et al. (2015), when people are self-affirmed, they are more open to messages that are dissonant with their attitudes, because they do not

feel the need to be defensive. This also applies to the findings which indicated that consumers refute social marketing advertisements by arguing defeat. This was more common after exposure to the positively framed advertisement, thereby suggesting that negative framing of anti-consumption social marketing interventions should be used, to make it more difficult for the audience to come up with excuses (such as defeat). Since positive framing in social marketing interventions is often designed to make the audience feel as if their actions would make a difference, these results suggest that this may not be the most effective approach. Social marketers should bear in mind that an audience will contest both negatively framed and positively framed counter-attitudinal messages, but negative frames have a more significant impact. Thus, positively framed anti-consumption social marketing advertisements are not impactful enough in their attempts to inspire consumers. Consumers may feel good, and they may feel motivated to act, but this is not enough to cause attitudinal changes, and thus behavioural changes. Feelings of defeat may be an important factor contributing to the attitudes towards reducing meat consumption, thereby indicating that social marketers should use more impactful messages, such as those in negative framing strategies. Since the act itself of participating in a social movement can be motivating to consumers, beyond the possible outcomes that may result from participation (Mathur et al., 2020), this research recommends that when using the self-affirming strategy, social marketers should emphasize that success is not measured by the outcomes or the consequences, since these are neither easily measured, nor necessarily the main goal of those involved (Robinson, Phillips, Bishop, Daya, Gladstone, Ko, Loewen, Sim, Wilmot & Wollenberg, 2016).

In conclusion, as suggested by Olsen, Slotegraaf & Chandukala (2014), framing the message in social marketing encourages certain interpretations, some interpretations being more beneficial than others. This research indicated that meat eaters express strong pro-meat consumption views (Bergmann, von der Heidt & Maller, 2010) and that there are several different motivations that meat eaters use to support their meat consumption that social marketers should be aware of. The additional results also showed that the choice to eat meat is not entirely rational, but it is influenced by a combination of emotional, social, and nutritional messages (Bogueva, Marinova & Raphaely, 2017). Additionally, the counterarguments used present different ways of reducing cognitive dissonance and avoiding the message that advertisements deliver. Overall, the additional findings of this study indicated that motivations for maintaining meat consumption are strong, varied, and complex (Bergmann, von der Heidt & Maller, 2010). These findings, and the findings from previous research, emphasise a lack of awareness regarding the consequences of meat consumption, and they reveal the widespread inaccuracy of messages and beliefs regarding meat consumption, and they show the influence of the meat industry in promoting excessive meat consumption (Bogueva, Marinova & Raphaely, 2017). This research, therefore, recommends that more informative social marketing interventions should be considered, in combination with negative message framing, to influence attitudes and to educate consumers on the issues at hand. Therefore, the necessity for social marketing interventions is highlighted, and these interventions need to be carefully designed, in order to maximise their impact. Overall, marketers should be aware that a significant amount of importance was placed on the perceived benefits or drawbacks of reducing meat consumption (Ransome, 2018). Therefore, social marketing interventions should do more than elicit emotions and attract attention, they also need to provide information addressing both sides of an argument.

5.4 THEORETICAL CONTRIBUTIONS OF THE STUDY

This study has made numerous contributions to marketing research. Firstly, the advertising industry has the power to influence consumers' food choices; however little research on social marketing interventions involves the topic of meat consumption (Bakker & Dagevos, 2012). This research has

contributed to the existing social marketing literature by addressing the lack of information on marketing efforts, aimed at reducing meat consumption. Kolandai-Matchett (2009) claims that further research on message framing strategies for the promotion of sustainable consumption is needed, since this area seems to be overlooked in market research studies.

The necessity to focus on meat consumption is supported by strong evidence regarding its harmful impacts globally; including its impact on health, on social and environmental justice, on animal welfare, on water and air biodiversity and on the contributions to greenhouse gas emissions (Steinfeld et al., 2006). Bogueva & Phau (2016:264) stated that “the power of marketing is within the context of whether marketing has a role to play in decreasing rather than perpetuating meat consumption”. Therefore, this research contributed to the increasing necessity for the promotion of meat-reduced diets and for the reduction of meat consumption (Smil, 2013; Raphaely & Marinova, 2014; Bogueva & Phau, 2016) since social marketing strategies can now be implemented with an increased understanding of the target markets’ responses to anti-meat messages. Therefore, this research has made important contributions towards establishing a group of elements that are most effective in influencing consumers towards ethical consumption practices.

This study makes an important contribution to the existing literature on message framing, as prior research has not provided clear recommendations on the use of message framing in social marketing. This research provides insight regarding which message framing strategies are most useful in social marketing. Prior research has shown contradictory results regarding the use of positive versus negative framing strategies in social advertisements (Sciulli, Bhagat & Bebko, 2012; Martínez-Fiestas et al., 2015; Moon et al., 2016; Casado-Aranda, Sánchez-Fernández & Montoro-Ríos, 2017; Santos et al., 2017; Palomo-Vélez, Tybur & van Vugt, 2018; Yang, 2018). This research adds to the existing knowledge by providing a clear comparison of positive message framing and negative message framing, and by showing that message framing is not straightforward, when used in social marketing. The comparison of positive and negative framing effectiveness provides useful literature that allows social marketers to understanding the effects of both strategies. Therefore, this study has contributed greatly by providing research for better developing messages in framing strategies for the communication of sustainable consumption.

This study contributes to the field of message framing by providing insight regarding how consumers react to certain message framing strategies, which was not clear in prior research. M.R. Stafford, T.F. Stafford & Chowdhury (1996) suggested that research is necessary to identify and understand audience responses to social marketing appeals for advertisers to make the most out of their output. This research has contributed valuable insights and recommendations in terms of how message framing evokes emotional and attentional responses, that can be either advantageous or disadvantageous to advertising effectiveness. Research on emotion makes important contributions to social marketing, since the issues addressed in this field are often emotional in nature (Bogueva, Marinova & Raphaely, 2017). Furthermore, research on attention specifically contributes to marketing effectiveness in an age of information overload (Simmonds et al., 2020). The understanding of how positive versus negative framing resonate with an audience contributes new findings in social marketing literature. Additionally, the inclusion of consumer neuroscience measures of emotional and attentional responses in this research offers cutting edge insight into the reactions of consumers to different message framing strategies. Understanding consumers’ unconscious emotional and attentional responses have provided findings which have not been provided in previous research on anti-consumption social marketing.

This research differs from others in that the researcher combined unbiased, consumer neuroscience measures with quantitative and qualitative self-reporting measures, thereby providing a complete understanding of how consumers respond to different message framing strategies in social marketing advertisements. Considering the growing need for social marketing, this research has contributed to the development of established rules of best practice by integrating quantitative and qualitative measures to reveal new insights and to provide a better understanding of how consumers subconsciously and consciously respond to message framing in social marketing efforts.

This research has also contributed to social marketing literature that attempts to influence consumers' attitudes towards participating in social causes. Previous social marketing research has not been clear regarding how consumers' attitudes are impacted. This research is important, since it has added to the growing body of work aimed at changing consumers' attitudes, further guiding social marketers towards more effective communication. Consumers' attitudes towards maintaining their current behaviours are strong (Bergmann, von der Heide & Maller, 2010), and this research has contributed to the existing knowledge by providing an increased understanding of how consumers respond to counter-attitudinal messages and by further recommending ways in which social marketers can maximise the impact of their messages on consumers' attitudes. It provides influential research for social marketing efforts designed to impact consumers' attitudes regarding harmful behaviours, thereby informing the development of successful evidence-based social marketing messages with the potential to positively impact human, animal, and environmental well-being. This research has shown that although social marketing campaigns have the potential to influence attitudes (Fox & Kotler, 1989), it is important to understand how certain messages resonate with the audience.

Furthermore, the findings regarding passive advertisement avoidance provide particularly valuable contributions for improving the effectiveness of social marketing advertisements. There was little knowledge regarding passive advertisement avoidance in terms of social marketing for anti-consumption. This study has contributed to the existing knowledge on advertisement avoidance in response to counter-attitudinal messages (Fransen et al., 2015), and it has contributed to the existing literature on how social marketing managers can better design advertisements, in order to reduce advertisement avoidance. Social marketers can now be better informed when designing advertisements, since this research has provided a better understanding of how advertising regarding social issues resonates with consumers, thereby allowing enhanced targeting, and thus, increased impact for social marketing campaigns (M.R. Stafford, T.F. Stafford & Chowdhury, 1996).

This study has also provided important points of theoretical consideration in social marketing theory in terms of highlighting the need for further research into the effects of message framing, emotions, and attention on social marketing advertising effectiveness. Overall, this research extends the existing research, with the following main contributions: It broadens the previous literature on social marketing for anti-consumption by comparing positive message framing with negative message framing and their influence on attitude, it measures emotional and attentional responses to better understand how consumers respond to social marketing advertisements, and it provides empirical evidence of the influence of message framing on emotion, attention and attitude towards the reduction of meat consumption. This research has also contributed to the lack of information regarding the effectiveness of positive message framing and how positive framing resonates with consumers, by providing insight into the emotional, attentional, and attitudinal responses to positively framed social advertising. This social marketing research of anti-meat consumption also contributes to the literature on social marketing involving other social issues, since many of the findings can be applied to other social marketing efforts.

5.5 LIMITATIONS OF THE STUDY

This section outlines the limitations that were encountered in this research in terms of the sample, treatment stimuli, data collection procedures and the constructs that were included in the study. Firstly, in terms of the sample used, the study was limited by the small sample size, due to the nature of the research being experimental and because of the complex nature of consumer neuroscience measures. This made data collection more time-consuming, and it was more difficult to recruit respondents without any incentive. However, sample sizes in consumer neuroscience studies are often small, and this did not negatively affect the results (Bolls, Lang & Potter, 2001; Roynes et al., 2012; Guerreiro, Rita & Trigueiros, 2015). A larger sample would be beneficial; however, it was not feasible for the scope of this study. Furthermore, this study was geographically limited to consumers residing in Cape Town, South Africa. This was a result of the study being experimental since the respondents needed to be accessible to the researcher.

Next, in terms of the treatment stimuli, the respondents were only exposed to a single version of the stimuli (either one positively framed advertisement or one negatively framed advertisement), which limited the generalizability of the findings. Furthermore, the exposure to only a print advertising format for the duration of 12 seconds, limited the amount of emotional and attentional data that were collected. The 30 second timeframe, allowing the verbal responses for each question, also limited the amount of qualitative data that were collected. The forced exposure of stimuli also limited the results of the study, as it was not taken into consideration that consumers often physically avoid advertisements in the real world (Fransen et al., 2015). Therefore, the forced exposure of the advertisements in the experimental setting did not allow the respondents to respond as they might have had they been exposed to the advertisements in their daily lives, thereby limiting the generalizability of the results. The responses to the advertisements may differ when exposure occurs naturally (Hastings, Stead & Webb, 2004).

Lastly, this study did not take into consideration the respondents' characteristics, personality variables (such as agreeableness), potential predispositions, and the desire to conform to social norms that may have impacted the results. Covey (2014) and Collymore & McDermott (2016) suggest that individual factors, such as these, may have an impact on advertising effectiveness. Despite these limitations found in this study, the objectives were reached, and the findings offered useful recommendations for marketing managers to improve future social marketing interventions. Thus, it was still possible to achieve the desired results of this study. The limitations found in this research project also allowed recommendations to be made for future research in this topical area. These recommendations are outlined in the following section.

5.6 FUTURE RESEARCH RECOMMENDATIONS

The findings of this study and the limitations that were outlined therein provide useful recommendations for future research in the topical area. The findings of this study are specific to meat-eating consumers located in Cape Town, South Africa. Therefore, future research conducted in other areas of the world following the methodology of this study is recommended. This would provide social marketing managers with useful insights relevant to the different markets, since animal welfare is perceived differently, depending on one's geography (Fuseini & Sulemana, 2018). In addition, more research on this topic is recommended with the use of a larger sample, which was not possible, due to the limited scope of the current study. Future research could also compare the responses of different generations to social marketing aimed at reducing meat consumption, since other generations may respond differently

compared to the millennials who were targeted in the current study. Investigating differences in responses between genders may also be an issue of interest for future research.

Since many of the managerial recommendations from the findings related specifically to anti-meat advertisements focused on animal welfare, future research is recommended to explore the same aspects investigated in the current study (message framing, emotional responses, attentional responses, and attitudes) in terms of other anti-meat approaches, such as social marketing advertisements focused on environmental, health, and on the food security consequences of meat consumption. This would provide social marketing managers with a well-rounded guide to promote the reduction in meat consumption. Furthermore, since there were no mediating effects or relationships found regarding emotional and attentional responses on attitudes, future research is recommended to explore these same effects with video stimuli, rather than print. It is possible that video stimuli may elicit emotional and attentional responses that are more influential on the attitudes towards meat consumption. While emotion and attention did not influence the attitudes towards reducing meat consumption, there were significant differences found between emotional and attentional responses to the different message framing strategies, and these differences did not contribute to the attitudinal change that occurred in the negative framing group. Therefore, more research on emotional and attentional influences on attitudes, using similar methods to those used in this study, is recommended.

Furthermore, future research could explore the effects other personal and contextual factors, which might influence or inhibit attitudinal change to social causes, such as individual agreeableness, prejudices, personal experiences and norms, knowledge, demographic factors, social factors, family, culture, socio-economic characteristics, and the media (Tanner & Kast, 2003). According to Bogueva & Phau (2016), consumer behaviour regarding meat consumption is complex, and it is influenced various aspects, such as stage of life, friends, entertainment, perceptions, beliefs, knowledge, norms, and values, thereby indicating the need for more topics for future research. Further research on culture, specifically, could offer valuable insights on animal welfare and social marketing, since animal welfare is perceived differently, depending on an individual's system of beliefs (Fuseini & Sulemana, 2018). In addition, while this study focused on the attitudinal aspect of the Theory of Planned Behaviour, future research on subjective norms and perceived behavioural control could add more insight into the effects of message framing in the social marketing advertisements.

The use of different research designs to further explore message framing in anti-consumption social marketing interventions is recommended, in order to elaborate on the findings obtained from this study, since the recommendations for social marketing managers are still somewhat contradictory, indicating thereby the need for more research on the topic. Furthermore, much of the literature on the role of emotions and attention in attitude formation and change has mostly focused on subjective responses, which may explain the contradictory results, indicating that more research is needed using consumer neuroscience methodologies (Sanbonmatsu & Kardes, 1988; Bagozzi & Moore, 1994; Moore, Harris & Chen, 1995; Dahl, Frankenberger & Manchanda, 2003; Shimp & Stuart, 2004; Wang, 2008; Anghelcev & Sar, 2014; Choi et al., 2016; Collymore & McDermott, 2016; Sanchez & Alley, 2016; Bettiga, Lamberti & Noci, 2017; Feinberg et al., 2019). Future research is also recommended to include consumer neuroscience measures of specific emotions beyond disgust, such as joy, anger, fear, contempt, sadness, and surprise, to provide a more detailed approach to understand emotional responses to social marketing interventions.

The qualitative findings of this study have provided valuable insights from the respondents' verbal responses. The qualitative analysis identified areas of interest regarding responses to positive versus

negative message framing strategies in anti-meat social marketing interventions that were not evident at the beginning of the study (as is often the case with qualitative research), future research is recommended to better understand those themes that were not the direct focus of this study. The qualitative findings of this study have indicated that future research is necessary to examine the effectiveness of the different self-reported responses to social marketing aimed at reducing meat consumption, such as feelings of motivation, compassion, guilt, anger, defeat, indifference, and mixed feelings. These feelings were verbally reported by the respondents in this study, in response to the anti-meat advertisements, but this study was not specifically investigating these emotional responses. Therefore, future research could provide more insight into the effects of these emotions on the attitudes towards reducing meat consumption. This is essential to social marketing, as marketers need to understand how to arouse the desired emotions within consumers, and how to avoid arousal of undesirable emotions (Bennett, 2015). Furthermore, since the qualitative findings provided evidence of passive advertisement avoidance, more research on the topic of responses to social marketing interventions is recommended to explore advertisement avoidance in more detail, and to provide further insights into how consumers attempt to maintain their current attitudes. Such future research should also investigate the responses to stimuli that are placed in a natural setting or disguised, and experiments that would allow the skipping of advertisements are recommended, in order to obtain more accurate responses from meat eaters.

LIST OF REFERENCES

- Agrawal, N. & Duhachek, A. 2010. Emotional compatibility and the effectiveness of antidrinking messages: A defensive processing perspective on shame and guilt. *Journal of Marketing Research*, 47(2):263-273.
- Ajzen, I. 1985. From intentions to actions: A theory of planned behavior. In *Action-control: From cognition to behavior*. J. Kuhl & J. Beckman, Eds. Heidelberg, Germany: Springer. 11-39.
- Ajzen, I. 1991. The theory of planned behavior. *Organisational Behaviour and Human Decision Processes*, 50(2):179-211.
- Ajzen, I. & Fishbein, M. 1980. *Understanding attitudes and predicting social behaviour*. Upper Saddle River, New Jersey: Prentice Hall, Inc.
- Allen, C.T., Machleit, K.A., Kleine, S.S. & Notani, A.S. 2005. A place for emotion in attitude models. *Journal of Business Research*, 58(4):494-499.
- Allen, M. Ed. 2017. *The SAGE encyclopedia of communication research methods*. Thousand Oaks, California: Sage Publications.
- Al Pop, N., Iorga, A.M. & Pelau, C. Eds. 2013. Using neuromarketing studies to explore emotional intelligence - As a key to the buying decision process. *Proceedings of the European Conference on Knowledge Management*. September 2013. Kidmore End: Academic Conferences International Limited. 1-8.
- Andrews, J.C., Netemeyer, R.G., Kees, J. & Burton, S. 2014. How graphic visual health warnings affect young smokers' thoughts of quitting. *Journal of Marketing Research*, 51(2):165-183.
- Anghelcev, G. & Sar, S. 2014. In the mood for the right kind of social marketing communication. *Journal of Social Marketing*, 4(1):38-57.
- Anilkumar, N. & Joseph, J. 2012. Factors influencing the pre-purchase attitude of consumers: A Study. *IUP Journal of Management Research*, 11(3):23-53.
- Annan-Prah, A., Mensah, A.A., Akorli, S.Y., Asare, P.T. & Kumi-Die, I.D. 2012. Slaughterhouses, animal slaughter and slaughter hygiene in Ghana. *Journal of Veterinary Advances*, 2(4):189-198.
- Apostolidis, C. & McLeay, F. 2016. Should we stop meating like this? Reducing meat consumption through substitution. *Food Policy*, 65:74-89.
- Ausin-Azofra, J.M., Guixeres, J., Bigné, E. & Alcañiz, M. 2017. Facial expressions to evaluate advertising: A laboratory versus living room study. In *Advances in advertising research VIII*. V. Zabkar & M. Eisend, Eds. Wiesbaden: Springer Gabler. 109-122.
- Babin, B.J., Darden, W.R. & Babin, L.A. 1998. Negative emotions in marketing research: Affect or artifact? *Journal of Business Research*, 42(3):271-285.

- Bagozzi, R., Gopinath, M. & Nyer, P. 1999. The role of emotions in marketing. *Journal of the Academy of Marketing Science*, 27(2):184-206.
- Bagozzi, R.P., Lee, K. & Loo, V.M.F. 2001. Decisions to donate bone marrow: The role of attitudes and subjective norms across cultures. *Psychology and Health*, 16(1):29-56.
- Bagozzi, R.P. & Moore, D.J. 1994. Public service advertisements: Emotions and empathy guide prosocial behavior. *Journal of Marketing*, 58(1):56-70.
- Bagozzi, R.P., Wong, N. & Yi, Y. 1999. The role of culture and gender in the relationship between positive and negative affect. *Cognition & Emotion*, 13(6):641-672.
- Baker, S., Thompson, K.E. & Palmer-Barnes, D. 2002. Crisis in the meat industry: A values-based approach to communications strategy. *Journal of Marketing Communications*, 8(1):19-30.
- Banks, S.J., Bellerose, J., Douglas, D. & Jones-Gotman, M. 2012. Bilateral skin conductance responses to emotional faces. *Appl Psychophysiol Biofeedback*, 37:145–152.
- Banks, S.M., Salovey, P., Greener, S., Rothman, A.J., Moyer, A., Beauvais, J. & Epel, E. 1995. The effects of message framing on mammography utilization. *Health Psychology*, 14(2):178-184.
- Barden, J., Maddux, W.W., Petty, R.E. & Brewer, M.B. 2004. Contextual moderation of racial bias: The impact of social roles on controlled and automatically activated attitudes. *Journal of Personality and Social Psychology*, 87(1):5.
- Barone, M.J., Norman, A.T. & Miyazaki, A.D. 2007. Consumer response to retailer use of cause-related marketing: Is more fit better? *Journal of Retailing*, 83(4):437–445.
- Bearden, W.O., Netemeyer, R.G. & Haws, K.L. 2011. *Handbook of marketing scales: Multi-item measures for marketing and consumer behavior research*. 3rd ed. California, USA: Sage.
- Beardsworth, A.D. & Keil, E.T. 1997. *Sociology on the menu*. London: Routledge.
- Bebko, C., Sciuilli, L.M. & Bhagat, P. 2014. Using eye tracking to assess the impact of advertising appeals on donor behavior. *Journal of Nonprofit & Public Sector Marketing*, 26(4):354-371.
- Bennett, R. 2015. Individual characteristics and the arousal of mixed emotions: Consequences for the effectiveness of charity fundraising advertisements. *International Journal of Nonprofit and Voluntary Sector Marketing*, 20(2):188-209.
- Bercea, M.D. 2012. Anatomy of methodologies for measuring consumer behavior in neuromarketing research. *Proceedings of the Lupcon Center for Business Research (LCBR) European Marketing Conference*. August 2012. Ebermannstadt, Germany. Available: https://www.researchgate.net/profile/Monica_Diana_Olteanu_bercea/publication/260058154_Anatomy_of_methodologies_for_measuring_consumer_behavior_in_neuromarketing_research/links/0deec52f3abdb88ac1000000.pdf [2019, June 6].

Bercea, M.D. 2013. *Quantitative Versus Qualitative in Neuromarketing Research*. Munich Personal RePEc Archive Paper No. 44134. Available: <https://mpra.ub.uni-muenchen.de/44134/> [2019, November 25].

Bergmann, I., von der Heidt, T. & Maller, C. 2010. Cognitive dissonance and individuals' response strategies as a basis for audience segmentation to reduce factory farmed meat consumption. *Proceedings of the 2010 International Nonprofit and Social Marketing Conference (INSM)*. 15-16 July. Brisbane: Southern Cross University. 32-35.

Bester, S. & Jere, M.G. 2012. Cause-related marketing in an emerging market: Effect of cause involvement and message framing on purchase intention. *Journal of Database Marketing & Customer Strategy Management*, 19:286-293.

Bettiga, D., Lamberti, L. & Noci, G. 2017. Do mind and body agree? Unconscious versus conscious arousal in product attitude formation. *Journal of Business Research*, 75:108-117.

Bianchi, F., Dorsel, C., Garnett, E., Aveyard, P. & Jebb, S.A. 2018. Interventions targeting conscious determinants of human behaviour to reduce the demand for meat: A systematic review with qualitative comparative analysis. *International Journal of Behavioral Nutrition and Physical Activity*, 15(1):1-25.

Biener, L., Ji, M., Gilpin, E.A. & Albers, A.B. 2004. The impact of emotional tone, message, and broadcast parameters in youth anti-smoking advertisements. *Journal of Health Communication*, 9(3):259-274.

Bigné, E. 2016. Frontiers in research in business: Will you be in? *European Journal of Management and Business Economics*, 25(3):89-90.

Bigné, E., Chatzipanagiotou, K. & Ruiz, C. 2020. Pictorial content, sequence of conflicting online reviews and consumer decision-making: The stimulus-organism-response model revisited. *Journal of Business Research*, 115:403-416.

Birch, D., Memery, J. & Kanakaratne, M.D.S. 2018. The mindful consumer: Balancing egoistic and altruistic motivations to purchase local food. *Journal of Retailing and Consumer Services*, 40:221-228.

Bitbrain. 2018. *Our solution: Neurotechnology for consumer insights*. Available: https://www.bitbrain.com/neurotechnology-products/complete-solutions/consumer-research?utm_source=adwords&utm_medium=ppc&utm_term=neuromarketing&utm_campaign=We+biste+Traffic+2020&hsa_cam=12127052308&hsa_mt=b&hsa_ver=3&hsa_src=g&hsa_ad=492755871329&hsa_net=adwords&hsa_tgt=kwd-114423335&hsa_acc=5072024072&hsa_grp=117353791872&hsa_kw=neuromarketing&gclid=Cj0KCQiAgomBBhDXARIsAFNyUqOmA5XRiEYlbtK9jf3yuyfP74-m957S2hBWwoXIC6Xq8W3XDLknoKQaAtgxEALw_wcB [2021, February 10].

Blum, B.E. 2016. *Consumer neuroscience: A multi-disciplinary approach to marketing leveraging advances in neuroscience, psychology and economics*. Senior Thesis: Paper 1414. Claremont McKenna College. Available: http://scholarship.claremont.edu/cmcc_theses/1414 [2019, December 9].

- Boerman, S.C., van Reijmersdal, E.A. & Neijens, P.C. 2012. Sponsorship disclosure: Effects of duration on persuasion knowledge and brand responses. *Journal of Communication*, 62(6):1047-1064.
- Boerman, S.C., van Reijmersdal, E.A. & Neijens, P.C. 2015. Using eye tracking to understand the effects of brand placement disclosure types in television programs. *Journal of Advertising*, 44(3):196-207.
- Bogueva, D., Marinova, D. & Raphaely, T. 2017. Reducing meat consumption: The case for social marketing. *Asia Pacific Journal of Marketing and Logistics*, 29(3):466-500.
- Bogueva, D. & Phau, I. 2016. Meat myths and marketing. In *Impact of meat consumption on health and environmental sustainability*. T. Raphaely & D. Marinova, Eds. Hershey, PA: IGI Global. 264-276.
- Bollani, L., Bonadonna, A. & Peira, G. 2019. The millennials' concept of sustainability in the food sector. *Sustainability*, 11:2984.
- Bolls, P.D., Lang, A. & Potter, R.F. 2001. The effects of message valence and listener arousal on attention, memory, and facial muscular responses to radio advertisements. *Communication Research*, 28(5):627-651.
- Bone, P. & Ellen, P. 1992. The generation and consequences of communication-evoked imagery. *Journal of Consumer Research*, 19(1): 93–104.
- Booth-Kewley, S., Larson, G.E. & Miyoshi, D.K. 2007. Social desirability effects on computerized and paper-and-pencil questionnaires. *Computers in Human Behavior*, 23(1):463-477.
- Bradley, M.M. & Lang, P.J. 1994. Measuring emotion: The self-assessment manikin and the semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry*, 25(1):49-59.
- Bratanova, B., Loughnan, S. & Bastian, B. 2011. The effect of categorization as food on the perceived moral standing of animals. *Appetite*, 57(1):193-196.
- Braun, V. & Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2):77-101.
- Breckler, S.J. 1984. Empirical validation of affect, behavior, and cognition as distinct components of attitude. *Journal of Personality and Social Psychology*, 47(6):1191-1205.
- Brennan, L. & Binney, W. 2010. Fear, guilt, and shame appeals in social marketing. *Journal of Business Research*, 63(2):140-146.
- Broom, D.M. 1991. Animal welfare: concepts and measurement. *Journal of Animal Science*, 69: 4167-4175.
- Bryman, A. & Bell, E. 2011. *Business research methods*. 3rd ed. United States, New York: Oxford University Press Inc.

- Burgos-Campero, A.A. & Vargas-Hernandez, J.G. 2013. Analytical approach to neuromarketing as a business strategy. *Procedia - Social and Behavioral Sciences*, 99:517-525.
- Cabanac, M. 2002. What is emotion? *Behavioural Processes*, 60(2):69-83.
- Casado-Aranda, L.A., Sánchez-Fernández, J. & Montoro-Ríos, F.J. 2017. Neural correlates of voice gender and message framing in advertising: A functional MRI study. *Journal of Neuroscience, Psychology, and Economics*, 10(4):121-136.
- Castellanos, M.C., Ausin, J.M., Guixeres, J. & Bigné, E. 2018. Emotion in a 360-degree vs. traditional format through EDA, EEG and facial expressions. In *Advances in advertising research IX*. V. Cauberghe, L. Hudders & M. Eisend, Eds. :3-15. Wiesbaden: Springer Gabler. 3-15.
- Chandy, R.K., Tellis, G.J., MacInnis, D.J. & Thaivanich, P. 2001. What to say when: Advertising appeals in evolving markets. *Journal of Marketing Research*, 38(4):399-414.
- Chédotal, C., Berthe, B., de Peyrelongue, B. & Le Gall-Ely, M. 2017. Using guilt appeals in communication. *Recherche Et Applications En Marketing (English Edition)*, 32(4):91-110.
- Cheong, J.H., Brooks, S. & Chang, L.J. 2019. FaceSync: Open source framework for recording facial expressions with head-mounted cameras. *F1000Research*, 8:702.
- Chohan, R. 2013. *Understanding the role of emotion in viral marketing*. Master of Business Science Thesis. University of Cape Town. Available: <http://hdl.handle.net/11427/5815> [2021, March 5].
- Choi, N., Jung, J., Oyunbileg, T. & Yang, P. 2016. The impact of emotional arousal levels and valence on product evaluations. *European Journal of Marketing*, 50(1):78-99.
- Choi, Y., Song, S., Song, Y. & Lee, J.E. 2013. Consumption of red and processed meat and esophageal cancer risk: Meta-analysis. *World Journal of Gastroenterol*, 19(7):1020–1029.
- Cialdini, R.B. & Goldstein, N.J. 2004. Social influence: compliance and conformity. *Annual Review of Psychology*, 55:591-621.
- Cialdini, R.B., Petty, R.E. & Cacioppo, J.T. 1981. Attitude and attitude change. *Annual Review of Psychology*, 32(1):357-404.
- Clifford, S. & Wendell, D.G. 2016. How disgust influences health purity attitudes. *Political Behavior*, 38(1):155-178.
- Clonan, A., Wilson, P., Swift, J.A., Leibovici, D.G. & Holdsworth, M. 2015. Red and processed meat consumption and purchasing behaviours and attitudes: Impacts for human health, animal welfare and environmental sustainability. *Public Health Nutrition*, 18(13):2446-2456.
- Clore, G. L. & Schnall, S. 2005. The influence of affect on attitude. In *Handbook of attitudes*. D. Albarracín, B. T. Johnson & M. P. Zanna, Eds. Mahwah: Erlbaum. 437-489.

- Collymore, N.N. & McDermott, M.R. 2016. Evaluating the effects of six alcohol-related message frames on emotions and intentions: The neglected role of disgust. *Journal of Health Psychology*, 21(9):1907-1917.
- Cordts, A., Nitzko, S. & Spiller, A. 2014. Consumer response to negative information on meat consumption in Germany. *International Food and Agribusiness Management Review*, 17(A).
- Covey, J. 2014. The role of dispositional factors in moderating message framing effects. *Health Psychology*, 33(1):52.
- Creswell, J.W., Plano Clark, V.L., Gutmann, M.L. & Hanson, W.E. 2003. Advanced mixed methods research designs. In *Handbook of Mixed Methods in Social and Behavioral Research*. A. Tashakkori & C.B. Teddlie, Eds. Thousand Oaks, CA: Sage. 209-40.
- Creswell, J.W. 2014. *Research design: Qualitative, quantitative and mixed methods approaches*. 4th ed. Thousand Oaks, California: Sage.
- Cuesta, U., Martínez-Martínez, L. & Niño, J.I. 2018. A case study in neuromarketing: Analysis of the influence of music on advertising effectiveness through eye-tracking, facial emotion and GSR. *European Journal of Social Science Education and Research*, 5(2):73-82.
- Cunningham, W. A., Packer, D. J., Kesek, A. & Van Bavel, J. J. 2009. Implicit measurement of attitudes: A physiological approach. In *Attitudes: Insights from the new implicit measures*. R. E. Petty, R. H. Fazio & P. Brinol, Eds. New York: Taylor & Francis. 485–512.
- Dagevos, H. & Voordouw, J. 2013. Sustainability and meat consumption: Is reduction realistic? *Sustainability: Science, Practice and Policy*, 9(2):60-69.
- Dahl, D.W., Frankenberger, K.D. & Manchanda, R.V. 2003. Does it pay to shock? Reactions to shocking and nonshocking advertising content among university students. *Journal of Advertising Research*, 43(3):268-280.
- Dasgupta, N. & Greenwald, A.G. 2001. On the malleability of automatic attitudes: Combating automatic prejudice with images of admired and disliked individuals. *Journal of Personality and Social Psychology*, 81(5):800.
- Davidson, R.J., Sherer, K.R. & Goldsmith, H.H. Eds. 2009. *Handbook of affective sciences*. New York: Oxford University Press.
- de Backer, C.J.S. & Hudders, L. 2015. Meat morals: relationship between meat consumption consumer attitudes towards human and animal welfare and moral behavior. *Meat Science*, 99:68-74.
- de Bakker, E. & Dagevos, H.J. 2012. Reducing meat consumption in today's consumer society: Questioning the citizen-consumer gap. *Journal of Agricultural and Environmental Ethics*, 25(6):877-894.
- de Boer, J. & Aiking, H. 2011. On the merits of plant-based proteins for global food security: Marrying macro and micro perspectives. *Ecological Economics*, 70(7):1259-1265.

de Boer, J., Hoogland, C.T. & Boersema, J.J. 2007. Towards more sustainable food choices: Value priorities and motivational orientations. *Food Quality and Preference*, 18(7):985-996.

de Jager, J. 2009. *Environmental concern and the theory of planned behaviour: Identifying the green consumer*. Master of Philosophy in Environmental Management. University of Cape Town. Available: <http://hdl.handle.net/11427/4843> [2021, March 5].

Delpont, M., Louw, M., Davids, T., Vermeulen, H. & Meyer, F. 2017. Evaluating the demand for meat in South Africa: An econometric estimation of short term demand elasticities. *Agrekon*, 56(1):13-27.

Derbaix, C.M. 1995. The impact of affective reactions on attitudes toward the advertisement and the brand: A step toward ecological validity. *Journal of Marketing Research*, 32(4):470-479.

Desai, M.Z. 2017. *Analysing the loyalty levels displayed by football fans: A case study on Cape Town City Football Club*. Master of Business Science Thesis. University of Cape Town. Available: https://open.uct.ac.za/bitstream/handle/11427/27106/thesis_com_2017_desai_muhammed.pdf?sequence=1 [2021, March 5].

Dibb, S. & Fitzpatrick I. 2014. *Let's talk about meat: Changing dietary behaviour for the 21st century*. London: Eating Better.

Donnison, S. 2007. Unpacking the millennials: A cautionary tale for teacher education. *Australian Journal of Teacher Education*, 32(3):1-13.

Donovan, R. & Rossiter, J. 1982. Store atmosphere: An environmental psychology approach. *Journal of Retailing*, 58(1):3-57.

Dubé, L. & Cantin, I. 2000. Promoting health or promoting pleasure? A contingency approach to the effect of informational and emotional appeals on food liking and consumption. *Appetite*, 35(3):251-262.

du Plessis, E. 2011. *The branded mind: What neuroscience really tells us about the puzzle of the brain and the brand*. London: Millward Brown.

Easterby-Smith, M., Thorpe, R. & Jackson, P.R. 2012. *Management research*. 4th ed. Sage.

Eisend, M. 2006. Two-sided advertising: A meta-analysis. *International Journal of Research in Marketing*, 23(2):187-198.

Elaad, E. 2009. Effects of context and state of guilt on the detection of concealed crime information. *International Journal of Psychophysiology*, 71(3):225-234.

Eroglu, S.A., Machleit, K.A. & Davis, L.M. 2001. Atmospheric qualities of online retailing: A conceptual model and implications. *Journal of Business Research*, 54(2):177-184.

Eshel, G., Shepon, A., Makov, T. & Milo, R. 2014. Land, irrigation water, greenhouse gas, and reactive nitrogen burdens of meat, eggs, and dairy production in the United States. *Proceedings of the National Academy of Sciences (PNAS)*. 111(33):11996-12001.

- Estes, Z. & Verges, M. 2008. Freeze or flee? Negative stimuli elicit selective responding. *Cognition*, 108:557–565.
- Farnsworth, B. 2019. *How to analyze and interpret heat maps* [Blog, 23 July]. Available: <https://imotions.com/blog/analyze-heat-maps/> [2021, January 26].
- Farnsworth, B. 2020. *10 Most used eye tracking metrics and terms* [Blog, 12 May]. Available: <https://imotions.com/blog/10-terms-metrics-eye-tracking/> [2020, August 26].
- Feinberg, M., Kovacheff, C., Teper, R. & Inbar, Y. 2019. Understanding the process of moralization: How eating meat becomes a moral issue. *Journal of Personality and Social Psychology*.
- Festinger, L. 1957. *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.
- Fiddes, N. 1991. *Meat / a natural symbol*. London: Routledge.
- Fishbein, M. & Ajzen, I. 1975. *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, Mass: Addison-Wesley.
- Foley, J. 2017. *The future of food*. Available: <https://www.nationalgeographic.com/foodfeatures/feeding-9-billion/> [2020; April 16].
- Forestell, C.A., Spaeth, A.M. & Kane, S.A. 2012. To eat or not to eat red meat. A closer look at the relationship between restrained eating and vegetarianism in college females. *Appetite*, 58(1):319-325.
- Fox, K. & Kotler, P. 1980. The marketing of social causes: The first ten years. *Journal of Marketing*, 44(4):24.
- Fransen, M.L., Verlegh, P.W.J., Kirmani, A. & Smit, E.G. 2015. A typology of consumer strategies for resisting advertising, and a review of mechanisms for countering them. *International Journal of Advertising*, 34(1):6-16.
- Fuseini, A. & Sulemana, I. 2018. An exploratory study of the influence of attitudes toward animal welfare on meat consumption in Ghana. *Food Ethics*, 2:57-75.
- Gaille, B. 2018. *19 South African meat industry statistics, trends & analysis*. Available: <https://brandongaille.com/19-south-african-meat-industry-statistics-trends-analysis/> [2019, June 12].
- Gall, M.D., Gall, J.P. & Borg, W.R. 2003. *Educational research: An introduction*. 7th ed. Boston, USA: Allyn and Bacon.
- Gardner, B. 2013. *Global food futures: Feeding the world in 2050*. London, UK: Bloomsbury Publishing.
- Garnett, T. 2009. Livestock-related greenhouse gas emissions: Impacts and options for policy makers. *Environmental Science & Policy*, 12(4):491-503.

- Garnett, T. 2010. *Livestock, feed and food security*. Available: https://www.fcrcn.org.uk/sites/default/files/FCRN_livestockfeed_foodsecurity.pdf [2020, April 16].
- Gawronski, B. & Bodenhausen, G.V. 2006. Associative and propositional processes in evaluation: An integrative review of implicit and explicit attitude change. *Psychological Bulletin*, 132(5):692-731.
- Gawronski, B. & Strack, F. 2004. On the propositional nature of cognitive consistency: Dissonance changes explicit, but not implicit attitudes. *Journal of Experimental Social Psychology*, 40(4):535-542.
- Goodrich, K. 2014. The gender gap: Brain-processing differences between the sexes shape attitudes about online advertising. *Journal of Advertising Research*, 54(1):32-43.
- Gordon, R., Carrigan, M. & Hastings, G. 2011. A framework for sustainable marketing. *Marketing Theory*, 11(2):143-163.
- Gorn, G., Pham, T.M. & Sin, L.Y. 2001. When arousal influences ad evaluation and valence does not (and vice versa). *Journal of Consumer Psychology*, 11(1):43-55.
- Gregg, A.P., Seibt, B. & Banaji, M.R. 2006. Easier done than undone: Asymmetry in the malleability of implicit preferences. *Journal of Personality and Social Psychology*, 90(1):1.
- Guerreiro, J., Rita, P. & Trigueiros, D. 2015. Attention, emotions and cause-related marketing effectiveness. *European Journal of Marketing*, 49(11):1728-1750.
- Haidt, J. 2003. The moral emotions. In *Handbook of affective sciences*. R.J. Davidson, K.R. Scherer & H.H. Goldsmith, Eds. Oxford: Oxford University Press. 11:852-870.
- Haidt, J. 2007. The new synthesis in moral psychology. *Science*, 316(5827):998-1002.
- Hamelin, N., Moujahid, O.E. & Thaichon, P. 2017. Emotion and advertising effectiveness: A novel facial expression analysis approach. *Journal of Retailing and Consumer Services*, 36:103-111.
- Harrell, E. 2019. *Neuromarketing: What you need to know*. Available: <https://hbr.org/2019/01/neuromarketing-what-you-need-to-know> [2021, February 10].
- Harris, J.M., Ciorciari, J. & Gountas, J. 2018. Consumer neuroscience for marketing researchers. *Journal of Consumer Behaviour*, 17(3):239-252.
- Harrison, R.L. & Reilly, T.M. 2011. Mixed methods designs in marketing research. *Qualitative Market Research: An International Journal*, 14(1):7-26.
- Hastings, G., Stead, M. & Webb, J. 2004. Fear appeals in social marketing: Strategic and ethical reasons for concern. *Psychology & Marketing*, 21(11):961-986.
- Hayley, A., Zinkiewicz, L. & Hardiman, K. 2015. Values, attitudes, and frequency of meat consumption: Predicting meat-reduced diet in Australians. *Appetite*, 84:98-106.

- Hayes, A.F. 2018. *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. 2nd ed. New York: The Guilford Press.
- Hazlett, R.L. & Hazlett, S.Y. 1999. Emotional response to television commercials: Facial EMG vs. self-report. *Journal of Advertising Research*. 39(2).
- Herr, P.M., Page, C.M., Pfeiffer, B.E. & Davis, D.F. 2011. Affective influences on evaluative processing. *Journal of Consumer Research*, 38(5):833-845.
- Holbrook, M.B. & Batra, R. 1987. Assessing the role of emotions as mediators of consumer responses to advertising. *Journal of Consumer Research*, 14(3):404-420.
- Holbrook, M.B. & O' Shaughnessy, J. 1984. The role of emotion in advertising. *Psychology and Marketing*, 1(2):45-64.
- Honkanen, P., Verplanken, B. & Olsen, S.O. 2006. Ethical values and motives driving organic food choice. *Journal of Consumer Behaviour: An International Research Review*, 5(5):420-430.
- Hopkins, R. & Fletcher, J.E. 1994. Electrodermal measurement: Particularly effective for forecasting message influence on sales appeal. In *Measuring psychological responses to media messages*. A. Lang, Ed. Hillsdale, New Jersey: Erlbaum.
- Ilea, R.C. 2009. Intensive livestock farming: Global trends, increased environmental concerns, and ethical solutions. *Journal of Agricultural and Environmental Ethics*, 22(2):153-167.
- iMotions. 2017. *Galvanic skin response: The complete pocket guide*. Available: <https://imotions.com/guides/eda-gsr/> [2021, March 3].
- iMotions. 2020. *Galvanic skin response (GSR): The complete pocket guide* [Blog, 25 February]. Available: <https://imotions.com/blog/galvanic-skin-response/> [2021, February 10].
- iMotions. n.d._a. *Facial expression analysis*. Available: <https://imotions.com/biosensor/fea-facial-expression-analysis/> [2021, February 10].
- iMotions. n.d._b. *EDA / GSR*. Available: <https://imotions.com/biosensor/gsr-galvanic-skin-response-eda-electrodermal-activity/> [2021, February 10].
- iMotions. n.d._c. *Tobii Pro Nano*. Available: <https://imotions.com/hardware/tobii-nano/> [2021, February 10].
- iMotions. n.d._d. *Eye tracking: Screen-based*. Available: <https://imotions.com/biosensor/eye-tracking-screen-based/> [2020, May 28].
- iMotions. n.d._e. *iMotions research software*. Available: <https://imotions.com/platform/> [2021, February 10].
- iMotions. n.d._f. *Shimmer3 GSR+*. Available: <https://imotions.com/hardware/shimmer3-gsr/> [2021, February 10].

- Isabella, G., Mazzon, J.A. & Dimoka, A. 2015. Culture differences, difficulties, and challenges of the neurophysiological methods in marketing research. *Journal of International Consumer Marketing*, 27(5):346-363.
- Isen, A.M., Daubman, K.A. & Nowicki, G.P. 1987. Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology*, 52(6):1122-1131.
- Izard, C.E. 1977. *Human emotions*. New York: Springer Science + Business Media.
- Jacoby, J. 2002. Stimulus-organism-response reconsidered: An evolutionary step in modeling (consumer) behavior. *Journal of Consumer Psychology*, 12(1):51-57.
- James, W. 1884. What is an emotion? *Mind*, 9(34):188-205.
- Jankielsohn, A. 2015. Hidden cost of eating meat in South Africa: What every responsible consumer should know. *Journal of Agricultural & Environmental Ethics*, 28(6):1145-1157.
- Jensen, C.T., Jessen, A.M.K., Jørgensen, L.I., Laursen, J.K., Larsen, L.B. & Wieland, J.L. 2017. Using biometric data to assess affective response to media experiences. In *Advances in Affective and Pleasurable Design*. W. Chung & C.S. Shin, Eds. Springer. 471-480.
- Johnson, R.B. & Onwuegbuzie, A.J. 2004. Mixed Methods Research: A research paradigm whose time has come. *Educational Researcher*, 33(7):14-26.
- Johnson, R.B., Onwuegbuzie, A.J. & Turner, L.A. 2007. Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2):112-33.
- Joyce, A., Dixon, S., Comfort, J. & Hallett, J. 2012. Reducing the environmental impact of dietary choice: Perspectives from a behavioural and social change approach. *Journal of Environmental and Public Health*, 2012.
- Just, M.A. & Carpenter, P.A. 1980. A theory of reading: From eye fixations to comprehension. *Psychological Review*, 87(4):329.
- Kareklas, I., Carlson, J.R. & Muehling, D.D. 2012. The role of regulatory focus and self-view in “green” advertising message framing. *Journal of Advertising*, 41(4):25-39.
- Khushaba, R.N., Wise, C., Kodagoda, S., Louviere, J., Kahn, B.E. & Townsend, C. 2013. Consumer neuroscience: Assessing the brain response to marketing stimuli using electroencephalogram (EEG) and eye tracking. *Expert Systems with Applications*, 40(9):3803-3812.
- Kim, J. & Johnson, K. 2013. The impact of moral emotions on cause-related marketing campaigns: A cross-cultural examination. *Journal of Business Ethics*, 112(1):79-90.
- Kim, H.R., Tussyadiah, I.P. & Jago, L. 2019. Framing effective cause-related marketing message online. *e-Review of Tourism Research*, 17(3):452-459.

- Kleinginna, P.R. & Kleinginna, A.M. 1981. A categorized list of emotion definitions, with suggestions for a consensual definition. *Motivation and Emotion*, 5(4): 345-379.
- Knobloch-Westerwick, S. & Meng, J. 2009. Looking the other way: Selective exposure to attitude-consistent and counterattitudinal political information. *Communication Research*, 36(3):426-448.
- Knowles, E. & J. Linn. 2004. *Resistance and persuasion*. Mahwah, NJ: Lawrence Erlbaum.
- Kolandai-Matchett, K. 2009. Mediated communication of 'sustainable consumption' in the alternative media: A case study exploring a message framing strategy. *International Journal of Consumer Studies*, 33(2):113-125.
- Kotler, P. & Lee, N. 2008. *Social marketing: Influencing behaviors for good*. Thousand Oaks, CA: Sage Publications.
- Kotze, I. & Rose, M. Eds. 2015. *Farming Facts and Futures: Reconnecting South Africa's Food Systems to its Ecosystems*. WWF-SA, Cape Town, South Africa.
- Kroeber-Riel, W. 1979. Activation research: Psychobiological approaches in consumer research. *Journal of Consumer Research*, 5(4):240-250.
- Krosschell, K. 2020. *Facial expression analysis: The complete pocket guide* [Blog, 10 March]. Available: <https://imotions.com/blog/facial-expression-analysis/#expressions> [2020, December 4].
- Kulke, L., Feyerabend, D. & Schacht, A. 2020. A comparison of the Affectiva iMotions Facial Expression Analysis Software with EMG for identifying facial expressions of emotion. *Frontiers in Psychology*, 11:329.
- Kunst, J.R. & Hohle, S.M. 2016. Meat eaters by dissociation: How we present, prepare and talk about meat increases willingness to eat meat by reducing empathy and disgust. *Appetite*, 105:758-774.
- Kuppens, P., Tuerlinckx, F., Russell, J.A. & Barrett, L.F. 2013. The relation between valence and arousal in subjective experience. *Psychological Bulletin*, 139(4):917.
- LaBarbera, P.A. & Tucciarone, J.D. 1995. GSR reconsidered: A behavior-based approach to evaluating and improving the sales potency of advertising. *Journal of Advertising Research*, 35(5):33.
- Lang, A. 2000. The limited capacity model of mediated message processing. *Journal of Communication*, 50(1):46-70.
- Lang, A., Potter, R.F. & Bolls, P. 2009. Where psychophysiology meets the media: Taking the effects out of mass media research. In *Media effects: Advances in theory and research*. J. Bryant & M.B. Oliver, Eds. 3rd ed. New York: Routledge. 185–206.
- Lang, P.J. 1979. A bio-informational theory of emotional imagery. *Psychophysiology*, 16(6):495-512.
- Lang, P.J. 1995. The emotion probe: Studies of motivation and attention. *American Psychologist*, 50(5):372.

- Lang, P.J. & Bradley, M.M. 2008. Cortex-reflex connections appetitive and defensive motivation is the substrate of emotion. In *Handbook of approach and avoidance motivation*. A.J. Elliot, Ed. New York: Psychology Press, Taylor & Francis Group. 51-66.
- Lang, P.J., Greenwald, M.K., Bradley, M.M. & Hamm, A.O. 1993. Looking at pictures: Affective, facial, visceral, and behavioral reactions. *Psychophysiology*, 30(3):261-273.
- Lea, E. & Worsley, A. 2001. Influences on meat consumption in Australia. *Appetite*, 36(2):127-136.
- Lee, J. & Ahn, J.H. 2012. Attention to banner ads and their effectiveness: An eye-tracking approach. *International Journal of Electronic Commerce*, 17(1):119-137.
- Lee, N., Broderick, A.J. & Chamberlain, L. 2007. What is 'neuromarketing'? A discussion and agenda for future research. *International Journal of Psychophysiology*, 63(2):199-204.
- Lerner, J.S., Li, Y., Valdesolo, P. & Kassam, K.S. 2015. Emotion and decision making. *Annual Review of Psychology*, 66:799-823.
- Levin, I.P., Schneider, S.L. & Gaeth, G.J. 1998. All frames are not created equal: A typology and critical analysis of framing effects. *Organisational Behaviour and Human Decision Processes*, 76(2):149-188.
- Lewinski, P., Fransen, M.L. & Tan, E.S. 2014. Predicting advertising effectiveness by facial expressions in response to amusing persuasive stimuli. *Journal of Neuroscience, Psychology, and Economics*, 7(1):1-14.
- Li, S., Scott, N. & Walters, G. 2015. Current and potential methods for measuring emotion in tourism experiences: A review. *Current Issues in Tourism*, 18(9):805-827.
- Li, S., Walters, G., Packer, J. & Scott, N. 2018. A comparative analysis of self-report and psychophysiological measures of emotion in the context of tourism advertising. *Journal of Travel Research*, 57(8):1078-1092.
- Likert, R. 1932. A technique for the measurement of attitudes. *Archives of Psychology*, 140(22):5-55.
- Lord, K.R. 1994. Motivating recycling behavior: A quasiexperimental investigation of message and source strategies. *Psychology & Marketing*, 11(4):341-358.
- Loria, J. 2017. *Millennials are the largest generation in history – and the largest demographic saying no to meat*. Available: <https://www.alternet.org/2017/12/millennials-are-largest-generation-history-and-largest-demographic-saying-no-meat/> [2019, June 12].
- Loroz, P.S. 2007. The interaction of message frames and reference points in prosocial persuasive appeals. *Psychology and Marketing*, 24(11):1001-1023.
- Loughnan, S., Bastian, B. & Haslam, N. 2014. The psychology of eating animals. *Current Directions in Psychological Science*, 23(2):104-108.

- Loughnan, S., Bratanova, B. & Puvia, E. 2012. The meat paradox: How are we able to love animals and love eating animals? *The Inquisitive Mind Italia*, 1:15-18.
- Macdiarmid, J.I., Douglas, F. & Campbell, J. 2016. Eating like there's no tomorrow: Public awareness of the environmental impact of food and reluctance to eat less meat as part of a sustainable diet. *Appetite*, 96:487-493.
- Machleit, K. & Wilson, R.D. 1988. Emotional feelings and attitude toward the advertisement: The roles of brand familiarity and repetition. *Journal of Advertising*, 17(3):27-35.
- MacKenzie, S.B. 1986. The role of attention in mediating the effect of advertising on attribute importance. *Journal of Consumer Research*, 13(2):174-195.
- MacKinnon, D. P. 2008. *Introduction to statistical mediation analysis*. New York, NY: Erlbaum.
- Madden, T.J., Allen, C.T. & Twible, J.L. 1988. Attitude toward the ad: An assessment of diverse measurement indices under different processing "sets". *Journal of Marketing Research*, 25:242-252.
- Magdin, M. & Prikler, F. 2017. Real time facial expression recognition using webcam and SDK Affectiva. *International Journal of Interactive Multimedia and Artificial Intelligence*, 5(1):7-15.
- Maheswaran, D. & Meyers-Levy, J. 1990. The influence of message framing and issue involvement. *Journal of Marketing Research*, 27(3):361-367.
- Maior, G.R., Esses, V.M., Arnold, K.H. & Olson, J.M. 2004. The function-structure model of attitudes: Incorporating the need for affect. In *Contemporary perspectives on the psychology of attitudes*. G. Haddock & G.R. Maio, Eds. (27-52). Hove: Psychology Press Inc.
- Malhotra, N.K. 2010. *Marketing research: An applied orientation*. 6th ed. New Jersey, USA: Pearson.
- Malhotra, N.K., Nunan, D. & Birks, D.F. 2017. *Marketing research: An applied approach*. Pearson Education Limited.
- Martínez-Fiestas, M., Del Jesus, M.I.V., Sánchez-Fernández, J. & Montoro-Rios, F.J. 2015. A psychophysiological approach for measuring response to messaging: How consumers emotionally process green advertising. *Journal of Advertising Research*, 55(2):192-205.
- Massaglia, S., Merlino, V. & Borra, D. 2018. Marketing strategies for animal welfare meat identification: Comparison of preferences between millennial and conventional consumers. *Quality – Access to Success*, 19(S1).
- Mathur, M.B., Robinson, T.N., Reichling, D.B., Gardner, C.D., Nadler, J., Bain, P.A. & Peacock, J. 2020. Reducing meat consumption by appealing to animal welfare: Protocol for a meta-analysis and theoretical review. *Systematic Reviews*, 9(3):1-8.
- Mbumbwa, T. 2016. *Exploring factors influencing black South African millennials when considering African Ankara fashion*. Master of Business Science Thesis. University of Cape Town. Available:

https://open.uct.ac.za/bitstream/handle/11427/22928/thesis_com_2016_mbumbwa_tendai.pdf?isAllowed=y&sequence=1 [2021, March 5].

McArthur, J. n.d. *The Slaughter*. Digital image. Available: <http://weanimals.org/gallery.php?id=92#ph29> [2019, June 20].

McCormick, B. & Mahdi, H. 2019. *Why people go vegan: 2019 global survey results*. Available: <https://vomadlife.com/blogs/news/why-people-go-vegan-2019-global-survey-results> [2019, May 29].

Mehrabian, A. & Russell, J.A. 1974. *An approach to environmental psychology*. MIT Press.

Meinhardt, J. & Pekrun, R. 2003. Attentional resource allocation to emotional events: An ERP study. *Cognition and Emotion*, 17(3):477-500.

Mennell, S. 1985. *All manners of food: Eating and taste in England and France from the middle ages to the present*. Oxford: Basil Blackwell.

Meyerding, S.G.H. 2018. Combining eye-tracking and choice-based conjoint analysis in a bottom-up experiment. *Journal of Neuroscience, Psychology, and Economics*, 11(1):28-44.

Micha, R., Michas, G. & Mozaffarian, D. 2012. Unprocessed red and processed meats and risk of coronary artery disease and type 2 diabetes - An updated review of the evidence. *Current Atherosclerosis Reports*, 14(6):515-524.

Michaelidou, N. & Hassan, L.M. 2008. The role of health consciousness, food safety concern and ethical identity in attitudes and intentions towards organic food. *International Journal of Consumer Studies*, 32(2):163-170.

Micu, A.C. & Plummer, J.T. 2010. Measurable emotions: How television ads really work: Patterns of reactions to commercials can demonstrate advertising effectiveness. *Journal of Advertising Research*, 50(2):137-153.

Miller, D.W., Hadjimarcou, J. & Miciak, A. 2000. A scale for measuring advertisement-evoked mental imagery. *Journal of Marketing Communications*, 6(1): 1-20.

Moon, S., Bergey, P.K., Bove, L.L. & Robinson, S. 2016. Message framing and individual traits in adopting innovative, sustainable products (ISPs): Evidence from biofuel adoption. *Journal of Business Research*, 69(9):3553-3560.

Moore, D.J., Harris, W.D. & Chen, H.C. 1995. Affect intensity: An individual difference response to advertising appeals. *Journal of Consumer Research*, 22(2):154-164.

Morales, A.C., Wu, E.C. & Fitzsimons, G.J. 2012. How disgust enhances the effectiveness of fear appeals (Report). *Journal of Marketing Research*, 49(3):383-393.

Morgan, D.L. 2007. Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research*, 1(1):48-76.

- Morin, C. 2011. Neuromarketing: the new science of consumer behavior. (Symposium: Consumer Culture in Global Perspective) (Report). *Society*, 48(2):131.
- Morris, J.D., Woo, C., Geason, J.A. & Kim, J. 2002. The power of affect: Predicting intention. *Journal of Advertising Research*, 42(3):7-17.
- Nabi, R.L. 1998. The effect of disgust-eliciting visuals on attitudes toward animal experimentation. *Communication Quarterly*, 46(4):472-484.
- Nabi, R. 1999. A cognitive-functional model for the effects of discrete negative emotions on information processing, attitude change, and recall. *Communication Theory*, 9(3):292-320.
- Najmi, M., Atefi, Y. & Mirbagheri, S. 2012. Attitude toward brand: An integrative look at mediators and moderators. *Academy of Marketing Studies Journal*, 16(1):111-130.
- Nellemann, C., MacDevette, M., Manders, T., Eickhout, B., Svihus, B., Prins, A.G. & Kaltenborn, B. P. (Eds). 2009. *The environmental food crisis – The environment's role in averting future food crises*. A UNEP rapid response assessment. United Nations Environment Programme, GRID-Arendal. Available: <https://www.gwp.org/globalassets/global/toolbox/references/the-environmental-crisis.-the-environments-role-in-averting-future-food-crises-unep-2009.pdf> [2020, April 16].
- Neuromarketing Science & Business Association [NMSBA]. 2013. *Code of ethics*. Available: <https://www.neuromarketing-association.com/buying-neuromarketing/code-of-ethics> [2020, April 28].
- O'Connell, B., Walden, S. & Pohlmann, A. 2011. Marketing and neuroscience: What drives customer decision? *A white paper based on the American Marketing Association's virtual event marketing and neuroscience: what drives customer decisions?*
- Ohme, R., Reykowska, D., Wiener, D. & Choromanska, A. 2009. Analysis of neurophysiological reactions to advertising stimuli by means of EEG and galvanic skin response measures. *Journal of Neuroscience, Psychology, and Economics*, 2(1):21-31.
- Olsen, M.C., Slotegraaf, R.J. & Chandukala, S.R. 2014. Green claims and message frames: How green new products change brand attitude. *Journal of Marketing*, 78(5):119-137.
- Organization for Economic Cooperation and Development [OECD]. 2020. *Meat consumption (indicator)*. Available: <https://data.oecd.org/agroutput/meat-consumption.htm> [2020, April 7].
- Osgood, C.E., Suci, G.J. & Tannenbaum, P.H. 1957. *The measurement of meaning* (47). Urbana & Chicago: University of Illinois Press.
- Our World in Data. 2018. *Number of animals slaughtered for meat, world, 1961 to 2018*. Available: <https://ourworldindata.org/grapher/animals-slaughtered-for-meat> [2021, March 4].
- Oxfam. 2014. *Hidden hunger strips away dignity, perpetuates inequality and destroys South Africans' potential to prosper*. Available: <https://www.oxfam.org/en/press-releases/hidden-hunger-strips-away-dignity-perpetuates-inequality-and-destroys-south-africans> [2021, March 6].

- Palomo-Vélez, G., Tybur, J.M. & van Vugt, M. 2018. Unsustainable, unhealthy, or disgusting? Comparing different persuasive messages against meat consumption. *Journal of Environmental Psychology*, 58:63-71.
- Peattie, K. & Peattie, S. 2009. Social marketing: A pathway to consumption reduction? *Journal of Business Research*, 62:260-268.
- Penny, J.C., Swift, J.A. & Salter, A.M. 2015. “Meat reducers”: Meat reduction strategies and attitudes towards meat alternatives in an emerging group. *Proceedings of the Nutrition Society*. 6-9 July. 74(OCE5):E313.
- Pervan, S.J. & Vocino, A. 2008. Message framing: Keeping practitioners in the picture. *Marketing Intelligence & Planning*, 26(6):634-648.
- Pieters, R. & Wedel, M. 2004. Attention capture and transfer in advertising: Brand, pictorial, and text-size effects. *Journal of Marketing*, 68(2):36-50.
- Pimentel, D. & Pimentel, M. 2003. Sustainability of meat-based and plant-based diets and the environment. *The American Journal of Clinical Nutrition*, 78(3):660S-663S.
- Pinho, J.C.M.R. & Soares, A.M. 2011. Examining the technology acceptance model in the adoption of social networks. *Journal of Research in Interactive Marketing*, 5(2-3):116-129.
- Pixabay. 2017. *Cow Funny Ruminant*. Digital image. Available: <https://pixabay.com/photos/cow-funny-ruminant-cute-close-up-2896329/> [2019, June 20].
- Plassmann, H., Ramsøy, T.Z. & Milosavljevic, M. 2012. Branding the brain: A critical review and outlook. *Journal of Consumer Psychology*, 22(1):18–36.
- Poels, K. & Dewitte, S., 2006. How to capture the heart? Reviewing 20 years of emotion measurement in advertising. *Journal of Advertising Research*, 46(1):18-37.
- Potter, R.F. & Bolls, P.D. 2012. *Psychophysiological measurement and meaning: Cognitive and emotional processing of media*. New York: Routledge.
- Pozharliev, R., Verbeke, W.J.M.I. & Bagozzi, R.P. 2017. Social consumer neuroscience: Neurophysiological measures of advertising effectiveness in a social context. *Journal of Advertising*, 46(3):351-362.
- Preacher, K.J. & Hayes, A.F. 2008. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3):879–891.
- Ransome, K. 2018. *Intentions to engage in a meat-reduced diet: An application of the integrative model of behavioural prediction*. Master of Business Science. University of Cape Town. Available: <http://hdl.handle.net/11427/31014> [2021, March 5].
- Raphaely, T. & Marinova, D. 2014. Flexitarianism: A more moral dietary option. *International Journal of Sustainable Society*, 6(1/2):189-211.

- Reid, N. 2006. Thoughts on attitude measurement. *Research in Science & Technological Education*, 24(1):3-27.
- Roberts, J.A. 1996. Green consumers in the 1990s: Profile and implications for advertising. *Journal of Business Research*, 36(3):217-231.
- Robinson, L., Phillips, J., Bishop, E.B., Daya, S., Gladstone, N., Ko, V., Loewen, P., Sim, A., Wilmot, C. & Wollenberg, S. 2016. *What motivates citizens to participate?* The Digital Public Square Report, Munk School of Global Affairs, University of Toronto. Available: <https://digitalpublicsquare.com/media/DPS-Motivational-Reportv9.pdf> [2021, February 26].
- Robinson, T.N. 2010. Save the world, prevent obesity: Piggybacking on existing social and ideological movements. *Obesity*, 18(S1):S17-S22.
- Rollin, B. E. 2006. *Animal rights & human morality*. New York: Prometheus Books.
- Rosbergen, E., Pieters, R. & Wedel, M. 1997. Visual attention to advertising: A segment-level analysis. *Journal of Consumer Research*, 24(3):305-314.
- Rossmann, G. & Rallis, S. F. 2012. *Learning in the field: An introduction to qualitative research*. 3rd ed. Thousand Oaks, California: Sage.
- Rothgerber, H. 2012. Real men don't eat (vegetable) quiche: Masculinity and the justification of meat consumption. *Psychology of Men & Masculinity*, 14(4):363.
- Rothman, A.J., Bartels, R.D., Wlaschin, J. & Salovey, P. 2006. The strategic use of gain- and loss-framed messages to promote healthy behavior: How theory can inform practice. *Journal of Communication*, 56:S202-S220.
- Royne, M.B., Martinez, J., Oakley, J. & Fox, A.K. 2012. The effectiveness of benefit type and price endings in green advertising. *Journal of Advertising*, 41(4):85-102.
- Rozin, P., Haidt, J. & McCauley, C.R. 1993. *Handbook of emotions: Disgust*. New York: Guilford Press.
- Rozin, P., Haidt, J., McCauley, C., Dunlop, L. & Ashmore, M. 1999. Individual differences in disgust sensitivity: Comparisons and evaluations of paper-and-pencil versus behavioral measures. *Journal of Research in Personality*, 33(3):330-351.
- Rozin, P. & Fallon, A. 1980. The psychological categorization of foods and non-foods: A preliminary taxonomy of food rejections. *Appetite*, 1(3):193-201.
- Rozin, P. & Fallon, A.E. 1987. A perspective on disgust. *Psychological Review*, 94:23.
- Rydell, R.J. & McConnell, A.R. 2006. Understanding implicit and explicit attitude change: A systems of reasoning analysis. *Journal of Personality and Social Psychology*, 91(6):995-1008.
- Salim, R. 2019. What is EDA peak detection and how does it work? [Blog, 22 October]. Available: <https://imotions.com/blog/eda-peak-detection/> [2020, August 27].

- Salkind, N.J. 2010. *Encyclopedia of research design* (Vol. 1). Thousand Oaks, CA: Sage Publications.
- Sanbonmatsu, D.M. & Kardes, F.R. 1988. The effects of physiological arousal on information processing and persuasion. *Journal of Consumer Research*, 15(3):379-385.
- Sanchez, C.A. & Alley, Z.M. 2016. Advertising effectiveness and attitude change vary as a function of working memory capacity. *Applied Cognitive Psychology*, 30:1093-1099.
- Sanders, B. 2018. *Global animal slaughter statistics and charts*. Available: <https://faanalytics.org/global-animal-slaughter-statistics-and-charts/#:~:text=Worldwide%2C%20more%20than%2070%20billion,EXCLUSIVE&text=Please%20see%20our%20Global%20Animal,%26%20Charts%3A%202020%20Update%20here.> [2021, March 4].
- Santos, M.A.D., Lobos, C., Muñoz, N., Romero, D. & Sanhueza, R. 2017. The influence of image valence on the attention paid to charity advertising. *Journal of Nonprofit & Public Sector Marketing*, 29(3):346-363.
- Scarborough, P., Appleby, P.N., Mizdrak, A., Briggs, A.D.M., Travis, R.C., Bradbury, K.E. & Key, T.J. 2014. Dietary greenhouse gas emissions of meat-eaters, fish-eaters, vegetarians and vegans in the UK. *Climate Change*, 125(2):179-192.
- Schachter, S. & Singer, J. 1962. Cognitive, social, and physiological determinants of emotional state. *Psychological Review*, 69(5):379-399.
- Scherer, K.R. 2005. What are emotions? And how can they be measured? *Social Science Information*, 44(4):695-729.
- Schösler, H., de Boer, J. & Boersema, J.J. 2012. Can we cut out the meat of the dish? Constructing consumer-oriented pathways towards meat substitution. *Appetite*, 58(1):39-47.
- Schupp, H.T., Stockburger, J., Codispoti, M., Junghöfer, M., Weike, A.I. & Hamm, A.O. 2007. Selective visual attention to emotion. *The Journal of Neuroscience*, 27(5):1082-1089.
- Schwarz, N. & Bless, H. 1991. Happy and Mindless, But Sad and Smart? The Impact of Affective States on Analytic Reasoning. *Emotion and Social Judgments*. Oxford: Pergamon Press.
- Sciulli, L., Bhagat, P.S. & Bebeko, C.P. 2012. Eye tracking analysis: Engagement levels and donor tendencies using print advertisements with emotional appeals. *Innovative Marketing*, 8(2):91-98.
- Searchinger, T., Hanson, C., Ranganathan, J., Lipinski, B., Waite, R., Winterbottom, R., Dinshaw, A. & Heimlich, R. 2014. Creating a sustainable food future: A menu of solutions to sustainably feed more than 9 billion people by 2050. *World Resources Report 2013-14: Interim Findings*.
- Sebastian, V. 2014a. Neuromarketing and evaluation of cognitive and emotional responses of consumers to marketing stimuli. *Procedia – Social and Behavioural Sciences*, 127:753-757.

- Sebastian, V. 2014b. Neuromarketing and neuroethics. *Procedia - Social and Behavioral Sciences*, 127:763-768.
- Shaw, D.S., Shiu, E. & Clarke, I. 2000. The contribution of ethical obligation and self-identity to the theory of planned behaviour: An exploration of ethical consumers. *Journal of Marketing Management*, 16(8):879–894.
- Shaw, D.S. & Shiu, E. 2002a. The role of ethical obligation and self-identity in ethical consumer choice. *International Journal of Consumer Studies*, 26(2):109–116.
- Shaw, D. & Shiu, E. 2002b. An assessment of ethical obligation and self-identity in ethical consumer decision-making: A structural equation modelling approach. *International Journal of Consumer Studies*, 26(4):286-293.
- Shen, L. & Dillard, J.P. 2007. The influence of behavioral inhibition/approach systems and message framing on the processing of persuasive health messages. *Communication Research*, 34(4):433-467.
- Shimp, T.A. & Stuart, E.W. 2004. The role of disgust as an emotional mediator of advertising effects. *Journal of Advertising*, 33(1):43-53.
- Simmonds, L., Bellman, S., Kennedy, R., Nenycz-Thiel, M. & Bogomolova, S. 2020. Moderating effects of prior brand usage on visual attention to video advertising and recall: An eye-tracking investigation. *Journal of Business Research*, 111:241-248.
- Smil, V. 2013. *Should humans eat meat [excerpt]?* Available: <https://www.scientificamerican.com/article/should-humans-eat-meat-excerpt/> [2020, August 4].
- Smith, R. & Lane, R.D. 2016. Unconscious emotion: A cognitive neuroscientific perspective. *Neuroscience & Biobehavioral Reviews*, 69:216-238.
- Solnais, C., Andreu-Perez, J., Sánchez-Fernández, J. & Andréu-Abela, J. 2013. The contribution of neuroscience to consumer research: A conceptual framework and empirical review. *Journal of Economic Psychology*, 36:68–81.
- Solomon, M., Bamossy, G., Askegaard, S. & Hogg, M. 2006. *Consumer behaviour: A European perspective*. 3rd ed. New Jersey: Pearson.
- South African Government. 2021. *About alert system*. Available: <https://www.gov.za/covid-19/about/about-alert-system#> [2021, March 5].
- Speck, P.S. & Elliott, M.T. 1997. Predictors of advertising avoidance in print and broadcast media. *Journal of Advertising*, 26(3):61-76.
- Spence, A. & Pidgeon, N. 2010. Framing and communicating climate change: The effects of distance and outcome frame manipulation. *Global Environmental Change*, 20(4):656-667.
- Stafford, M.R., Stafford, T.F. & Chowdhury, J. 1996. Predispositions toward green issues: The potential efficacy of advertising appeals. *Journal of Current Issues & Research in Advertising*, 18(1):67-79.

- Stark, R., Walter, B., Schienle, A. & Vaitl, D. 2005. Psychophysiological correlates of disgust and disgust sensitivity. *Journal of Psychophysiology*, 19(1):50-60.
- Starr, M.A. 2009. The social economics of ethical consumption: Theoretical considerations and empirical evidence. *The Journal of Socio-Economics*, 38(6):916–925.
- Steinfeld, H., Gerber, P., Wassenaar, T., Castel, V., Rosales, M. & de Haan, C. 2006. *Livestock's long shadow – Environmental issues and options*. Rome: Food and Agriculture Organization of the United Nations.
- Stewart, D.W. & Furse, D.H. 1982. Applying psychophysiological measures to marketing and advertising research problems. *Current Issues and Research in Advertising*, 5(1):1-38.
- Stoll-Kleemann, S. & Schmidt, U. 2017. Reducing meat consumption in developed and transition countries to counter climate change and biodiversity loss: a review of influence factors. *Regional Environmental Change*, 17(5):1261-1277.
- Strahilevitz, M. & Myers, J.G. 1998. Donations to charity as purchase incentives: How well they work may depend on what you are trying to sell. *Journal of Consumer Research*, 24(4):434–446.
- Sung, B., Wilson, N.J., Yun, J.H. & Lee, E.J. 2019. What can neuroscience offer marketing research? *Asia Pacific Journal of Marketing and Logistics*.
- Tanner, C. & Kast, W.S. 2003. Promoting sustainable consumption: Determinants of green purchases by Swiss consumers. *Psychology and Marketing*, 20(10):883-902.
- Taute, H.A., Mcquitty, S. & Sautter, E.P. 2011. Emotional information management and responses to emotional appeals. *Journal of Advertising*, 40(3):31-44.
- Teixeira, T., Wedel, M. & Pieters, R. 2012. Emotion-induced engagement in internet video advertisements. *Journal of Marketing Research*, 49(2):144-159.
- Tofighi, D. & Thoemmes, F. 2014. Single-level and multilevel mediation analysis. *The Journal of Early Adolescence*, 34(1):93-119.
- Trendel, O., Mazodier, M. & Vohs, K.D. 2018. Making warnings about misleading advertising and product recalls more effective: An implicit attitude perspective. *Journal of Marketing Research*, 55(2):265-276.
- Triyanti, V., Yassierli, Y. & Iridiastadi, H. 2019. Basic emotion recognition using automatic facial expression analysis software. *Jurnal Optimasi Sistem Industri*, 18(1):55-64.
- Trochim, W.M.K. 2020. *Inferential statistics*. Available: <https://conjointly.com/kb/inferential-statistics/> [2020, June 25].
- Truelove, H.B. & Parks, C. 2012. Perceptions of behaviors that cause and mitigate global warming and intentions to perform these behaviors. *Journal of Environmental Psychology*, 32(3):246-259.

- Tullis, T. & Albert, B. 2013. *Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics*. Morgan Kaufmann.
- Turner III, D.W. 2010. Qualitative interview design: A practical guide for novice investigators. *The Qualitative Report*, 15(3):754.
- Tversky, A. & Kahneman, D. 1981. The framing of decisions and the psychology of choice. *Science*, 211(4481):453-458.
- Tybur, J.M., Laakasuo, M., Ruff, J. & Klauke, F. 2016. How pathogen cues shape impressions of foods: The omnivore's dilemma and functionally specialized conditioning. *Evolution and Human Behavior*, 37(5):376-386.
- United States Census Bureau. 2015. *Millennials outnumber baby boomers and are far more diverse, Census Bureau reports*. Available: <https://www.census.gov/newsroom/press-releases/2015/cb15-113.html> [2019, June 12].
- USDA Foreign Agriculture Service. 2015. *The South African meat market*. Available: https://gain.fas.usda.gov/Recent%20GAIN%20Publications/The%20South%20African%20meat%20market_Pretoria_South%20Africa%20-%20Republic%20of_9-15-2015.pdf [2019, June 12].
- Vainikka, B. 2015. *Psychological factors influencing consumer behaviour*. Bachelor Thesis. Centria University of Applied Sciences. Available: https://www.theseus.fi/bitstream/handle/10024/96405/Vainikka_Bianca.pdf.pdf?sequence=1 [2019, March 6].
- Valeri, L. & VanderWeele, T.J. 2013. Mediation analysis allowing for exposure–mediator interactions and causal interpretation: Theoretical assumptions and implementation with SAS and SPSS macros. *Psychological Methods*, 18(2):137-150.
- Varadarajan, P. & Menon, A. 1988. Cause-related marketing: A coalignment of marketing strategy. *Journal of Marketing*, 52(3):58–74.
- Vegan Calculator. 2018. *Vegan and vegetarian statistics*. Available: <https://vegancalculator.com/statistics/> [2021, March 2].
- Venkatraman, V., Dimoka, A., Pavlou, P.A., Vo, K., Hampton, W., Bollinger, B., Hershfield, H.E., Ishihara, M. & Winer, R.S. 2015. Predicting advertising success beyond traditional measures: New insights from neurophysiological methods and market response modeling. *Journal of Marketing Research*, 52(4):436-452.
- Vieira, V.A. 2013. Stimuli-organism-response framework: A meta-analytic review in the store environment. *Journal of Business Research*, 66(9):1420-1426.
- Wakefield, M.A., Loken, B. & Hornik, R.C. 2010. Use of mass media campaigns to change health behaviour. *The Lancet*, 376(9748):1261–1271.

- Walla, P., Koller, M. & Meier, J.L. 2014. Consumer neuroscience to inform consumers – physiological methods to identify attitude formation related to over-consumption and environmental damage. *Frontiers in Human Neuroscience*, 8(304).
- Wang, C.L. 2008. Gender differences in responding to sad emotional appeal: A moderated mediation explanation. *Journal of Nonprofit & Public Sector Marketing*, 19(1):55-70.
- Wang, Y. & Beydoun, M.A. 2009. Meat consumption is associated with obesity and central obesity among US adults. *International Journal of Obesity*, 33(6):621-628.
- Wang, Y.J. & Minor, M.S. 2008. Validity, reliability, and applicability of psychophysiological techniques in marketing research. *Psychology & Marketing*, 25(2):197-232.
- Western Cape Government. 2020. Population Data. Circular H 102 / 2020. Available: https://www.westerncape.gov.za/assets/departments/health/h_102_2020_covid-19_population_data.pdf [2021, October 24].
- Wheale, P. & Hinton, D. 2007. Ethical consumers in search of markets. *Business Strategy and the Environment*, 16(4):302–315.
- Wilson, T. D. 2002. *Strangers to ourselves: Discovering the adaptive unconscious*. Cambridge, MA: Belknap Press of Harvard University Press.
- Wilson, T.D. & Schooler, J.W. 1991. Thinking too much: Introspection can reduce the quality of preferences and decisions. *Journal of Personality and Social Psychology*, 60(2):181-192.
- World Health Organisation. 2003. *Diet, nutrition and the prevention of chronic disease*. Geneva: World Health Organisation.
- World Health Organisation. 2015. *Q&A on the carcinogenicity of the consumption of red meat and processed meat*. Available: www.who.int/features/qa/cancer-red-meat/en/ [2020, April 2].
- Yang, D.J. 2018. Exploratory neural reactions to framed advertisement messages of smoking cessation. *Social Marketing Quarterly*, 24(3):216-232.
- Yang, D.J. & Ma, T.K.E. 2011. Exploring anchoring and communication effects from message manipulation: An experimental study about recycling. *Pan-Pacific Management Review*, 14(2):79-108.
- Yartz, A.R. & Hawk, L.W. 2002. Addressing the specificity of affective startle modulation: Fear versus disgust. *Biological psychology*, 59(1):55-68.
- Yfantidou, I. 2018. *A neuromarketing perspective of green advertising: The influence of environmental advertising appeals and CSR to consumers*. Ph.D. Thesis. Aristotle University of Thessaloniki. Available: <https://ikee.lib.auth.gr/record/297480/files/GRI-2018-21381.pdf> [2019, February 26].
- Yzer, M. 2012. The integrative model of behavioral prediction as a tool for designing health messages. *Health Communication Message Design: Theory and Practice*, 21-40.

Zaltman, G. 1997. Rethinking market research: Putting people back in. *Journal of Marketing Research*, 34(4):424-437.

Zaltman, G. 2003. *How customers think: Essential insights into the mind of the market*. Boston, M.A: Harvard Business School Press.

Zhang, Y. & Buda, R. 1999. Moderating effects of need for cognition on responses to positively versus negatively framed advertising messages. *Journal of Advertising*, 28(2):1-15.

Zurawicki, L. 2010. *Neuromarketing: Exploring the brain of the consumer*. Berlin: Springer.

Appendix A: Ethics Approval; Department of Student Affairs (DSA) Approval

Ethics Approval



Faculty of Commerce

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UCT Commerce Faculty Office

11th November 2019

Ms Caitlin Zunckel
School of Management
Studies
University of Cape Town

Dear Ms Zunckel

REF: REC 2019/10/061

**QUANTIFYING THE IMPACT OF MESSAGE FRAMING ON CONSUMER ATTITUDES
TOWARDS THE CONSUMPTION OF MEAT PRODUCTS: A CONSUMER NEUROSCIENCE
APPROACH**

We are pleased to inform you that your ethics application has been approved. Unless otherwise specified this ethical clearance is valid for 1 year and may be renewed upon application.

Please be aware that you need to notify the Ethics Committee immediately should any aspect of your study regarding the engagement with participants as approved in this application, change. This may include aspects such as changes to the research design, questionnaires, or choice of participants.

The ongoing ethical conduct throughout the duration of the study remains the responsibility of the principal investigator.


We wish you well for your research.

Shandre Swain
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"Our Mission is to be an outstanding teaching and research university, educating for life and addressing the challenges facing our society."

DSA Approval

	RESEARCH ACCESS TO STUDENTS	DSA 100
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NOTES

- This form must be FULLY completed by all applicants who want to access UCT students for the purpose of research or surveys.
- Return the fully completed (a) DSA 100 application form by email, in the same word format, together with your: (b) research proposal inclusive of your survey, (c) copy of your ethics approval letter / proof (d) informed consent letter to: Moontsa.Khan@uct.ac.za. Your application will be attended to by the Executive Director, Department of Student Affairs (DSA), UCT.
- The turnaround time for a reply is approximately 30 working days.
- NB: It is the responsibility of the researcher/s to apply for and to obtain ethics approval and to comply with amendments that may be requested as well as to obtain approval to access UCT staff and/or UCT students, from the following, at UCT, respectively: (a) Ethics: Chairperson, Faculty Research Ethics Committee (FREC) for ethics approval, (b) Staff access: Executive Director: HR for approval to access UCT staff, and (c) Student access: Executive Director: Student Affairs for approval to access UCT students.
- Note: UCT Senate Research Protocols requires compliance to the above, even if prior approval has been obtained from any other institution/agency. UCT's research protocol requirements applies to all persons, institutions and agencies from UCT and external to UCT who want to conduct research on human subjects for academic, marketing or service related reasons at UCT.
- Should approval be granted to access UCT students for this research study, such approval is effective for a period of one year from the date of approval (as stated in Section D of this form), and the approval expires automatically on the last day.
- The approving authority reserves the right to revoke an approval based on reasonable grounds and/or new information.

SECTION A: RESEARCH APPLICANT'S DETAILS

Position	Staff / Student No	Title and Name	Contact Details (Email / Cell / land line)
A.1 Student Number	ZNCCA001	Miss Caitlin Zuncel	zncca001@myuct.ac.za / 0796882315
A.2 Academic / PASS Staff No.			
A.3 Visitor/ Researcher ID No.			
A.4 University at which a student or employee	University of Cape Town	Address if not UCT:	
A.5 Faculty/ Department/School	Commerce / Management Studies (Marketing)		
A.6 APPLICANT'S DETAILS if different from above	Title and Name	Tel.	Email

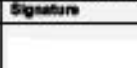
SECTION B: RESEARCHER'S SUPERVISOR'S DETAILS

Position	Title and Name	Tel.	Email
B.1 Supervisor	Dr. Pragasen Pillay	0216335939	p.pillay@sc.ac.za
B.2 Co-Supervisor/s	Mark Drummond / Dr. David Rosenztein	0827006979 / 0842101630	Mark.drummond@neuralscience.co.za / David.rosenztein@neuralscience.co.za

SECTION C: APPLICANT'S RESEARCH STUDY FIELD AND APPROVAL STATUS

C.1 Degree – if applicable	Master of Business Science
C.2 Research Project Title	Quantifying the impact of message framing on consumer attitudes towards the consumption of meat products: A consumer neuroscience approach.
C.3 Research Proposal	Attached: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
C.4 Target population	Consumers between the ages of 18 to 34, living in Cape Town, who consumes meat products.
C.5 Lead Researcher details	If different from applicant:
C.6 Will use research assistants	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes provide a list of names, contact details and IDs:
C.7 Research Methodology and informed consent:	Research methodology: Quantitative methods (Online questionnaire and consumer neuroscience methods) Informed consent: Informed Consent Form Attached
C.8 Ethics clearance status from UCT's Faculty Ethics in Research Committee /Chair (EIRC)	Approved by the UCT EIRC: Yes <input checked="" type="checkbox"/> With amendments: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (a) Attach copy of your UCT ethics approval. Attached: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (b) State date / Ref. No / Faculty of your UCT ethics approval: 11/11/2019 REC2019/03081 (Commerce)

SECTION D: APPLICANT'S APPROVAL STATUS FOR ACCESS TO STUDENTS FOR RESEARCH PURPOSE (To be completed by the UCT - ES, DSA or Nontinex)

D.1 APPROVAL STATUS	Approved / With Terms / Not	* Conditional approval with terms	Applicant's Ref. No.:	
	(i) Approved <input checked="" type="checkbox"/> (ii) With terms <input type="checkbox"/> (iii) Not approved <input type="checkbox"/>	a) Access to students for this research study must only be undertaken after written ethics approval has been obtained. b) In event any ethics conditions are attached, these must be complied with before access to students.	ZNCCA001/ Miss Caitlin Zuncel Valid till 31 January 2021	
D.2 APPROVED BY:	Designation	Name	Signature	Date of Approval
	Executive Director Department of Student Affairs	Dr Moontsa Khan		8 January 2020 Valid up to 31/12/2021 (Annually renewable)

Version: DSA 100.2016
Page 1 of 1
DSA 100

Appendix B: Language Editing Certificate

Language Quality Assurance Practitioner

Dr PJB Goldstone
22 Inviola Avenue
Musgrave
Durban
4001
South Africa

Cell: +27 73 198 0087

pat@pemail.co.za

5th June 2021

TO WHOM IT MAY CONCERN

I hereby certify that I have language-edited the master's thesis of Ms Caitlin Zunckel entitled: QUANTIFYING THE IMPACT OF MESSAGE-FRAMING ON CONSUMER ATTITUDES TOWARDS THE CONSUMPTION OF MEAT PRODUCTS. A CONSUMER NEURO-SCIENCE APPROACH.

I am satisfied that, provided the changes I have made are effected to the text, the language is of an acceptable standard; and is fit for publication – provided the notes I made are satisfactorily dealt with by the candidate.

Dr Patrick Goldstone
BSc (Stell.)
DEd (UPE)

Language Quality Assurance – Certification Statement

Appendix C: Stimulus Treatments

Positively Framed Treatment Stimulus



SOURCE: Pixabay (2017)

Negatively Framed Treatment Stimulus



SOURCE: McArthur (n.d.)

Appendix D: Research Instruments

QUESTIONNAIRE



Questionnaire:

QUANTIFYING THE IMPACT OF MESSAGE FRAMING ON CONSUMER ATTITUDES TOWARDS THE CONSUMPTION OF MEAT PRODUCTS: A CONSUMER NEUROSCIENCE APPROACH.

Faculty:

Commerce

Department:

School of Management Studies (Marketing)

Researcher:

Name: Caitlin Zunckel

Student Number: ZNCCAI001

Email Address: znccai001@myuct.ac.za

Cell Phone Contact Number: 0766882315

Dear Respondent,

My name is Caitlin Zunckel, and I am currently registered as a Master of Business Science student (specialising in Marketing) at the University of Cape Town (UCT). The research topic that I am currently investigating pertains to the impact of message framing on consumer attitudes towards the consumption of meat products, with a consumer neuroscience approach. This research aims to determine whether there is a difference between positively framed advertisements and negatively framed advertisements in influencing attitudes towards the consumption of meat products. I therefore invite you to participate (voluntarily) in this research study by completing the questionnaires that follow.

The stimuli used in this research study contain sensitive and highly descriptive content which some people may find offensive or disturbing. Your participation in this research is **voluntary**. Due to the nature of the study, you will need to provide some personal information. Your feedback is greatly appreciated and will be kept as strictly confidential. You may further choose to withdraw from the study at any given time and may contact the researcher (should you have any queries), by making note of the contact details supplied on the cover sheet of this questionnaire.

Please note the commencement of this research study has been approved by the UCT Commerce Faculty Ethics in Research Committee. By completing the questionnaires, you therefore implicitly provide consent for your responses to be included within the researcher's data analysis and results presentation.

Each questionnaire should not take longer than 3 minutes to complete. Many thanks for your valuable contribution and participation in this investigation.

Researcher

Respondent Number	
-------------------	--

Questionnaire 1: Pre-Exposure Self-Report

Filter Questions

For each question identified below, mark with an ‘X’ in the shaded box to indicate your answer.

A	Are you between the ages of 18 and 34?	Yes		No	
B	Do you reside in the Cape Town metropolitan area?	Yes		No	
C	Do you consume meat products?	Yes		No	
D	Do you have normal or corrected-to-normal vision?	Yes		No	
E	Are you colour blind?	Yes		No	

If you answered “yes” in all four of the above questions, continue with the rest of the questionnaire. If you answered “no” in any of the questions, you do not have to complete the rest of the questionnaire.

For each question identified below, mark with an ‘X’ the number to the right that best fits your judgment of its quality. Use the rating scale to select the quality number. For example:

1	2	3	4	5	6	7
---	---	--------------	---	---	---	---

SECTION 1 (Source: De Jager, 2009)

	Please indicate how strongly you agree or disagree with each of the following statements	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	I personally think that consuming meat products is a good thing to do.	1	2	3	4	5	6	7
2	I think that consuming meat products is also a wise thing to do.	1	2	3	4	5	6	7
3	For me, consuming meat products is more rewarding than consuming plant-based products.	1	2	3	4	5	6	7

SECTION 2 (Source: Bearden, Netemeyer & Haws, 2011)

	Please indicate how strongly you agree or disagree with each of the following statements	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
4	One of the primary reasons for concern in meat production is animal cruelty.	1	2	3	4	5	6	7
5	There is nothing the average citizen can do to help stop animal cruelty.	1	2	3	4	5	6	7
6	My involvement in reducing meat consumption today will have a positive impact on animal welfare in the future.	1	2	3	4	5	6	7
7	I would not eat meat-free meals unless I was forced to. It is too inconvenient.	1	2	3	4	5	6	7

SECTION 3 (Source: Ajzen & Fishbein, 1980; Bagozzi, Lee & Loo, 2001; Bettiga, Lamberti & Noci, 2017)

Please indicate how each of the following statements resonate with you (feel in common with).									
8	For me personally, adopting a meat-free diet in the next six months can be described as								
	Rewarding	1	2	3	4	5	6	7	Punishing
9	For me personally, adopting a meat-free diet in the next six months can be described as								
	Wise	1	2	3	4	5	6	7	Foolish
10	For me personally, adopting a meat-free diet in the next six months can be described as								
	Beneficial	1	2	3	4	5	6	7	Harmful
11	For me personally, adopting a meat-free diet in the next six months can be described as								
	Useful	1	2	3	4	5	6	7	Useless
12	For me personally, adopting a meat-free diet in the next six months can be described as								
	Good	1	2	3	4	5	6	7	Bad

SECTION 4 (Source: Ajzen & Fishbein, 1980; Bagozzi, Lee & Loo, 2001; Bettiga, Lamberti & Noci, 2017)

Please indicate how each of the following statements resonate with you (feel in common with).								
13	For me personally, adopting a meat-free diet in the next six months can be described as							
Enjoyable	1	2	3	4	5	6	7	Unenjoyable
14	For me personally, adopting a meat-free diet in the next six months can be described as							
Pleasant	1	2	3	4	5	6	7	Unpleasant
15	For me personally, adopting a meat-free diet in the next six months can be described as							
Comfortable	1	2	3	4	5	6	7	Uncomfortable
16	For me personally, adopting a meat-free diet in the next six months can be described as							
Attractive	1	2	3	4	5	6	7	Unattractive
17	For me personally, adopting a meat-free diet in the next six months can be described as							
Appealing	1	2	3	4	5	6	7	Unappealing

THANK YOU! YOU MAY CONTINUE WITH THE EXPERIMENT.

Respondent Number	
-------------------	--

Questionnaire 2: Post-Exposure Self-Report

For each question identified below, mark with an 'X' the number to the right that best fits your judgment of its quality. Use the rating scale to select the quality number. For example:

1	2	3	4	5	6	7
---	---	--------------	---	---	---	---

SECTION 1 (Source: De Jager, 2009)

	Please indicate how strongly you agree or disagree with each of the following statements	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	I personally think that consuming meat products is a good thing to do.	1	2	3	4	5	6	7
2	I think that consuming meat products is also a wise thing to do.	1	2	3	4	5	6	7
3	For me, consuming meat products is more rewarding than consuming plant-based products.	1	2	3	4	5	6	7

SECTION 2 (Source: Bearden, Netemeyer & Haws, 2011)

	Please indicate how strongly you agree or disagree with each of the following statements	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
4	One of the primary reasons for concern in meat production is animal cruelty.	1	2	3	4	5	6	7
5	There is nothing the average citizen can do to help stop animal cruelty.	1	2	3	4	5	6	7
6	My involvement in reducing meat consumption today will have a positive impact on animal welfare in the future.	1	2	3	4	5	6	7
7	I would not eat meat-free meals unless I was forced to. It is too inconvenient.	1	2	3	4	5	6	7

SECTION 3 (Source: Ajzen & Fishbein, 1980; Bagozzi, Lee & Loo, 2001; Bettiga, Lamberti & Noci, 2017)

Please indicate how each of the following statements resonate with you (feel in common with).									
8	For me personally, adopting a meat-free diet in the next six months can be described as								
	Rewarding	1	2	3	4	5	6	7	Punishing
9	For me personally, adopting a meat-free diet in the next six months can be described as								
	Wise	1	2	3	4	5	6	7	Foolish
10	For me personally, adopting a meat-free diet in the next six months can be described as								
	Beneficial	1	2	3	4	5	6	7	Harmful
11	For me personally, adopting a meat-free diet in the next six months can be described as								
	Useful	1	2	3	4	5	6	7	Useless
12	For me personally, adopting a meat-free diet in the next six months can be described as								
	Good	1	2	3	4	5	6	7	Bad

SECTION 4 (Source: Ajzen & Fishbein, 1980; Bagozzi, Lee & Loo, 2001; Bettiga, Lamberti & Noci, 2017)

Please indicate how each of the following statements resonate with you (feel in common with).								
13	For me personally, adopting a meat-free diet in the next six months can be described as							
Enjoyable	1	2	3	4	5	6	7	Unenjoyable
14	For me personally, adopting a meat-free diet in the next six months can be described as							
Pleasant	1	2	3	4	5	6	7	Unpleasant
15	For me personally, adopting a meat-free diet in the next six months can be described as							
Comfortable	1	2	3	4	5	6	7	Uncomfortable
16	For me personally, adopting a meat-free diet in the next six months can be described as							
Attractive	1	2	3	4	5	6	7	Unattractive
17	For me personally, adopting a meat-free diet in the next six months can be described as							
Appealing	1	2	3	4	5	6	7	Unappealing

SECTION 5

18	What is your gender identity? (Please mark 'X' in the correct box)						
Male		Female		Other		Prefer not to answer	
19	What is your age? (It is not compulsory to answer this question)						

THANK YOU FOR YOUR PARTICIPATION, YOUR RESPONSES ARE GREATLY APPRECIATED!

Respondent Number	
-------------------	--

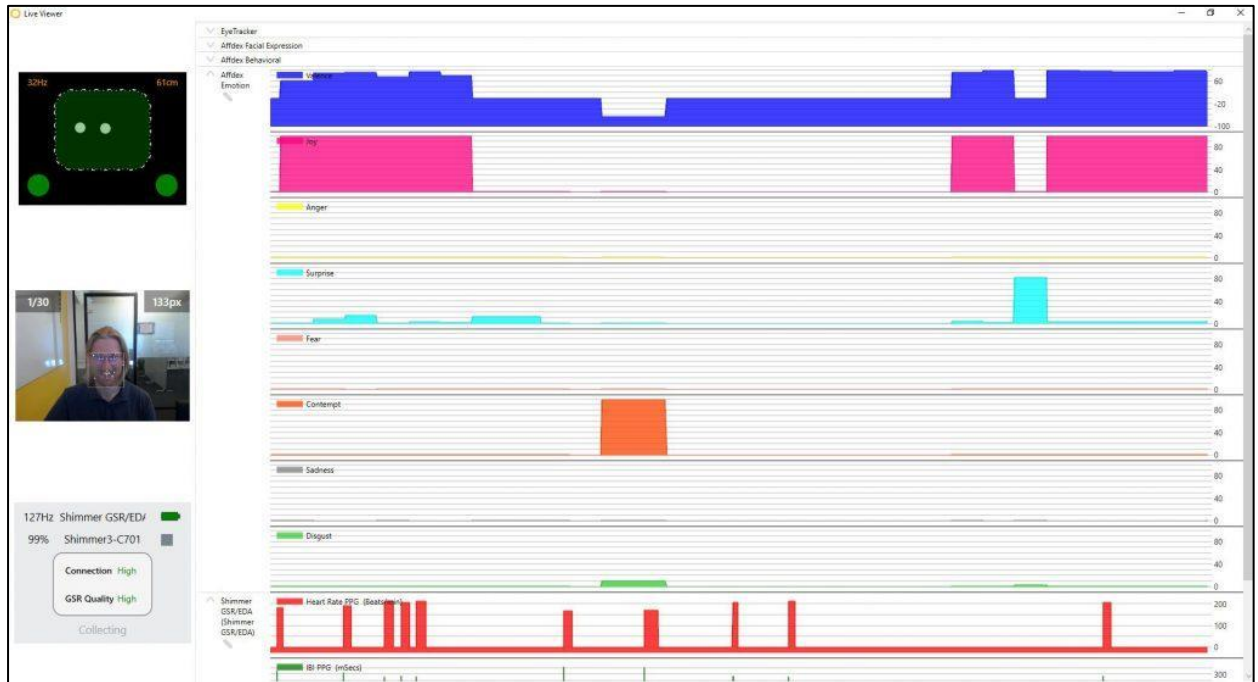
Personal Interview

1. Interviewer: *How does this advertisement make you feel?*

2. Interviewer: *What emotions does this advertisement evoke?*

3. Interviewer: *Why do you feel that way?*

Facial Expression Analysis on iMotions Software



SOURCE: iMotions (n.d.a)

GSR Shimmer Device



SOURCE: iMotions (n.d.b)

Tobii Pro Nano Eye-Tracker

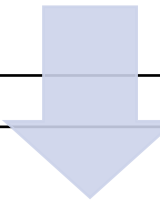


SOURCE: iMotions (n.d.c)

Appendix E: Data Collection Procedure

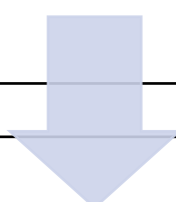
Step 1: Screening, Randomization & Matching

Pre-screening of respondents for exclusion based on demographics, meat-eating behaviour, poor eyesight, and health problems. Randomization and matching of groups ensured prior equality of the groups to allow comparisons between one another.



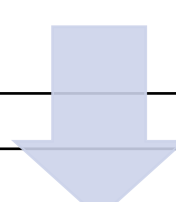
Step 2: Pre-Treatment Questionnaire

This entails obtaining baseline self-report data from respondents before stimulus exposure.



Step 3: Treatment & Autonomic Data Collection

During stimulus exposure, consumer neuroscience technology measures autonomic responses in real-time while respondents view the advertisement and answer three questions regarding their feelings verbally.

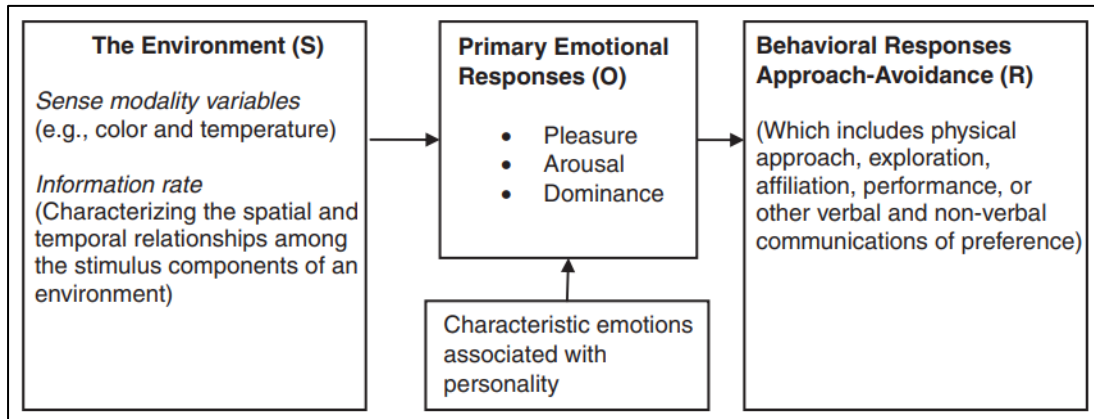


Step 4: Post-Treatment Questionnaire

Respondents complete a second questionnaire based on their experiences during stimulus exposure.

Appendix F: S-O-R Framework; Disgust / Revulsion

Mehrabian & Russell's (1974) S-O-R framework



Disgust - Revulsion



SOURCE: Izard (1977)

Appendix G: Items, scales, and reliability; Statistical techniques

Items, measurement scales and reliability			
Construct	Scale Type and Items	Source	Source Reliability (α)
Section 1: Attitude	Likert Scale, 3 items	De Jager (2009)	0.87
Section 2: Attitude	Likert Scale, 4 items	Bearden, Netemeyer & Haws (2011)	0.93
Section 3: Affective Attitude	Semantic Differential Scale, 5 items	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	0.92
Section 4: Affective Attitude	Semantic Differential Scale. 5 items	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	0.87

Statistical techniques used for data analysis	
Statistical Techniques	Hypotheses
Linear Regression	H1 _A
Paired Samples T-Test	H1 _C , H1 _D
Logistical Regression for Simple Mediation Analysis	H2 _A , H2 _B , H2 _C , H5 _A , H5 _B , H5 _C , H5 _D , H5 _E
Bivariate Correlation	H3 _A , H3 _B , H3 _C , H6
Independent Samples T-Test	H1 _B , H4 _A , H4 _C , H7 _A , H7 _B , H7 _C , H7 _D , H7 _E
Independent Samples Mann-Whitney U Test	H4 _B

Appendix H: Descriptive Statistics

Distribution of respondents between experimental groups		
Experimental Group	Frequency	Valid Percent
Positive Message Framing Group	28	50
Negative Message Framing Group	28	50
Total	56	100.0

Gender distribution between experimental groups						
	Total Sample		Positive Message Framing Group		Negative Message Framing Group	
Gender	Frequency	Valid Percent	Frequency	Valid Percent	Frequency	Valid Percent
Male	27	48.2	13	46.4	14	50.0
Female	28	50.0	14	50.0	14	50.0
Other	1	1.8	1	3.6	0	0
Prefer not to answer	0	0	0	0	0	0
Total	56	100.0	28	100.0	28	100.0

Age distribution between experimental groups				
		Total Sample	Positive Message Framing Group	Negative Message Framing Group
	Age	Age	Age	Age
N	Valid	53	26	27
	Missing	3	2	1
Mean		22.32	22.08	22.56
S.D.		4.04	3.72	4.39
Minimum		18	18	18
Maximum		34	34	33

Item means and standard deviations (positive message framing)						
Item	Question	Pre-Exposure		Post-Exposure		Mean Attitude Change
		Mean	S.D.	Mean	S.D.	
Q1	I personally think that consuming meat products is a good thing to do.	3.29	1.38	3.93	1.51	0.64
Q2	I think that consuming meat products is also a wise thing to do.	3.25	1.27	3.96	1.40	0.71
Q3	For me, consuming meat products is more rewarding than consuming plant-based products.	2.89	1.37	3.43	1.62	0.54
Q4	One of the primary reasons for concern in meat production is animal cruelty.	2.14	1.08	2.18	1.25	0.04
Q5	There is nothing the average citizen can do to help stop animal cruelty.	5.39	1.29	5.64	1.16	0.25
Q6	My involvement in reducing meat consumption today will have a positive impact on animal welfare in the future.	3.43	1.14	2.82	1.36	-0.61
Q7	I would not eat meat-free meals unless I was forced to. It is too inconvenient.	5.39	1.45	5.00	1.68	-0.39
For me personally, adopting a meat-free diet in the next six months can be described as:						
Q8	Rewarding/Punishing	3.57	1.26	3.43	1.53	-0.14
Q9	Wise/Foolish	3.04	1.04	2.93	1.22	-0.11
Q10	Beneficial/Harmful	2.89	.99	2.79	1.29	-0.1
Q11	Useful/Useless	3.21	1.07	3.04	1.20	-0.17
Q12	Good/Bad	2.71	1.21	2.79	1.45	0.08
For me personally, adopting a meat-free diet in the next six months can be described as:						
Q13	Enjoyable/Unenjoyable	4.71	1.24	4.21	1.48	-0.5
Q14	Pleasant/Unpleasant	4.39	1.17	4.07	1.36	-0.32
Q15	Comfortable/Uncomfortable	4.68	1.09	4.21	1.20	-0.47
Q16	Attractive/Unattractive	4.14	1.30	3.75	1.43	-0.39
Q17	Appealing/Unappealing	4.32	1.61	3.57	1.48	-0.57

Item means and standard deviations (negative message framing)						
Item	Question	Pre-Exposure		Post-Exposure		Mean Attitude Change
		Mean	S.D.	Mean	S.D.	
Q1	I personally think that consuming meat products is a good thing to do.	3.18	1.49	3.82	1.72	0.64
Q2	I think that consuming meat products is also a wise thing to do.	3.50	1.45	4.18	1.83	0.68
Q3	For me, consuming meat products is more rewarding than consuming plant-based products.	3.04	1.58	3.64	1.70	0.60
Q4	One of the primary reasons for concern in meat production is animal cruelty.	2.36	1.66	2.07	1.74	-0.29
Q5	There is nothing the average citizen can do to help stop animal cruelty.	5.07	1.70	5.07	2.00	0.00
Q6	My involvement in reducing meat consumption today will have a positive impact on animal welfare in the future.	2.61	1.42	2.57	1.35	-0.04
Q7	I would not eat meat-free meals unless I was forced to. It is too inconvenient.	5.36	1.87	5.07	1.84	-0.29
For me personally, adopting a meat-free diet in the next six months can be described as:						
Q8	Rewarding/Punishing	3.39	1.91	2.89	1.69	-0.50
Q9	Wise/Foolish	2.54	1.50	2.43	1.37	-0.11
Q10	Beneficial/Harmful	2.64	1.45	2.36	1.39	-0.28
Q11	Useful/Useless	2.93	1.74	2.75	1.43	-0.18
Q12	Good/Bad	2.50	1.55	2.36	1.47	-0.14
For me personally, adopting a meat-free diet in the next six months can be described as:						
Q13	Enjoyable/Unenjoyable	4.25	1.84	3.32	1.79	-0.93
Q14	Pleasant/Unpleasant	4.04	1.81	3.14	1.76	-0.9
Q15	Comfortable/Uncomfortable	4.21	1.75	3.43	1.71	-0.78
Q16	Attractive/Unattractive	3.50	1.62	2.75	1.51	-0.75
Q17	Appealing/Unappealing	3.54	1.60	2.82	1.49	-0.72

Detailed descriptive statistics for facial coding emotion							
		Total Sample		Positive Message Framing		Negative Message Framing	
	Stimulus & Duration of Exposure	Mean	S.D.	Mean	S.D.	Mean	S.D.
Emotional Valence	Advertisement (12 sec)	4.96	17.60	8.08	19.32	1.83	15.40
	How does this advertisement make you feel? (30 sec)	18.56	28.40	24.62	27.52	12.28	28.43
	What emotions does this advertisement evoke? (30 sec)	16.19	24.83	20.28	23.29	12.10	26.04
	Why do you feel this way? (30 sec)	13.33	29.85	16.35	34.04	10.20	25.05
	Total	13.24	25.92	17.33	26.95	9.06	24.25
Level of Disgust	Advertisement (12 sec)	1.04	2.61	0.78	1.86	1.30	3.20
	How does this advertisement make you feel? (30 sec)	3.39	5.95	2.40	5.74	4.42	6.09
	What emotions does this advertisement evoke? (30 sec)	3.21	6.15	2.41	4.13	4.01	7.65
	Why do you feel this way? (30 sec)	3.77	6.98	3.27	6.37	4.28	7.65
	Total	2.84	5.73	2.21	4.87	3.49	6.44

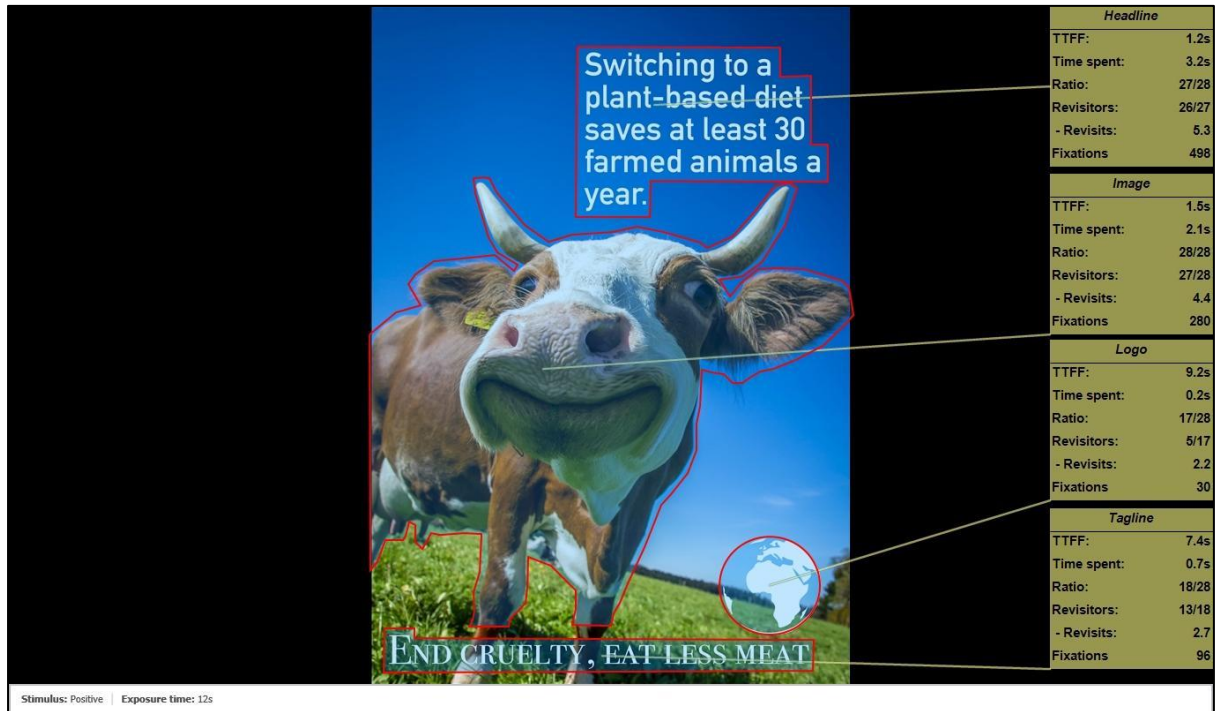
Appendix I: Questionnaire Coding Sheets

Coding Sheet Questionnaire 1: Pre-Exposure		
Construct	Item <i>*Indicates reverse scored items</i>	Scale Values
Experimental Group	Experimental Group	1 = Positive 2 = Negative
Filter Question 1	A. Are you between the ages of 18 and 34?	1 = Yes 2 = No
Filter Question 2	B. Do you reside in the Cape Town metropolitan area?	1 = Yes 2 = No
Filter Question 3	C. Do you consume meat products?	1 = Yes 2 = No
Filter Question 4	D. Do you have normal or corrected-to-normal vision?	1 = Yes 2 = No
Filter Question 5	E. Are you colour blind?	1 = Yes 2 = No
Attitude	<ol style="list-style-type: none"> 1. *I personally think that consuming meat products is a good thing to do. 2. *I think that consuming meat products is also a wise thing to do. 3. *For me, consuming meat products is more rewarding than consuming plant-based products. 4. One of the primary reasons for concern in meat production is animal cruelty. 5. *There is nothing the average citizen can do to help stop animal cruelty. 6. My involvement in reducing meat consumption today will have a positive impact on animal welfare in the future. 7. *I would not eat meat-free meals unless I was forced to. It is too inconvenient. 	1 = Strongly Disagree 2 = Disagree 3 = Somewhat Disagree 4 = Neutral 5 = Somewhat Agree 6 = Agree 7 = Strongly Agree
Attitude	<ol style="list-style-type: none"> 8. *Rewarding/Punishing 9. *Wise/Foolish 10. *Beneficial/Harmful 11. *Useful/Useless 12. *Good/Bad 13. *Enjoyable/Unenjoyable 14. *Pleasant/Unpleasant 15. *Comfortable/Uncomfortable 16. *Attractive/Unattractive 17. *Appealing/Unappealing 	7-Point Semantic Differential Scale

Coding Sheet Questionnaire 2: Post-Exposure		
Construct	Item <i>*Indicates reverse scored items</i>	Values
Attitude	1. *I personally think that consuming meat products is a good thing to do. 2. *I think that consuming meat products is also a wise thing to do. 3. *For me, consuming meat products is more rewarding than consuming plant-based products. 4. One of the primary reasons for concern in meat production is animal cruelty. 5. *There is nothing the average citizen can do to help stop animal cruelty. 6. My involvement in reducing meat consumption today will have a positive impact on animal welfare in the future. 7. *I would not eat meat-free meals unless I was forced to. It is too inconvenient.	1 = Strongly Disagree 2 = Disagree 3 = Somewhat Disagree 4 = Neutral 5 = Somewhat Agree 6 = Agree 7 = Strongly Agree
Attitude	8. *Rewarding/Punishing 9. *Wise/Foolish 10. *Beneficial/Harmful 11. *Useful/Useless 12. *Good/Bad 13. *Enjoyable/Unenjoyable 14. *Pleasant/Unpleasant 15. *Comfortable/Uncomfortable 16. *Attractive/Unattractive 17. *Appealing/Unappealing	7-Point Semantic Differential Scale
Gender	18. What is your gender identity?	1 = Male 2 = Female 3 = Other 4 = Prefer not to answer
Age	19. What is your age? (It is not compulsory to answer this question)	-

Appendix J: Fixation AOIs; Heatmaps

Positively Framed Advertisement AOIs



Negatively Framed Advertisement AOIs



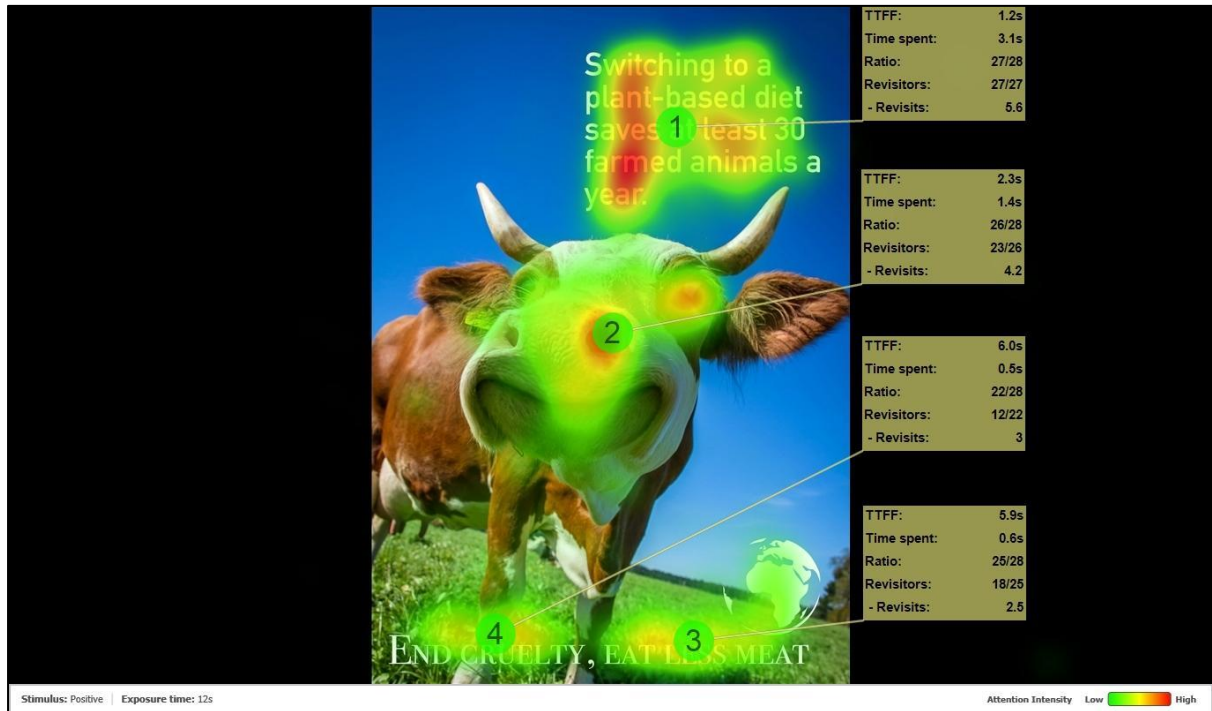
Comparison of eye-tracking metrics between the positively framed advertisement and negatively framed advertisement:

The AOIs include the headline, image, tagline, and logo of the advertisement. TTFF represents ‘time to first fixation’; the amount of time before respondents fixated on an AOI (Farnsworth, 2020). This indicates how certain aspects are prioritized, where a shorter TTFF represents higher priority (Farnsworth, 2020). Time spent refers to the amount of time that respondents spent looking at a particular AOI (Farnsworth, 2020). A longer time spent may indicate a high level of interest, whereas as a shorter time spent may indicate that other AOIs might be more interesting (Farnsworth, 2020). The ratio represents the proportion of respondents that viewed a certain AOI, indicating which AOIs attracted the most or least attention and those that did not attract attention of respondents (Farnsworth, 2020). Revisits indicate how many times a certain part of the stimulus was repeatedly viewed (Farnsworth, 2020). Revisits may be a result of an AOI being pleasing, confusing or even frustrating, indicating which areas of a stimulus should be examined further (Farnsworth, 2020).

The headline of the positively framed advertisement and negatively framed advertisement had similar TTFFs. However, time spent on the headline of the positively framed advertisement was longer than that of the negatively framed advertisement. This metric contradicts the findings regarding average fixation duration (H7_B); however, this is likely because the ‘time spent’ metric (dwell time) includes all fixations as well as saccades within the AOI, including revisits (Tullis & Albert, 2013). The headline of the positively framed advertisement received more revisits, perhaps indicative that respondents were confused by the headline text. The ratio of respondents who viewed the headline was the same between the two treatment groups. Respondents, on average, took longer to fixate on the image in the positively framed advertisement than on the image in the negatively framed advertisement. This indicates that the negatively framed image was prioritized by respondents. Additionally, respondents spent a longer time fixating on the image of the negatively framed advertisement, indicated by a longer time spent than that of the positively framed advertisement. The ratio of respondents who viewed the image was the same between the two treatment groups. However, the negatively framed image received more revisits. This is interesting, since respondents’ attention was drawn to the disgusting image.

TTFF on the tagline was slightly shorter and time spent was slightly longer in the positive message framing group compared to the negative message framing group, although the difference was small. Additionally, the ratio of respondents viewing the tagline and the number of revisits was similar between the two treatment groups. Similarly, TTFF on the logo was slightly shorter in the positive message framing group compared to the negative message framing group, although the difference was small, and time spent was the same between the two treatment groups. Additionally, the ratio of respondents viewing the tagline and the number of revisits was similar between the two treatment groups. The ratio for the two groups indicates that fewer respondents in the negative message framing group viewed the logo, perhaps indicated that other AOIs were more interesting to respondents. The number of revisits was similar in the positively framed advertisement and the negatively framed advertisement.

Positively Framed Advertisement Heat Map: Concentrated Attention



Negatively Framed Advertisement Heat Map: Concentrated Attention



Comparison of eye-tracking heat maps presenting concentrated attention:

The heat map results indicated that the headline, the cow's nostril, and the cow's eye in the positively framed advertisement received concentrated attention, shown by the red colour. Additionally, the sequence of eye-movements on the positively framed advertisement was as follows: 1) headline, 2) image, 3) second part of the tagline and 4) first part of the tagline. This indicates the order of attention and what stood out to respondents. The heat map of the negatively framed advertisement shows that the cow's neck that was cut open received the most attention in the negatively framed advertisement, shown by the red colour. The sequence of eye-movements on the negatively framed advertisement was as follows: 1) image (gruesome incision), 2) headline, 3) back to the image (cow's ear), 4) tagline and 5) headline (attention was drawn back to the first line of the headline).

The comparison of the sequence of eye-movements between the two treatment stimuli shows that the positively framed advertisement received a normal flow from the headline at the top of the advertisement down to the tagline at the bottom of the advertisement, and the negatively framed advertisement received a more erratic eye-movement sequence. This may indicate that none of the AOIs stood out to the respondents who were exposed to the positively framed advertisement, as they went about a logical sequence from top to bottom. However, the image really stood out to respondents who viewed the negatively framed advertisement since it was first in the order of attention, and it received a second wave of concentrated attention. In addition, the headline stood out to respondents as it also received a second wave of concentrated attention.

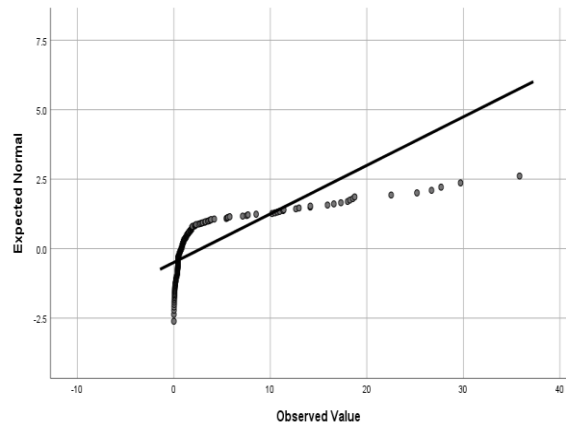
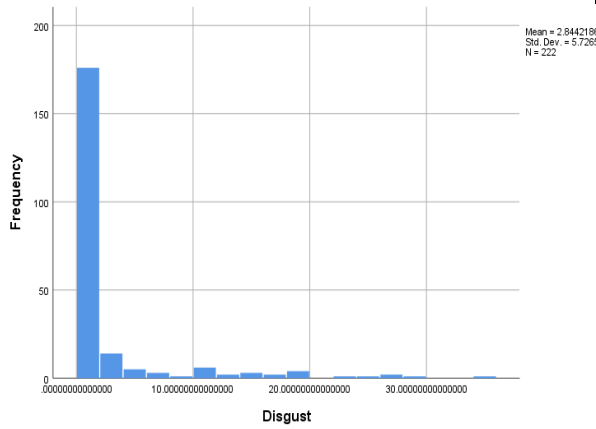
Appendix K: Reliability Analysis; Factor Analysis; Normality Tests

Item reliability results (treatment groups)					
Construct	Source	Number of Items		Cronbach Alpha	
		Source	Present	Source	Present
Positive Message Framing					
Pre-Exposure Questionnaire					
Section 1: Attitude	De Jager (2009)	3	3	0.87	0.75
Section 2: Attitude	Bearden, Netemeyer & Haws (2011)	4	4	0.93	-0.02
Section 3: Attitude	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	5	5	0.92	0.81
Section 4: Attitude	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	5	5	0.87	0.87
Post-Exposure Questionnaire					
Section 1: Attitude	De Jager (2009)	3	3	0.87	0.91
Section 2: Attitude	Bearden, Netemeyer & Haws (2011)	4	4	0.93	0.47
Section 3: Attitude	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	5	5	0.92	0.88
Section 4: Attitude	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	5	5	0.87	0.89
Negative Message Framing					
Pre-Exposure Questionnaire					
Section 1: Attitude	De Jager (2009)	3	3	0.87	0.80
Section 2: Attitude	Bearden, Netemeyer & Haws (2011)	4	4	0.93	0.23
Section 3: Attitude	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	5	5	0.92	0.92
Section 4: Attitude	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	5	5	0.87	0.94
Post-Exposure Questionnaire					
Section 1: Attitude	De Jager (2009)	3	3	0.87	0.89
Section 2: Attitude	Bearden, Netemeyer & Haws (2011)	4	4	0.93	0.59
Section 3: Attitude	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	5	5	0.92	0.95
Section 4: Attitude	Ajzen & Fishbein (1980); Bagozzi, Lee & Loo (2001); Bettiga, Lamberti & Noci (2017)	5	5	0.87	0.97

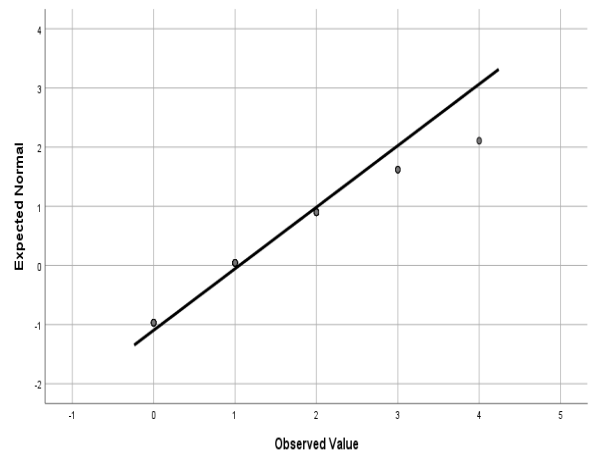
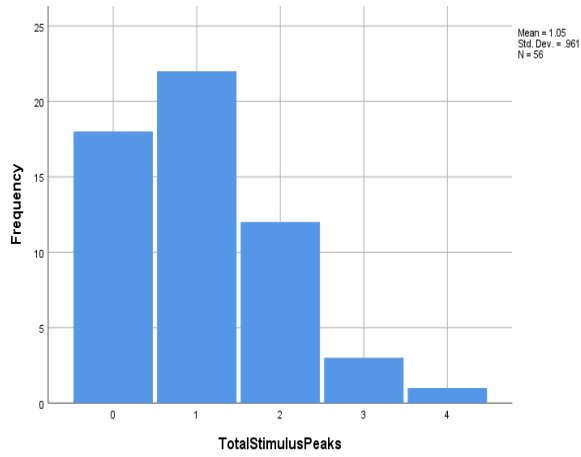
Section 2 Attitude Items	Cronbach's Alpha if Item Deleted
Section 2: Pre-Exposure Questionnaire	
Q4	0.07
Q5	0.14
Q6	0.23
Q7	-0.13
Section 2: Post-Exposure Questionnaire	
Q4	0.56
Q5	0.40
Q6	0.50
Q7	0.38

Factor analysis results (treatment groups)				
Construct	Factor	Eigenvalues	Percentage of Variation	Cumulative Percentage of Variation
Positive Message Framing				
Pre-Exposure Questionnaire				
Section 1: Attitude	1	2.05	68.23	68.23
Section 2: Attitude	1	1.47	35.26	35.26
	2	1.19	31.41	66.67
Section 3: Attitude	1	2.90	57.93	57.93
Section 4: Attitude	1	3.31	66.24	66.24
Post-Exposure Questionnaire				
Section 1: Attitude	1	2.57	85.68	85.68
Section 2: Attitude	1	1.64	38.51	38.51
	2	1.04	28.48	66.99
Section 3: Attitude	1	3.55	70.91	70.91
Section 4: Attitude	1	3.45	69.05	69.05
Negative Message Framing				
Pre-Exposure Questionnaire				
Section 1: Attitude	1	2.19	72.83	72.83
Section 2: Attitude	1	1.46	34.98	34.98
	2	1.25	32.86	67.84
Section 3: Attitude	1	3.84	76.83	76.83
Section 4: Attitude	1	4.08	81.63	81.63
Post-Exposure Questionnaire				
Section 1: Attitude	1	2.45	81.72	81.72
Section 2: Attitude	1	1.88	46.94	46.94
Section 3: Attitude	1	4.17	83.32	83.32
Section 4: Attitude	1	4.44	88.83	88.83

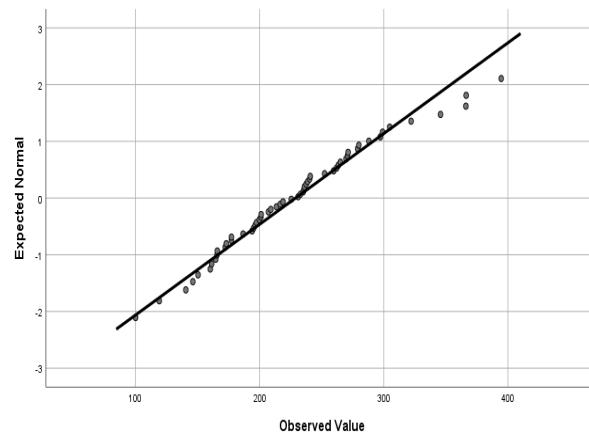
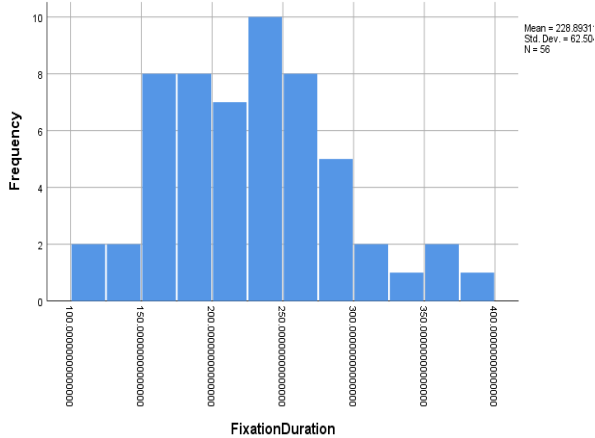
Emotion: Disgust



Emotion: Arousal



Attention

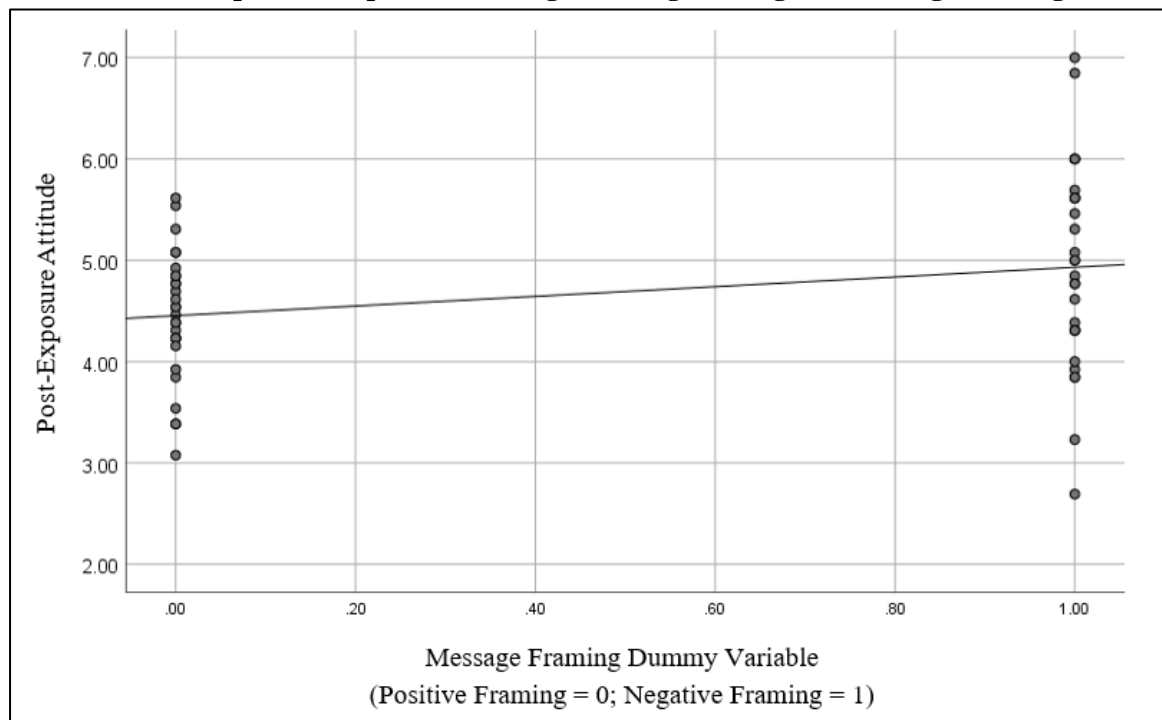


Appendix L: Linear Regression

ANOVA: H1 _A					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.20	1	3.20	4.50	0.04
Residual	38.38	54	0.71		
Total	41.57	55			

Model summary: H1 _A			
R	R Square	Adjusted R Square	Std. Error of the Estimate
0.28	0.077	0.06	0.84

Linear relationship between positive message framing and negative message framing



Appendix M: Mediation Analysis

Hayes (2018) PROCESS Mediation Analysis Output

H2A: Emotional valence elicited by the advertisement will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher emotional valence will lead to more positive attitudes toward the reduction of meat consumption.

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
 Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
 Y : PostExp
 X : Framing
 M : Valence

Covariates:
 PreExp

Sample
 Size: 56

OUTCOME VARIABLE:
 Valence

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,2069	,0428	436,4071	1,1852	2,0000	53,0000	,3137

Model

	coeff	se	t	p	LLCI	ULCI
constant	30,5794	18,3579	1,6657	,1017	-6,2422	67,4010
Framing	-8,0819	5,7046	-1,4167	,1624	-19,5239	3,3601
PreExp	-1,1800	3,9454	-,2991	,7660	-9,0936	6,7336

OUTCOME VARIABLE:
 PostExp

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,7935	,6296	,2962	29,4589	3,0000	52,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	,2134	,4906	,4350	,6654	-,7711	1,1978
Framing	,2321	,1514	1,5333	,1313	-,0717	,5359
Valence	,0027	,0036	,7511	,4560	-,0045	,0099
PreExp	,9051	,1029	8,7990	,0000	,6987	1,1116

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:
 PostExp

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,7909	,6255	,2937	44,2704	2,0000	53,0000	,0000

Model	coeff	se	t	p	LLCI	ULCI
constant	,2956	,4763	,6206	,5375	-,6597	1,2508
Framing	,2104	,1480	1,4217	,1610	-,0864	,5073
PreExp	,9020	,1024	8,8119	,0000	,6967	1,1073

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c_ps
,2104	,1480	1,4217	,1610	-,0864	,5073	,2420

Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_ps
,2321	,1514	1,5333	,1313	-,0717	,5359	,2670

Indirect effect(s) of X on Y:				
Effect	BootSE	BootLLCI	BootULCI	
Valence	-,0217	,0414	-,1293	,0350

Partially standardized indirect effect(s) of X on Y:				
Effect	BootSE	BootLLCI	BootULCI	
Valence	-,0250	,0471	-,1442	,0424

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

----- END MATRIX -----

H2B: The level of disgust elicited by the advertisement will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher levels of disgust will lead to more positive attitudes toward the reduction of meat consumption.

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
 Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
 Y : PostExp
 X : Framing
 M : Disgust

Covariates:
 PreExp

Sample
 Size: 56

OUTCOME VARIABLE:
 Disgust

Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	,1500	,0225	17,9721	,6097	2,0000	53,0000	,5473

Model							
	coeff	se	t	p	LLCI	ULCI	
constant	,1899	3,7254	,0510	,9595	-7,2825	7,6622	
Framing	1,1613	1,1577	1,0031	,3204	-1,1607	3,4832	
PreExp	,1969	,8007	,2459	,8067	-1,4090	1,8028	

OUTCOME VARIABLE:
 PostExp

Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	,7956	,6330	,2934	29,9004	3,0000	52,0000	,0000

Model							
	coeff	se	t	p	LLCI	ULCI	
constant	,2921	,4760	,6137	,5421	-,6630	1,2473	
Framing	,1894	,1493	1,2687	,2102	-,1102	,4890	
Disgust	,0181	,0176	1,0296	,3080	-,0171	,0533	
PreExp	,8984	,1024	8,7771	,0000	,6930	1,1038	

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:
 PostExp

Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	,7909	,6255	,2937	44,2704	2,0000	53,0000	,0000

Model	coeff	se	t	p	LLCI	ULCI
constant	,2956	,4763	,6206	,5375	-,6597	1,2508
Framing	,2104	,1480	1,4217	,1610	-,0864	,5073
PreExp	,9020	,1024	8,8119	,0000	,6967	1,1073

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c_ps
,2104	,1480	1,4217	,1610	-,0864	,5073	,2420

Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_ps
,1894	,1493	1,2687	,2102	-,1102	,4890	,2179

Indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
Disgust	,0210	,0411	-,0185	,1425

Partially standardized indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
Disgust	,0241	,0493	-,0211	,1726

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

----- END MATRIX -----

H2c: Emotional arousal elicited by the advertisement will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher emotional arousal will lead to more positive attitudes toward the reduction of meat consumption.

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
 Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
 Y : PostExp
 X : Framing
 M : Arousal

Covariates:
 PreExp

Sample
 Size: 56

OUTCOME VARIABLE:
 Arousal

Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	,2662	,0708	,8913	2,0204	2,0000	53,0000	,1427

Model							
	coeff	se	t	p	LLCI	ULCI	
constant	2,6435	,8296	3,1864	,0024	,9795	4,3075	
Framing	-,0032	,2578	-,0124	,9901	-,5203	,5139	
PreExp	-,3503	,1783	-1,9648	,0547	-,7080	,0073	

OUTCOME VARIABLE:
 PostExp

Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	,7910	,6257	,2992	28,9776	3,0000	52,0000	,0000

Model							
	coeff	se	t	p	LLCI	ULCI	
constant	,2634	,5247	,5019	,6179	-,7896	1,3163	
Framing	,2104	,1494	1,4088	,1648	-,0893	,5102	
Arousal	,0122	,0796	,1531	,8789	-,1475	,1719	
PreExp	,9062	,1070	8,4686	,0000	,6915	1,1210	

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:
 PostExp

Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	,7909	,6255	,2937	44,2704	2,0000	53,0000	,0000

Model	coeff	se	t	p	LLCI	ULCI
constant	,2956	,4763	,6206	,5375	-,6597	1,2508
Framing	,2104	,1480	1,4217	,1610	-,0864	,5073
PreExp	,9020	,1024	8,8119	,0000	,6967	1,1073

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c_ps
,2104	,1480	1,4217	,1610	-,0864	,5073	,2420

Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_ps
,2104	,1494	1,4088	,1648	-,0893	,5102	,2421

Indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
Arousal	,0000	,0213	-,0619	,0236

Partially standardized indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
Arousal	,0000	,0256	-,0769	,0277

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

----- END MATRIX -----

H5A: Attention to the whole advertisement will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes toward the reduction of meat consumption.

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
 Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
 Y : PostExp
 X : Framing
 M : Fixation

Covariates:
 PreExp

Sample
 Size: 56

OUTCOME VARIABLE:

Fixation

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,326	,107	3622,241	3,160	2,000	53,000	,051

Model

	coeff	se	t	p	LLCI	ULCI
constant	147,547	52,889	2,790	,007	41,464	253,630
Framing	38,145	16,435	2,321	,024	5,181	71,110
PreExp	5,333	11,367	,469	,641	-17,467	28,132

OUTCOME VARIABLE:

PostExp

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,792	,627	,299	29,079	3,000	52,000	,000

Model

	coeff	se	t	p	LLCI	ULCI
constant	,364	,514	,707	,482	-,668	1,396
Framing	,228	,157	1,456	,151	-,086	,542
Fixation	,000	,001	-,371	,712	-,003	,002
PreExp	,904	,103	8,746	,000	,697	1,112

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

PostExp

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,791	,626	,294	44,270	2,000	53,000	,000

Model	coeff	se	t	p	LLCI	ULCI
constant	,296	,476	,621	,538	-,660	1,251
Framing	,210	,148	1,422	,161	-,086	,507
PreExp	,902	,102	8,812	,000	,697	1,107

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c_ps
,210	,148	1,422	,161	-,086	,507	,242

Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_ps
,228	,157	1,456	,151	-,086	,542	,262

Indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
Fixation	-,018	,048	-,123	,070

Partially standardized indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
Fixation	-,020	,056	-,145	,078

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

----- END MATRIX -----

H5B: Attention to the headline will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes toward the reduction of meat consumption.

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
 Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
 Y : PostExp
 X : Framing
 M : FixH

Covariates:
 PreExp

Sample
 Size: 56

OUTCOME VARIABLE:

FixH

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,3136	,0983	3441,0432	2,8898	2,0000	53,0000	,0644

Model

	coeff	se	t	p	LLCI	ULCI
constant	232,0028	51,5493	4,5006	,0000	128,6072	335,3983
Framing	32,2417	16,0186	2,0128	,0492	,1123	64,3710
PreExp	-18,8309	11,0788	-1,6997	,0950	-41,0524	3,3906

OUTCOME VARIABLE:

PostExp

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,7940	,6305	,2954	29,5765	3,0000	52,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	,0492	,5615	,0876	,9305	-1,0776	1,1760
Framing	,1762	,1540	1,1440	,2579	-,1328	,4852
FixH	,0011	,0013	,8344	,4079	-,0015	,0036
PreExp	,9220	,1054	8,7462	,0000	,7104	1,1335

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

PostExp

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,7909	,6255	,2937	44,2704	2,0000	53,0000	,0000

Model	coeff	se	t	p	LLCI	ULCI
constant	,2956	,4763	,6206	,5375	-,6597	1,2508
Framing	,2104	,1480	1,4217	,1610	-,0864	,5073
PreExp	,9020	,1024	8,8119	,0000	,6967	1,1073

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c_ps
,2104	,1480	1,4217	,1610	-,0864	,5073	,2420

Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_ps
,1762	,1540	1,1440	,2579	-,1328	,4852	,2026

Indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
FixH	,0342	,0362	-,0377	,1097

Partially standardized indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
FixH	,0394	,0427	-,0414	,1321

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

----- END MATRIX -----

H5c: Attention to the image will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes toward the reduction of meat consumption.

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
 Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
 Y : PostExp
 X : Framing
 M : FixI

Covariates:
 PreExp

Sample
 Size: 56

OUTCOME VARIABLE:

FixI

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,2746	,0754	9399,1199	2,1619	2,0000	53,0000	,1252

Model

	coeff	se	t	p	LLCI	ULCI
constant	117,7525	85,1964	1,3821	,1727	-53,1311	288,6361
Framing	46,0084	26,4741	1,7379	,0880	-7,0924	99,1091
PreExp	13,9314	18,3102	,7609	,4501	-22,7944	50,6572

OUTCOME VARIABLE:

PostExp

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,7909	,6256	,2994	28,9583	3,0000	52,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	,2917	,4894	,5961	,5537	-,6903	1,2738
Framing	,2089	,1536	1,3601	,1797	-,0993	,5172
FixI	,0000	,0008	,0419	,9668	-,0015	,0016
PreExp	,9015	,1039	8,6769	,0000	,6930	1,1100

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

PostExp

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,7909	,6255	,2937	44,2704	2,0000	53,0000	,0000

Model	coeff	se	t	p	LLCI	ULCI
constant	,2956	,4763	,6206	,5375	-,6597	1,2508
Framing	,2104	,1480	1,4217	,1610	-,0864	,5073
PreExp	,9020	,1024	8,8119	,0000	,6967	1,1073

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c_ps
,2104	,1480	1,4217	,1610	-,0864	,5073	,2420

Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_ps
,2089	,1536	1,3601	,1797	-,0993	,5172	,2403

Indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
FixI	,0015	,0375	-,0775	,0802

Partially standardized indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
FixI	,0017	,0429	-,0911	,0930

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

----- END MATRIX -----

H5D: Attention to the tagline will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes toward the reduction of meat consumption.

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
 Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
 Y : PostExp
 X : Framing
 M : FixT

Covariates:
 PreExp

Sample
 Size: 56

OUTCOME VARIABLE:

FixT

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,1538	,0237	10922,1664	,6422	2,0000	53,0000	,5302

Model

	coeff	se	t	p	LLCI	ULCI
constant	176,4277	91,8401	1,9210	,0601	-7,7815	360,6368
Framing	-30,8440	28,5386	-1,0808	,2847	-88,0856	26,3976
PreExp	-2,2106	19,7380	-,1120	,9112	-41,8004	37,3791

OUTCOME VARIABLE:

PostExp

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,7921	,6274	,2979	29,1810	3,0000	52,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	,3591	,4961	,7239	,4724	-,6364	1,3546
Framing	,1993	,1507	1,3226	,1917	-,1031	,5017
FixT	-,0004	,0007	-,5020	,6178	-,0018	,0011
PreExp	,9012	,1031	8,7407	,0000	,6943	1,1081

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

PostExp

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,7909	,6255	,2937	44,2704	2,0000	53,0000	,0000

Model	coeff	se	t	p	LLCI	ULCI
constant	,2956	,4763	,6206	,5375	-,6597	1,2508
Framing	,2104	,1480	1,4217	,1610	-,0864	,5073
PreExp	,9020	,1024	8,8119	,0000	,6967	1,1073

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c_ps
,2104	,1480	1,4217	,1610	-,0864	,5073	,2420

Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_ps
,1993	,1507	1,3226	,1917	-,1031	,5017	,2292

Indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
FixT	,0111	,0324	-,0439	,0947

Partially standardized indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
FixT	,0128	,0377	-,0530	,1062

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

----- END MATRIX -----

H5E: Attention to the logo will mediate the effect of the message framing strategy on Cape Town meat eaters' attitudes, such that higher attention will lead to more positive attitudes toward the reduction of meat consumption.

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
 Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
 Y : PostExp
 X : Framing
 M : FixL

Covariates:
 PreExp

Sample
 Size: 56

OUTCOME VARIABLE:

FixL

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,1687	,0285	17114,3409	,7764	2,0000	53,0000	,4652

Model

	coeff	se	t	p	LLCI	ULCI
constant	236,9894	114,9629	2,0614	,0442	6,4013	467,5775
Framing	-31,8310	35,7239	-,8910	,3769	-103,4845	39,8225
PreExp	-16,5489	24,7075	-,6698	,5059	-66,1063	33,0085

OUTCOME VARIABLE:

PostExp

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,7967	,6348	,2920	30,1281	3,0000	52,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	,1413	,4935	,2864	,7757	-,8490	1,1317
Framing	,2311	,1487	1,5547	,1261	-,0672	,5294
FixL	,0007	,0006	1,1471	,2566	-,0005	,0018
PreExp	,9127	,1025	8,9060	,0000	,7071	1,1184

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

PostExp

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,7909	,6255	,2937	44,2704	2,0000	53,0000	,0000

Model	coeff	se	t	p	LLCI	ULCI
constant	,2956	,4763	,6206	,5375	-,6597	1,2508
Framing	,2104	,1480	1,4217	,1610	-,0864	,5073
PreExp	,9020	,1024	8,8119	,0000	,6967	1,1073

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c_ps
,2104	,1480	1,4217	,1610	-,0864	,5073	,2420

Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_ps
,2311	,1487	1,5547	,1261	-,0672	,5294	,2658

Indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
FixL	-,0207	,0425	-,1429	,0273

Partially standardized indirect effect(s) of X on Y:				
	Effect	BootSE	BootLLCI	BootULCI
FixL	-,0238	,0489	-,1643	,0319

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

----- END MATRIX -----

Appendix N: Qualitative Data Transcripts; Code Sheets

Transcript 1: Positive message framing group

Respondent 1

How does this advertisement make you feel?

Makes me feel happy because the cow looks really sweet and happy and I think because it's like in a field and it's free. And it makes me feel happy.

What emotions does this advert evoke?

Yeah, I'd say happiness, but also guilt because I am not on a fully meat free diet and it makes me sad to think that I make cows not happy, like in this picture.

Why do you feel that way?

I feel guilt... Because of... Because I am not on a completely meat free diet... So, it makes me feel bad that I am contributing to the unhappiness.

Respondent 2:

How does this advert make you feel?

A little bit more self-aware of what, what I do and what I eat and the effect it has. But it doesn't evoke emotion that makes me feel upset or resentful or bad or guilty. Suppose it just makes me more aware.

What emotions does this advertisement evoke?

I'm slightly indifferent. I don't really have much sympathy for the cow.

And why do you feel that way?

Partly because I feel like change will not be brought about by myself personally, and one person is not going to make a difference. Suppose my attitude is defeat on that note, kind of like well if I stop is not going to change the world so why would I do it.

Respondent 3:

How does this advert make you feel?

Don't really know if I believe it (*laughs*). Not really upset or anything.

What emotions does it evoke?

I feel a bit happy because the cow looks pretty happy, and that's about it.

Why do you feel that way?

Mostly because of the cow's smile. But the whole saving the animals thing I'm not really a believer in that kind of thing.

Respondent 4:

How does this advert make you feel?

Ah, I felt nothing (*laughs*). It's a cute photo but it just doesn't stimulate much emotion.

What emotions does it evoke?

Again, it's a cute photo, it just, I think the emotions that it's meant to make me feel, I'm not really feeling them. I'm quite chilled.

And then why do you feel that way?

Because, the picture of the cow is a happy cow, if it was a sad cow then maybe it'd be different.

Respondent 5:

How does this advert make you feel?

It didn't really, it didn't make me feel anything more or less about meat, it just makes me feel happy and neutral. Very neutral. Just a picture of a happy cow.

What emotions does it evoke?

Not really any sad emotions. Obviously the picture is happy. Um, so how like, if it's meant to make you feel upset or sad about it. That's what it means to do, but no I just saw a happy cow.

Why do you feel that way?

I suppose there is something to read there so if you read it you take it into consideration. But altogether I think the advert is just, if there was, like, a sad like a cow being killed or something like that, it might, where it says cruelty I would feel more like there's cruelty there but, yeah it's just a happy cow.

Respondent 6:

How does this advert make you feel?

It's a pretty happy cow. But. I suppose, yeah I don't know. It doesn't make me feel sad that's for sure. It makes me wanna look after it, but yeah, cute cow.

What emotions does it evoke?

Happiness. Um. yeah, I suppose caring. Caring, care for the cow too.

Why do you feel that way?

It just looks super cute from that angle of the camera. Um, yeah. It is just based on the advert directly, then yeah.

Respondent 7:

How does this advert make you feel?

Don't really feel anything about the advert, but just nice colours, grabs your attention.

Okay, so what emotions does this evoke?

Well it's a cute cow (*laughs*). Um, yeah, I just think it's a nice advert.

Why do you feel that way?

Because of the bright colours and the cow is happy. Yeah.

Respondent 8:

How does this advert make you feel?

You know, it would be nice to, to have cows survive. But I mean it's just a fact of survival. People need to eat and yes, we could switch to a plant-based diet but I think therein lies issues of lacks of protein and all sorts of supplements that we'd have to take.

Okay what emotions does this advert evoke?

I think happiness and at the same time a bit of guilt, to be honest. I am somebody who eats a lot of meat, but I think unless everybody on this planet switches to a plant-based diet. By Me changing to that sort of diet. I'm not going to save, save all the cows out there.

Why do you feel that way?

The guilt part more because I eat a lot of meat myself. And not that I'm against vegans but, or vegetarians, pescatarians, those sort of diets, but I just, yeah, I don't think that me changing my diet. On my own versus, everybody on the planet would necessarily make a great deal of difference.

Respondent 9:

Okay, how does this advert make you feel?

Um, I don't really have, like, any feelings towards it I don't know, like, I'm just, neutral.

What emotions does this advert evoke?

It kind of makes me want to do it but also not, like, it's not enough motivation sort of thing.

And lastly, why do you feel that way?

Um, because, like, I really like meat. And, like, I don't know if 30, like they are gonna get killed anyway so like I don't really... Like I guess like if I cut down and a whole lot of other people cut down like it will have an effect against it but. Yeah, I don't really see them killing the animal, so I don't think it really affects me.

Respondent 13:

Okay, how does this advert make you feel?

Um, it's actually quite amusing (*laughs*). Yeah, um, it feels... I like that it's um, it makes me feel good actually.

And what emotions does this advert evoke?

I would say empathy, happiness, um I like the animal on it. You know, it's likability, it's likable.

Why do you feel that way?

I think it's because of the animal, the way it's presented. It's almost like it's more human. In a way, because of the smile on the face and just like kind of a goofy face almost. Like cartoons. Um yeah, so, I think it, you can empathize with it, it's more human.

Respondent 21:

How does this advert make you feel?

Very impartial. Yeah, just the same.

What emotions does this advert evoke?

Neutral emotions.

Why do you feel that way?

Um, it's a loaded question (*laughs*). Um, because I don't necessarily plan to switch to a plant-based diet. Though the cow makes it look appealing, it's smiling but... Yeah, it's not my plan.

Respondent 23:

How does this advert make you feel?

A little bit inspired.

What emotions does this advert evoke?

Um, happiness, friendliness.

Why do you feel that way?

Um, I don't actually know. Because, you feel a bit of sympathy for the cow.

Respondent 25:

How does this advert make you feel?

Um, kind of like warm and fuzzy because it's so cute.

What emotions does this advert evoke?

Um, I suppose empathy with a happy cow. It's like, uh, happiness as, like it's going to be saved, I guess.

Then lastly, why do you feel that way?

I think the fluffy ears have a lot to do with it. It is very cute. And, I wouldn't want it to be harmed.

Respondent 27:

How does this advert make you feel?

Um, it makes me feel a little bit bad for eating meat because the cow looks so cute um, and yeah, it kind of encourages me not to eat meat.

What emotions does this advert evoke?

Like aww, I don't know what that emotion is... I think it's like, empathy? Empathy.

Why do you feel that way?

Because the cow looks really cute and like, it's a lot of animals compared to me just eating meat, you know, like what makes meat. And it's not difficult to switch to a plant-based diet as well it's an easy thing to do. To save 30 farm animals.

Respondent 29:

How does this advert make you feel?

Like concerned.

What emotions does this advert evoke?

I think it makes me feel... hopeful.

Why do you feel that way?

I think it's the face of the animal.

Respondent 31:

How does this advert make you feel?

Pleasant. It's not unpleasant in the way a lot of advertising along this line makes you feel. Uh, positive about the whole thing.

Okay what emotions does this advert evoke?

I'm obviously amused by the photograph of the cow. It's very sweet. Um, I wouldn't say guilt. I think I can't, I don't have much more than that.

Why do you feel that way?

Because it's telling you about the good result of the action. Rather than telling you you're killing animals, it is telling you this, not doing a certain action would have this positive consequence. Um, Yeah.

Respondent 33:

How does this advert make you feel?

It makes me feel kind of guilty. Because I am a meat eater. And to see how many animals are actually killed for my satisfaction.

What emotions does this advert evoke?

I'm not really sure, but I think guilt. And, yeah.

Why do you feel that way?

Um. As I mentioned I'm a meat eater and I feel like I've, like, grown up in an environment where, you know, kill chicken and you don't have to even buy it. Because in my house we used to sell chicken. And my mom used to kill chicken (*laughs*). So, I feel kind of, like, guilty because I have a contribution to that. To animal cruelty.

Respondent 34:

How does this advert make you feel?

I'm actually con... Not confused. But um, didn't know you can save 30 farm animals. So my question is do we consume 30 farm animals in a year (*laughs*).

What emotions does this advert evoke?

Um... I feel guilty. Yeah.

Why do you feel that way?

Um, just because like, you can see the amount of animals you can save. But at the same time. Yeah. But at the same time also they um, these animals reproduce so I feel like there will, not, there will always be enough, but yeah.

Respondent 36:

How does this advert make you feel?

Um, like I said in the beginning kind of it was light-hearted, you know it was quite funny. But then, I think as you think about it more, especially like the words "end cruelty", this makes it a quite hectic, kind of forceful way of saying it (*laughs*). Um, you just start to feel quite bad. And yeah like I said guilty.

What emotions does this advert evoke?

I don't know if it's an emotion but it's quite funny, so yeah, I'd say like a positive emotion actually. Maybe a little bit of guilt as well because I do eat meat (*laughs*) and I feel a bit bad now.

Why do you feel that way?

Well I think for killing animals (*laughs*). And I think a lot of us are aware of the fact that the way in which mass production and consumption of animals is carried out is not ethical in terms of how the animals are treated before they are slaughtered or killed.

Respondent 39:

How does this advert make you feel?

Um kind of indifferent.

What emotions does this advert evoke?

Nothing really.

Why do you feel that way?

I think I'm not as emotionally attached to the issue.

Respondent 41:

How does this advert make you feel?

Like I want to eat less meat. Um, yeah.

Okay, what emotions does this advert evoke?

Um, I mean I think the cow is really cute but I don't know what emotion that is.

Why do you feel that way?

I'm in terms of cruelty like I don't, I already eat less meat, I don't eat meat every day. Yeah, I just, I don't like killing animals.

Respondent 44:

How does this advert make you feel?

Um, ashamed.

What emotions does this advert evoke?

Um, sadness, and guilt.

Why do you feel that way?

Because I know I'm responsible for not saving animals.

Respondent 47:

How does this advert make you feel?

It makes me feel like eating meat is killing this animal in front of me. And that if I eat less meat this animal might be saved.

What emotions does this advert evoke?

Pity. For the animal that's dying. Just so that we can eat meat.

Why do you feel that way?

We have to kill animals. Its children are dying or will be killed for the same reason that this guy died, just so that we can eat meat and if we do switch to a plant-based diet, it gets kind of...

Respondent 48:

How does this advert make you feel?

Can I answer more than one word?

Yeah.

Um, it makes me feel like I can do something.

What emotions does this advertisement evoke?

Guilt, pity.

Why do you feel that way?

Because they've stated that if you do something about it you can save animals and it almost puts it on you like if you don't, you're allowing the animals to die.

Respondent 50:

How does this advert make you feel?

I think... I'm going to say a little bit indifferent. Because I think it's something that I know, more, like I know that eating less meat can... I'm not against being emotive towards it.

What emotions does this advert evoke?

Um. I guess positive ones in a sense that it makes me want to switch to a plant-based diet. Um, yeah.

Why do you feel that way?

I think it's because, like, with my relationship with animals I kind of want to save more animals, and I kind of... Doing my part can contribute to that, I guess, yeah.

Respondent 53:

How does this advert make you feel?

It doesn't make me feel any different because of what I believe about meat generally, so.

What emotions does this advert evoke?

It doesn't evoke any emotions.

And lastly, why do you feel that way?

Because I feel, people have choices, and you know they see eating meat as, well they see it differently... Some people they think it's animal cruelty. Some people think it's vital to, you know to human existence. It really depends on... a person's belief, how they look at eating meat.

Respondent 54:

How does this advert make you feel?

Oh. It made me feel a bit confused. It's, quite all over the place and I'm not too sure, yeah. Reading it and reacting to it, it kind of didn't grab all that much out of it. Confused.

What emotions does this advert evoke?

Mm, I mean it's an odd angle, I think in terms of emotions... Yeah, I don't know.

Why do you feel that way?

Probably because the cow doesn't look real. It feels fake. And so it doesn't resonate with me. Because, because it feels like I'm out of reality.

Respondent 55:

How does this advert make you feel?

I don't know how to explain. Like the facial expression of the cow, it's, like, kind of funny. Um, it makes, kind of neutral actually, it's not exactly what I expected. I expected, like, a lot of... Or something.

What emotions does this advert evoke?

...Um.... What emotions?...

It's just on a timer so you can answer it now, why do you feel that way?

I just, I generally feel like it's like a cute advertisement and I just feel that way because of the way, like, probably the angle of the shot. The cow, something cute like this, don't, didn't imagine it that way. Yeah it makes me feel happy, generally.

Transcript 2: Negative message framing group

Respondent 10:

How does this advert make you feel?

I'm like, shocked, sort of jarred, really. Um. Yeah. Well, like, just like blugh.

What emotions does this advert evoke?

I don't know, like disgust. But more than that, like in the, in the gore of it. Um. Yeah.

Why do you feel that way?

It's just, the visual is pretty shocking. Like all the sinew and the cow's head and stuff it's just like, blugh.

Respondent 11:

How does this advert make you feel?

Mm. I think it makes me think about it. But I don't feel, I feel, I feel removed from, like, what's being shown in a way that, I'm not... I don't think I necessarily think. Yeah. And I don't really have, like, feeling for the animal.

What emotions does this advert evoke?

Um, I think like disgust, um a bit of discomfort. I wouldn't say, uh yeah, I would say concern as well.

Why do you feel that way?

Because it seems quite um... kind of removed from my reality. Even though it is gruesome.

Respondent 12:

How does this advert make you feel?

Yeah, pretty much that, like very sorry for the animal.

Okay what emotions does this advert evoke?

Disgust. It's pretty disgusting. Uh, yeah like what's it called? Not shame. What's it called when you like...

Like guilt?

Yeah when you feel sorry for something. Yeah that one.

And then why do you feel that way?

(Laughs) Because its head is like... Uh no, just because, it's a very cruel way of killing the animal, and we're killing it so, yeah.

Respondent 14:

How does this advert make you feel?

Yeah, it's scary. But um, I've seen it before, but it doesn't seem to, like, sink in well... Still doesn't, like, sit well. You can't just forget it... And be okay with it.

What emotions does it evoke?

Um, sadness. Pity... For the cow.

Okay. Why do you feel that way?

Because... I don't know, maybe it's, I feel for it... Because I wouldn't want to be in that, well, yeah.

Respondent 15:

How does this advert make you feel?

Sick.

What emotions does this advert evoke?

Sad. Disgusted. Sad, mostly.

Why do you feel that way?

Because that is just cruel like, I didn't think that. Well, I mean, I guess that animals are killed like that but they're also killed in different ways, but I mean just killing an animal is inhumane. It's, nasty (*laughs*).

Respondent 16:

How does this advert make you feel?

Guilty.

Similar, what emotions does this advert evoke?

Guilt and... I feel sad for the animal.

Lastly, why do you feel that way?

Because it's being slaughtered, and they see blood... and I don't think it's necessary.

Respondent 17:

How does this advert make you feel?

It makes me angry about the way that they slaughtered the cow because there's way more humane ways to do it.

And what emotions does this advert evoke?

Um... sadness and anger.

Lastly, why do you feel that way?

Because there's way more humane ways that they could have done it without any pain to the animal than that, but this way it did the most suffering possible.

Respondent 18:

How does this advert make you feel?

Um... slightly conflicted.

Okay, what emotions does this advert evoke?

I'd say only a small bit of sadness, but also just confusion... based on what, like, what was the process of this. Of actually what happened because I've been to a meat farm, I've seen how you could say, I guess there's no humane way to kill an animal. But um, there are pretty decent ways of actually doing this.

Why do you feel that way?

Because, like, I love animals if I do go to cattle farm then, like, I'll stroke the cows, run away from the bulls because they're still scare me to bits... and as somebody who, I did an essay on the Yulin dog meat festival and, I decided for a year to try go vegetarian... just based on like I can't be cruel to animals but I've just found that I.. number one I just lost too much weight.

Respondent 19:

How does this advert make you feel?

Uncomfortable. Um... yeah, really sad. Traumatized... A little bit.

Okay, so what emotions does this advert evoke?

Um, sadness. Yeah mostly... Sadness.

Why do you feel that way?

Because the way... Because at the end the image is portraying some really gruesome things. And it just... It's very cruel and it doesn't make me feel good. As someone who does eat meat, because it's, yeah.

Respondent 20:

So how does this advert make you feel?

It is a bit disturbing seeing that, because I know there is a lot of places that are very cruel to how they actually treat their animals, and I know there is places like that and it is disturbing to see that.

What emotions does this advert evoke?

Uh it's a bit of repulsion. Little bit of anger as well... and disgust.

Why do you feel that way?

Because there is ways to prepare meat and to actually put that animal down before, you know... Sending it, cutting it up to prepare the meat for supermarkets and butcheries without having to put the animal through pain or discomfort. So, the way that they did it here, is just wrong and on so many levels.

Respondent 22:

How does this advert make you feel?

It does look, like, really cruel, and, like, I guess you could say I feel sorry for the animal, I guess.

Okay, so what emotions does this advert evoke?

Well, it looks, I don't know. Disgusting, I guess.

Why do you feel that way?

Well, it looks like it's killing the animal... Just slaughter the animals so blood is not a good sight.

Respondent 24:

How does this advert make you feel?

On a biological level it's like, oh that's just a cow. Probably on a more sympathetic level... It's kind of, it's disturbing.

What emotions does this advert evoke?

Um, at first, I was... You couldn't really see what it was, so I was like, Oh, what is that? So, a little bit of, not confusion. And then there was, um, oh poor cow. Um and then there was, oh, biologically... (*time out*).

Okay, and then why do you feel that way?

Probably because you can... Do you mean because of the picture or, why do I feel that way? Oh, because I wouldn't hurt a cow.

Respondent 26:

How does this advert make you feel?

Well, I don't feel anything towards the animal... (inaudible).

What emotions does this advert evoke?

Towards the animal I feel bad for the animal but... It has to be done.

Why do you feel that way?

I am used to eating meat and uh something that I see, usually... It's normal for me to see a cow getting slaughtered.

Respondent 28:

How does this advert make you feel?

Um firstly it's a little bit disgusting.

What emotions does this advert evoke?

Um, I kind of feel on edge and kind of nervous as well... And then I have like a weird feeling in the pit of my stomach like it's... strong.

Why do you feel that way?

Um, probably because it's... Quite visual and explicit. Yeah.

Respondent 30:

How does this advert make you feel?

I don't even want to picture how the actual animal looks because I'm kind of like, avoiding looking at it. So, like I know that there's blood, and like, I think that's enough that I see so I'm like, not that appealing.

What emotions does this advert evoke?

A bit sad. Just the way, especially because, like, they show you the knife and like everything still there, especially because I feel like it's the brain as well. And I'm very confused. But yeah.

Why do you feel that way?

Because it's cutting the brain. Um... Yeah. And I feel like it's not in the proper environment as well, like it literally just looks like on the street, and like the knife only... How is the knife even enough to cut it apart? I shouldn't be asking that but, yeah.

Respondent 32:

Okay, so how does this advert make you feel?

It makes me feel like I am so cruel because I eat animals and I eat meat. It makes me mad though.

What emotions does this advert evoke?

Anger.

Why do you feel that way?

Because now that I can see like, animals have to be killed for us to eat them. They go through much pain for us to eat them. So... Which makes me feel like what they're doing is so cruel.

Respondent 35:

How does this advert make you feel?

Horrible. Disgusting... (inaudible).

Okay, what emotions does this advert evoke?

I feel, um sorry for the animal.

Why do you feel that way?

Because, people eat this and like it's a living thing and... Like, seeing the blood run... It shows that this was like a living organism and it was killed just for, like, consumption. So, it makes me feel bad.

Respondent 37:

How does this advert make you feel?

Like I'm so disturbed, like what? No.

What emotions does this advert evoke?

It's so sad.

Why do you feel that way?

Because... The animal, like, an innocent animal.

Respondent 38:

How does this advert make you feel?

Um, it... Makes me feel sad... For the animal. It's being like, so brutally killed. Um, it makes me feel... Guilty. With the title saying, "juicy red steak, does it still sound so appealing?". Makes me feel guilty for, like, eating meat.

What emotions does this advert evoke?

Guilt. Um, sympathy.

Why do you feel that way?

Because the animal is just being so brutally murdered um... Obviously suffered through pain. And I'm going to eat that meat, um, and enjoy it and not even think about how it's killed.

Respondent 40:

How does this advert make you feel?

Fairly uncomfortable.

What emotions does this advert evoke?

Confusion.

Why do you feel that way?

Um, because I don't think this is the full story.

Respondent 42:

How does this advert make you feel?

Disgusted. Guilty.

Okay, what emotions does this advert evoke?

It's... I feel disgusted. Um, I feel like it's such a harsh reality shock, because you know I look at just a nice, juicy meat... And then I don't realize like you, it's like a natural thing to suppress where could come from. So yeah, I... Feel, like, guilty.

Why do you feel that way?

Um, well because, you know, I can see how harshly this animal has been treated. Like, it doesn't deserve that and yet we just getting it for our own enjoyment, and not taking into account that they have a life of their own. And it shouldn't be treated that. Period. It's just disgusting. Overall.

Respondent 43:

How does this advert make you feel?

Bad. That I've been consuming meat, and that this is the process that, is, that they use to actually produce it.

What emotions does this advert evoke?

I don't know, sadness.

Why do you feel that way?

Because...

You can repeat what you said earlier if you want.

I find it cruel how... They are like um, producing meat how, um, animals have to suffer like this.

Respondent 45:

How does this advert make you feel?

A little bit nauseous, I think that that's the way that that animal is treated is gonna be in store for me to buy and eat.

What emotions does this advert evoke?

Sadness and frustration.

Lastly, why do you feel that way?

Because I don't believe that animals should be treated in gruesome... Gruesome ways.

Respondent 46:

How does this advert make you feel?

Uncomfortable. Um, just like sad... yeah.

What emotions does this advert evoke?

Fright. Um... Concern. And I guess a level of disgust.

Lastly. Why do you feel that way?

It seems quite brutal. It seems very... inhumane, as far as, like, killing can be. Yeah.

Respondent 49:

How does this advert make you feel?

Um, disgusted.

What emotions does this advert evoke?

Heartbreak.

Why do you feel that way?

It seems like needless suffering.

Respondent 51:

How does this advert make you feel?

Uh, shocked. And disappointed.

What emotions does this advert evoke?

Definitely some... Sadness. But you almost have to think about the choices of your consumption... (inaudible).

Why do you feel that way?

Because I've never thought about it like that before... But you just eat meat unknowingly. Like, there's some cruelty linked behind what we consume.

Respondent 52:

How does this advert make you feel?

Very terrible... Especially that um, I take part in that.

Okay what emotions does this advert evoke?

Sad, anger. Um... Yeah that's it.

Why do you feel that way?

Because when you eat meat you don't really see this part... and okay. Um, I should just answer these questions? Not go beyond?

You can say more if you want.

I might also say um, looking at this picture. Uh... It might also be different for people who grew up, let's say, with this... (time out)

Respondent 56:

How does this advert make you feel?

Um... I mean, I'm a human I have emotions so obviously I'm not gonna enjoy looking at that but I don't equate, you know, eating of meat to the killing of animals in my mind, it kind of doesn't really collaborate with me.

Okay, what emotions does this advert evoke?

I feel sorry for the cow... But on the same side of that it is a more humane way to kill it. Yeah, it's, it's a part of life. Unfortunately.

Why do you feel that way?

It's a tough question. Um, I think that, ending, you know... By eating less meat, I don't think it's going to necessarily end cruelty so I don't, I don't think that to me eating less meat will, you know... Kind of change it, but, um... Yeah.

Code sheet 1: Qualitative coding - Positive message framing group

Code sheet 1A: Self-report emotion

	Motivation to Change			Compassionate Feelings			Guilty Feelings			Total Guilt			
	Hopeful	Inspired / E Increased	Total Mot	Caring	Concerned	Empathetic	Sympathetic	Pity / Sorn	Total Com		Ashamed	Guilt	Bad
1 Respondent 1	0	0	0	0	0	0	0	0	0	0	1	1	2
2 Respondent 2	0	0	1	0	0	0	0	0	0	0	0	0	0
3 Respondent 3	0	0	0	0	0	0	0	0	0	0	0	0	0
4 Respondent 4	0	0	0	0	0	0	0	0	0	0	0	0	0
5 Respondent 5	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Respondent 6	0	0	0	1	0	0	0	0	1	0	0	0	0
7 Respondent 7	0	0	0	0	0	0	0	0	0	0	0	0	0
8 Respondent 8	0	1	0	0	0	0	0	0	0	0	1	0	1
9 Respondent 9	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Respondent 13	0	0	0	0	0	1	0	0	1	0	0	0	0
11 Respondent 21	0	0	0	0	0	0	0	0	0	0	0	0	0
12 Respondent 23	0	1	0	0	0	0	0	1	0	0	0	0	0
13 Respondent 25	1	0	0	0	0	1	0	0	1	0	0	0	0
14 Respondent 27	0	1	0	0	0	1	0	0	0	0	0	1	1
15 Respondent 29	1	0	0	0	1	0	0	0	0	0	0	0	0
16 Respondent 31	0	0	0	0	0	0	0	0	0	0	0	0	0
17 Respondent 33	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Respondent 34	0	0	1	0	0	0	0	0	0	0	1	0	1
19 Respondent 36	0	0	1	0	0	0	0	0	0	0	1	0	1
20 Respondent 39	0	0	0	0	0	0	0	0	0	0	1	1	2
21 Respondent 41	0	1	0	0	0	0	0	0	0	0	0	0	0
22 Respondent 44	0	0	0	0	0	0	0	0	0	0	1	1	2
23 Respondent 47	1	0	0	0	0	0	0	0	1	0	0	0	0
24 Respondent 48	1	1	0	0	0	0	0	0	1	0	1	0	1
25 Respondent 50	0	1	0	0	0	0	0	0	0	0	0	0	0
26 Respondent 53	0	0	0	0	0	0	0	0	0	0	0	0	0
27 Respondent 54	0	0	0	0	0	0	0	0	0	0	0	0	0
28 Respondent 55	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	4	6	3	1	1	3	1	1	2	1	7	3	11
Category Total	13			8			11			11			

	Strong Negative Feelings										Negative Feelings					Total Neg
	Traumatizé	Uneasy / (Sick / Doe Fear	Uncomfort:	Disgusted	Shocked	Total Strc	Sad	Disappoint:	Not Good	Unhappy	Negative	Upset	Not Appea	Unpleasan	Not Pleas:	
1 Respondent 1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
2 Respondent 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Respondent 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 Respondent 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 Respondent 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Respondent 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 Respondent 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 Respondent 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 Respondent 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Respondent 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Respondent 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 Respondent 23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 Respondent 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 Respondent 27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 Respondent 29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Respondent 31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 Respondent 33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Respondent 34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 Respondent 36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 Respondent 39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 Respondent 41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Respondent 44	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
23 Respondent 47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 Respondent 48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Respondent 50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Respondent 53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 Respondent 54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 Respondent 55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Category Total	0										2					

	Angry Feelings		Positive Feelings						Mixed Feelings			Total Mix	
	Frustrated	Resentful / Total Ang	Happy	Positive	Good	Pleasant	Amused	Appealing	Total Pos	Conflicted	Confused		Sceptical
1 Respondent 1	0	0	0	1	0	0	0	0	0	0	0	0	0
2 Respondent 2	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Respondent 3	0	0	0	1	0	0	0	0	0	0	0	0	1
4 Respondent 4	0	0	0	0	0	0	0	0	0	0	0	0	0
5 Respondent 5	0	0	0	1	0	0	0	0	0	0	0	0	0
6 Respondent 6	0	0	0	1	0	0	0	0	0	0	0	0	0
7 Respondent 7	0	0	0	0	0	0	0	0	1	0	0	0	0
8 Respondent 8	0	0	0	1	0	0	0	0	0	0	0	0	0
9 Respondent 9	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Respondent 13	0	0	0	1	0	0	1	0	1	0	0	0	0
11 Respondent 21	0	0	0	0	0	0	0	0	1	0	0	0	0
12 Respondent 23	0	0	0	1	0	0	0	0	0	0	0	0	0
13 Respondent 25	0	0	0	1	0	0	0	0	0	0	0	0	0
14 Respondent 27	0	0	0	0	0	0	0	0	0	0	0	0	0
15 Respondent 29	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Respondent 31	0	0	0	0	1	0	0	1	0	0	0	0	0
17 Respondent 33	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Respondent 34	0	0	0	0	0	0	0	0	0	0	0	0	1
19 Respondent 36	0	0	0	0	1	0	0	1	0	0	0	0	0
20 Respondent 39	0	0	0	0	0	0	0	0	0	0	0	0	0
21 Respondent 41	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Respondent 44	0	0	0	0	0	0	0	0	0	0	0	0	0
23 Respondent 47	0	0	0	0	0	0	0	0	0	0	0	0	0
24 Respondent 48	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Respondent 50	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Respondent 53	0	0	0	0	0	0	0	0	0	0	0	0	0
27 Respondent 54	0	0	0	0	0	0	0	0	0	0	0	0	0
28 Respondent 55	0	0	0	1	0	0	0	1	0	0	0	0	0
Total	0	0	9	3	3	1	1	4	3	0	0	2	1
Category Total	0							21				3	

	Defeat	Neutral Feelings										Total Neu
		Not Symp	Not Resen	Indifferent	Not Upset	Not Sad	Not Guilty	Not Unple	Not Bad	Removed f		
1 Respondent 1	0	0	0	0	0	0	0	0	0	0	0	0
2 Respondent 2	1	1	1	1	1	0	1	0	1	0	1	0
3 Respondent 3	0	0	0	0	1	0	0	0	0	0	0	0
4 Respondent 4	0	0	0	1	1	0	0	0	0	0	0	0
5 Respondent 5	0	0	0	1	0	1	0	0	0	0	0	0
6 Respondent 6	0	0	0	0	0	1	0	0	0	0	0	0
7 Respondent 7	0	0	0	1	0	0	0	0	0	0	0	0
8 Respondent 8	0	0	0	0	0	0	0	0	0	0	0	0
9 Respondent 9	1	0	0	1	0	0	0	0	0	0	0	1
10 Respondent 13	0	0	0	0	0	0	0	0	0	0	0	0
11 Respondent 21	0	0	0	1	0	0	0	0	0	0	0	0
12 Respondent 23	0	0	0	0	0	0	0	0	0	0	0	0
13 Respondent 25	0	0	0	0	0	0	0	0	0	0	0	0
14 Respondent 27	0	0	0	0	0	0	0	0	0	0	0	0
15 Respondent 29	0	0	0	0	0	0	0	0	0	0	0	0
16 Respondent 31	0	0	0	0	0	0	0	1	0	0	0	0
17 Respondent 33	0	0	0	0	0	0	0	0	0	0	0	0
18 Respondent 34	0	0	0	0	0	0	0	0	0	0	0	0
19 Respondent 36	0	0	0	0	0	0	0	0	0	0	0	0
20 Respondent 39	0	0	0	1	0	0	0	0	0	0	0	0
21 Respondent 41	0	0	0	0	0	0	0	0	0	0	0	0
22 Respondent 44	0	0	0	0	0	0	0	0	0	0	0	0
23 Respondent 47	0	0	0	0	0	0	0	0	0	0	0	0
24 Respondent 48	0	0	0	0	0	0	0	0	0	0	0	0
25 Respondent 50	0	0	0	1	0	0	0	0	0	0	0	0
26 Respondent 53	0	0	0	1	0	0	0	0	0	0	0	0
27 Respondent 54	0	0	0	0	0	0	0	0	0	0	0	0
28 Respondent 55	0	0	0	1	0	0	0	0	0	0	0	0
Total	2	1	1	10	2	2	2	2	1	1	1	1
Category Total												

Code sheet 1B: Self-report reasoning

	Encouraged		Guilt		Positive Nature of the Advert		Negative Nature of the Advert	
	Forceful Ad. It is easy to Don't want	Total Enc	Negative c. Unnecessary/ Unethical / Don't realize it is a living	Total Guilt	Positive Im: Positive cc: Nice advert	Total Pos	Negative Im: It is some	Total Neg
1 Respondent 1	0	0	1	0	1	0	1	0
2 Respondent 2	0	0	0	0	0	0	0	0
3 Respondent 3	0	0	0	0	0	0	0	0
4 Respondent 4	0	0	0	0	0	0	0	0
5 Respondent 5	0	0	0	0	0	0	0	0
6 Respondent 6	0	0	0	0	0	0	0	0
7 Respondent 7	0	0	0	0	0	0	0	0
8 Respondent 8	0	0	0	0	0	0	0	0
9 Respondent 9	0	0	0	0	0	0	0	0
10 Respondent 13	0	0	0	0	0	0	0	0
11 Respondent 21	0	0	0	0	0	0	0	0
12 Respondent 23	0	0	0	0	0	0	0	0
13 Respondent 25	0	0	0	0	0	0	0	0
14 Respondent 27	0	0	0	0	0	0	0	0
15 Respondent 29	0	0	0	0	0	0	0	0
16 Respondent 31	0	0	0	0	0	0	0	0
17 Respondent 33	0	0	0	0	0	0	0	0
18 Respondent 34	0	0	0	0	0	0	0	0
19 Respondent 36	1	0	0	0	0	0	0	0
20 Respondent 39	0	0	0	0	0	0	0	0
21 Respondent 41	0	0	0	0	0	0	0	0
22 Respondent 44	0	0	0	0	0	0	0	0
23 Respondent 47	0	0	0	0	0	0	0	0
24 Respondent 48	0	0	0	0	0	0	0	0
25 Respondent 50	0	0	0	0	0	0	0	0
26 Respondent 53	0	0	0	0	0	0	0	0
27 Respondent 54	0	0	0	0	0	0	0	0
28 Respondent 55	0	0	0	0	0	0	0	0
Total	1	5	3	7	2	1	0	0
Category Total	9	11	20	0	0	0	0	0

		Arguments for Meat Consumption								
		Pro Meat					Defeat			
		Necessary	Really like	There will	There are	Health con	Total Pro	One perso	The anima	Total Defe
1 Respondent 1		0	0	0	0	0	0	0	0	0
2 Respondent 2		0	0	0	0	0	0	1	0	1
3 Respondent 3		0	0	0	0	0	0	0	0	0
4 Respondent 4		0	0	0	0	0	0	0	0	0
5 Respondent 5		0	0	0	0	0	0	0	0	0
6 Respondent 6		0	0	0	0	0	0	0	0	0
7 Respondent 7		0	0	0	0	0	0	0	0	0
8 Respondent 8		1	0	0	0	1	2	1	1	2
9 Respondent 9		0	1	0	0	0	1	1	1	2
10 Respondent 13		0	0	0	0	0	0	0	0	0
11 Respondent 21		0	0	0	0	0	0	0	0	0
12 Respondent 23		0	0	0	0	0	0	0	0	0
13 Respondent 25		0	0	0	0	0	0	0	0	0
14 Respondent 27		0	0	0	0	0	0	0	0	0
15 Respondent 29		0	0	0	0	0	0	0	0	0
16 Respondent 31		0	0	0	0	0	0	0	0	0
17 Respondent 33		0	0	0	0	0	0	0	0	0
18 Respondent 34		0	0	1	0	0	1	0	0	0
19 Respondent 36		0	0	0	0	0	0	0	0	0
20 Respondent 39		0	0	0	0	0	0	0	0	0
21 Respondent 41		0	0	0	0	0	0	0	0	0
22 Respondent 44		0	0	0	0	0	0	0	0	0
23 Respondent 47		0	0	0	0	0	0	0	0	0
24 Respondent 48		0	0	0	0	0	0	0	0	0
25 Respondent 50		0	0	0	0	0	0	0	0	0
26 Respondent 53		1	0	0	0	0	1	0	0	0
27 Respondent 54		0	0	0	0	0	0	0	0	0
28 Respondent 55		0	0	0	0	0	0	0	0	0
Total		2	1	1	0	1		3	2	
Category Total				5				5		

		Indifference							Total Indi
		Doesn't loc	Not enough	No plan to	Not emotic	Normal in	People ha	Don't see	Total Indi
1 Respondent 1		0	0	0	0	0	0	0	0
2 Respondent 2		0	0	0	0	0	0	0	0
3 Respondent 3		0	0	0	1	0	0	0	1
4 Respondent 4		0	1	0	0	0	0	0	1
5 Respondent 5		0	1	0	0	0	0	0	1
6 Respondent 6		0	0	0	0	0	0	0	0
7 Respondent 7		0	0	0	0	0	0	0	0
8 Respondent 8		0	0	0	0	0	0	0	0
9 Respondent 9		0	1	0	0	0	0	1	2
10 Respondent 13		0	0	0	0	0	0	0	0
11 Respondent 21		0	0	1	0	0	0	0	1
12 Respondent 23		0	0	0	0	0	0	0	0
13 Respondent 25		0	0	0	0	0	0	0	0
14 Respondent 27		0	0	0	0	0	0	0	0
15 Respondent 29		0	0	0	0	0	0	0	0
16 Respondent 31		0	0	0	0	0	0	0	0
17 Respondent 33		0	0	0	0	1	0	0	1
18 Respondent 34		0	0	0	0	0	0	0	0
19 Respondent 36		0	0	0	0	0	0	0	0
20 Respondent 39		0	0	0	1	0	0	0	1
21 Respondent 41		0	0	0	0	0	0	0	0
22 Respondent 44		0	0	0	0	0	0	0	0
23 Respondent 47		0	0	0	0	0	0	0	0
24 Respondent 48		0	0	0	0	0	0	0	0
25 Respondent 50		0	0	0	0	0	0	0	0
26 Respondent 53		0	0	0	0	0	1	0	1
27 Respondent 54		1	0	0	0	0	0	0	1
28 Respondent 55		0	0	0	0	0	0	0	0
Total		1	3	1	2	1	1	1	
Category Total					10				

Code sheet 2: Qualitative coding - Negative message framing group

Code sheet 2A: Self-report emotion

	Motivation to Change			Compassionate Feelings					Guilty Feelings			Total Guilt		
	Hopeful	Inspired / E	Increased	Total Mot	Caring	Concerned	Empathetic	Sympathetic	Pity / Sorr	Total Comp	Ashamed		Guilty	Bad
1 Respondent 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 Respondent 11	0	0	1	1	0	1	0	0	0	0	0	0	0	0
3 Respondent 12	0	0	0	0	0	0	0	0	1	1	0	0	0	0
4 Respondent 14	0	0	0	0	0	0	0	0	1	1	0	0	0	0
5 Respondent 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Respondent 16	0	0	0	0	0	0	0	0	1	1	0	1	0	1
7 Respondent 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 Respondent 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 Respondent 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Respondent 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Respondent 22	0	0	0	0	0	0	0	0	1	1	0	0	0	0
12 Respondent 24	0	0	0	0	0	0	0	0	1	1	0	0	0	0
13 Respondent 26	0	0	0	0	0	0	0	0	0	0	0	0	1	1
14 Respondent 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 Respondent 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Respondent 32	0	0	0	0	0	0	0	0	0	0	0	1	0	1
17 Respondent 35	0	0	0	0	0	0	0	0	1	1	0	0	0	1
18 Respondent 37	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 Respondent 38	0	0	0	0	0	0	0	1	1	2	0	1	0	1
20 Respondent 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 Respondent 42	0	0	1	1	0	0	0	0	0	0	0	1	0	1
22 Respondent 43	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 Respondent 45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 Respondent 46	0	0	0	0	0	1	0	0	0	1	0	0	0	0
25 Respondent 49	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Respondent 51	0	0	1	1	0	0	0	0	0	0	0	0	0	0
27 Respondent 52	0	0	0	0	0	0	0	0	0	0	0	1	0	1
28 Respondent 56	0	0	0	0	0	0	0	0	1	1	0	0	0	0
Total	0	0	3	3	0	2	0	1	8	0	0	5	3	3
			3					11						8

	Angry Feelings		Positive Feelings						Mixed Feelings			Total Mix	
	Frustrated	Resentful / Total Ang	Happy	Positive	Good	Pleasant	Amused	Appealing	Total Pos	Conflicted	Confused		Sceptical
1 Respondent 10	0	0	0	0	0	0	0	0	0	0	0	0	0
2 Respondent 11	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Respondent 12	0	0	0	0	0	0	0	0	0	0	0	0	0
4 Respondent 14	0	0	0	0	0	0	0	0	0	0	0	0	0
5 Respondent 15	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Respondent 16	0	0	0	0	0	0	0	0	0	0	0	0	0
7 Respondent 17	0	1	0	0	0	0	0	0	0	0	0	0	0
8 Respondent 18	0	0	0	0	0	0	0	0	0	1	1	1	3
9 Respondent 19	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Respondent 20	0	1	0	0	0	0	0	0	0	0	0	0	0
11 Respondent 22	0	0	0	0	0	0	0	0	0	0	0	0	0
12 Respondent 24	0	0	0	0	0	0	0	0	0	0	1	0	1
13 Respondent 26	0	0	0	0	0	0	0	0	0	0	0	0	0
14 Respondent 28	0	0	0	0	0	0	0	0	0	0	0	0	0
15 Respondent 30	0	0	0	0	0	0	0	0	0	0	1	1	2
16 Respondent 32	0	1	0	0	0	0	0	0	0	0	0	0	0
17 Respondent 35	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Respondent 37	0	0	0	0	0	0	0	0	0	0	0	0	0
19 Respondent 38	0	0	0	0	0	0	0	0	0	0	0	0	0
20 Respondent 40	0	0	0	0	0	0	0	0	0	0	1	1	2
21 Respondent 42	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Respondent 43	0	0	0	0	0	0	0	0	0	0	0	0	0
23 Respondent 45	1	0	0	0	0	0	0	0	0	0	0	0	0
24 Respondent 46	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Respondent 49	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Respondent 51	0	0	0	0	0	0	0	0	0	0	0	0	0
27 Respondent 52	0	1	0	0	0	0	0	0	0	0	0	0	0
28 Respondent 56	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	4	0	0	0	0	0	0	0	1	4	3	8
	5								0				8

Code sheet 2B: Self-report reasoning

	Encouraged		Guilt		Positive Nature of the Advert		Negative Nature of the Advert	
	Forceful A; it is easy t	Don't want	Negative c. Unnecess; Unethical / Don't Real	It is a living	Positive Irr	Nice adver	Negative Irr	It is some
	0	1	0	1	0	1	0	1
	Total Enc	Total Gui	Total Pos	Total Neg				
1 Respondent 10	0	0	0	0	0	0	0	1
2 Respondent 11	0	0	0	0	0	0	0	1
3 Respondent 12	0	0	1	0	0	0	1	0
4 Respondent 14	0	0	0	0	0	0	0	1
5 Respondent 15	0	0	0	0	0	0	0	1
6 Respondent 16	0	0	1	0	1	0	0	1
7 Respondent 17	0	0	0	0	0	0	0	0
8 Respondent 18	0	0	0	0	0	0	0	0
9 Respondent 19	0	0	1	0	2	0	1	0
10 Respondent 20	0	0	0	0	1	0	0	0
11 Respondent 22	0	0	0	0	1	0	1	0
12 Respondent 24	0	0	0	0	0	0	0	0
13 Respondent 26	0	0	0	0	0	0	0	0
14 Respondent 28	0	0	0	0	0	0	0	0
15 Respondent 30	0	0	0	0	0	0	0	0
16 Respondent 32	0	0	1	0	3	0	0	0
17 Respondent 35	0	0	0	0	1	0	1	0
18 Respondent 37	0	0	0	0	1	0	0	0
19 Respondent 38	0	0	1	0	2	0	1	0
20 Respondent 40	0	0	0	0	0	0	0	0
21 Respondent 42	0	0	1	1	5	0	0	0
22 Respondent 43	0	0	1	0	2	0	0	0
23 Respondent 45	0	1	0	0	1	0	1	0
24 Respondent 46	0	0	0	0	1	0	1	0
25 Respondent 49	0	0	1	0	1	0	0	0
26 Respondent 51	0	0	0	0	1	0	0	0
27 Respondent 52	0	0	1	0	1	0	0	0
28 Respondent 56	0	0	0	0	0	0	0	0
Total	0	2	8	4	10	2	3	13
	2		27		0			14

		Arguments for Meat Consumption									
		Pro Meat					Defeat				
		Necessary	Really like	There will	There are t	Health cor	Total Pro	One perso	The anima	Total Defe	
1 Respondent 10		0	0	0	0	0	0	0	0	0	0
2 Respondent 11		0	0	0	0	0	0	0	0	0	0
3 Respondent 12		0	0	0	0	0	0	0	0	0	0
4 Respondent 14		0	0	0	0	0	0	0	0	0	0
5 Respondent 15		0	0	0	0	0	0	0	0	0	0
6 Respondent 16		0	0	0	0	0	0	0	0	0	0
7 Respondent 17		0	0	0	1	0	1	0	0	0	0
8 Respondent 18		0	0	0	1	1	2	0	0	0	0
9 Respondent 19		0	0	0	0	0	0	0	0	0	0
10 Respondent 20		0	0	0	1	0	1	0	0	0	0
11 Respondent 22		0	0	0	0	0	0	0	0	0	0
12 Respondent 24		0	0	0	0	0	0	0	0	0	0
13 Respondent 26		1	0	0	0	0	1	0	0	0	0
14 Respondent 28		0	0	0	0	0	0	0	0	0	0
15 Respondent 30		0	0	0	1	0	1	0	0	0	0
16 Respondent 32		0	0	0	0	0	0	0	0	0	0
17 Respondent 35		0	0	0	0	0	0	0	0	0	0
18 Respondent 37		0	0	0	0	0	0	0	0	0	0
19 Respondent 38		0	0	0	0	0	0	0	0	0	0
20 Respondent 40		0	0	0	0	0	0	0	0	0	0
21 Respondent 42		0	0	0	0	0	0	0	0	0	0
22 Respondent 43		0	0	0	0	0	0	0	0	0	0
23 Respondent 45		0	0	0	0	0	0	0	0	0	0
24 Respondent 46		0	0	0	0	0	0	0	0	0	0
25 Respondent 49		0	0	0	0	0	0	0	0	0	0
26 Respondent 51		0	0	0	0	0	0	0	0	0	0
27 Respondent 52		0	0	0	0	0	0	0	0	0	0
28 Respondent 56		1	0	0	0	0	1	1	0	0	1
Total		2	0	0	4	1		1	0		
				7				1			

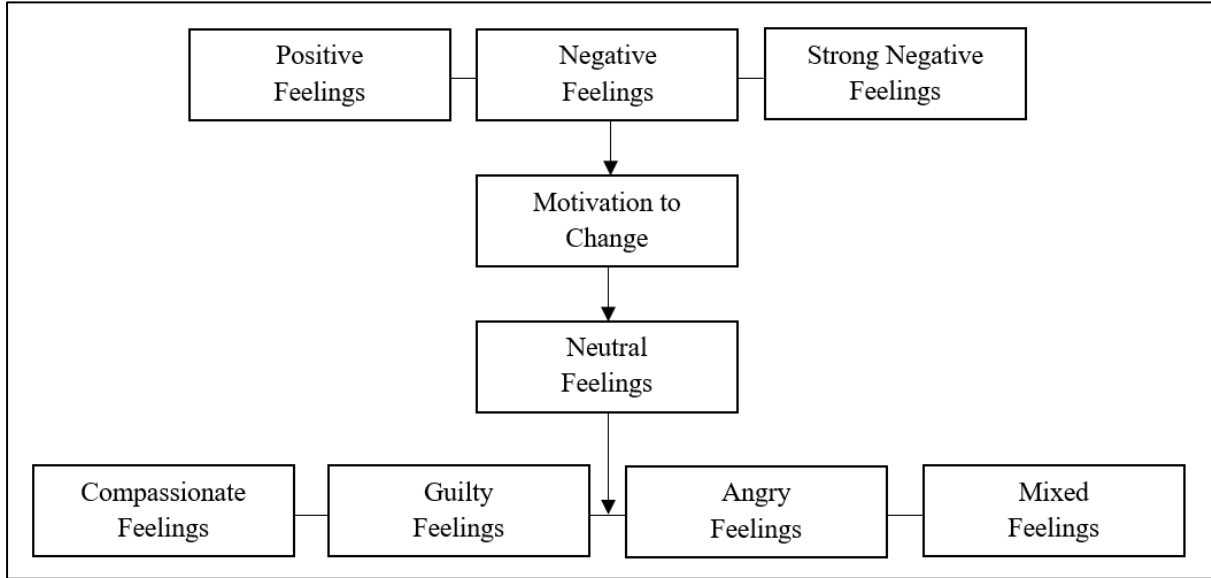
		Indifference							Total Indi
		Doesn't loc	Not enough	No plan to	Not emotic	Normal in	People hav	Don't see	
1 Respondent 10		0	0	0	0	0	0	0	0
2 Respondent 11		0	0	0	0	0	0	1	1
3 Respondent 12		0	0	0	0	0	0	0	0
4 Respondent 14		0	0	0	0	0	0	0	0
5 Respondent 15		0	0	0	0	0	0	0	0
6 Respondent 16		0	0	0	0	0	0	0	0
7 Respondent 17		0	0	0	0	0	0	0	0
8 Respondent 18		0	0	0	0	0	0	0	0
9 Respondent 19		0	0	0	0	0	0	0	0
10 Respondent 20		0	0	0	0	0	0	0	0
11 Respondent 22		0	0	0	0	0	0	0	0
12 Respondent 24		0	0	0	0	0	0	0	0
13 Respondent 26		0	0	0	0	1	0	0	1
14 Respondent 28		0	0	0	0	0	0	0	0
15 Respondent 30		0	0	0	0	0	0	0	0
16 Respondent 32		0	0	0	0	0	0	0	0
17 Respondent 35		0	0	0	0	0	0	0	0
18 Respondent 37		0	0	0	0	0	0	0	0
19 Respondent 38		0	0	0	0	0	0	0	0
20 Respondent 40		0	0	0	0	0	0	0	0
21 Respondent 42		0	0	0	0	0	0	0	0
22 Respondent 43		0	0	0	0	0	0	0	0
23 Respondent 45		0	0	0	0	0	0	0	0
24 Respondent 46		0	0	0	0	0	0	0	0
25 Respondent 49		0	0	0	0	0	0	0	0
26 Respondent 51		0	0	0	0	0	0	0	0
27 Respondent 52		0	0	0	0	1	0	1	2
28 Respondent 56		0	0	0	0	0	0	1	1
Total		0	0	0	0	2	0	3	
				5					

Appendix O: Qualitative Categories; Comparisons Between Categories

Categorisation of emotional codes into broader themes	
Category	Initial Coding
Positive Feelings	<ul style="list-style-type: none"> ● Happy ● Positive ● Good ● Pleasant ● Amused ● Appealing
Negative Feelings	<ul style="list-style-type: none"> ● Sad ● Disappointed ● Not good ● Unhappy ● Negative ● Upset ● Not appealing ● Unpleasant ● Not pleasant
Strong Negative Feelings	<ul style="list-style-type: none"> ● Traumatized / Disturbed ● Uneasy / On edge / Nervous ● Sick /Doesn't sit well ● Fear ● Uncomfortable ● Disgusted / Repulsed ● Shocked
Motivation to change	<ul style="list-style-type: none"> ● Hopeful ● Inspired/encouraged to eat less meat ● Increased awareness
Compassionate Feelings	<ul style="list-style-type: none"> ● Caring ● Concerned ● Empathetic ● Sympathetic ● Pity / Sorry for the animal
Guilty Feelings	<ul style="list-style-type: none"> ● Ashamed ● Guilty ● Bad
Angry Feelings	<ul style="list-style-type: none"> ● Frustrated ● Resentful / Angry
Mixed Feelings	<ul style="list-style-type: none"> ● Conflicted ● Confused ● Sceptical
Neutral Feelings	<ul style="list-style-type: none"> ● Defeat ● Not sympathetic ● Not resentful ● Indifferent ● Not upset

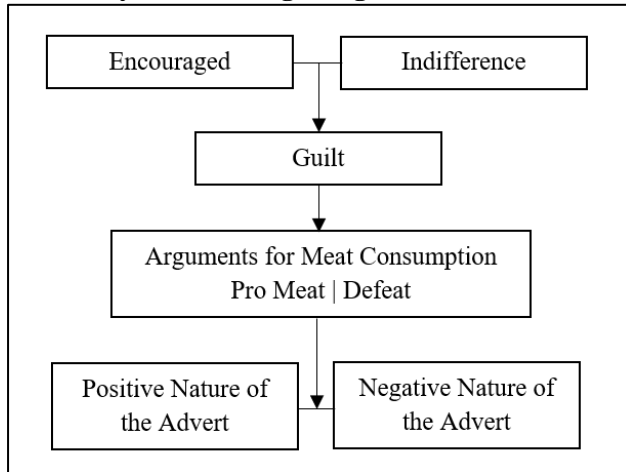
	<ul style="list-style-type: none"> ● Not sad ● Not guilty ● Not unpleasant ● Not bad ● Removed from the issue
--	--

Hierarchy of self-report emotional categories



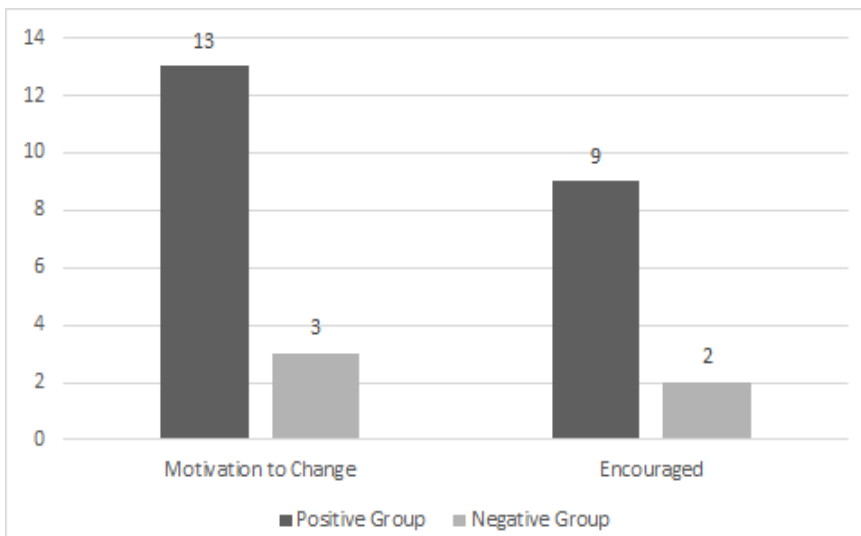
Categorisation of reasoning codes into broader themes		
Category	Initial Coding	
Encouraged	<ul style="list-style-type: none"> ● Forceful Advert ● It is easy to switch to a plant-based diet / We can contribute ● Don't want animals to be harmed 	
Guilt	<ul style="list-style-type: none"> ● Negative contribution / Directly responsible ● Unnecessary / Killed for our satisfaction ● Unethical / Cruel / Inhumane ● It is a living thing / Sentient being ● Don't realize / Suppress the reality 	
Indifference	<ul style="list-style-type: none"> ● Doesn't look real / Doesn't resonate / Image looks fake ● Not enough motivation ● No plan to switch to a plant-based diet ● Not emotionally attached to the issue ● Normal in environment growing up / Culture ● People have choices / Depends on what you believe ● Don't see them being killed / Removed from the process 	
Arguments for Meat Consumption	Pro Meat	<ul style="list-style-type: none"> ● Necessary / Fact of survival ● Really like meat ● There will always be enough animals / The animals reproduce ● There are better ways to do it (than in the picture) / Not the proper environment ● Health concerns / Losing too much weight
	Defeat	<ul style="list-style-type: none"> ● One person will not make a difference / Unrealistic to save all the cows / Denial of the fact in front of them ● The animals are killed anyway / Unrealistic to save them
Positive Nature of the Advert	<ul style="list-style-type: none"> ● Positive Image (cute / happy cow, etc.) ● Positive consequence emphasized ● Nice advert 	
Negative Nature of the Advert	<ul style="list-style-type: none"> ● Negative Image (gore, gruesome, blood, etc.) ● It is something you can't forget 	

Hierarchy of reasoning categories

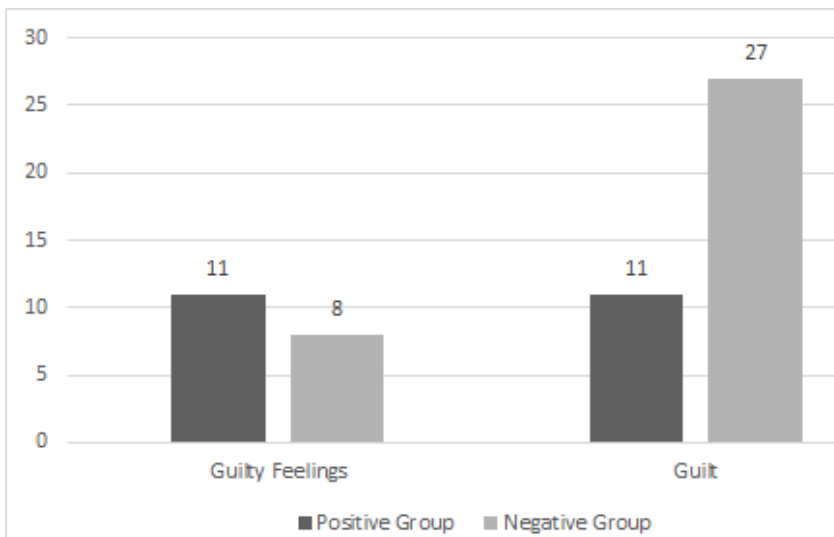


Comparison of Categories: Positive and Negative Framing Groups

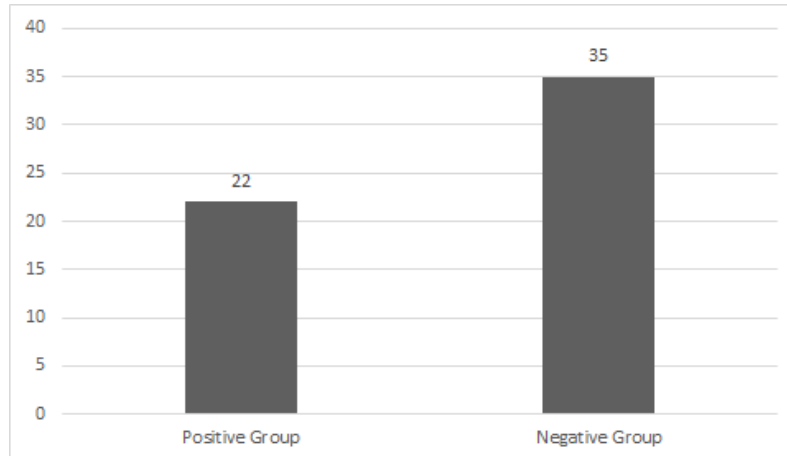
Motivation to Change versus Encouraged



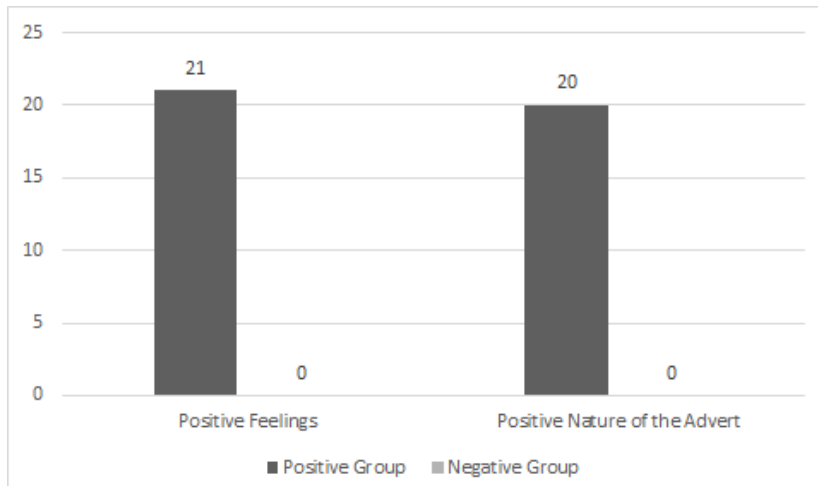
Guilty Feelings versus Guilt



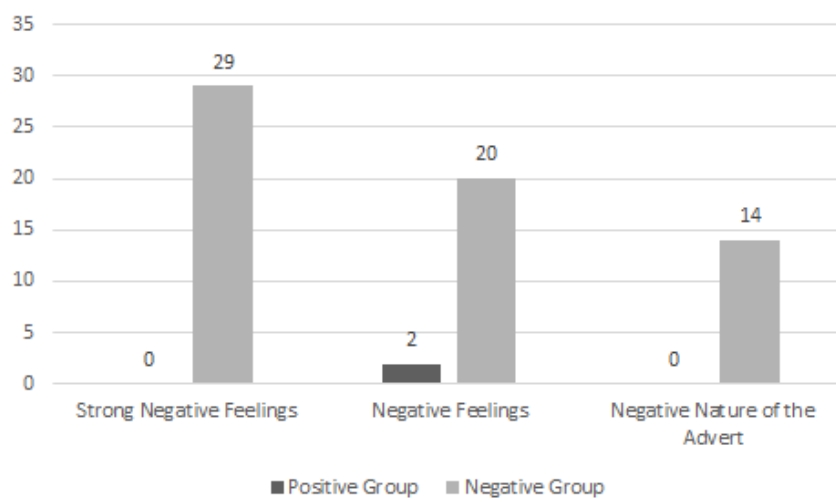
Guilt Theme (Guilty Feelings and Guilt Combined)



Positive Feelings versus Positive Nature of the Advert



Strong Negative Feelings versus Negative Feelings and Negative Nature of the Advert



Neutral Feelings versus Indifference

