Final Research Paper for Masters Dissertation in Marketing (BUS5000W)

INTENTIONS TO ENGAGE IN A MEAT-REDUCED DIET: AN APPLICATION OF THE INTEGRATIVE MODEL OF BEHAVIOURAL PREDICTION

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ABSTRACT

The consumption of meat and meat products has been cited as the most critical area to be addressed if we are to meet a sustainable future diet, regarding the impact on climate change and health. The numerous sustainability concerns that have been raised have stimulated calls to reduce the quantity of meat people in general eat, and have created an on-going global debate among policymakers, academics and practitioners. This research makes use of the Integrative Model of Behavioural Prediction (IMBP) in order to isolate the key determinants of what drives the intentions of middle to upper-income South Africans to engage in a meat-reduced diet (MRD). A two-phase methodology was utilised, by firstly conducting an elicitation study to identify the salient beliefs present in the population, and secondly by conducting a population survey to quantify the cognitive foundation of this behaviour. The empirical results showed that the areas of cognition which most strongly predict whether one intends to engage in an MRD were instrumental attitude, experiential attitude and injunctive norms. This study makes three primary contributions. Firstly, a theoretical contribution, through providing insight into how behavioural themes and beliefs materialise into changes in meat-consumption. Secondly, marketing practitioners can benefit from the insight offered by IMBP, which is valuable as it helps to identify what behavioural shift is required to promote MRDs. Lastly, this study contributes to the methodology utilised when applying the IMBP by applying the model to dietary behaviour, which has received comparatively less attention in the past.

Keywords: Meat Consumption, Meat-Reduced Diets, Integrative Model of Behavioural Prediction, Descriptive Research, South Africa

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CHAPTER 1

INTRODUCTION

1.1. Introduction

This research makes use of behavioural theory in order to understand what drives people's intentions to engage in a meat-reduced diet. Many sustainability debates have criticised the high levels of meat consumption - both current levels and those predicted in the future (Apostolidis & McLeay, 2016; Macdiarmid, Douglas & Campbell, 2016; Reisch, Eberle & Lorek, 2013). Behavioural theory was applied to isolate the essential behavioural determinants that precede the intention to engage in a meat-reduced diet. Governments, policy makers and marketing practitioners can use a more in-depth analysis of these behavioural determinants to promote a meat-reduced diet under the more significant topic of sustainable consumption.

The chapter begins by giving a background to the study, a rationale for the study, a brief overview of the methodology followed, after which the research questions and objectives are stated. The chapter ends off by stating the main contributions of this study, and finally, a demarcation is given for the rest of the paper.

1.2. Background

Sustainable consumption has been defined as consumption that is socially beneficial, economically viable and environmentally benign, where sustainable products contribute, through their attributes or consequences, to one or a combination of these aspects (Vermier & Verbeke, 2006). Meat has been said to be among one of the most environmentally harmful components in the food package (de Bakker & Dagevos, 2012; Garnet, 2009). Within the scope of sustainable food production and consumption, the consumption of meat and meat products has been cited as the most critical area of to be addressed if we are to meet a sustainable future diet, in terms of impact on climate change and health (Reisch, Eberle & Lorek, 2013; Schösler, De Boer & Boersema, 2012). The growth of the world's population coupled with rising disposable incomes has resulted in a global increase in meat consumption (de Boer & Aiking, 2011; Schösler *et al.,* 2012), where these high levels are increasingly criticised for ethical, environmental and social reasons (Apostolidis & McLeay, 2016).

Leading up to the year 2050, humanity is expected to experience significant increases in the demand for food, driven primarily by population growth, increased rates of urbanisation and economic growth (Gardner, 2013; Searchinger, Hanson, Ranganathan, Lipinski *et al.*, 2013). As a result of a rapidly increasing population and growing levels of affluence, "food security and sustainability are on a collision course by mid-century" (Aiking, 2011: 112). Recent studies project that the production of animal-food-products would need to more than double to keep pace with projected

demands resulting from population growth and dietary changes leading up to 2050 (de Bakker & Dagevos 2012; Foley, Ramankutty, Cassidy, Gerber *et al.*, 2011; Garnett, 2009; McMichael, Powles, Butler & Uauy, 2007; Westhoek, Lesschen, Wagner, De Marco *et al.*, 2014).

Some of the emerging themes in the literature regarding meat consumption can be seen in the diagram below, where two divisions have been made with relevance to this study: sustainability criticism and consumer literature.

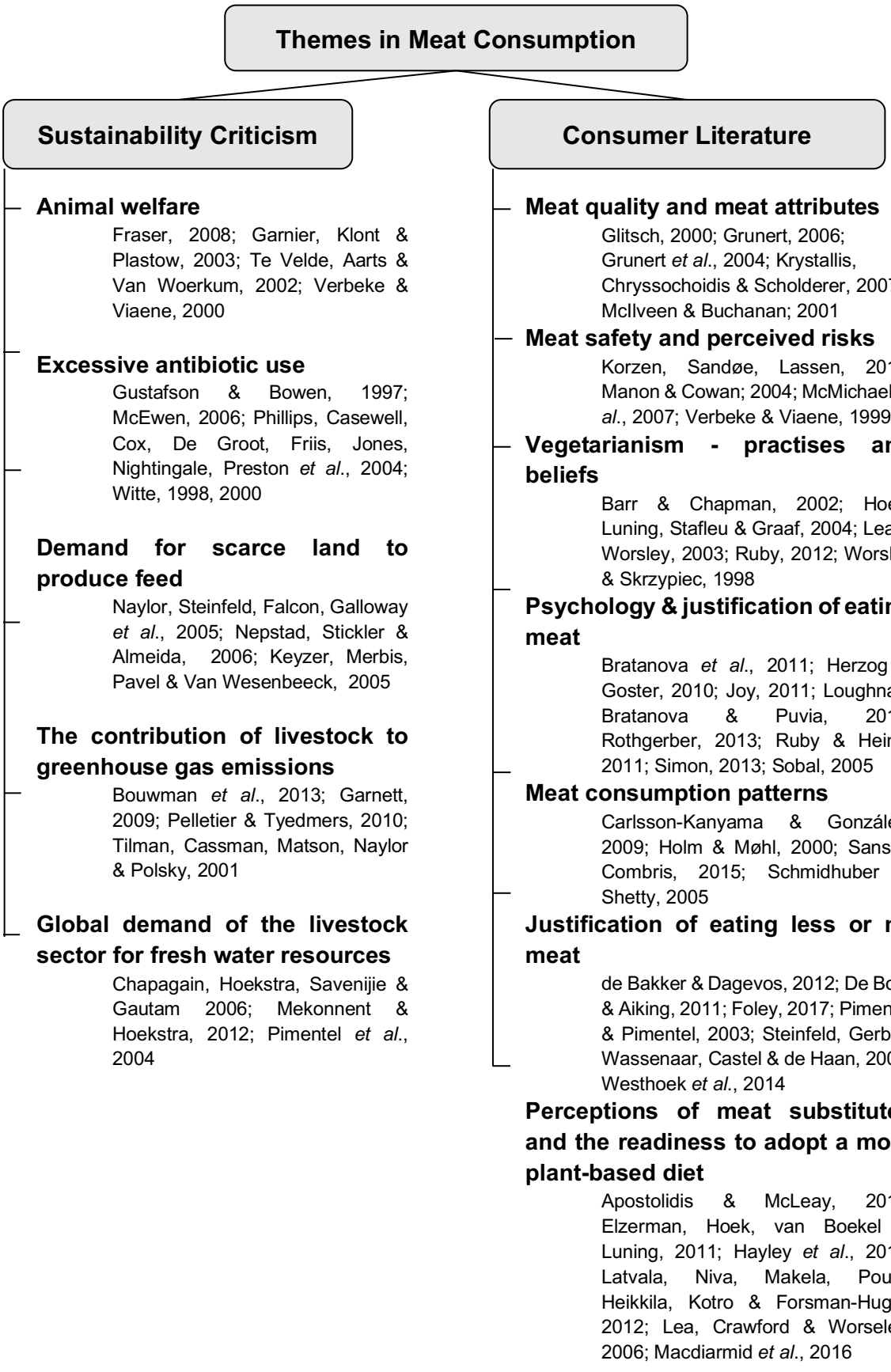

Figure 1.1: Themes in Meat Consumption Literature
(Author's own summary)

From a sustainability perspective, meat has become a subject of increasing controversy. As a result of this controversy, the sustainability concerns outlined in Figure 1.1 have stimulated calls to reduce the quantity of meat people in general eat, and have created an on-going global debate among policymakers, academics and practitioners (Latvala *et al.*, 2012; Macdiarmid *et al*., 2016). While there exists extensive literature on consumer theory within the topic of meat consumption, there is, however, a lack of literature exploring how these themes materialise into changes in meat consumption, more specifically - reduced meat consumption. Various studies have analysed the individual variables of consumer behaviour (attitude, motivation, norms, self-efficacy) regarding meat consumption (Bar & Chapman, 2002; Grunert, 2006; Hoek, Luning, Stafleu & de Graaf, 2004; Holm & Møhl, 2000; Joy, 2011; Joyce *et al.*, 2012; Lea *et al.*, 2012; Lea & Worseley, 2003; Lindquist, 2013; Rothergerber, 2013; Ruby, 2012; Vanhonacker, Verbeke, Van Poucke & Tuyttens, 2007; Zaraska, 2016). but none have applied behavioural models to test what drives people's intentions to engage in a meat-reduced diet.

In order to avoid the consequences of excessive meat consumption for future generations, some research has proposed the need to shift consumer behaviour towards meat-reduced diets (Hayley, Zinkiewicz & Hardiman, 2015; Joyce, Dixon, Comfort & Hallett, 2012). Meat-reduced diets (MRDs) limit the frequency, type, and portion of meat in one's average diet, including a continuum of diet practices such as low-meat/plant-based diets and forms of semi-vegetarianism. MRDs are correlated with decreased consumption of harmful levels of animal fats and increased consumption of protective foods such as fruit, vegetables, legumes, nuts/seeds, and, for some MRDs, fish protein and oils (Hayley *et al.*, 2015). Hayley *et al.* (2015) explored the predictive power of personal values, gender differences and perceptions of meat categories, concerning perceptions towards engaging in an MRD. Given the health benefits of MRDs, Hayley *et al*. (2015: 98) stated that “determining the fundamental influences on MRD adoption and practice is an important contribution to health and wellbeing research”. Macdiarmid *et al.* (2015: 487) further stated that “reducing meat consumption is central to many scientific debates on healthy, sustainable diets because of the high environmental impact of meat production”. These views of meat-reduced behaviour were a founding rationale in establishing the behaviour explored in this study. The next section considers the rationale for the need to provide behavioural research within the context of MRDs.

1.3. Rationale for the Study

The lack of literature exploring how consumer behaviour themes materialise into changes in meat consumption - specifically, reduced meat consumption, has resulted in a lack of insight into how to promote this diet. From a sustainability point of view, understanding how to shift behaviour towards reduced-meat consumption is of utmost importance (Hayley *et al.,* 2015; Joyce *et al.*, 2012). This study, therefore, analysed the behavioural intentions of engaging in an MRD as part of one's weekly routine, by

applying behavioural prediction theory to explain the key drivers of intention behind this behaviour.

The call to reduce the levels of meat being consumed has been advocated by researchers in multiple sectors (Apostolidis & McLeay, 2016; Bouwman, Goldewikj, Van Der Hoek, VanVuuren *et al*., 2013, Carlsson-Kanyama & González, 2009; de Bakker & Dagevos, 2012; De Boer & Aiking, 2011; Gardner, 2013; Macdiarmid *et al.*, 2016; Reisch *et al.*, 2013; Schösler *et al.*, 2012). If governments, policymakers and business managers alike are to attempt building message strategies or interventions that reduce the rates of meat consumption, they would need to understand this consumption behaviour better. This understanding would stem from gaining insight into the various determinants of the behaviour of engaging in an MRD so that these determinants could be isolated and promoted. The next section gives a more in-depth overview of the theoretical framework used in this research

1.4. Theoretical Framework: The Integrative Model of Behavioural Prediction

Behaviour change and behaviour prediction theories are useful because they are a tool for identifying crucial behavioural determinants and can be viewed as theories of message and intervention strategy to promote or change the desired behaviour (Yzer, 2012). The past few decades have seen a growing recognition of behavioural theory in the usefulness of developing behaviour change interventions (Fishbein & Cappella, 2006), where modifying people's behaviour has been stated as being at "the core of many efforts to improve the human condition" (Ajzen, 2011: 74). Some social psychologists have argued that behavioural intentions are the single strongest contributing factor to behaviour (Fishbein & Ajzen, 2010). The Integrative Model of Behavioural Prediction (IMBP) (Fishbein, 2000; Fishbein & Cappella, 2006; Kasprzyk, Montaño & Fishbein, 1998) is the most recent formulation of Fishbein and Ajzen's (2010) reasoned action approach. The reasoned action approach states that although an infinite number of variables may in some way influence behaviour, a small number of variables can be identified that together explain a significant proportion of variance in the data (Fishbein, 2008; Fishbein & Ajzen, 1975, 2010). Figure 1.2 below shows the IMBP, as a development from the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and the theory of planned behaviour (Ajzen, 1985, 1991).

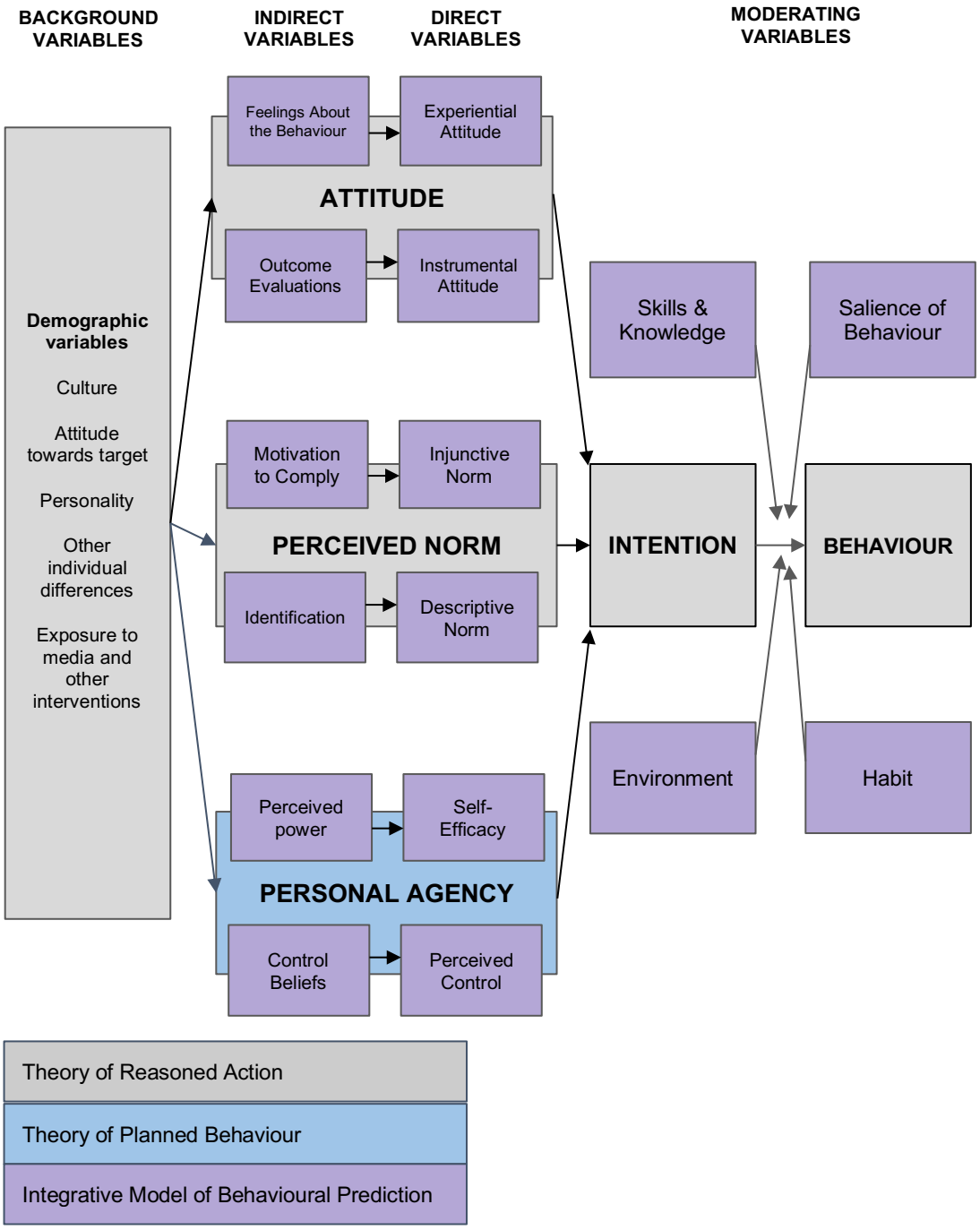

Figure 1.2. The Integrative Model of Behavioural Prediction
SOURCE: Fishbein, 2000; Fishbein & Cappella, 2006; Kasprzyk *et al.*, 1998

The IMBP uses a combination of constructs of a few key behavioural theories, resulting in measures of the central constructs of intention (attitudes, perceived norms and personal agency) being measured both indirectly, recognising that each construct is a function of underlying salient beliefs, as well as directly. This study utilised the IMBP to measure the central constructs of intention to engage in an MRD as part of one's weekly routine, thus providing more in-depth insight into the behavioural

determinants so that future message strategies and interventions can be built. The next section outlines the research question and objectives this paper aimed to address.

1.5. Research Questions and Research Objectives

The rationale for this study, and specifically the problem statement, led to the formulation of the below primary research question:

1. *Which categories of cognition (attitudinal, normative or personal agency) will most strongly predict whether or not a middle to upper-income South African intends to engage in an MRD as part of their weekly routine?*

Furthermore, the behavioural theory applied in this study further sought to provide deeper insight into the cognitive foundation aiding people's behavioural intentions, leading to the two secondary research questions below:

2. *Of the indirect measures, which underlying salient beliefs should be used to build target messages and intervention strategies which promote MRDs?*

3. *Of the categories of cognition (attitudinal, normative or personal agency), will the indirect measures or direct measures explain more variance in the intentions of middle to upper-income South Africans to engage in an MRD as part of their weekly routine?*

The aim of this research is thus to inform future message strategies and interventions that will seek to promote the engagement of MRDs. The primary and secondary research objectives are described below.

1.5.1 Primary objectives

The three research questions above lead to the following three primary research objectives:

1. *To determine which categories of cognition (attitudinal, normative or personal agency) will most strongly predict whether or not a middle to upper-income South African intends to engage in an MRD as part of their weekly routine.*
2. *To determine which underlying salient beliefs, as found in the indirect measures, should be used to build target messages and intervention strategies which promote MRDs?*
3. *To determine whether the indirect measures or direct measures of the categories of cognition (attitudinal, normative or personal agency) explain more variance in the intentions of middle to upper income South Africans to engage in an MRD as part of their weekly routine.*

1.5.2. Secondary objectives

When considering the first primary objective, this research has the below secondary objectives:

i. *To measure the impact of direct 'experiential attitude' on predicting whether or not a middle to upper income South African intends to engage in an MRD as part of their weekly routine*
ii. *To measure the impact of direct 'instrumental attitude' on predicting whether or not a middle to upper income South African intends to engage in an MRD as part of their weekly routine*
iii. *To measure the impact of direct 'perceived injunctive norms' on predicting whether or not a middle to upper income South African intends to engage in an MRD diet as part of their weekly routine*
iv. *To measure the impact of direct 'perceived descriptive norms' on predicting whether or not a middle to upper income South African intends to engage in an MRD as part of their weekly routine*
v. *To measure the impact of direct 'self-efficacy' on predicting whether or not a middle to upper income South African intends to engage in an MRD as part of their weekly routine*
vi. *To measure the impact of direct 'perceived control' on predicting whether or not a middle to upper income South African intends to engage in an MRD as part of their weekly routine*

When considering the second primary objective, this research has the below secondary objectives:

vii. *To determine which of the modal salient beliefs related to indirect experiential attitude are most strongly correlated with behavioural intention*
viii. *To determine which of the modal salient beliefs related to indirect instrumental attitude are most strongly correlated with behavioural intention*
ix. *To determine which of the modal salient beliefs related to indirect injunctive norms are most strongly correlated with behavioural intention*
x. *To determine which of the modal salient beliefs related to indirect descriptive norms are most strongly correlated with behavioural intention*
xi. *To determine which of the modal salient beliefs related to indirect self-efficacy are most strongly correlated with behavioural intention*
xii. *To determine which of the modal salient beliefs related to indirect perceived control are most strongly correlated with behavioural intention*

When considering the third primary objective, this research has the below secondary objectives:

xiii. To compare the regression model using indirect IMBP measures and the regression model using direct IMBP measures, assessing which model predicts a greater amount of variance in behavioural intention.

The next section gives an overview of the research design utilised in an attempt to answer the above research questions..

1.6. Research Method and Design

A pragmatic reason for focusing on this IMBP is that the model has a well-developed approach for measuring its central constructs, which can be adapted to a specific behaviour of interest (Frosch, Légaré, Fishbein & Elwyn, 2009). The following sections detail the target population chosen for this study, as well as the two-phase methodology utilised, which included 1) elicitation study and 2) population survey, as recommended by Fishbein and Ajzen (2010).

1.6.1. Target population

Respondents for this study met three criteria:

1. *South African*
2. *Household monthly income above R6,000.*
3. *Currently eats meat as part of their diet*

South Africa was chosen as developing African countries are expected to experience a growing demand for meat and animal products in upcoming years (Delport, Louw, Davids, Vermeulen & Meyer, 2017), which raises concern from a sustainability point of view (Cirera & Masset, 2010; Gardner, 2013). Middle to upper income South Africans were chosen as people earning household income below R6,000 per month are considered to be in South Africa's 'base of the pyramid' market, and hence are unlikely to have enough disposable income to purchase significant quantities of animal products (Simpson & Lappeman, 2017; Lappeman, Kabi, Oglesby & Palmer, 2017; Simpson, Egan, Neethling & Lappeman, 2014). Lastly, meat-eaters were chosen so that researchers could better understand their intentions, so to change this group's dietary choice to a MRD. The following sections detail the two-phase methodology utilised.

1.6.2. Phase one: the elicitation study

Phase one of the research was exploratory and involved conducting an elicitation study. An elicitation has the aim of determining the attitudinal, normative, and control beliefs of a specific population regarding a particular behaviour, obtaining substantive information about the cognitive foundation of people's behaviour (Ajzen & Fishbein, 1980). The elicitation questionnaire can be seen in in Appendix A. To determine a population's salient behavioural beliefs, Ajzen and Fishbein (2010) recommend that researchers: a) conduct an elicitation study with open-ended questions assessing a

population's behavioural, normative and control beliefs, b) perform a content-analysis to rank-order the beliefs, and c) determine the 5-10 most salient beliefs (aka ‘modal beliefs'). These modal beliefs were then used to frame the items measuring the indirect variables for each respective key construct in phase two of the research. The elicitation study used a sample of respondents who answered "YES" to the following filter questions:

1. *Are you a South African citizen?*
2. *Is your household income greater than R6,000 per month?*
3. *Does meat currently form part of your diet?*

The sample size for the elicitation study consisted of 40 respondents, ensuring that responses reached saturation (Montano & Kasprzyk, 2015). The elicitation study adopted a convenience sampling technique - used as an attempt to gather information from a sample of available elements (Malhotra, 2010), specifically, an internet-based sampling technique called unrestricted self-selected surveys (Fricker, 2008). A statistical program called Qualtrics was used to develop the elicitation study, where data was gathered online via survey links being sent out via email, Facebook and WhatsApp. Upon completion of gathering the data, the data was exported into MS Excel, for so that a content analysis on the key themes in the salient beliefs could be performed - determining the modal salient beliefs (Ajzen, 2006). These modal salient beliefs were then further analysed in the second phase of research.

1.6.3. Phase two: the population survey

Phase two, the population survey, was descriptive, providing a comprehensive measure of all variables within the IMBP. Measures for the indirect variables were guided by the findings from the elicitation study (i.e. measuring the strength of the determined modal salient beliefs in the sample population) and the measures for the direct variables were guided by previously utilised scales for each key construct (Montano & Kasprzyk, 2015; Robbins & Niederdeppe, 2015). The population survey included a sample target population that met the same criteria as that mentioned in the elicitation study.

Phase two of the research adopted the same sampling technique and data collection process as described in phase one – convenience sampling via an internet-based sampling technique called unrestricted self-selected surveys (Fricker, 2008). This method was particularly beneficial as the sample size for the population survey included 301 respondents, and so this method saved both time and money. Upon completion of the data gathering, the data was exported into SPSS for further analysis.

1.7. Contribution of the Study

This study makes three primary contributions, a theoretical contribution, contributions to marketing practitioners, and lastly, a contribution to the development of the IMBP framework. Each of these contributions has been discussed below.

1.7.1. Theoretical contribution

Research has been conducted on the topic of meat consumption, but there has been a lack of research exploring how certain behavioural themes materialise into changes in meat-consumption. The application of the IMBP within this research area aimed to provide a deeper insight and understanding into these changes, and how the key areas of cognition impact intentions to engage in an MRD. This research, therefore, adds to current consumer literature on the topic of meat consumption, more specifically, by providing insight into what drives people's intentions to engage in an MRD. By only including respondents who are current meat-eaters, this research further added to the field of literature as many studies of this nature only analysed, for example, existing vegetarians and vegans (Barr & Chapman, 2002; Hoek *et al.*, 2004; Ruby, 2012; Ruby & Heine, 2011).

1.7.2. Contribution to marketing practitioners

The insight gained by this research aimed to offer marketing practitioners the necessary insight into what behavioural shift is required to promote the behaviour of engaging in an MRD. A key benefit of applying the IMBP within the topic of health behaviour is that it isolates the key areas of cognition (attitude, perceived norms and perceived control) concerning the behaviour of interest, thereby offering more in-depth insight into the key determinants supporting a particular behaviour (Yzer, 2012). The value gained from these insights is through their application via marketing practitioners, who can use them to develop messages and intervention strategies which promote the behaviour of engaging in an MRD. From a sustainability point of view, "the high consumption of animal-based proteins, especially meat, has been identified as one of the most relevant topics to be addressed if [consumers] are to shift towards a more sustainable diet" (Schösler *et al.*, 2012: 39). Future marketing practitioners are therefore expected to benefit from these insights in the case that they will be creating messages and intervention strategies that promote the behaviour of engaging in an MRD.

1.7.3. Methodological contribution

The IMBP has been praised for its application within the realm of health behaviour, as it helps identify which categories of cognition (attitudes, perceived norms and perceived control) most strongly predict whether or not an individual is likely to engage

in a preventative behaviour (Robbins & Niederdeppe, 2015; Yzer, 2012). The IMBP has been applied to health behaviours such as those mentioned in Table 1.1 below:

Table 1.1: A Brief Overview of the Applications of the IMBP

Behaviour	Reference
Sleep behaviour	Robbins and Niederdeppe, (2015)
HIV/Aids testing	Diteweg, Van Oostwaard, Tempelman, Vermeer, Appels, Van der Schaaf and Maree (2013)
Designing health messages	Yzer (2012)
Media and sexual behaviour	Bleakley, Hennessy, Fishbein and Jordan, (2011)
Binge drinking	Braun (2012)
Decision support interventions in health care	Frosch *et al.* (2009)
Condom usage	Kasprzyk *et al.* (1998)

This study contributed to the development of the IMBP by applying the model within the behavioural context of diet, specifically intentions to engage in an MRD. While the IMBP has been applied to a range of health behaviours (a list of which is mentioned in Table 1.1 above), dietary behaviour (such as engaging in an MRD) has received comparatively less attention. This research, therefore, further develops the IMBP within the behavioural topic of diet, specifically focusing on intentions to engage in an MRD.

1.8. Demarcation of the Study

This paper consists of six chapters. The next chapter, chapter two, introduces sustainable consumption and sustainable marketing, focusing on meat-consumption and introducing it as an area of sustainability concern. Chapter three introduces behavioural prediction theory as an intervention tool, explaining how behavioural prediction theory (specifically, the IMBP) is used in this research to identify the behavioural determinants of engaging in an MRD. Chapter four defines the methodology utilised when applying the IMBP to identify the behavioural determinants of engaging in an MRD. This chapter details the necessary steps that were taken in both phase one and phase two of the research, and how the data therein was analysed. Chapter five details the empirical results of this research, providing evidence

to answer the research questions mentioned above. Lastly, chapter six provides a discussion of the empirical results, limitations that were encountered in this research, recommendations for future researchers, and final concluding remarks.

1.9. Conclusion

Meat has become a contested area of food production and consumption in recent years and has been cited as an area of significant sustainability concern. This research thereby aims to provide deeper insight and understanding of the cognitive foundation supporting behavioural intentions to engage in an MRD. These insights aim to support future message strategies looking to target beliefs which are found to be significant in predicting behavioural intention to engage in an MRD. The remaining chapters introduce this topic within the more significant topic of sustainable consumption and sustainable marketing, then introducing behavioural prediction theory, and how the IMBP was used in order to understand behavioural intentions to engage in an MRD. The findings of this research answer the research questions mentioned above and offer significant contributions to theory, marketing practitioners and a methodological contribution.

1.10. Chapter Summary

This study makes use of behavioural prediction theory in order to understand what drives people's intentions to engage in an MRD. This research is underpinned by many sustainability debates that have criticised the high levels of meat consumption (Apostolidis & McLeay, 2016; Macdiarmid *et al*., 2016; Reisch *et al*.,2013; Schösler *et al*., 2012). Within the scope of sustainable food production and consumption, the consumption of meat and meat products has been cited as the most critical area to be addressed if we are to meet a sustainable future diet, in terms of impact on climate change and health (Reisch *et al*., 2013; Schösler *et al*., 2012).

This study, therefore, applied behavioural prediction theory, specifically the Integrative Model of Behavioural Prediction (IMBP) (Fishbein, 2000; Fishbein & Cappella, 2006; Kasprzyk *et al*, 1998), in order to isolate and understand the key determinants aiding intention to engage in an MRD. This application of the IMBP aimed to provide deeper insight into the behavioural determinants of meat-reduced behaviour (attitude, perceived norms and personal agency) so that future message strategies and interventions could make use of them as a foundation of their communication. As a result, this study aimed to answer three research questions:

1. *Which categories of cognition (attitudinal, normative or personal agency) will most strongly predict whether or not a middle to upper-income South African intends to engage in a meat-reduced diet as part of their weekly routine?*

2. *Of the indirect measures, which underlying salient beliefs should be used to build target messages and intervention strategies which promote meat-reduced diets?*
3. *Of the categories of cognition (attitudinal, normative or personal agency), will the indirect measures or direct measures explain more variance in the intentions of middle to upper-income South Africans to engage in a meat-reduced diet as part of their weekly routine?*

A pragmatic reason for focusing on the IMBP is that the model has a well-developed approach for measuring its central constructs (attitudes, perceived norms and personal agency) which can be adapted to a specific behaviour of interest (Frosch *et al*., 2009). This approach involves a two-phase methodology, 1) elicitation study and 2) population survey, as recommended by Fishbein and Ajzen (2010).

This study makes three contributions: a theoretical contribution (adding to the existing literature on meat-consumption behaviour) a marketing practitioner contribution (through isolating key behavioural determinants, which can guide future message and intervention strategies), and lastly a methodological contribution (through the application of the IMBP to diet behaviour, which has received little attention in the past).

CHAPTER 2

SUSTAINABLE CONSUMPTION

2.1. Introduction

Many sustainability debates have criticised both the current and predicted future levels of meat consumption (Apostolidis & McLeay, 2016; Bouwman *et al*., 2013, Carlsson-Kanyama & González, 2009; de Bakker & Dagevos, 2012; De Boer & Aiking, 2011; Gardner, 2013; Macdiarmid *et al.*, 2016; Reisch *et al.*, 2013; Schösler *et al.*, 2012). Consequently, meat has been cited as the most environmentally burdensome food product (Garnet, 2009). Research has promoted the need to actively control the consumption of meat if we are to achieve a sustainable future diet (Schösler *et al.*, 2012). This chapter, therefore, considers the importance of the behaviour of 'engaging in an MRD' within the broader context of sustainable consumption.

This chapter begins by defining sustainable consumption and sustainable marketing, noting the importance of sustainable marketing practices for governments, business managers and NGOs. Next, the sustainability of meat is discussed, after which literature exploring consumer theory regarding meat consumption as well as MRDs is explored. Lastly, the implications for governments, marketing practitioners, and NGOs is stated, and a chapter summary and conclusion is given.

2.2. Sustainable Consumption

Making consumption patterns sustainable is one of the most significant challenges to humanity (Pönitzsch & Kniebes, 2013). Sustainability requires the timely and concerted action of governments, businesses and consumers - where the goal is to reach a higher understanding and awareness of the environmental, economic and social impacts of a particular behaviour (Pönitzsch & Kniebes, 2013). The following sections begin by defining sustainable consumption, giving an overview of sustainability marketing and its importance for governments, businesses and consumers, and lastly an overview of the ongoing debate on the sustainability of meat.

2.2.1. Defining sustainable consumption

Sustainable consumption has been defined as consumption that is socially beneficial, economically viable and environmentally benign. Sustainable products contribute, through their attributes or consequences, to one or a combination of these aspects (Vermier & Verbeke, 2006). According to Veiderman (1995:2), "sustainability is a vision of the future that provides us with a road map and helps us to focus our attention on a set of values and ethical and moral principles by which to guide our actions". Sustainability works on the 'triple bottom line' approach concerning people, planet and profit (Peattie, Ottman, Polonsky & Charter, 2006). Further, sustainability has been

cited as being a long-term vision, dealing with development strategy based on ethical and moral principles (Kumar, Rahman, Kazmi & Gotal, 2012). Sustainability is mostly understood concerning 'environmental sustainability', not limited to environmental issues, but also to the resulting economic and social issues too (Kumar *et al*., 2012; Ottman, 2017). With this definition in mind, current generations need to take active steps to ensure a sustainable future for coming generations (Kumar *et al*., 2012), where one of these steps involves ensuring that we are adopting sustainable marketing practices. Many consumers have taken responsibility for their efforts towards sustainability - realising that environmental protection by governments and institutions cannot be solely relied upon (Oztek & Cengel, 2013). This concern of environmental degradation has resulted in a new consumer segment, namely 'the environmentally responsible consumers' (Paul & Rana, 2012). These consumers take responsibility to avoid products that are unsustainable, negatively impact the environment, and cause unnecessary waste (Paul & Rana, 2012). The result is that many organisations have focused on a sustainable marketing strategy (Alsmadi, 2007; Ginsberg & Bloom, 2004; Menon & Menon, 1997). The importance of sustainable marketing should, therefore, be noted by governments, businesses and NGOs.

2.2.2. Sustainable marketing

A vision of sustainability states that "business practices should be assessed in terms of sustainability through economic, environmental and social dimensions" (Kumar *et al*., 2012: 483). Peattie *et al.* (2002: 12) define sustainable marketing as "creating, producing and delivering sustainable solutions with higher net sustainable value while continuously satisfying customers and other stakeholders". The below sections detail the importance of sustainable marketing practises for governments, business and NGOs.

2.2.2.1. Implications for governments

Until recently, governments have been reluctant to target individual behaviours which are deemed as unsustainable and have instead focused on large numbers of individuals, often having a small effect (Gordon, Carrigan & Hastings, 2011). Gordon *et al.* (2011) state that this reluctance is likely because governments are hesitant to threaten commercial relationships, and that their intervention could be electorally unwise. Dryzek (1997) expands on this point, stating that governments taking action on many sustainability issues would often require them challenging the dominant political and economic systems in place, putting those governments at risk.

Despite these barriers, Connolly and Prothero (2003) state the critical role that governments have in educating firms and consumers on the point that sustainable consumption does not have to mean a reduction in well-being. Governments can have an active role in promoting sustainable marketing via rethinking their regulations and incentives, developing incentives that make business leaders think long-term,

promoting education on sustainable agriculture, and finally, not only looking at GDP as a measure of success, but also at social and environmental prosperity (Pönitzsch & Kniebes, 2013). An example would be South Africa's National Framework for Sustainable Development – giving the nation a vision of sustainability (Department of Environmental Affairs, 2017). This framework means that the South African government is now "obliged by [its] international commitments, constitutional principles and statutory laws to justify [its] national policies and development strategies in terms of sustainable development" (Department of Environmental Affairs, 2017).

2.2.2.2. Implications for business managers

Business managers need to note that sustainability is no longer an option, but rather a requirement (Peattie *et al.*, 2002). Sustainable practises have become a necessary competitive strategy for organisations, particularly in developing nations (Kumar *et al.*, 2012; Menon & Menon, 1997). This competitive strategy developed as consumers began to place more value on organisations with sustainable principles, where many consumers consider sustainability as central to their buying decision (Alsmadi, 2007; Oztek & Cengel, 2013). Benn, Edwards and Williams (2014) state that companies need to adapt their stakeholder approach to not only consider share value, but rather to focus on how this value is attained. This adapted stakeholder approach requires taking into consideration the impacts of all business activity, not just on shareholders, but also on the environment, the public and employees (Benn *et al.*, 2014). The concept of marketing is extending towards fulfilling the needs of future generations, which requires that businesses create, communicate and deliver upon sustainability-based value to their customers (Kumar *et al.*, 2012). Companies need to balance their marketing strategies in such a way that customer needs are fulfilled after maintaining profitability, social interests and environmental interests (Vasagi, 2004).

An example of a company who has done this well is Woolworths. Woolworths' 'Good Business Journey' has encapsulated their sustainability efforts central to their business philosophy and operations, specifically in the areas of agricultural practises, water usage, energy efficiency and recycling (Woolworths, 2017). This example highlights corporate efforts to promote sustainable development within South Africa. These efforts are further evident in South Africa as all JSE-listed organisations are required to disclose their sustainability efforts (Chetty, Naidoo & Seetharam, 2015). While effort is taking place in certain business sectors, Chetty *et al.* (2015) revealed the difficulty for organisations within developing countries to achieve sustainability.

2.2.2.3. Implications for NGOs

Non-Government Organisations (NGOs) are a crucial sector when it comes to promoting sustainability (Gordon *et al.*, 2011). Many NGOs, such as the United Nations and Greenpeace, are well placed to leverage their global reach and competence to promote and support a sustainability agenda (Pönitzsch & Kniebes,

2013). The role that NGOs have is primarily an educational and awareness role - informing and educating consumers about their role within the sustainability landscape and the impact of their consumption choices, laying out paths for more sustainable lifestyles (Pönitzsch & Kniebes, 2013). NGOs have further roles in holding businesses accountable for the level of social and environmental externalities they are producing, where this accountability often puts pressure on business managers to adopt more sustainable business practices. NGOs, therefore, hold an essential role in encouraging business managers to adopt a stakeholder approach that is sustainable (Benn *et al.*, 2014).

With the above vision of sustainability in mind, the following section takes a closer look at the meat industry, and whether or not the current and predicted future consumption of meat can be deemed as sustainable.

2.2.3. Towards a sustainable future diet

Food consumption has been debated as a significant issue in the politics of sustainable consumption and production. This debate is primarily due to the impact of meat production and consumption on the environment, individual and public health, as well as on the economy (Reisch *et al.,* 2013). Within the scope of sustainable food production and consumption, the consumption of meat and meat products has been cited as the most crucial area to be addressed if we are to meet a sustainable future diet, in terms of impact on climate change and health (Reisch *et al.*, 2013; Schösler *et al.*, 2012). The growth of the world's population coupled with rising disposable incomes has resulted in a global increase in meat consumption (de Boer & Aiking, 2011; Schösler *et al.,* 2012), where these high levels are increasingly being criticised for ethical, environmental and social reasons (Apostolidis & McLeay, 2016). As a result, these concerns have stimulated calls to reduce the quantity of meat eaten and has created an on-going global debate among policymakers, academics and practitioners (Macdiarmid *et al.*, 2016). This chapter draws in on the sustainability of the consumption of meat - where the below sections give more detail into what is driving the demand for animal food-products at large, how agriculture can/cannot meet this demand, the consequences of this growing demand, and finally a closer look at a more sustainable alternative: MRDs.

2.3. Meat Consumption: An Area of Sustainability Concern

Future generations have the challenge of finding new and improved ways of feeding a population that is forecast to grow by 2.5 billion people in the next thirty years (United Nations, 2015; Worldometers, 2017). One of these challenges includes solving the extent of externalities resulting from the growing consumption of meat and animal products. The below sections detail the key drivers in demand for food and animal products, followed by a closer look at the agricultural implications thereof, as well as some of the future consequences of continued and growing meat consumption.

2.3.1. The global rise in food demand

The ability of the world to meet the future demand for food depends critically on the ability of food supply to meet the increasing demand for food (Cirera & Masset, 2010). Leading up to the year 2050, humanity is expected to experience significant increases in the demand for food, driven primarily by population growth, increased rates of urbanisation and economic growth (Gardner, 2013; Searchinger *et al.*, 2013). An illustration of this can be seen in Figure 2.1 below.

Figure 2.1. The Implications of a World Demanding More
SOURCE: Tilman *et al.* (2002)

As seen in Figure 2.1, the world's population is expected to increase by as much as 35% leading up to the year 2050 (Tilman *et al*., 2002). This increase is expected to result in a world population of 9.7 billion people, with most of this increase projected to take place in developing countries (Thornton, 2010; United Nations, 2015; Worldometers, 2017). Africa, in particular, is expected to double its population from 1 billion to 2 billion people by 2050 (World Economic Forum, 2016). Secondly, PwC (2017) predicts the world economy to almost triple by year 2050. As income levels grow, more households exist which have higher levels of disposable income to spend

on food. More specifically, there is a strong, positive relationship between the level of income and the level of animal proteins consumed (Cirera & Masset, 2010; Gardner, 2013). The result of these combining forces is a significant increase in the demand for food and animal food products (Cirera & Masset, 2010). The rapid population growth, as well as the forecast income growth in developing countries leading up to 2050, is expected to result in an ever-rising demand for animal food products (Cirera & Masset, 2010; Gardner, 2013). Lastly, considering urbanisation, it is predicted that 87% of the world's population in 2050 will live in the presently developing world, resulting in further pressures on food demand (Dobermann, Nelson, Beever, Bergvinson *et al.*, 2013). United Nations (2014) predict that 66% of the world's population will live in urban areas by year 2050, a 12% increase from current levels. These growing rates of urbanization, including the development of supermarkets, cold-storage facilities, transportation chains etc., are another key variable aiding the increase in demand for animal food-products (Gardner, 2013).

The United Nations Food and Agriculture Organization (FAO) estimate an 82% increase in the total caloric consumption of animal food-products by 2050 (Searchinger *et al.*, 2013). Africa, in particular, is expected to experience an unprecedented boom in demand for animal products leading up to 2050, fueled by a growing population with rising standards of living (Delport *et al.*, 2017). This population growth poses a significant challenge: "to adequately feed more than nine billion people by 2050, the world must close a 70 percent gap between the amount of food produced today and that needed by mid-century" (Searchinger, Hanson, Ranganathan, Lipinski, Waite, Winterbotto, Dinshaw & Heimlich, 2014: 17). As a result of a rapidly increasing population and growing levels of affluence, "food security and sustainability are on a collision course by mid-century" (Aiking, 2011: 112).

The next section will consider agriculture's role in closing this food gap, specifically looking at the consumption of animal products, as well as the potential consequences of continued rates of consumption.

2.3.2. Demand to resource misalignment

When considering livestock's impact on food security, in areas where crop production is limited, the farming of livestock can positively impact food security via animals converting grasses, crop residues and household waste into food (Garnett, 2010). However, intensive landless livestock, which contributes towards 45% of the world's meat supply, actually undermines food security because they use up around a third of the world's total grain supply (Garnett, 2010). According to UNEP (2009), if all of the feed grown for livestock were fed to humans, the food system would be able to feed an additional 3.5 billion people. Foley (2017) stated that it would be far easier to feed 9 billion people by 2050 if more of the crops grown ended up in human stomachs. Only 55% of the world's crop calories feed people directly - the rest are fed to livestock or turned into biofuels and industrial products (Foley, 2017). Furthermore, of the crops

fed to livestock, only a fraction of the calories make their way into the animal-food-products that humans can consume (Foley, 2017). Figure 2.2 below is a graphical representation of this point, showing the production of calories available in animal products produced via 100 calories of grain.

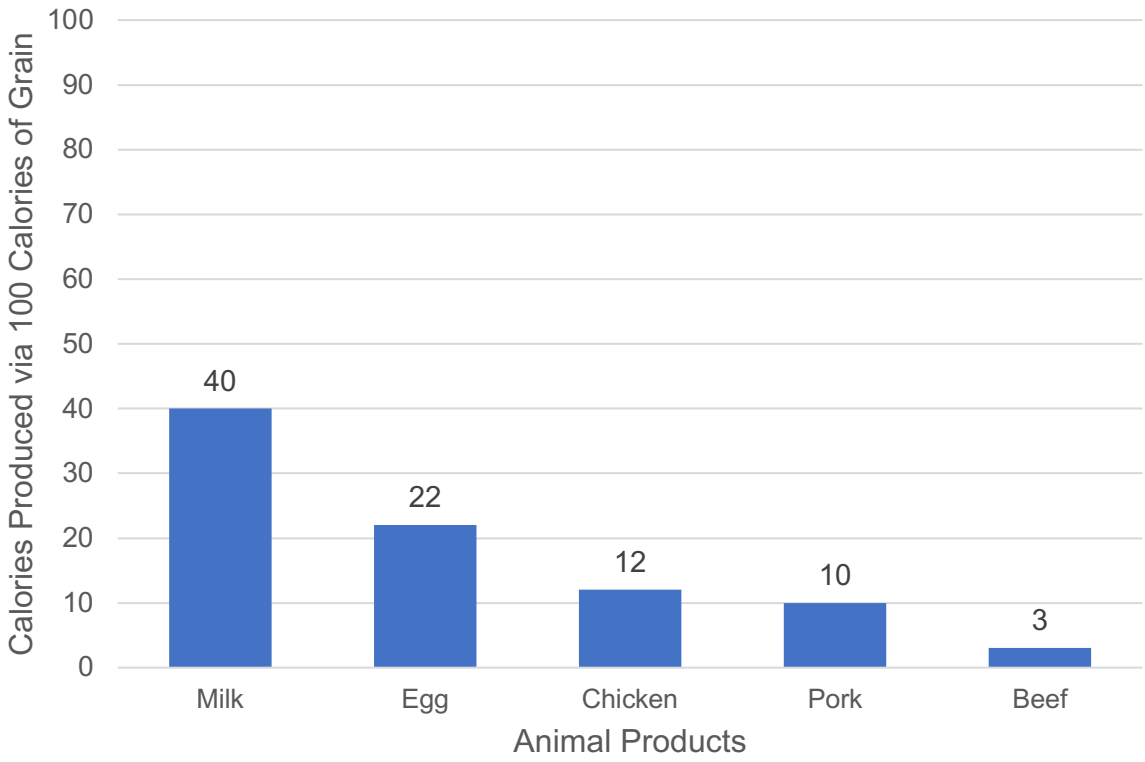

Figure 2.2: A graphical representation of the available calories of animal food-products produced via 100 calories of grain
SOURCE: Foley (2017)

The production and consumption of animal-food-products are said to be among the most environmentally harmful components in the food package (de Bakker & Dagevos, 2012; Garnet, 2009). The environmental harm is primarily due to the fact that animal-food-products require a great deal of plant material, and consequently, a great deal of arable land, water and other resources (de Bakker & Dagevos, 2012). Furthermore, the conversion of plant matter into meat is highly energy intensive and inefficient. As seen in Figure 2.2, the production of animal food products requires a disproportionate amount of resources, and the loss of calories in the conversion from grain to meat is inefficient.

The type of farming that is likely to satisfy growing appetites while using resources more wisely is said to be small-scale traditional pastoralism, essential to combat the destructive trend of large-scale factory farms (Bouwman, Van der Hoek, Eickhout & Soenario, 2005). However, the rapid growth in demand is expected to result in the ongoing shift from traditional extensive and mixed farming systems, to industrial farming systems (Bouwman *et al.*, 2005; Galloway *et al.*, 2007; Naylor *et al.*, 2005),

where both the pros and cons of such shifts have already been explored (Capper, Cady & Bauman, 2009; Lewis, Klopfenstein, Stock, & Nielsen, 1990). There is, therefore, a need to invest in new ways of producing food that yield an increased output while decreasing agricultural externalities.

Recent studies project that the production of animal-food-products would need to more than double to keep pace with projected demands resulting from population growth and dietary changes leading up to 2050 (de Bakker & Dagevos 2012; Foley *et al.*, 2011; Garnett, 2009; McMichael *et al.*, 2007; Westhoek *et al.*, 2014). Compounding this challenge, agriculture must address great environmental concerns, as "agriculture is now a dominant force behind many environmental threats, including climate change, biodiversity loss and degradation of land and freshwater" (Foley *et al.*, 2011: 337). Foley *et al.* (2011: 337) emphasise that "agriculture is a major force driving the environment beyond the planetary boundaries". This cause of concern results in the need to take a closer look at the sustainability concerns regarding the growing demand for animal products - all of which are highly dependent on intensive agriculture. The below section considers some of the key themes found in the literature regarding the concerns of continued increases in consumption of animal products.

2.3.3. Agricultural sustainability

Agriculture is responsible for meeting one of our most basic needs: nutrition. Agriculture is further responsible for being the world's largest user of land - roughly one-third of the Earth's terrestrial surface (Dobermann *et al.*, 2013). Under the scenario of the 70 % food gap by 2050, as mentioned above, it will be difficult to simultaneously meet the Sustainable Development Goals of eradicating poverty and hunger as well as safeguarding the environment (United Nations, 2017; World Economic Forum, 2016). There is abundant literature that has explored the expected environmental consequences of the growing consumption of animal products (McAlpine, Etter, Fearnside, Seabrook & Laurance, 2009; Myers & Kent, 2003; Naylor *et al.*, 2005; Sutton, Oenema, Erisman, Leip, van Grinsven & Winiwarter, 2011; Pelletier & Tyedmers, 2010). While this paper is not aiming to address any of these issues, it is important to mention them as they motivate MRDs. The key themes concerning the consequences of continued growth rates in meat consumption can be seen in Table 2.1 below.

Table 2.1: Emerging Themes Considering the Consequences For the Continued Growth Rates of Meat Consumption
(Author's summary)

Themes	Authors
The contribution of livestock to greenhouse gas emissions	Bouwman *et al.*, 2013; Garnett, 2009; Pelletier & Tyedmers, 2010; Tilman, Fargione, Wolff, D'antonio, Dobson, Howarth, Schindler, Schlesinger, Simberloff & Swackhamer, 2001
Global demand of the livestock sector for fresh water resources	Chapagain *et al.*, 2006; Mekonnent & Hoekstra, 2012; Pimentel, Berger, Filiberto, Newton, Wolfe, Karabinakis, Clark, Poon, Abbett & Nandagopal, 2004
Demand for scarce land to produce feed	Naylor *et al.*, 2005; Nepstad *et al.*, 2006; Keyzer *et al.*, 2005
Animal welfare	Fraser, 2008; Garnier *et al.*, 2003; Te Velde *et al.,* 2002; Verbeke & Viaene, 2000
Excessive antibiotic use	Gustafson & Bowen, 1997; McEwen, 2006; Phillips *et al.,* 2004; Witte, 1998, 2000

Of the themes mentioned above, those which recur in research and debates as being critical from a sustainability point of view are:

- The contribution of livestock to greenhouse gas emissions
- The global demand of the livestock sector for freshwater resources
- The demand for scarce land to produce feed

Garnett (2009) states that meat and dairy products are the foods that contain the most significant environmental burden, as livestock production is greenhouse gas intensive, compared to other food groups. Livestock production includes the "deforestation for grazing land and soy-feed production, soil carbon loss in grazing lands, the energy used in growing feed-grains and processing and transporting grains and meat, nitrous oxide released from the use of nitrogenous fertilisers, and gases from animal manure (primarily methane) and enteric fermentation" (McMichael *et al.*, 2007: 1259). This livestock production accounts for 18% of total greenhouse gas emissions - more than the entire transportation sector (Smith, Sones, Grace, MacMillan, Tarawali & Herrero, 2013; World Bank Group, 2008). Halting the greenhouse gas emissions caused by the agricultural sector, specifically within livestock production, should, therefore, be a top priority because it could slow climate change fairly rapidly. Despite this statement, the demand for livestock products is expected to continue growing, especially in low to middle-income countries (McMichael *et al*., 2007).

The increasing demand for animal-food-products, specifically in developing economies, is resulting in forcibly extending agriculture into the tropical rainforests of South America (McMichael *et al*., 2007). Foley *et al.* (2011) further touch on this point by explaining that the environmental impacts of agriculture include those caused by expansion and intensification. Expansion occurs when croplands and pastures extend into new areas, replacing natural ecosystems (Foley *et al.*, 2011). When looking at expansion, one should start by noting that the total land devoted to raising livestock (including cropland for animal feed and pasture, and grazing lands) amounts to a 75% of the world's agricultural land (Foley *et al.*, 2011). Building on the above point made by McMichael *et al*. (2007), Foley *et al.* (2011: 338) state that "agriculture is mainly expanding in the tropics, where it is estimated that about 80% of new croplands are replacing forests". This expansion is a cause of concern, as these tropical forests are valuable reservoirs of biodiversity and key ecosystem services and clearing them results in a significant source of greenhouse gas emissions. Further, intensification occurs when existing lands are made more productive through the use of fertilisers, irrigation, biocides and mechanisation. Intensification has resulted in water degradation, increased energy use and widespread pollution. Foley *et al.* (2011: 338) state that around 70% of global freshwater resources are devoted to agriculture, and also, "fertiliser use, manure application and leguminous crops have dramatically disrupted global nitrogen and phosphorus cycles".

The pertinent issue and arguments surrounding the environmental concern of livestock production have been advocated, which then leads us to the next question “how should we produce our food leading up to 2050?” (FAO, 2009). Searchinger *et al.* (2013) make an important statement regarding meat consumption, saying that instead of asking if we should continue producing meat and milk, we should keep a realistic view and ask, ‘how should the consumption of animal products grow or change between now and 2050?'. Searchinger *et al.* (2013) proposed that a solution to the food security crisis would be for agriculture to grow food consumption in ways that advance human well-being - a significant implication being to reduce excessive food consumption. Proposed ways of reducing excessive food consumption were cited as reductions of losses and waste, reductions in excessive consumption of animal products, a shift to a more efficient mix of animal products and to aid Africa in its efforts to reduce its high fertility rates (Searchinger *et al*., 2013). This paper narrows in on two of these propositions: decreasing the consumption of animal products and a shift to a more efficient mix of animal products - via the behavioural analysis of engaging in an MRD.

The following section takes a closer look at the meat industry, concerning consumer theory and MRDs. For this study, when concerning the topic of animal products, the focus will be on meat - not milk, eggs or dairy, as meat is the most resources intensive to produce.

2.4. Consumer Literature and MRDs

Meat has become a contested area of food production and consumption in recent years. Historically, meat has been viewed as a scarce and highly appreciated foodstuff, exhibiting images of strength, power and masculinity (Ruby & Heine, 2011). Today, meat forms an integral part of many different human populations' diets, where many people consider a meal without meat as a rare exception (Latvala *et al.*, 2012). However, in recent decades, due to the rise of information regarding the environmental and health implications related to meat production and consumption, meat has become a subject of increasing controversy (Latvala *et al.*, 2012). The following sections outline some of the key areas of literature which consider meat-consumption, regarding patterns, perceptions and behaviours and trends, followed by an introduction to MRDs.

2.4.1. Themes in meat consumption literature

When analysing previous research considering meat consumption patterns and behaviour, there exist a few key themes that have been explored in different contexts. Table 2.2 showcases these themes and the respective authors who have explored them.

Table 2.2. Emerging Themes in Meat Consumption Consumer Literature
(Author's summary)

Theme	Title	Author	Type of Research	Model / Method	Location	n	Future Research
Meat quality	*Consumer perceptions of fresh meat quality: cross-national comparison*	Glitsch, 2000	Quantitative	Survey	Six European countries	NA	None stated
Trends	*Future trends and consumer lifestyles with regard to meat consumption*	Grunert, 2006	Qualitative	Food-related lifestyle model as a conceptual framework	NA	NA	None stated
Meat quality	*Consumer perception of meat quality and implications for product development in the meat sector—a review*	Grunert, Bredahl & Brunsø, 2004	Quantitative	Total Food Quality Model	Europe	NA	Consumer-led product development for differentiated meat products
Meat quality	*Consumer-perceived quality in 'traditional' food chains: The case of the Greek meat supply chain*	Krystallis *et al.*, 2007	Qualitative	Survey	Greece	268	None stated
Risk reduction	*Pure meat – Public perceptions of risk reduction strategies in meat production*	Korzen *et al.*, 2011	Qualitative	Focus groups	Europe	Six focus groups (n = 5-9)	Quantitative studies to assess the prevalence of the perceptions found in the study
Climate, energy and health	*Food, livestock production, energy, climate change, and health*	McMichael, Powles, Butler & Uauy, 2007	Qualitative	Literature review	NA	NA	Development of an effective contraction and convergence policy.
Safety-related meat attributes	*Beliefs, attitude and behaviour towards fresh meat consumption in Belgium: empirical evidence from a consumer survey*	Verbeke & Viaene, 1999	Quantitative	GfK household panel in Belgium	Belgium	320	To compare retail scanner data, household consumption data and self-reported attitude and behaviour by the same sample of respondents.

Changes in dietary practises	*Perceptions and practices of self-defined current vegetarian, former vegetarian, and nonvegetarian women*	Barr & Chapman, 2002	Qualitative	Cross-sectional survey	Canada	118	Collaboration of food industry, government, health, and consumer industries to food safety and animal welfare concerns.
Attitudes	*Food-related lifestyle and health attitudes of Dutch vegetarians, non-vegetarian consumers of meat substitutes, and meat consumers*	Hoek, Luning, Stafleu & de Graaf, 2004	Quantitative	Food-related lifestyle instrument Health consciousness scale	Netherlands	6250	None stated
Benefits & barriers	*Benefits and barriers to the consumption of a vegetarian diet in Australia*	Lea & Worsley, 2003	Quantitative	Survey	Australia	601	Look specifically at the benefits and barriers of plant foods and plant-based diets that may or may not contain some meat
Vegetarianism	*Vegetarianism. A blossoming field of study*	Ruby, 2012	Qualitative	Literature review	Western cultures	NA	A deeper investigation across a broader range of consumers - across non-Western cultures, different age groups, genders and socio-economic status.
Vegetarianism	*Teenage Vegetarianism: Prevalence, Social and Cognitive Contexts*	Worsley & Skrzypiec, 1998	Quantitative	Vegetarianism Questionnaire (VEQ)	Australia	2000	A clear definition for 'vegetarianism', and research into the true prevalence of vegetarianism.
Food categorization	*The effect of categorization as food on the perceived moral standing of animals*	Bratanova, Loughnan & Bastian, 2011	Qualitative	Survey	Unitied States of America	80	None stated
Psychology	*Why we Love Dogs, Eat Pigs and Wear Cows: An Introduction to Carnism, the Belief System that Enables us to Eat Some Animals and Not Others*	Joy, 2011	Mixed Methods	NA	NA	NA	None stated
Psychology	*The meat paradox: how are we able to love animals and love eating animals?*	Loughnan *et al.*, 2012	Qualitative	Literature review	NA	NA	None stated
Psychology	*Real Men Don't Eat (Vegetable) Quiche:*	Rothgerber, 2013	Quantitative	MEJ 27-item scale	Louisville, Kentucky	125	Threaten masculinity and measure changes in reported or desired meat consumption. Prime

	Masculinity and the Justification of Meat Consumption						meat consumption (e.g., through images of meat dishes vs. vegetarian dishes) and measure masculinity. Ask participants to evaluate fictitious vegetarian targets who vary along sex and other dimensions.
Psychology	*Meat, morals, and masculinity*	Ruby & Heine, 2011	Quantitative	Survey	Vancouver, Canada	273	To continue our future studies in both student and non-student samples, in different cultural settings, and with varied methods
Economics	*Meatonomics: How the Rigged Economics of Meat and Dairy Make You Consume Too Much–and How to Eat Better, Live Longer, and Spend Smarter*	Simon, 2013	Mixed Methods	NA	Unitied States of America	NA	None stated
Climate change	*Potential contributions of food consumption patterns to climate change*	Carlsson-Kanyama & González, 2009	Quantitative	Literature review	NA	NA	Research is needed to understand why dietary change is not on the climate policy agenda.
Attitudes	*The role of meat in everyday food culture: an analysis of an interview study in Copenhagen*	Holm & Møhl, 2000	Qualitative	Interviews	Copenhagen	20	Further studies across different types of households, and different genders
Changes in dietary practises	*Diversifying meat consumption patterns: Consumers' self-reported past behaviour and intentions for change*	Latvala *et al.,* 2012	Quantitative	Online questionnaire	Finland	1623	Research concerning how people themselves see the evolvement of their food consumption patterns and the role that various societal discussions and personal preferences play in this evolvement.

While there exists extensive literature on consumer theory within the topic of meat consumption, there is, however, a lack of literature exploring how these themes materialise into changes in meat consumption, more specifically - reduced meat consumption. Latvala *et al.* (2012) noticed this gap, and analysed meat consumption patterns among Finnish consumers, taking past changes and intended future changes into consideration. Regardless, there is a lack of literature which has explicitly explored intentions to reduce meat consumption within the context of the applied behavioural theory. The following section introduces MRDs - a definition and an application within research.

2.4.2. Meat-reduced diets

While some studies have reported a decline in meat consumption from people living in industrialised countries (Fresco, 2009), the global trend is quite the opposite. Recent studies project that the production of meat would need to more than double to keep pace with projected demands resulting from population growth and dietary changes leading up to 2050 (de Bakker & Dagevos 2012; Foley *et al.*, 2011; Garnett, 2009; McMichael *et al.*, 2007; Westhoek *et al.*, 2014). Given all of the implications mentioned above concerning this increasing and growing demand for meat, researchers and policymakers alike should have this at the forefront of their concern. Carlsson-Kanyama and González (2009) concluded their paper *Potential contributions of food consumption patterns to climate change* stating that research is needed to identify why dietary change is not on the climate policy agenda and that more environmentally friendly diets need to be identified. More specifically, Schösler *et al.* (2012: 39) stated that "the high consumption of animal-based proteins, especially meat, has been identified as one of the most relevant topics to be addressed if Western consumers are to shift towards a more sustainable diet".

The need for consumers at large to engage in an MRD has thus been advocated. However, the literature concerning meat consumption (see table 2.2 above) does not explicitly explore how themes materialise into changes in meat consumption, more specifically - reduced meat consumption. If governments, business managers and NGOs alike are to attempt curbing meat consumption and to include it in the climate policy agenda, they will need first to understand what drives the intentions of people to engage in an MRD, so that messages and interventions can be built which promote meat-reduction behaviour (Yzer, 2012). Applying behaviour-prediction theory to the behaviour of engaging in an MRD will enable insights into the key areas of cognition regarding this behaviour, and thus a clear view of which areas need addressing in order to make this behaviour seem more favourable (Yzer, 2012). The first step necessary is to define the behaviour of engaging in an MRD.

MRDs can be defined as diets which “limit the frequency, type, and/or portion of meat in one's average diet” (Latvala *et al.*, 2012: 98). They are inclusive of a continuum of diet practices including low-meat/plant-based diets, forms of semi-vegetarianism and

'flexitarianism', and pescetarianism, Lacto-Ovo-vegetarianism, and veganism (Ruby, 2012). Past research has shown the leading motivations for consumers to engage in an MRD being personal health, environmental sustainability, and animal welfare (Rothgerber, 2013; Ruby; 2012).

As mentioned, an essential step in applying the behavioural prediction theory is clearly defining the behaviour that one is wanting to promote or change. This behaviour needs to be consistent with the four-component view, explaining behaviour as an *action* directed at a *target*, performed in a particular *context*, at a certain point in *time* (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010). A change in any one of these components creates a different behaviour. The more specific the definition of behaviour, the more likely the behavioural recommendations will be interpreted as intended (Yzer, 2012). Meat-reduction behaviour is a relatively new area of research; as a result, this behaviour has not been clearly defined in previous studies. Ruby (2012) has explored the general topic of Vegetarianism, however, there is still lacking research considering the behavioural intentions to engage in an MRD. Due to this behaviour being undefined in previous research, a more general definition of these four components (action, target, context and time) was adopted when defining the behaviour in this study, giving future studies the opportunity to make these components more specific and to test this behaviour within different contexts. For this study, the behaviour under question will be as follows: engaging *(*action*)* in an MRD *(*target*)* as part of one's weekly routine *(*context and time*)*.

The following section will give further insight into the implications of this research for governments, business managers and NGOs.

2.5. Implications Regarding the Sustainability Concern of Meat

With the above arguments and literature in mind concerning the call to reduce the amount of meat being consumed, the below sections detail the implications for governments, business managers and NGOs.

2.5.1. Implications for governments

When considering sustainability efforts, Pönitzsch and Kniebes (2013) state the importance of changing the way we view success - not only as a measure of GDP but also as a measure of social and environmental prosperity. When it comes to sustainable consumption, the government's role in promoting and enforcing this view of success and this behaviour is crucial. Rethinking governmental regulations and incentives for agricultural production is key to promoting sustainable consumption within the food and meat industry at large (Pönitzsch & Kniebes, 2013). If small-scale traditional pastoralists are to try to compete in the larger agricultural market, they will need the assistance of governmental regulation (Bouwman *et al.*, 2005). In his book, *'Meatonomics'* Simon (2013) explains the crucial role that government subsidy,

legislation and regulation play in the provision of meat, eggs and dairy at prices that consumers become accustomed to, and prices that further result in the smaller farmers being unable to compete. Simon (2013) further states that the combination of legislation, messaging strategies and price control deprive consumers of the ability to make informed decisions about what and how much to eat. Governments, therefore, need to shift their view of success in this industry away from pure GDP, and towards social and environmental gains too. The government should reconsider the economic regulations that are currently active and the impact they are having on the growing demand for animal products. Governments should further re-consider their messaging strategy, and the messaging strategy they enable the meat industry to have, regarding animal products and the consumption thereof.

2.5.2. Implications for business managers

Within the scope of this research, 'business managers' refers broadly to all those involved in the agricultural supply chain. As mentioned above, sustainable practices are a critical competitive strategy for businesses (Kumar *et al.*, 1997; Peattie *et al.*, 2002). The resulting implication for business managers is that they need to ensure that they are adopting long-term thinking: adopting a triple bottom line approach (considering people, planet and profit in their operations) as well as ensuring that their stakeholder approach focuses on value beyond financial gain in order to maintain competitive advantage (Benn *et al.*, 2014). Business managers should further ensure that their message strategies are not promoting unsustainable behaviour, such as the over-consumption of meat. Business managers should further be aware of how to market meat-alternatives, and what messages strategies they should adopt in order to promote MRDs.

2.5.3. Implications for NGOs

Similarly, NGOs should hold businesses and governments accountable for their behaviour when it is not considered sustainable. NGOs further have the role of raising awareness and education the general public about the unsustainability of the high levels of meat consumption, and ways in which to adopt a more sustainable lifestyle. The findings of this paper thus to aim to aid the ongoing global debate between policymakers, academics and practitioners on this topic (Macdiarmid *et al.*, 2016), and to ultimately aid the promotion of this behaviour - from governments, business managers and NGOs alike.

2.6. Conclusion

The current levels, and predicted future levels, of meat consumption, are unsustainable - where many researchers have signified the importance of a reduction in meat consumption. This study, therefore, analysed the behavioural intentions of "engaging in an MRD as part of one's weekly routine", by applying behavioural

prediction theory to explain the key drivers of intention behind this behaviour. The implications of doing so would be to enable governments, business managers and NGOs to understand what drives people's intentions to engage in an MRD, so that strategic messages and interventions can be built which promote this behaviour, thereby aiding sustainable consumption. The following chapter provides detail on the behavioural theory applied in this research, specifying how it will isolate the key determinants supporting the behavioural intention to engage in an MRD.

2.7. Chapter Summary

Sustainable consumption has been defined as consumption that is socially beneficial, economically viable and environmentally benign, where sustainable products contribute to one or a combination of these aspects (Vermier & Verbeke, 2006). Peattie *et al.* (2002: 12) define sustainable marketing as "creating, producing and delivering sustainable solutions with higher net sustainable value, while continuously satisfying customers and other stakeholders". Sustainable marketing is no longer an obligation, but rather a requirement - as without it, businesses lose competitive advantage (Paul & Rana, 2012; Peattie *et al.*, 2002). This requirement for businesses to adopt a sustainability marketing approach has far-reaching implications for governments, business managers and NGOs alike.

The high and increasing consumption of meat and meat products has been cited as one of the most critical areas to be addressed if we are to meet a sustainable future diet (Reisch *et al.*, 2013; Schösler *et al.*, 2012). Meat consumption is an important area within the topic of sustainable consumption due to the high levels of consumption being criticised for ethical, environmental and social reasons (Apostolidis & McLeay, 2016). These concerns have stimulated calls to reduce the amount of meat we consume (Macdiarmid *et al.*, 2016). Despite these concerns, the rates of meat consumption are expected to significantly increase leading up to the year 2050, fueled by a growing population, rising incomes and urbanisation, having significant implications on sustainable consumption (Foley, 2017; Gardner, 2013; Searchinger *et al.*, 2013). While there exists extensive literature on consumer theory within the topic of meat consumption, there is, however, a lack of literature exploring how these themes materialise into changes in meat consumption, more specifically - reduced meat consumption. This study, therefore, analysed the behavioural intentions of "engaging in an MRD as part of one's weekly routine", by applying behavioural prediction theory to explain the key drivers of intention behind this behaviour. The implications of doing so would be to enable governments, business managers and NGOs to understand what drives people's intentions to engage in an MRD, so that strategic messages and interventions can be built which promote this behaviour, thereby aiding sustainable consumption.

The next chapter describes how this paper has made use of behavioural theory to gain deeper insight and understanding of what drives people's intentions to engage in an

MRD. Behavioural theory is useful for this kind of research as it helps identify respondents underlying intentions to engage in an MRD so that these key behavioural determinants can be isolated, understood, and used to develop interventions and message strategies that promote this behaviour.

CHAPTER 3

BEHAVIOURAL PREDICTION THEORIES

3.1. Introduction

Chapter 2 emphasised that if a sustainable future diet is to be reached, we need to address the current and growing rates of meat consumption (Reisch *et al.*, 2013; Schösler *et al.*, 2012). There is a lack of literature exploring how behavioural themes materialise into changes in meat consumption - specifically reduced meat-consumption. Yzer (2012) stated that if one is to create message strategies or interventions that promote a particular behaviour, one first needs to understand the underlying key determinants of that behaviour. This study, therefore, analysed the behavioural intentions of "engaging in an MRD diet as part of one's weekly routine", by applying behavioural prediction theory to explain the key drivers of intention behind this behaviour.

The below sections detail the usefulness of behavioural prediction theory as an intervention tool - giving insight into the reasoned action approach (Fishbein & Ajzen, 2010) and the various models which use this approach to understand behaviour: the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), the Theory of Planned Behaviour (Ajzen, 1985, 1991) and lastly, the Integrative Model of Behavioural Prediction (Fishbein, 2000; Fishbein & Cappella, 2006; Kasprzyk, *et al.*, 1998). An argument for the use of the Integrative Model of Behavioural Prediction in this study was made, after which the model's variables were elaborated upon within the context of the behaviour of engaging in an MRD as part of one's weekly routine.

3.2. Behavioural Prediction Theory as an Intervention Tool

The past few decades have seen a growing recognition of behavioural theory in the usefulness of developing behaviour change interventions (Fishbein & Cappella, 2006), where modifying people's behaviour has been stated as being at "the core of many efforts to improve the human condition" (Ajzen, 2011: 74). Interventions can take many shapes, ranging from individual counselling, small group encounters, public service announcements to national campaigns (Ajzen, 2011). Social psychology plays a vital role in these interventions by providing suitable conceptual frameworks and methodological tools to assist in the design and evaluation of these interventions (Ajzen, 2011). Behaviour change and behaviour prediction theories are useful because they are a tool for identifying crucial behavioural determinants and can be viewed as theories of message and intervention strategy to promote or change a desired behaviour (Yzer, 2012). The below sections take a closer look at two of the most commonly applied behavioural prediction theories: The Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and The Theory of Planned Behaviour (Ajzen, 1985, 1991), after which a definition for the IMBP (Fishbein, 2000;

Fishbein & Cappella, 2006; Kasprzyk *et al.*, 1998) is given and defined within the scope of this research.

3.2.1. A reasoned action approach to understanding behaviour

Table 3.1 below describes some of the most commonly applied behavioural prediction theories and models.

Table 3.1: A Table Showing the Different Theories and Models of Behavioural Prediction as Presented by Past Research
(author's own summary)

THEORY / MODEL	VARIABLES	AUTHOR(S)
Theory of Reasoned Action	Attitudes, Subjective Norms, Intention to Perform the Behaviour	Ajzen & Fishbein (1980); Fishbein & Ajzen (1975)
Theory of Planned Behaviour	Attitudes, Subjective Norms, Perceived Behavioural Control, Intention to Perform the Behaviour	Ajzen (1985, 1991)
Theory of Subjective Culture and Interpersonal Relations	Intentions, Habits, Facilitating Factors, Consequences, Social Influences, Emotions	Triandis (1972,1977)
Transtheoretical Model of Behavior Change	Precontemplation, Contemplation, Preparation, Action, Maintenance, Termination	Prochaska & DiClemente (1986, 1992), Prochaska, DiClemente, & Norcross (1992), Prochaska, Redding, Harlow, Rossi, & Velicer (1994)
Information/Motivation/ Behavioral-skills Model	Information, Motivation, Behavioural Skills	Fisher & Fisher (1992)
Health Belief Model	Perceived Susceptibility, Perceived Severity, Perceived Benefits, Perceived Barriers, Cues to Action, Self-Efficacy	Becker (1974), Rosenstock, Strecher & Becker (1988)

Social Cognitive Theory	Reciprocal Determination, Outcome Expectations, Self-Efficacy, Collective Efficacy, Observational Learning, Incentive Motivation, Facilitation, Self-Regulation, Moral Disengagement	Bandura (1989, 2001)
Integrative Model of Behavioural Prediction	Attitude, Norms, Personal Agency, Environment, Knowledge & Skills, Intention	Fishbein (2000), Fishbein & Cappella, (2006), Kasprzyk *et al.* (1998)

Of these models above, the most commonly applied include the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and the Theory of Planned Behaviour (TPB) (Ajzen, 1985, 1991) - both of which follow the reasoned action approach to understanding behaviour. The reasoned action approach holds that although an infinite number of variables exist which may influence the particular behaviour, "only a small number of variables need to be considered to predict, change, or reinforce a particular behaviour in a particular population" (Yzer, 2012: 44). The reasoned action approach states that the most critical determinant of behaviour is the behavioural intention, where some social psychologists have argued that behavioural intentions are the single strongest contributing factor to behaviour (Fishbein & Ajzen, 2010).

The TRA, as seen in the grey blocks in Figure 3.1 below, suggests that a person's behaviour is determined by their intention to perform that behaviour, and that intention is, in turn, a function of their attitude towards the behaviour and the subjective norms surrounding the behaviour (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). Post the development of the TRA, Ajzen (1985, 1991) discovered that behaviour was not wholly voluntary and under one's full control, which resulted in a third additional variable being added to the model: perceived behavioural control, and the creation of TPB, as seen in Figure 3.1.

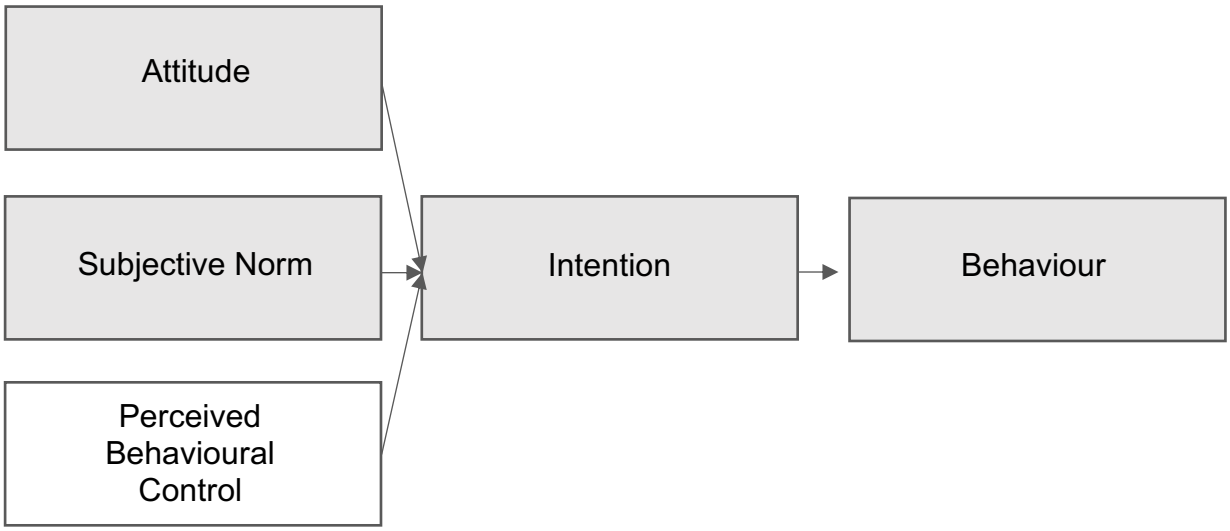

Figure 3.1: The Theory of Reasoned Action and The Theory of Planned Behaviour
SOURCE: Ajzen (1991)

A general rule for the TPB model is that the more favourable one's attitude and subjective norm towards to behaviour, the greater the perceived behavioural control, and therefore the stronger one's intention to perform the behaviour (Yzer, 2012). Since its introduction 33 years ago (Ajzen, 1985), the TPB has become one of the most frequently applied behavioural prediction models (Ajzen, 2011). As of 2018, Ajzen's (1985, 1991) TPB has been cited over 55,000 times on Google Scholar. The wide application of the TPB has also caused the model to be the target of much criticism and debate - where some researchers have rejected it as an adequate explanation of human social behaviour. Critics tend to deny the importance that consciousness plays as a causal behaviour agent, viewing much of human behaviour as a dependent variable of implicit attitudes and other unconscious mental processes (Wegner, 2002). Other critics have voiced that the TPB and other reasoned action models are "too 'rational', not taking sufficient account of cognitive and affective processes that are known to bias human judgements and behaviour" (Ajzen, 2011: 1115). Ajzen (2011: 1116) combats this argument stating that "there is no assumption in the TPB that behavioural, normative and control beliefs are formed in a rational, unbiased fashion or that they accurately represent reality".

In 1992 the National Institutes of Mental Health (NIMH) sponsored a workshop with the primary architects of some of the theories and models mentioned in table 3.1 above, with the goal of developing a theoretical framework to integrate their constructs. Coinciding with the recommendations of this workshop, Kasprzyk *et al.* (1998) proposed the Integrative Model of Behavioural Prediction (IMBP) - including elements from all of the above suggested theoretical models, providing strong support for an integrated model. Fishbein and colleagues saw an increased interest in this integrated model focusing primarily on the determinants of behavioural intention, and further

refined the IMBP (Fishbein, 2000; Fishbein & Cappella, 2006). The IMBP is explained in further detail below.

3.2.2. The Integrative Model of Behavioural Prediction

The IMBP (Fishbein, 2000; Fishbein & Cappella, 2006; Kasprzyk *et al.*, 1998) is the most recent formulation of Fishbein and Ajzen's (2010) reasoned action approach, stating that although an infinite number of variables may in some way influence behaviour, a small number of variables can be identified that together explain a significant proportion of variance in the data (Fishbein, 2008; Fishbein & Ajzen, 1975, 2010). The IMBP combines the constructs of some of the key theories mentioned in Table 3.1 above, resulting in measures of the central constructs of intention (attitudes, perceived norms and personal agency) both indirectly, recognising that each construct is a function of underlying salient beliefs, as well as directly. The IMBP has been explained as "the two-component theory of planned behaviour" as it takes the three central components of the TPB model (as seen in the grey blocks below in Figure 3.2) and further divides them into two parts. These 'two components' for each construct are as follows: attitude (experiential attitude and instrumental attitude), subjective norm (injunctive norm and descriptive norm) and personal agency (perceived control and self-efficacy) (Elliot & Ainsworth, 2012). Figure 3.2 to follow thus gives a full view of the IMBP - showing its development from the reasoned action approach: starting with the TRA model (in grey), after which the ‘perceived control' variable was added for form the TPB (in blue). Lastly, each of the fundamental constructs of the TPB was broken into two and measured indirectly and directly to form the IMBP (in purple). The IMBP further includes moderating variables impacting the intention-behaviour relationship.

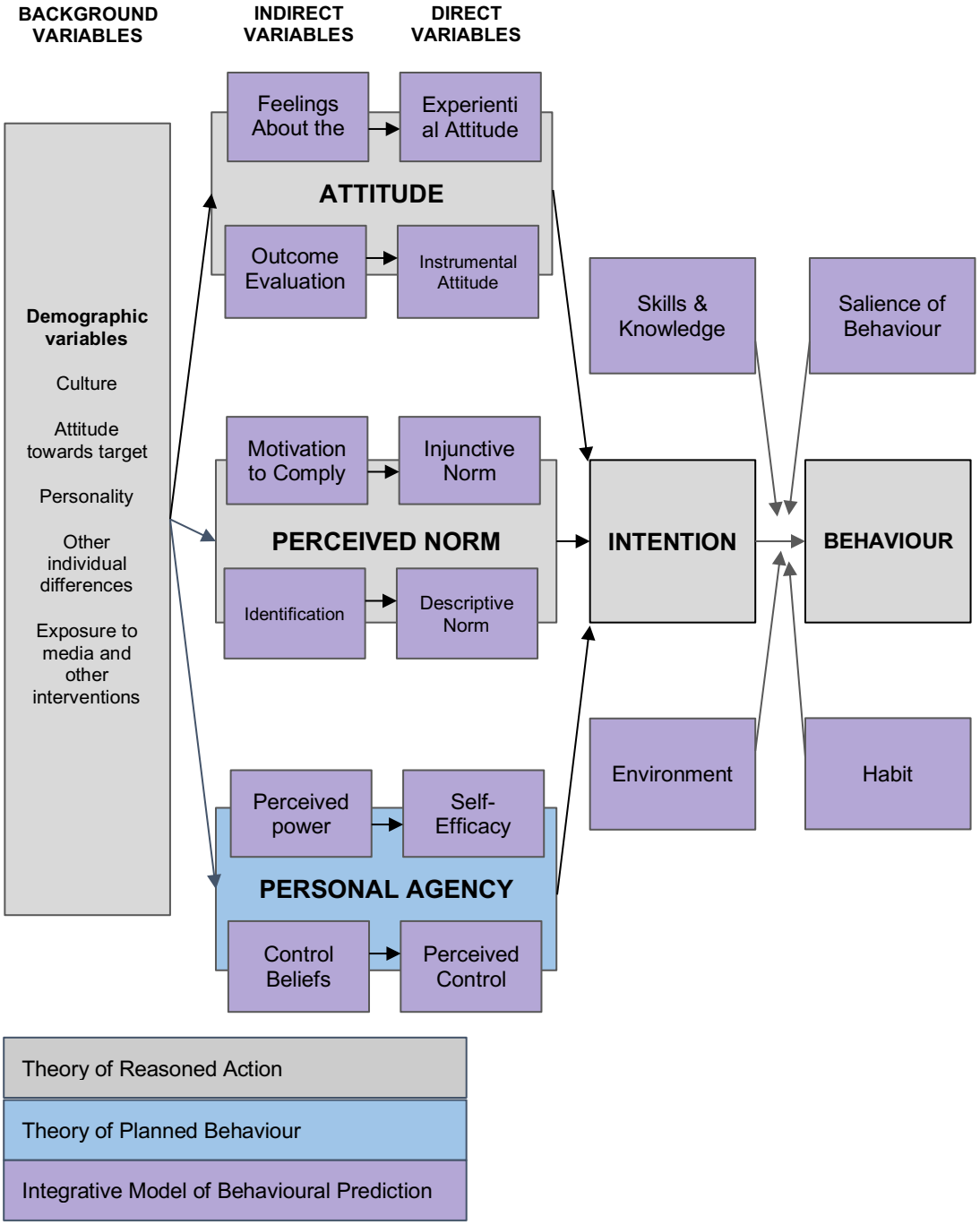

Figure 3.2: The Integrative Model of Behavioural Prediction
SOURCE: Fishbein, 2000; Fishbein & Cappella, 2006; Kasprzyk *et al.*, 1998

One should recognise that there are many influences which determine whether a person will act on their intentions, and as a result, intentions alone cannot ensure behaviour (Fishbein & Cappella, 2006; Gollwitzer, 2009). While the TPB constructs sufficiently determine intention, the TPB model does not explain why some people act on their intentions, and others do not (Fishbein, Hennessy, Yzer & Douglas, 2003). The IMBP further extends the TPB by postulating that four more variables are

responsible for moderating the intention-behaviour relationship: skills and knowledge, the salience of behaviour, environment, and habit (Fishbein & Ajzen, 2010; Kreijns, Vermeulen, Kirschner, Buuren & Acker, 2013). As an effort to provide deeper insight into this intention-behaviour gap, the IMBP includes a socio-ecological perspective, recognising that even with the strongest intentions, there may be a lack of prerequisite skills and the existence of environmental constraints that may inhibit the performance of the behaviour (Fishbein *et al.*, 2003). These moderating variables are an important inclusion, as the behavioural misperformance may not be an issue of lacking intention, but one of competence (skills and abilities) or means (environmental constraints or facilitators) (Yzer, 2012).

The IMBP explains that "intention to perform a behaviour follows reasonably (but not necessarily rationally) from specific beliefs that people hold around the behaviour", as seen by the series of ‘indirect variables' in Figure 3.2 (Yzer, 2012: 23). In this context, "reasoned" means that if people perceive the performance of a particular behaviour as favourable, then they are more likely to perform the behaviour - so the IMBP accounts for any behaviour, regardless of whether or not the behaviour is rational or irrational (Yzer, 2012). The IMBP can identify the most critical determinants of a given behaviour within any specific population and proposes that messages/interventions should address the salient beliefs supporting these determinants in order to promote the desired behaviour (Yzer, 2012). For this reason, the IMBP has been seen as a valuable behavioural prediction model within the area of health behaviour, where a list of applications can be seen in Table 3.2.

Table 3.2: Applications of the IMBP

Behaviour	Author	Aim	Location	n (Phase 1)	n (Phase 2)	Recommendations for Future Research
Sleep behaviour	Robbins and Niederdeppe, (2015)	To examine cognitive predictors of intentions to engage in healthy sleep behaviour among a population of college students	New York	31	365	In-depth, qualitative methods to better understand the roles that beliefs play in understanding sleep behaviour. Develop more appropriate semantic differential scale pairs to measure the direct IMBP variables. Future work should attempt to identify better measures of the perceived social norm construct that are consistent and have strong inter-item reliability.
HIV/Aids testing	Diteweg *et al.* (2013)	To measure the extent to which the IMBP variables predict HIV/AIDS prevention behaviour.	South Africa	NA	92	Including additional variables within the IMBP (e.g. fear, gender) Use the questionnaire from this study to gather longitudinal research.
Designing health messages	Yzer (2012)	To explicate how the IMBP can be used in health interventions to design maximally effective	NA	NA	NA	NA

		messages for different populations.				
Media and sexual behaviour	Bleakley, Hennessy, Fishbein and Jordan, (2011)	To identify which beliefs are influenced by exposure to sexual media.	United States of America	NA	460	Research conducted with larger samples of adolescents, examining racial differences to determine if these findings hold across different racial and ethnic groups.
Binge drinking	Braun (2012)	To assess the IMBP and its ability to predict binge drinking among college students.	United States of America	32	350	To determine the efficacy of the IMBP constructs which were found to be nonsignificant in this study. How binge drinking rates differ during the fall, spring, and summer semesters.
Decision support interventions in health care	Frosch *et al.* (2009)	To describe how the IMBP can be applied to the development and evaluation of decision support interventions..	NA	NA	NA	The behavioural impact that decision support interventions on a patient before consultation have on subsequent clinical encounters.
Condom usage	Kasprzyk, Montaño and Fishbein (1998)	To use a prospective design to test the IMBP for prediction of condom use among four groups who are at higher risk for the acquisition of HIV.	United States of America	171	685	NA

A pragmatic reason for focusing on this model is because it has a well-developed approach for measuring its central constructs (attitudes, perceived norms and personal agency) which can be adapted to an investigator's specific behaviour of interest (Frosch *et al.*, 2009). This approach involves a two-phase methodology, 1) elicitation study and 2) population survey. The elicitation study has the aim of determining the behavioural, normative, and control beliefs of a specific population, obtaining substantive information about the cognitive foundation of people's behaviour (Ajzen & Fishbein, 1980). To determine a population's salient behavioural beliefs, Ajzen and Fishbein (2010) recommend that researchers: a) conduct an elicitation study with open-ended questions assessing a population's behavioural, normative and control beliefs, b) perform a content-analysis to rank-order the beliefs, and c) determine the 5-10 most salient beliefs. The population survey, phase two, is then a comprehensive measure of all variables within the IMBP - where the findings from the elicitation study guide indirect measures. The measurement of each phase has been described in further detail in sections to follow.

The following section takes a closer look at the variables within the IMBP, within the context of MRDs.

3.3. Applying the IMBP to MRDs

Chapter 2 has already detailed that reduced meat consumption is an important topic that needs to be addressed if we are to strive towards a sustainable future diet (Foley *et al.*, 2011; Carlsson-Kanyama & González; 2009, Schösler *et al*., 2012). In order to create message strategies and interventions which would promote reduced meat consumption, researchers and policymakers would need a clear view on the key constructs and salient beliefs that aid intention to engage in an MRD. The IMBP can identify the most critical determinants of a particular behaviour (in this study: the behaviour of engaging in an MRD as part on one's weekly routine) within any specific population and proposes that messages/interventions should address these determinants in order to promote this desired behaviour (Yzer, 2012). The below sections give an overview of some of the literature which exists concerning the key constructs within the IMBP, within the context of MRDs, as well as the hypothesised relationships of these constructs expected to be found in this study.

3.3.1. Attitude towards engaging in an MRD

Attitude can be defined as "the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question" (Ajzen, 1991: 188). Regarding the IMBP, attitude is further analysed in terms of its two components: experiential attitude and instrumental attitude (which are measured both indirectly and directly), as seen below.

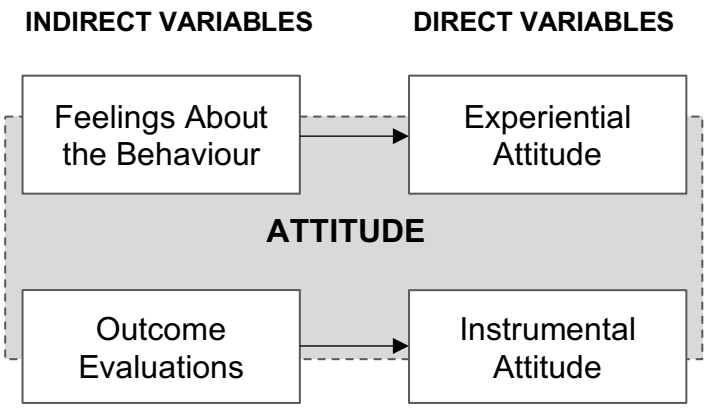

Figure 3.3. Attitude - A Two-Component Illustration
SOURCE: Fishbein & Ajzen (2010)

Experiential attitude refers to an individual's emotional response to the idea of performing the behaviour, and instrumental attitude refers to an individual's overall perception of favourableness or un-favourableness towards a particular behaviour (Fishbein & Ajzen, 2010). Like most psychologists who take a cognitive-based approach to attitude, Fishbein and Ajzen (1975) stated, via their expectancy-value model of attitudes, that attitudes develop reasonably from the beliefs that people hold about the object of the attitude. Each belief links the attitude to a particular outcome, being either favourable or unfavourable. Concerning the behaviour under question, attitude is determined by the belief that engaging in an MRD as part of one's weekly routine will lead to either "good" outcomes, resulting in the positive attitude, or "bad" outcomes, resulting in negative attitude (Fishbein & Cappella, 2006).

Previous studies have cited consumer's positive outcomes associated with engaging in an MRD or meat-free diet, with these key associations consistently being: improved animal welfare, improved environmental sustainability and improved personal health (Bar & Chapman, 2002; Hoek, Luning, Stafleu & de Graaf, 2004; Ruby, 2012; Vanhonacker, Verbeke, Van Poucke & Tuyttens, 2007). These positive outcomes are likely to have a positive impact on one's intention to engage in an MRD as part of their weekly routine but might not be strong enough to materialise into behaviour. Grunert (2006) elaborates by explaining why some attitudes have little to no impact on our behaviour, stating that some concerns form ‘weak attitudes,' i.e. they are not based on embedded associations formed from one's personal experience. This means that "the less we know, and the more what we know is based on indirect sources, the less these attitudes will affect our behaviour" (Grunert, 2006: 157). Grunert (2006: 157) stated that "the current situation is therefore that many people have attitudes towards meat production, but that for most consumers these will be weak and will, in most situations, not affect their purchase behaviour". This statement as can be mirrored in the low market shares of, for example, organic and free-range meat. Holm and Møhl (2000) found that consumers themselves freely remarked that there was no or little link between the negative image of meat production methods and their purchase

behaviour. Some of the negative outcome associations consumers have when considering engaging in an MRD have been cited as health-related reasons (weakness, fatigue and anaemia), missing the taste of meat, changes in living situations (e.g. cooking for family members who eat meat), time-consuming, specific nutrition concerns and unwillingness to change eating habits (Barr & Chapman, 2002; Lea & Worsley, 2003). Hoek *et al.* (2004: 271) concluded that in order for a wider acceptance of meat substitutes and to get more people to engage in MRDs, products "should not rely exclusively on ethical or health claims" - supporting Grunert's (2006) statement that consumers already hold attitudes related to health and ethics, but they are weak and therefore have little impact on behaviour. Similarly, Grunert (2006: 157) stated that "attitudes towards meat production will then not generally affect buying behaviour, but they can be regarded as a potential that can be tapped by creative marketing and product development."

In their paper *The Meat Paradox: How Are We Able to Love Animals and Love Eating Animals?,* Loughnan *et al.* (2012:16) further explain that meat eating is undeniably a morally problematic issue, and that "even the most hardened meat lover probably does not want to think about a cow while eating a steak". They go on to explain that meat eaters feel tension (whether conscious or unconscious) due to their beliefs (that animals should not be harmed) not matching their actions (I eat meat). This tension results in a state of cognitive dissonance - " an undesirable state that people want to leave", resulting in people either changing their eating habits or changing their beliefs about animals to fit their palate (Loughnan *et al.*, 2012: 16). An example of how beliefs about animals are changed in order to ease a meat-consumers cognitive dissonance can be seen in changing one's frame of reference for individual animals (i.e. a dog is viewed as a pet, a horse is viewed as a tool, and a cow is viewed as food), which has been seen to have far-reaching ramifications for how animals are treated (Herzog & Foster, 2010; Bratanova *et al.*, 2011).

To summarise, previous research has shown that consumers generally hold positive attitudes towards reducing their meat consumption, thereby positively aiding their intention to engage in MRDs. However, these attitudes are weak and are likely not to impact behaviour. Seeing as attitude is not a direct antecedent of behaviour, but instead of intention in the IMBP model, the following hypothesis can be formed:

H_1A: Direct experiential attitude towards engaging in an MRD will have a significant, positive impact on one's intention to engage in an MRD as part of one's weekly routine.

H_1B: Direct instrumental attitude towards engaging in an MRD will have a significant, positive impact on one's intention to engage in an MRD diet as part of one's weekly routine.

3.3.2. Norms towards engaging in an MRD

Ajzen (1991: 195) stated that "normative beliefs are concerned with the likelihood that important referent individuals or groups approve or disapprove of performing a given behaviour". Ajzen (1991: 188) further stated that normative beliefs are viewed as determining subjective norms: "the perceived social pressure to perform or not to perform the behaviour". Regarding the IMBP, the perceived norms construct is further analysed in terms of its two components: injunctive norms and descriptive norms (which are measured both indirectly and directly), as seen below.

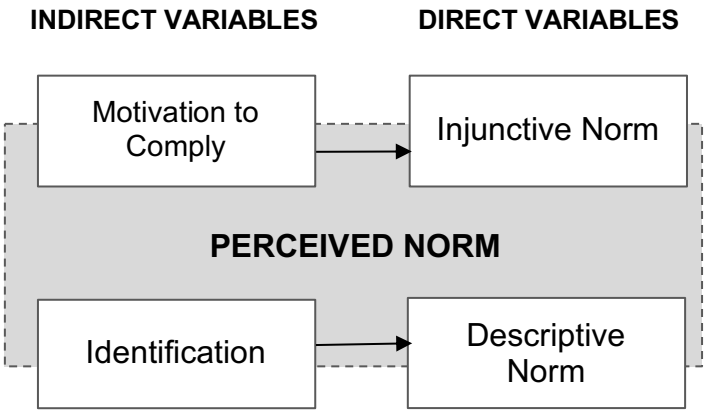

Figure 3.4. Perceived Norms - A Two-Component Illustration
SOURCE: Fishbein & Ajzen (2010)

Injunctive norms refer to the beliefs and motivation to comply with others' expectations surrounding the behaviour of interest, and whether or not the behaviour is deemed acceptable (i.e. how we ought to behave) (Fishbein & Ajzen, 2010). Descriptive norms refer to the identification with key referent individuals, and beliefs about others' behaviours (i.e. how we behave) (Fishbein & Ajzen, 2010). Lindquist (2013) states that when there is a difference between how we think we ought to behave (injunctive norms) and how we behave (descriptive norms), tension occurs.

When looking at the behaviour of engaging in an MRD, an essential factor about social norms was mentioned by Joy (2011: 105), "social norms aren't merely descriptive - describing how the majority of people behave - they are also prescriptive, dictating how we ought to behave". In her book *Why We Love Dogs, Eat Pigs, and Wear Cows*, Joy (2011: 97) refers to the "three Ns of justification: eating meat is normal, natural and necessary". This is pivotal to the norms surrounding meat reduction, as these three Ns are "so ingrained in our social consciousness that they guide our actions without our even having to think about them" (Joy, 2011: 97). Eating meat has been entrenched by culture, across the world, and is further a source of pleasure for many people - reinforcing the normative beliefs that meat should be a central part of our human diet (Lindquist, 2013). These norms have determined the way we frame our diets and have influenced the way in which we perceive the control we have over the

food we buy and consume. By interviewing current vegetarians about the reactions of their friends and family to their dietary choice, Lindquist (2013) discovered that there were many mixed reviews. Lindquist (2013:11) suggests that overall, there is still much confusion, and to some extent, "an open dislike of vegetarianism" - where vegetarians/vegans are perceived to be challenging the status quo, often coming across as "angry" or "judgmental". Respondent's in Lindquist's (2013:11) study felt like these stereotypes had been created due to people having a "fear of alternative lifestyles". Further, the vegetarians/vegans in Lindquist's (2013) study further showed they actively downplayed their MRD identity, a technique which Goffman (1963) calls 'passing': actively downplaying a potentially stigmatised trait.

The complex nature of the norms surrounding reduced-meat consumption can further be broken down and analysed from a gender perspective. Rothgerber (2013) found that males are much more likely to use strategies such as endorsing pro-meat attitudes, denying animal suffering, believing that animals are lower in a hierarchy than humans, believing it is human fate to eat animals, and providing religious and health justifications for eating animals - strategies of which have been found to be related to masculinity. Adams (1991) argues that meat is a symbol of patriarchy, due to its long-standing associations with manhood, power, and virility, citing records from Western European, African, and Asian cultures. Sobal (2005) found that in contemporary Northern America, meat is often considered an archetypal food for men, where meals without meat are not seen as "real food". Male justification has therefore been found to be correlated with higher meat consumption (Adams, 1991; Rothergerber, 2013; Ruby & Heine, 2011).

Further complexity of norms around meat eating can be seen from a cultural perspective. In the book: *Meathooked: The History and Science of Our 2.5-million-year Obsession with Meat*, Zaraska (2016) stated that culture is the one element that is most responsible for keeping us hooked on meat. Zaraska (2016) refers to belief systems such as "you are what you eat", stating examples such as how in ancient Egypt, once a year kings would slaughter the bull-god Apis and eat its flesh as a way to receive the animal's fierceness. The scarcity principle, an economic principle in which opportunities are perceived to be more valuable when they are in limited supply and high demand, further explains the value humans have placed on meat over time (Cialdini & Cialdini, 2007). Zaraska (2016) referred to the scarcity principle when talking about cultural norms around meat, saying that meat has been a rare and expensive good for most of human history, and as a result, different cultures all across the world tend to desire it more. Furthermore, treating meat as a reward - a special food eaten on occasions and celebrations, further boosts its power as something to crave (Zaraska, 2016).

Norms have therefore been found to play an essential role within the realm of meat consumption. The high 'social value' of eating and the sharing meat was found by Joyce *et al.* (2012) to be a major reason why many people are reluctant to engage in

various forms of MRDs. Joyce *et al.* (2012) found that the principal motivation to not reduce one's meat consumption was "pleasure, social value and tradition" - highlighting the importance of perceived norms on one's behavioural choice. Following this line of thinking, having family and friends that support one's dietary choice has been seen to be a significant factor contributing to one's decision to maintain meat-free and MRDs (Ruby, 2012). Fedusiv and Bai (2016) found norms to be rather complicated to understand - as the respondents in their study tended to neglect professional healthy eating recommendations yet were drawn to follow the advice and beliefs of their friends and family.

To summarise, perceived norms have a significant impact on one's intention to engage in an MRD in one's weekly routine, and the direction of this relationship is dependent on whether or not one's referent individuals approve or disapprove of the behaviour. Existing research has shown that MRD behaviour is still widely misunderstood, and overall has been subject to dislike. General attitudes towards MRDs show that people do positively evaluate MRD when thinking about how people ought to behave, leading to the following hypothesis considering injunctive norm:

H_2A: Direct injunctive norms towards engaging in an MRD will have a significant, positive impact on one's intention to engage in an MRD as part of one's weekly routine

Comparatively, existing research has shown that many people hold a "dislike" towards MRDs and that while some positive beliefs may hold, they often do not translate into the behaviour of engaging in an MRD. The results are that many of one's key referent groups/individuals are unlikely to mirror this behaviour. This results in the following hypothesis on descriptive norms (i.e. how we behave):

H_2B: Direct descriptive norms towards engaging in an MRD will not have a significant impact on one's intention to engage in an MRD as part of one's weekly routine

3.3.3. Personal agency towards engaging in an MRD

Personal agency refers to an individual's capability to originate and direct actions for given purposes (Fishbein & Ajzen, 2010). Throughout the different behavioural prediction models, this construct has been called many different things, including: "self-directedness", "choice", "decision freedom", "mastery", "autonomy" and "self-determination" (Fishbein & Ajzen, 2010). In the TPB model, this variable is called "perceived behavioural control" and referred to "people's perception of the ease or difficulty of performing the behaviour of interest" (Ajzen, 1991: 183). As previously mentioned, a general rule is that the more favourable one's attitude and subjective norm towards to behaviour, the higher the perceived behavioural control, and therefore the stronger one's intention to perform the behaviour (Yzer, 2012). Regarding the IMBP, the personal agency construct is further analysed in terms of its

two components: self-efficacy and perceived control (which are measured both indirectly and directly), as seen below.

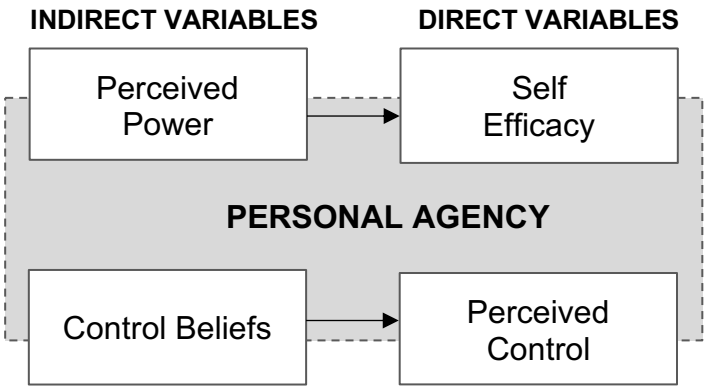

Figure 3.5. Personal Agency - A Two-Component Illustration
SOURCE: Fishbein & Ajzen (2010)

Self-efficacy refers to the extent to which the individual feels capable of performing the behaviour, and perceived control refers to the individual's amount of perceived control over the behavioural performance (Fishbein & Ajzen, 2010; Glanz, Rimer & Viswanath, 2008; Yzer, 2012). Control beliefs determine perceived control - an individual's perception of the degree to which environmental factors will make it easy/difficult to perform the given behaviour (Glanz *et al.*, 2008). One can, therefore, look to literature citing perceived enablers and barriers towards engaging in a meat-reduced diet as part of one's weekly routine.

Lea *et al.* (2006) conducted a survey that considered the barriers and perceived benefits of adopting a more plant-based diet. They found the main barriers to be as follows: convenience and ease of preparation, lack of information - such as nutrition and ease of preparation, the unwillingness to change eating habits, and the fear that family would not change their eating habits too. A similar study was conducted by Lea and Worsley (2003) where respondents in South Australia were questioned on their perceived barriers and benefits of adopting a 'vegetarian diet', where the main barriers were found to be as follows: the enjoyment of eating meat (78%), not wanting to change eating habits (56%), thinking that humans were meant to eat meat (44%), family consumption of meat (43%) and needing more information on vegetarian diets (43%). Furthermore, individuals have been seen to show a higher level of perceived control over their diet, compared to adopting a diet different from theirs (Povey, Wellens & Conner, 2001). Povey *et al.* (2011) also found perceived behavioural control to be the strongest predictor of intention to follow a vegetarian or vegan diet. It has been argued that behaviour change only occurs when perceived benefits outweigh perceived barriers, hence the link between personal agency with attitude and perceived norms (Lea & Worsley, 2003). It is important to note that one should not

confuse self-efficacy with knowledge and skills related to an MRD, as the variable 'knowledge and skills' is included in the IMBP as a moderating variable between intention and the behaviour.

To summarise, personal agency refers to one's perceived sense of control and being able to perform the behaviour of engaging in an MRD as part of their weekly routine. Due to the above literature citing numerous barriers and very few perceived enablers towards engaging in an MRD, the following hypothesis can be formed:

H_3A: Direct perceived control towards engaging in an MRD will have a significant, negative impact on one's intention to engage in an MRD as part of one's weekly routine.

H_3B: Direct self-efficacy towards engaging in an MRD will have a significant, negative impact on one's intention to engage in an MRD as part of one's weekly routine.

3.4. Comparing Direct and Indirect IMBP Measures

As stated, the IMBP has been explained as "the two-component theory of planned behaviour" as it takes the three central components of the TPB model and further divides them into two parts: attitude (experiential attitude and instrumental attitude), perceived subjective norm (injunctive norm and descriptive norm) and personal agency (perceived control and self-efficacy) (Elliot & Ainsworth, 2012). The result is six key variables, which are then measured directly and indirectly.

3.4.1. Direct IMBP measures

Direct IMBP measures for all key variables are taken via applying previously utilised scales to measure these variables. Direct measures are important for two reasons. Firstly, direct measures are usually more strongly correlated with behavioural intentions, compared to indirect measures (Montano & Kasprzyk, 2015). These associations between direct measures and behavioural intentions indicate the relative importance of each key variable in predicting a given behaviour (Montano & Kasprzyk, 2015). It is essential to identify and analyse these associations before analysing the indirect measures. This leads to the following hypothesis:

H_4: Direct measures will account for more variance in the behavioural intention to engage in an MRD as part of one's weekly routine than indirect measures alone.

Secondly, direct measures should be strongly correlated with indirect measures - indicating that appropriate salient beliefs were included in the measurement of the indirect measures and that the composite beliefs (behavioural, normative and control) are adequate measures of the respective IMBP constructs. Once these associations

between direct measures and indirect measures have been confirmed, the indirect measures are of most interest, as discussed below.

3.4.2. Indirect IMBP measures

Indirect measures for attitude (experiential attitude and instrumental attitude), perceived norms (injunctive norms and descriptive norms) and personal agency (self-efficacy and perceived control) consist of measures of the underlying salient beliefs supporting each of these variables - as discovered through the elicitation study. Behavioural, normative and control beliefs are assessed in two ways. Firstly, each belief strength is measured in order to assess whether or not respondents agree with that belief (e.g. that MRDs are "Healthy"). Secondly, each belief is measured regarding an overall evaluation of that belief (e.g. being "Healthy" is: good/bad). Then, a composite score for each belief is calculated by multiplying the belief strength and the evaluation of that particular belief. Behavioural, normative and control beliefs are vital as they help researchers identify and understand what underlying beliefs drive behaviours, providing a focus for intervention messages (Fishbein & Cappella, 2006).

3.4.3 Identifying measures and beliefs for intervention messages

In order to assess which of the key direct measures are significant predictors of behavioural intention, direct measures are used in a multiple linear regression analysis with behavioural intention. Once the researcher has identified the direct measures which are significant predictors of behavioural intention, they can then look at the respective indirect measures - analysing which of the supporting behavioural beliefs are most strongly correlated with behavioural intention (Montano & Kasprzyk, 2015). These particular behavioural beliefs are then analysed as a foundation upon which intervention messages which promote MRDs can be built.

3.5. Moderating Variables

Fishbein (2000: 275) further explains behavioural prediction via the IMBP stating that: "any given behaviour is most likely to occur if one has a strong intention to perform the behaviour, the necessary skills and abilities required to perform the behaviour and if there are no environmental constraints preventing behavioural performance". The inclusion of these moderating variables was not within the scope of this research, as this research focused on intention, and did not consider the intention-behaviour relationship.

3.6. Conclusion

Behavioural prediction theory is useful in identifying and isolating the key determinants of a particular behaviour, providing insight for future messages and intervention strategies looking to promote that behaviour. The IMBP is the most recent formulation

of Fishbein and Ajzen's (2010) reasoned action approach, being explained as the 'two-component theory of planned behaviour model' (Elliot & Ainsworth, 2012). This research applied the IMBP to the behaviour of *"engaging in an MRD as part of one's weekly routine"* in order to provide insight into the cognitive foundation of this behaviour. The following section details the methodology used when applying the IMBP, detailing how each key construct was measured regarding its two components: attitude (experiential attitude and instrumental attitude), subjective norm (injunctive norm and descriptive norm) and personal agency (perceived control and self-efficacy). The following methodology sought out to provide a clear way of gaining empirical evidence supporting the hypothesised relationships between each of these variables and behavioural intention.

3.7. Chapter Summary

Modifying people's behaviour has been stated as being at "the core of many efforts to improve the human condition" (Ajzen, 2011: 74), as seen in the growing use of behavioural theory in developing behaviour change interventions (Fishbein & Cappella, 2006). In order to modify (in this case reduce) people's meat consumption behaviour, one first needs to understand the key determinants of this behaviour. The reasoned action approach to understanding behaviour states that "only a small number of variables need to be considered to predict, change, or reinforce a particular behaviour in a particular population" (Fishbein & Ajzen, 2010; Yzer, 2012: 44). Commonly applied theories that follow the reasoned action approach to understanding behaviour include the TRA (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), the TPB (Ajzen, 1985, 1991) and most recently, the IMBP (Fishbein, 2000; Fishbein & Cappella, 2006; Kasprzyk *et al.*, 1998). The IMBP was proposed as an effort to integrate the key constructs from key theoretical behavioural frameworks (as seen in Table 2 above) as an attempt to identify the most important determinants of intention towards any given behaviour. Compared to the TPB, the IMBP offers deeper insight into each determinant of behaviour, as it breaks each key construct into two parts: attitude (experiential attitude and instrumental attitude), subjective norm (injunctive norm and descriptive norm) and personal agency (perceived control and self-efficacy) (Elliot & Ainsworth, 2012). The above sections detailed the literature regarding each key determinant (attitude, perceived norms and personal agency) within the context of MRDs, and hypothesised relationships of each determinant with the intention to engage in an MRD as part of one's weekly routine. The following section will detail the methodology utilised in order to apply the IMBP to the behaviour of engaging in an MRD as part of one's weekly routine.

CHAPTER 4

METHODOLOGY

4.1. Introduction

This chapter gives detail into the methodology utilised in this research, explaining how behavioural theory was applied to understand better what drives people's intentions to engage in an MRD. This research made use of the Integrative Model of Behavioural Prediction (IMBP), where the critical areas of cognition being researched were attitudes, perceived norms and personal agency, concerning one's intentions to engage in an MRD. A two-phase methodology was used, as recommended by Fishbein and Ajzen (2010). Both phase one and phase two had the common purpose of better understanding the cognitive foundation upon which the intentions to engage in an MRD are based. Figure 4.1 to follow illustrates some key features regarding both phase one and phase two of the research.

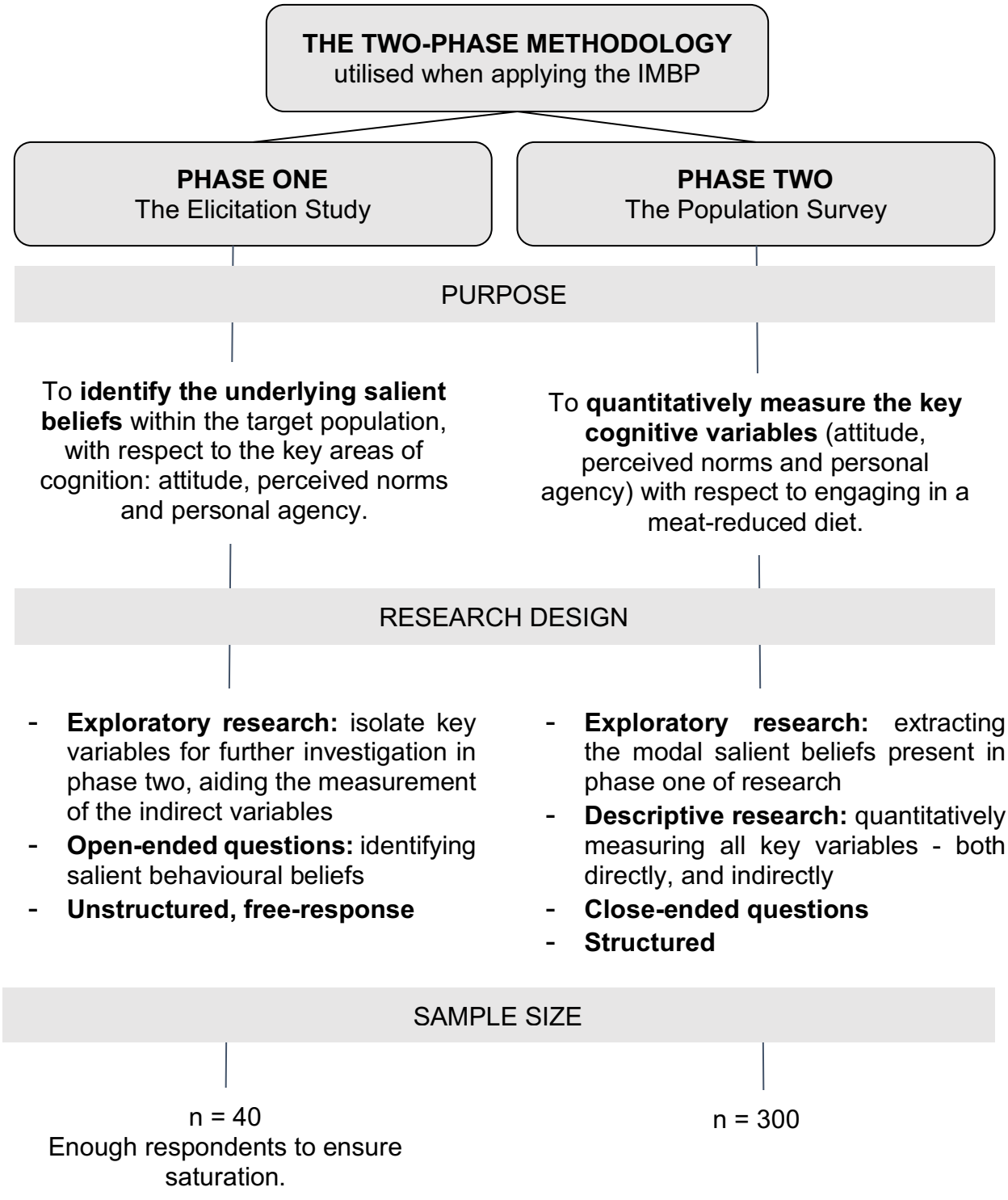

Figure 4.1. The Two-Phase Methodology of the IMBP
(Author's illustration)

The elicitation study aimed to determine the target population's salient behavioural beliefs concerning engaging in an MRD. Ajzen and Fishbein (2010) recommend that researchers: a) conduct an elicitation study with open-ended questions, assessing a

population's behavioural, normative and control beliefs, b) perform a content-analysis to rank-order the beliefs, and c) determine the 5-10 most salient beliefs. These 'modal salient beliefs' were then used in phase two of the research, where they defined the content used to measure the indirect variables for attitude, perceived norms and personal agency. The population survey followed, where quantitative measurements were taken on all key variables (experiential attitude, instrumental attitude. Injunctive norms, descriptive norms, self-efficacy, perceived control and behaviuoral intention). These measurements were taken both directly, through the use of predetermined scales, and indirectly, through measuring the respondent's evaluation of the modal salient beliefs (as identified in the elicitation study). Statistical analysis was then performed on these quantitative measures, yielding results to answer this study's research questions.

This chapter begins with a description of the research philosophy, after which the methodology used in each phase of research is further explained in detail. The chapter ends off with ethical considerations, limitations, a conclusion and a chapter summary.

4.2. Research Philosophy

This research made use of a positivist approach to understanding human behaviour, holding that observable evidence is the only source of defensible scientific findings (Easterby-Smith, Thorpe & Jackson, 2012; Scotland, 2012). The ontological position of positivism is one of realism - that objects have an existence independent of the researcher, and that there is a single measure of reality (Scotland, 2012). The epistemology of positivism is that reality can be measured, and hence the focus is on finding reliable and valid tools to gather these measurements (Easterby-Smith *et al*., 2012).

The research methodology of a positivist approach is usually quantitative, using sampling, measurement and scaling, statistical analysis, questionnaires, focus groups or interviews (Easterby-Smith *et al*., 2012). The sections to follow detail the research methods of both phases of the research: 1) the elicitation study and 2) the population survey.

4.3. The Elicitation Study: Research Method

Phase one of this research involved conducting an elicitation study - to determine the behavioural, normative, and control beliefs of a population, obtaining substantive information about the cognitive foundation of people's behaviour (Ajzen & Fishbein, 1980). To determine a population's salient behavioural beliefs, Ajzen and Fishbein (2010) recommend that researchers: a) conduct an elicitation study with open-ended questions assessing a population's behavioural, normative and control beliefs, b) perform a content-analysis to rank-order the beliefs, and c) determine the 5-10 most salient beliefs. The below sections provide further detail on the elicitation study: the

information needed, the research design, the measurement and scaling procedures, the data collection, data analysis and the limitations encountered.

4.3.1. Research design

This elicitation study followed an exploratory research design, with the goal being to "isolate key variables and relationships for further investigation" (Malhotra, 2010: 104). In this case, the key variables were the behavioural, normative and control beliefs and their relationship towards the intention to engage in an MRD. The IMBP is specified at the level of the individual, holding that an individual's salient behavioural beliefs determine their attitude, perceived norms and personal agency towards a given behaviour. However, in practice, it is much more convenient to identify beliefs that are salient within a given target population, where these beliefs are called ‘modal salient beliefs' (Ajzen & Fishbein, 1980). Elicitation studies are therefore used to identify the most salient behavioural beliefs relating to a particular behaviour in a given sample population, for subsequent quantitative measurement in close-ended surveys (Sutton, French, Hennings, Mitchell *et al.,* 2003).

4.3.2. Information needed in the elicitation study

The elicitation study offers researchers the opportunity to gather substantive information about the cognitive foundation of the population's behaviour (Ajzen & Fishbein, 1980). In behavioural prediction theories (TRA, TPB and IMBP), salient behavioural beliefs are defined as ‘accessible beliefs' which come to mind first and are accorded a significant role (Ajzen & Fishbein, 2000; Sutton *et al.*, 2003). Figure 4.2 illustrates these salient beliefs, their definitions as well as the key variable in the IMBP to which they are related.

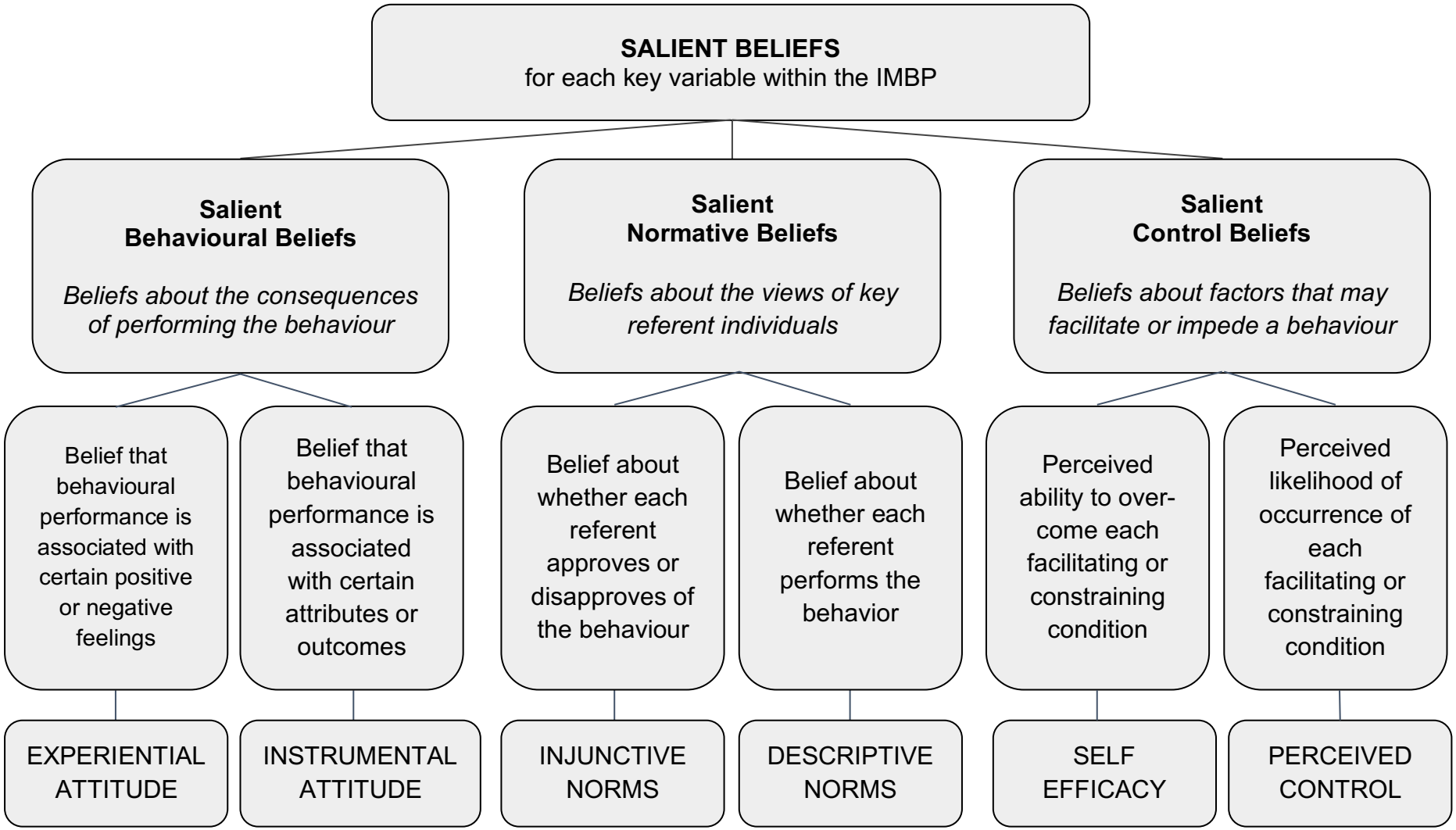

Figure 4.2. Salient Beliefs for Each Variable Within the IMBP
(Author's illustration)

The elicitation study, therefore, gathered information on each salient belief related to each key variable in the model: attitudes (experiential attitude & instrumental attitude), perceived norms (injunctive norms and descriptive norms) and personal agency (self-efficacy and perceived control). This information aimed to give the researcher a better understanding of the cognitive foundation towards the behaviour of engaging in an MRD. Importantly, these modal salient beliefs support the final findings of this research, through identifying salient beliefs which are appropriate to target in intervention messages that promote MRDs.

4.3.3. Sampling procedure

The sections to follow detail the sampling procedure utilised in this study, including the target population and sample size, and the sampling process used in the elicitation study.

4.3.3.1. Target population and sample size

This paper sought out to determine which categories of cognition (attitudes, norms and personal agency) have the most significant impact on one's intention to engage in an MRD. Other studies have already conducted similar research on respondents who are already vegetarian or practising a form of an MRD (Ruby, 2012; Barr & Chapman, 2002). For this reason, this study aimed to target respondents who were not currently practising an MRD - so that messages/interventions could address these individuals in the future to promote MRDs, and thereby attempt to change the behaviour of people who currently eat meat.

Both phases included three filter questions, to which respondents answer had to "YES" to continue with the rest of the survey, ensuring that all responses were from respondents out of the desired target population.

Table 4.1: Filter Questions Defining the Target Sample Population

NO.	FILTER QUESTION	REASON FOR FILTER QUESTION
1	Are you a South African citizen?	South Africa was chosen as a base for this target population due to research showing that developing countries, especially African countries are expected to see a significant increase in demand for animal products leading up to 2050, fueled by booming population growth and rising standards of living (Delport *et al.*, 2017; World Economic Forum, 2016). From a sustainability point of view, if future governments, business managers and NGOs are to attempt

		curbing this growth in demand for meat, they would need a better understanding of the consumption behaviour - mainly, what drives people's intentions to engage in an MRD. Non-South African citizens are, therefore, excluded from the sample.
2	Is your household income above R6,000.00 per month?	People earning below this threshold are considered to be in South Africa's 'base of the pyramid' market, and hence are unlikely to have enough disposable income to purchase significant quantities of animal products (Simpson & Lappeman, 2017; Lappeman *et al.*, 2014)
3	Does meat currently form part of your diet?	Understanding the intentions of meat-eaters (as opposed to people who do not eat any meat) to engage in an MRD, as part of their weekly routine, would help future researchers to develop messages and interventions that might promote MRDs amongst this group.

Both phase one and phase two of this research, therefore, targeted respondents from the same target population, meeting the above filter criteria.

Elicitation studies make use of a small sample of individuals, representative of the research population, used to elicit readily accessible behavioural outcomes, normative referents, and control factors (Ajzen, 2006). Montano and Kasprzyk (2015) state that 15-20 respondents are a minimum for the elicitation study, and that ideally, elicitation interviews should be continued until saturation, when no new responses are elicited. For this reason, the elicitation sample used in this study consisted of 40 individuals, representative of the target population. These individuals were asked questions related to each key variable as an effort to determine the underlying salient beliefs. The following section gives more detail on the sampling technique used in the elicitation study.

4.3.3.2. Sampling process

The sampling process used in both phases of research was a non-probability sampling technique called convenience sampling: a sampling technique that attempts to obtain a sampling of convenient elements (Malhotra, 2010). This sampling procedure was chosen as it enabled the researcher to gather data in a low cost and timely manner (Malhotra, 2010). This sampling procedure was further conducted via an internet-based sampling technique called unrestricted self-selected surveys; surveys that are open to the public for anyone to participate in (Fricker, 2008). Unrestricted self-selected surveys involve no restrictions on who can participate; it is up to the individual to choose to participate/opt-in (Fricker, 2008). However, the filter questions utilised at

the start of the survey ensured that only respondents who met the required target population criteria completed the survey. Convenience sampling is useful in exploratory research for generating ideas, insights or hypotheses, in the least expensive and time-consuming manner (Malhotra, 2010). In this context, convenience sampling was used to gather exploratory research on the underlying salient beliefs within the target population, concerning intentions to engage in an MRD as part of one's weekly routine.

4.3.4. Measurement instrument

In order to conduct a successful elicitation study resulting in the researcher eliciting the modal salient beliefs that are appropriate measures of their respective indirect variables, specific considerations needed to be taken. The following sections detail the elicitation questionnaire design considerations, the layout of the elicitation questionnaire, and finally the measurement and scaling of the elicitation questionnaire.

4.3.4.1. Questionnaire design considerations

An example of the elicitation questionnaire used in this study can be seen in Appendix A. In order to ensure a low drop-out rate and high-quality responses, the length of the elicitation questionnaire was kept short, consisting of 17 questions and having an estimated response time of 9 minutes (Berndt & Petzer, 2012). Most of the questions in the elicitation questionnaire were unstructured, free-response questions, which Malhotra (2010: 343) defined as "open-ended questions that respondents answer in their own words". Unstructured questions are useful in helping the researcher understand the general attitudes and opinions present in the sample population (Berndt & Petzer, 2012; Malhotra, 2010). In this case, open-ended questions helped the researcher understand the salient beliefs present in the sample population, with the aim of identifying the modal salient beliefs towards engaging in an MRD as part of one's weekly routine. Three filter questions were used, to ensure that all respondents qualified for the target sample (Malhotra, 2010). Lastly, Malhotra (2010) states the importance of having ‘informed respondents' - aiding their ability to answer all questions, thus providing the desired information. One of the key areas that required extra information was a clear definition of MRDs, as this was central to the respondent's understanding of the behaviour of interest and all subsequent questions in the elicitation questionnaire. As a result, a definition of MRDs was given at the start of the elicitation questionnaire, after the filter questions, as follows:

MRDs limit the frequency, type, and/or portion of meat in one's average diet, including a continuum of diet practices such as low-meat/plant-based diets and forms of semi-vegetarianism. MRDs are correlated with decreased consumption of harmful levels of animal fats and increased consumption of protective foods such as fruit, vegetables, legumes, nuts/seeds, and, for some MRDs, fish protein and oils (Hayley et al., 2015).

This definition was given to ensure that respondents were fully aware of what MRDs were, and could, therefore, answer any subsequent questions that referred to one's intentions to engage in an MRD as part of their weekly routine. The next section elaborates further on the layout of the elicitation questionnaire.

4.3.4.2. Layout of the questionnaire

To ensure that all respondents met the sampling criterion required for this study the filter questions were placed at the beginning of the questionnaire, following the cover letter. If the respondent answered "No" to any of the filter questions, therefore not meeting the sample population criterion, they were thanked for their time and told that they did not need to complete any further questions. The wording of each question was straightforward, aiding the respondent's understanding. Furthermore, instructions were concise and explicit, ensuring that respondents found them easy to follow and would not lead respondents to give any specific answers (Malhotra, 2010). The measurement and scale of each item is discussed in the next section below.

4.3.4.3. Measurement and scaling

As mentioned, the elicitation study consisted of a series of open-ended questions relating to each key construct. Table 4.2 shows the list of these open-ended questions, as suggested by Sutton *et al.* (2003) and Montano and Kasprzyk (2015).

Table 4.2: Elicitation Questions

Construct	Elicitation Questions
Experiential attitude	1. What would you *like* about engaging in an MRD as part of your weekly eating routine? 2. What would you *dislike* about engaging in an MRD as part of your weekly eating routine>
Instrumental attitude	1. What are some of the *benefits* that might result from engaging in an MRD as part of your weekly eating routine? 2. What are some of the *negative effects* that might result from engaging in an MRD as part of your weekly eating routine?
Normative influence	1. List the individuals/groups who would *approve* of you engaging in an MRD as part of your weekly eating routine. 2. List the individuals/groups who would *disapprove* of you engaging in an MRD as part of your weekly eating routine .
Personal agency	1. What factors would make it *easy* for you to engage in an MRD as part of your weekly eating routine?

	2. What factors would make it *difficult* for you to engage in an MRD as part of your weekly eating routine?

SOURCE: Sutton *et al.* (2003)

The above set of elicitation questions were also suggested by Ajzen (2006) in his paper "*Constructing a theory of planned behaviour questionnaire*", which uses the same approach to identify the modal salient beliefs present in a given population.

4.3.5. Data collection

The elicitation questionnaire was created on an online survey software called Qualtrics. The internet surveys were distributed via means of email and Facebook, providing a link to the Qualtrics survey which people could then decide upon their participation. Respondents were further encouraged to share the link with their online network, in order to ensure a wider range of respondents answering the questionnaire. Online surveys therefore offered an effective way of reaching many prospective respondents, across the country, at a low cost and in a timely manner (Malhotra, 2010). All responses were automatically recorded on Qualtrics and then exported into Excel for further analysis, as explained below.

4.3.6. Data analyses

Upon completion of gathering data for the elicitation study, the Qualtrics survey report was downloaded into Excel. As recommended by Ajzen (2006), a content analysis of the responses to the above open-ended questions was performed. The first step in this content analysis was to recode the responses into themes after which and the salient beliefs (represented by common themes) were given a rank-order based on their number of occurrences in the data. The top salient beliefs for each variable were then selected, creating a list of modal salient behavioural outcomes, referents and control factors. This process can be seen in Appendix B. These modal salient beliefs were then used to construct items measuring the indirect measures (used in phase two of the research - the final population study).

4.3.7. Limitations

According to Hogan, Hinrichs and Hornecker (2016), elicitation study results offer a limited level of detail as more in-depth and clarifying questions are not possible. This was not seen as a severe limitation, as the elicitation study used in this research was only a small part of the total data gathered in this study, and simply aimed to gather insight and understanding into the salient beliefs supporting each key variable. Furthermore, the elicitation study utilised made use of suggested and previously utilised questions in gathering this data. Furthermore, the elicitation study results aided

the measurement of the indirect variables within the IMBP (as further discussed in sections to follow).

The following section details phase two of the research - the population survey. As mentioned, the modal salient beliefs found in the elicitation study were used in phase two of the research, as further explained below.

4.4. The Population Survey: Research Method

The purpose of the population survey was to quantitatively analyse the key determinants of intention (attitude, perceived norms and personal agency) concerning the behaviour of engaging in an MRD as part of one's weekly routine. The following sections will describe the information needed in the population survey, the research design, the measurement and scaling procedure, the sampling procedure and sample size, the data collection procedure and finally the data analysis procedure.

4.4.1. Research design

The population survey made use of both broad classifications of research design: exploratory research and conclusive research (Malhotra, 2010). As mentioned, the exploratory research used in this study was gathered via phase one, the elicitation study, where the modal salient beliefs towards engaging in an MRD were gathered. These modal salient beliefs were then used in the population survey to frame the content of the items measuring the indirect variables for attitude, perceived norms and personal agency. The elicitation study, therefore, enabled conclusive research to be gathered in the population survey, specifically related to the indirect variables whose measures consisted of the evaluation of the modal salient beliefs related to the behavior of interest.

The population survey gathered conclusive, descriptive research - quantifying each key determinant of intention to engage in an MRD as part of one's weekly routine (direct and indirect measures for attitude, perceived norms and personal agency). The population survey aimed to test specific hypotheses related to each key construct in the IMBP, thus giving insight into specific relationships (Malhotra, 2010). This paper used the methodology of Robbins and Niederdeppe (2015) as a key reference for applying the IMBP, guiding the information needed and the approach to measuring each of the key variables, further explained below.

4.4.2. Information needed in the population survey

While extensive literature considering consumer theory within the topic of meat consumption exists (see table 2.2), there is a lack of literature explaining how these themes materialise into changes in meat consumption. As already stated, there is a lack of previous research which has explained individuals' intentions to engage in an MRD. This study thereby aimed to provide significant information on the variable "intention to engage in an MRD as part of one's weekly routine", by carefully analysing all key determinants of intention present in the IMBP (attitude, perceived norms and personal agency). It is important to note at this point, that this research did not include the full IMBP - an exclusion of the intention-behaviour relationship (and the moderating variables therein) was made, as it was beyond the scope of this research. The IMBP utilised in this research can, therefore, be seen in Figure 4.3 below.

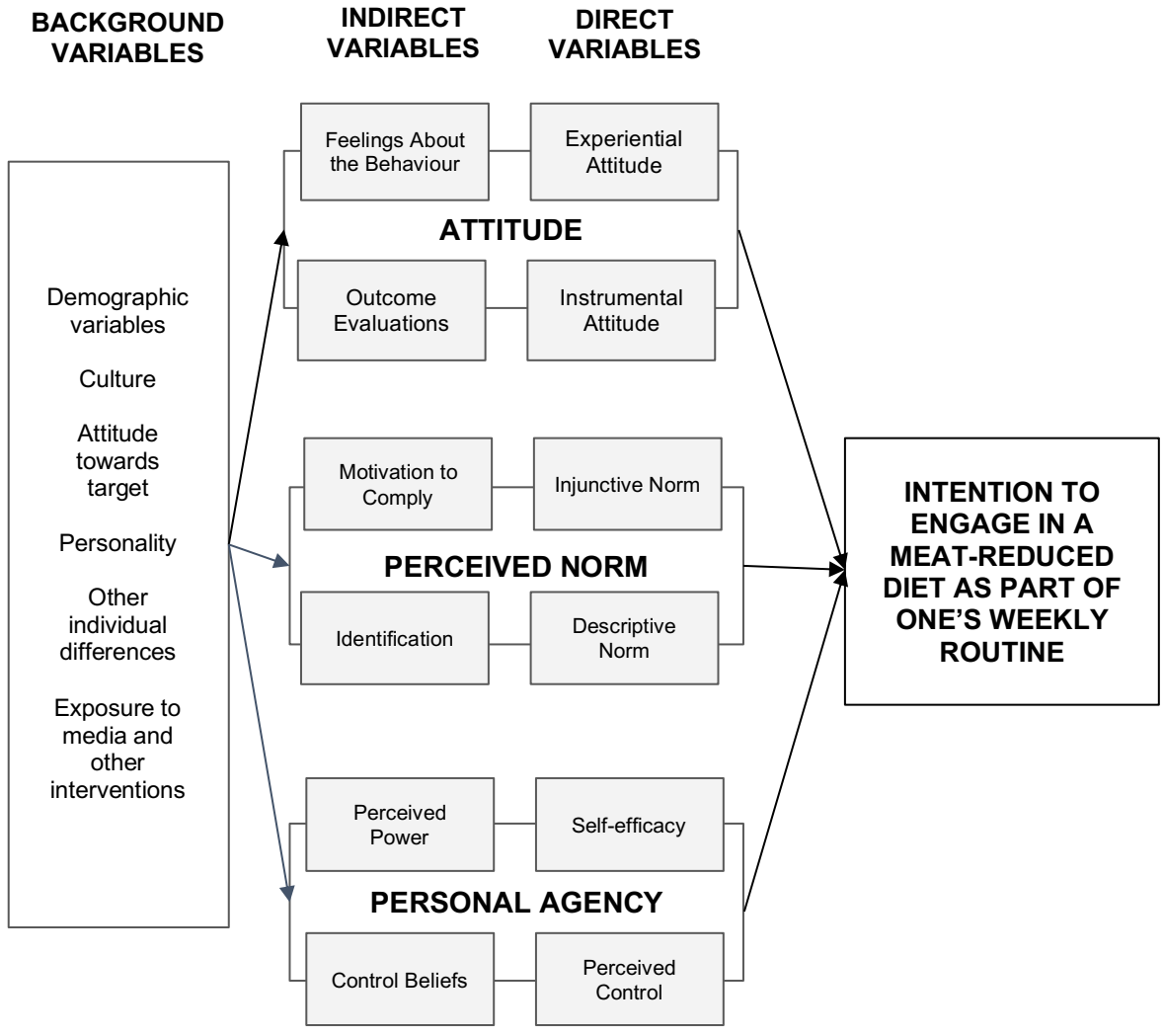

Figure 4.3. The Integrative Model: Adapted to Focus on Behavioural Intention
SOURCE: Fishbein, 2000; Fishbein & Cappella, 2006; Kasprzyk et al., 1998

Fishbein and Ajzen (2010) stated that intention is the strongest contributing factor towards any given behaviour, and thus the above model can be said to provide significant insights into the intended behaviour of engaging in an MRD.

The population survey, therefore, included a series of close-ended items, administered to a larger sample of the target population, to quantitatively identify which categories of cognition (attitude, perceived norms and personal agency) most strongly predict whether an individual would intend to engage in an MRD as part of their weekly routine. Each category of cognition was further analysed in terms of its two components, resulting in six key variables being measured (experiential attitude, instrumental attitude, injunctive norms, descriptive norms, self-efficacy and perceived control). Measures were taken on each category of cognition, which considered both its indirect measures (measured via evaluations of the modal salient beliefs found in the elicitation study) and direct measures (measured via previously used and approved scales for each category of cognition). This information sought to answer the research questions mentioned in Chapter 1, and hypotheses mentioned in Chapter 2. The following section details the sampling process used to gather this data.

4.4.3. Sampling procedure

The population survey made use of a sampling procedure which had previously been defined and utilised by Robbins and Niederdeppe (2015), who applied the IMBP to define sleep behaviour. The following sections define the target population that was chosen for this research as well as the sample size utilised, followed by the sampling process used to select sampling units from this target population.

4.4.3.1. Target population and sample size

The target population for both phases of research has already been explained in section 4.3.3.1 above. Similar to the elicitation study, in order for respondents for the population survey to be considered as part of the target population, they had to answer "Yes" to all three of the below filter questions to continue with the rest of the questionnaire:

1. *Are you a South African citizen?*
2. *Is your household income above R6,000.00 per month?*
3. *Does meat currently form part of your diet?*

When assessing how to apply the IMBP, this research referred to three key reference articles which had also applied the IMBP in their research, and the methodology used therein (Braun; 2012; Kasprzyk *et al.*, 1998; Robbins & Niederdeppe, 2015). The sample sizes in these articles are shown in Table 4.3 below:

Table 4.3: Sample Sizes Utilised by Key Studies Applying the IMBP

Article	Author	n
Application of an integrated behavioural model to predict condom use: A prospective study among high HIV risk groups.	Kasprzyk, Montaño and Fishbein (1998)	185
Using the integrative model of behavioural prediction to identify promising message strategies to promote healthy sleep behaviour among college students.	Robbins and Niederdeppe (2015)	365
Using the integrated behavioural model to predict binge drinking among college students.	Braun (2012)	350

The sample size used in the population survey was, therefore, 300 respondents. Data from respondents who did not meet the target population was removed from the final dataset, resulting in a final sample size of 278 respondents. When comparing to the above studies who also applied the IMBP in their research, this sample size of 300 was deemed appropriate for this study. The following section details the sampling process utilised to gather this data from the above sampling units.

4.4.3.2. Sampling process

The sampling process used in both the elicitation study and the population survey was non-probability convenience sampling, conducted via an internet-based sampling technique called unrestricted self-selected surveys; surveys that are open to the public for anyone to participate in (Fricker, 2008). Unrestricted self-selected surveys can be posted directly on a website (promoted or not promoted) so that anyone browsing through may be able to click the link and take the survey (Fricker, 2008). The key characteristics of this type of sampling are that there are no restrictions on individuals who can participate, and it is up to the individual to choose to opt-in (Fricker, 2008). It is important to note that while this technique offered unrestricted opting-in from respondents, only respondents who answered ‘Yes' to all three filter questions, thus considered part of the target population, were considered for analysis. The key advantages of internet sampling included the fast and inexpensive gathering of data, the ability to incorporate automatic skip patterns and a consistency check (Malhotra, 2010). It is important to note a principal disadvantage of internet sampling, being that it negatively impacts the representativeness of the sample, as it requires respondents to have internet access to complete the questionnaire - and internet access in South Africa is a limited resource for many. The population survey involved gathering responses from a relatively large sample size (n = 300), and thus convenience

sampling enabled the researcher to gather data at a low cost and in a time efficient manner (Malholtra, 2010). The following section describes the measurement instrument.

4.4.4. Measurement instrument

In order to conduct a successful population survey, which accurately measured all of the key variables aiding one's intention to engage in an MRD, specific considerations needed to be made. The below sections detail the questionnaire design considerations, the layout of the questionnaire, and the reliability and validity measures on the questionnaire items.

4.4.4.1. Questionnaire design considerations

An example of the population survey can be seen in Appendix C. The questionnaire contained 34 questions and had an estimated response time of 15-20 minutes. Unlike the elicitation study, the questionnaire contained a set of structured questions containing closed-ended categories pre-selected by the researcher (Malhotra, 2010). These structured questions included Likert scales (for most measurements on direct and indirect IMBP measures), dichotomous questions (for the filter questions), semantic differential scales, and category questions (for all demographic questions). All of the response categories were clearly explained to the respondent ahead of the respective question, and all questions were worded carefully to avoid ambiguity. This was done to ensure that respondents had complete and accurate information, encouraging the respondents to give accurate, unbiased and complete information (Malhotra, 2010). An advantage of using these structured questions was that they require a lower cognitive load from the respondent, requiring less thinking from the respondent, making it easier for them to complete the questionnaire.

4.4.4.2. Layout of the questionnaire

The questionnaire began with a cover letter from the researcher. This cover letter had the purpose of stating that this research was being done by a Masters student from the University of Cape Town as part of a final dissertation, with the aim of analysing the key behavioural constructs aiding an MRD. The cover letter further stated that the questionnaire would only take 15-20 minutes of the respondent's time and that they could leave the questionnaire at any point. Respondents were assured that this study had been approved UCT Faculty of Research Ethics and that their identity would remain anonymous and their data kept confidential. Lastly, respondents were given contact information of the researcher, should they want to find out further information on the study.

Questions 1, 2 and 3 were the filter questions (defined in previous sections), ensuring that respondents met the target population criteria. Respondents were notified that if

they answered ‘No' to any of the filter questions that they did not have to continue with the rest of the questionnaire and were thanked for their time. Directly after the filter questions, a definition of MRDs was given. In order to aid respondent's ability to answer all questions, a researcher needs to ensure they have ‘informed respondents' (Malhotra, 2010). Defining MRDs at the start of the questionnaire was central to the respondent's understanding of the behaviour of interest and all subsequent questions in the questionnaire.

Questions 4 - 16 were structured questions measuring the indirect variables for attitude, norms and personal agency (taking measures of both belief strength and belief evaluation). Questions 17 - 20 measured the direct measures for attitude, perceived norms and personal agency respectively, making use of predetermined scales. Question 21 measured direct intention to engage in MRD. Lastly, questions 22 - 27 measured the demographic information (age, gender, race, education, income and language). All demographic and potentially sensitive questions were placed at the end of the questionnaire to avoid drop out (Malhotra, 2010).

4.4.4.3 Reliability

Reliability refers to the “extent to which a scale produces consistent results if repeated measurements are made” (Malhotra, 2010: 318). In order to test the reliability of the scales used in the population survey, this research used the approach of testing for internal consistency reliability, where the commonly agreed-upon lower boundary for Cronbach Alpha is 0.7 (Malhotra, 2010). Additional analyses were also conducted on each scale to test for the influence of low-correlated questions on the total Cronbach Alpha coefficients. These analyses were performed as an effort to improve the total Cronbach Alpha coefficients by identifying and removing items that were unsatisfactorily correlated with other items measuring the same variable.

4.4.4.4. Validity

Validity refers to "the extent to which differences in observed scale scores reflect true differences among objects on the characteristic being measured" (Malhotra, 2010: 320). In order to test the validity of the questions used in the population survey, this research made use of ‘construct validity', addressing the question of why a specific scale works and what inferences can be made regarding the underlying theory (Malhotra, 2010). When assessing the construct validity of a measure, Zikmund (2003) states the importance of establishing the meaningfulness of the measure through convergent and discriminant validity. Convergent validity is the extent to which a scale correlates positively with other measures of the same construct, while discriminant validity refers to the extent to which a scale does not correlate with other constructs from which it is supposed to differ (Malhotra, 2010; Zikmund, 2003). By focusing on discriminant validity in the present study, the researcher intended to employ question items that would sufficiently discriminate between the different constructs being

investigated. The next section details the measurement and scaling procedures used to measure each construct in the study.

4.4.4.5. Pre-test

A pilot study was conducted in order to pretest the questionnaire on a small sample of respondents, aiming to eliminate any potential problems (Malhotra, 2010). A small sample of 20 respondents was chosen for the pre-test, all of whom met the target sample population criteria. Considering the population survey utilised methods and scales that have been used by previous researchers (Braun, 2012; Montano & Kasprzyk, 2015; Robbins & Niederdeppe, 2015) the main aim of the pre-test was not to test for scale reliability, but rather for face validity. Face validity refers to the subjective assessment of scale items and their correspondence with the construct they are measuring. The pre-test revealed that some questions had made use of ambiguous wording and needed to be made more specific.

4.4.5. Measurement and scaling

The population survey consisted of a series of close-ended quantitative questions, most of which were measured on a 7-point Likert scale, yielding quantitative measures for each variable. This measurement and scaling process was recommended by Ajzen (2006) and Montano and Kasprzyk (2015), and further adopted by researchers who have applied the IMBP (Braun, 2012; Robbins & Niederdeppe, 2015). The IMBP tests the three significant categories of cognition (attitude, perceived norms and personal agency), by taking measures on each variable's indirect effect and direct effect - each of which has been explained below.

4.4.5.1. Experiential attitude

Direct experiential attitude is defined as the overall affective evaluation of the behaviour (Montano & Kasprzyk, 2015). This variable was measured directly through responses to the question *"Overall, I think that engaging in an MRD as part of my weekly eating routine is:"* along a series of bipolar semantic differential pairs. Adjective pairs included bad-good, harmful-beneficial, foolish-wise, stressful-relaxing and shy-social. This measure was adopted by both Braun (2012) and Robbins and Niederdeppe (2015). A factor analysis was performed to check whether all items loaded with sufficient factor loadings, and then a reliability test was performed to ensure a Cronbach Alpha greater than 0.7, assessing whether or not certain items needed to be dropped from the scale.

Indirect experiential attitude is defined as the belief that the behavioural performance is associated with certain positive or negative feelings (Montano & Kasprzyk, 2015). Respondents were asked the following question: *"Engaging in an MRD in my weekly routine will lead to me feeling the following:"*, after which the strength of the six modal

affective-beliefs were measured, three of which were desirable ("healthy", "sustainable", "free from animal cruelty") and three of which were undesirable ("cravings for meat", "restricted in my food variety", "more time-pressed to prepare meals"). These six affective-beliefs were determined in the elicitation study. Responses were measured along a 7-point Likert scale, ranging from *strongly disagree (1)* to *strongly agree (7)*. The evaluation of each affective belief was also measured, by asking the respondents to rate each affective belief on a 7-point Likert scale, ranging from *very bad (1)* to *very good (7)*. These evaluation scores were then re-coded by subtracting four, such that negative values indicate undesirable outcomes, and positive values indicate desirable outcomes. Belief specific composite scores were calculated by computing the product of affective belief strength with the evaluation of that belief. An overall composite score for indirect-experiential-attitude was also calculated, by summing the belief-specific composite scores across all six affective beliefs.

4.4.5.2. Instrumental attitude

Direct instrumental attitude is defined as the overall evaluation of the behaviour (Montano & Kasprzyk, 2015). This variable was measured directly through responses to the question *"Overall, I think that engaging in an MRD as part of my weekly eating routine is:"* along a series of bipolar semantic differential pairs. Adjective pairs included embarrassing-liberating, unenjoyable-enjoyable, unpleasant-pleasant, boring-interesting and dull-amusing. This measure was adopted by both Braun (2012) and Robbins and Niederdeppe (2015). A factor analysis was performed to check whether all items loaded with sufficient factor loadings, and then a reliability test was performed to ensure a Cronbach Alpha greater than 0.7, assessing whether or not certain items needed to be dropped from the scale.

Indirect instrumental attitude is defined as the belief that the behavioural performance is associated with particular attributes or outcomes (Montano & Kasprzyk, 2015). Respondents were asked to rate their level of agreement to the following: *"Engaging in an MRD in my weekly routine will lead to the following …"*, where six outcome beliefs were given, three desirable ("improved health and nutrition", "improved animal welfare", "improved environmental sustainability") and three undesirable ("social criticism", "more effort", "lack of protein"). These six outcome beliefs were determined in the elicitation study. Responses were measured along a 7-point Likert scale, ranging from *strongly disagree (1)* to *strongly agree (7)*. The evaluation of each outcome belief was also measured, by asking the respondents to rate each outcome belief on a 7-point Likert scale, ranging from *very bad (1)* to *very good (7)*. These responses were then re-coded by subtracting four, such that negative values indicate undesirable outcomes, and positive values indicate desirable outcomes. Belief specific composite scores were calculated by computing the product of outcome belief strength with the evaluation of that belief. An overall composite score for indirect-instrumental-attitude

was also calculated, by summing the belief-specific composite scores across all six outcome beliefs.

4.4.5.3. Injunctive norms

Direct injunctive norm beliefs are defined as the belief about whether most people approve or disapprove of the behaviour (Montano & Kasprzyk, 2015). This variable was measured directly through the responses to the following: *"The following individuals/groups would support/approve of me engaging in an MRD as part of my weekly eating routine:"* where four referents were given ("people who are important to me", "my friends", "people whose opinion I value", "people who matter to me"). Responses were measured along a 7-point Likert scale, ranging from *strongly disagree (1)* to *strongly agree (7)*. This measure was adopted by both Braun (2012) and Robbins and Niederdeppe (2015). A factor analysis was performed to check whether all items loaded with sufficient factor loadings, and then a reliability test was performed to ensure a Cronbach Alpha greater than 0.7, assessing whether or not certain items needed to be dropped from the scale.

Indirect injunctive norm beliefs are defined as the belief about whether each *referent* approves or disapproves of the behaviour (Montano & Kasprzyk, 2015; Robbins & Niederdeppe, 2015). Respondents were asked to rate their level of agreement to the following: *"The following groups/individuals think I should engage in an MRD in my weekly routine…",* where five key referent groups/individuals were given (as determined in the elicitation study) ("my friends", "my family", "environmentalists and animal welfare groups", "vegans and vegetarians" and "health professionals"). Responses were measured along a 7-point Likert scale, ranging from *strongly disagree (1)* to *strongly agree (7)*. The evaluation of each of each referent was measured via the respondents' motivation to comply with each referent, by rating what each referent thinks the respondent should do with regards to the following: *"When it comes to matters of weekly eating routines, I want to do what …".* Responses were measured along a 7-point Likert scale, ranging from *strongly disagree (1)* to *strongly agree (7).* Responses were then re-coded by subtracting four, such that negative values indicate beliefs that the respondent does not feel motivated to comply with the particular referent individual/group, and positive values indicate beliefs that the respondent does feel motivated to comply with the particular referent individual/group. Referent specific composite scores were calculated by computing the product of referent belief with the motivation to comply with that referent. An overall composite score for indirect-injunctive norms was also calculated, by summing the referent-specific composite scores across all five referent beliefs.

4.4.5.4. Descriptive norms

Direct descriptive norm beliefs are defined as the belief about whether most people perform the behaviour (Montano & Kasprzyk, 2015). This variable was measured

directly through the responses to the following: *"The following individuals/groups would support/approve of me engaging in an MRD as part of my weekly eating routine:"* where four referents were given ("my best friends", "most of my friends", "most of my colleagues", "most South Africans"). Responses were measured along a 7-point Likert scale, ranging from strongly disagree (1) to strongly agree (7). This measure was adopted by both Braun (2012) and Robbins and Niederdeppe (2015). A factor analysis was performed to check whether all items loaded with sufficient factor loadings, and then a reliability test was performed to ensure a Cronbach Alpha greater than 0.7, assessing whether or not certain items needed to be dropped from the scale.

Indirect descriptive norm beliefs are defined as the belief about whether each referent performs the behaviour (Montano & Kasprzyk, 2015; Robbins & Niederdeppe, 2015). Respondents were asked to rate their level of agreement to the following: "*The following groups/individuals engage in an MRD in their weekly routine …",* where five key referent groups/individuals were given (as determined in the elicitation study) (same key referents as described above). The evaluation of each of each referent was measured via the respondents' identification with each referent, by rating what each referent does with regards to the following: *When it comes to matters of weekly eating routines, I want to do what ...:".* Responses were measured along a 7-point Likert scale, ranging from *strongly disagree (1)* to *strongly agree (7)*, then re-coded by subtracting four, such that negative values indicate beliefs that the respondent does not identify themselves with the particular referent individual or group, and positive values indicate beliefs that that the respondent doe identify themselves with the particular referent individual or group. Referent specific composite scores were calculated by computing the product of each descriptive norm belief with the associated identification. An overall composite score for indirect-descriptive norms was also calculated, by summing the referent-specific composite scores across all five referent beliefs.

4.4.5.5. Self-efficacy

Direct self-efficacy can be defined as one's overall measure of ability to perform the behaviour (Montano & Kasprzyk, 2015). Respondents were asked to rate their perceived levels of ease or difficulty, on a 7-point Likert scale ranging from *very difficult* (1) to *very easy* (7), concerning five different statements ("Monitoring how much meat I consume is …", "Controlling whether I consume meat is …", "Refusing to eat meat is …", Dealing with peer pressure to eat meat is …", "Limiting my meat consumption when I'm in social settings is …"). This measure was adopted by both Braun (2012) and Robbins and Niederdeppe (2015). A factor analysis was performed to check whether all items loaded with sufficient factor loadings, and then a reliability test was performed to ensure a Cronbach Alpha greater than 0.7, assessing whether or not certain items needed to be dropped from the scale.

Indirect self-efficacy can be defined as one's perceived ability to overcome each facilitating or constraining condition (Montano & Kasprzyk, 2015). Respondents were asked to rate their level of confidence to the following: *"If the following facilitators/barriers were present, how confident are you that you could engage in an MRD as part of your weekly routine:"* where three facilitators were given ("having social acceptance", "having meat-free restaurant options", "having education about MRDs") and three barriers were given ("having a lack of options when eating out", "having to expend more effort", "having higher costs"). Responses were measured along a 7-point Likert scale, ranging from *very unconfident (1)* to *very confident (7).* The evaluation of each condition belief was also measured, on a 7-point Likert scale, by respondents rating the perceived effect of each condition making the behavioural performance either *very difficult* (1) or *very easy* (7). Responses were then re-coded by subtracting four, such that negative values indicated perceived difficult conditions, and positive values indicated perceived easy conditions. Condition-specific composite scores were calculated by computing the product of each condition belief with the associated evaluation of that condition making the behavioural performance easy/difficult. An overall composite score for indirect-self efficacy was also calculated, by summing the various condition composite scores.

4.4.5.6. Perceived control

Direct perceived control can be defined as the overall measure of the perceived control over the behaviour (Montano & Kasprzyk, 2015). Respondents were asked to rate the extent to which various statements were under their control ("Abstaining from eating meat is …", "Limiting my meat consumption is …", "Engaging in an MRD in my weekly eating routine is …", "Turning down offers to eat meat with my friends is …", "Refusing another bite after I've already eaten some meat is …"). Responses were recorded on a 7-point Likert scale ranging from *totally not under my control* (1) to *totally under my control* (7). This measure was adopted by both Braun (2012) and Robbins and Niederdeppe (2015). A factor analysis was performed to check whether all items loaded with sufficient factor loadings, and then a reliability test was performed to ensure a Cronbach Alpha greater than 0.7, assessing whether or not certain items needed to be dropped from the scale.

Indirect perceived control can be defined as the perceived strength of each facilitating or constraining condition (Montano & Kasprzyk, 2015). Respondents were asked to rate their level of agreement to the following: *"The following elements would enable me to engage in an MRD in my weekly eating routine:"* where the three facilitators were given (as mentioned above). They were further asked to rate their level of agreement to the following: *"The following elements would prevent/deter me from engaging in an MRD in my weekly eating routine:"* where the three barriers (mentioned above) were given. Responses were measured on a 7-point Likert scale from *strongly disagree* (1) to *strongly agree* (7). Respondents then evaluated each facilitating/constraining variable by showing their level of agreement as to whether

each variable would be accessible within the next few weeks. These evaluation responses were then re-coded by subtracting four, such that negative values indicated perceptions that the condition would not be accessible within the next few weeks, and positive values indicated perceptions that the condition would be accessible within the next few weeks. Control specific composite scores were calculated by computing the product of each control belief with the associated evaluation of that control being present within the next few weeks. An overall composite score for indirect-perceived control was also calculated, by summing the various control composite scores.

4.4.5.7. Behavioural intention

Behavioural intention was measured directly through a four item scale measured on a 7-point Likert scale, where responses were measured on a 7-point Likert scale from *strongly disagree* (1) to *strongly agree* (7). Respondents were asked the following questions: 1) I intend to engage in a meat-reduced diet in my weekly eating routine, 2) I plan to engage in a meat-reduced diet in my weekly eating routine, 3) I am willing to engage in a meat-reduced diet in my weekly eating routine, 4) I expect to engage in a meat-reduced diet in my weekly eating routine. This measure was adopted by both Braun (2012) and Robbins and Niederdeppe (2015).

4.4.6. Data collection

The population questionnaire was created on an online survey software called Qualtrics. These internet-based questionnaires were distributed via email and Facebook, providing a link to the Qualtrics questionnaire, which people could then click on and participate in if they desired. Respondents were further encouraged to share the link with their online network, in order to ensure a wider range of respondents answering the questionnaire. All responses were automatically recorded on Qualtrics. When the sample size had reached 300 respondents, the data was exported into Excel.

Excel was used to filter respondents who answered ‘No' to any of the required filter questions. These respondents were then deleted from the questionnaire dataset, as they did not fall within the target population. Once the data had been cleaned, it was then exported into an advanced statistical analysis programme called SPSS, for further analysis, as explained below.

4.4.7. Data analysis of direct measures

An advanced statistical analysis programme called SPSS was used to conduct all analyses on the data. The first step was to account for missing values in the dataset, where every missing value was given the value of 999 and coded for respectively. The following sections detail how the direct measures were analysed.

4.4.7.1. Scale validity

Measures for the direct variables (instrumental attitude, experiential attitude, injunctive norms, descriptive norms, self-efficacy and perceived control) were taken through the use of predetermined scales. These predetermined scales were utilised by both Bruan (2012), Montano and Kasprzyk (2015) and Robbins and Niederdeppe (2015), both of whom applied the IMBP in their research.

Validity refers to "the extent to which differences in observed scale scores reflect true differences among objects on the characteristic being measured" (Malhotra, 2010: 320). In order to test the validity of the questions used to measure direct IMBP measures, this research made use of ‘construct validity', addressing the question of why a specific scale works and what inferences can be made regarding the underlying theory (Malhotra, 2010). When assessing the construct validity of a measure, Zikmund (2003) states the importance of establishing the meaningfulness of the measure through convergent and discriminant validity. Convergent validity is the extent to which a scale correlates positively with other measures of the same construct, while discriminant validity refers to the extent to which a scale does not correlate with other constructs from which it is supposed to differ (Malhotra, 2010; Zikmund, 2003). By focussing on discriminant validity in the present study, the researcher intended to employ question items that would sufficiently discriminate between the different constructs being investigated. Exploratory Principal Components Analysis (PCA) using Varimax Rotation was used to assess the construct validity, assessing constructs for related sub-themes. A loading factor of 0.40 or higher was used as the acceptable minimum factor loading (Braun, 2012).

4.4.7.2. Scale reliability

Reliability refers to the "extent to which a scale produces consistent results if repeated measurements are made" (Malhotra, 2010: 318). In order to test the reliability of the scales used in the population survey, this research used the approach of testing for internal consistency reliability, where the commonly agreed-upon lower boundary for Cronbach Alpha is 0.7 (Malhotra, 2010). Additional analyses were also conducted on each scale to test for the influence of low-correlated questions on the total Cronbach Alpha coefficients. These analyses were done to improve the total Cronbach Alpha coefficients by identifying and removing items that were unsatisfactorily correlated with other items measuring the same variable.

4.4.7.3. Descriptive statistics for direct IMBP measures

All of the measures for the direct variables within the IMBP were measured along 7-point Likert scales. Summated scales were calculated for each measure, after which descriptive statistics were calculated on these summated scales. The researcher noted all necessary descriptive statistics of each direct measure, namely: number of respondents, mean, standard deviation, and skewness and kurtosis values. Comments were then made on these descriptive statistics, and how they related to the behavioural intention to engage in an MRD.

4.4.7.4. Multiple linear regression analysis

A multiple linear regression analysis was performed on all direct measures in order to assess their particular significance and predictive power over the behavioural intention to engage in an MRD as part of one's weekly routine. Comments were issued on the resulting regression model R-Squared and Adjusted R-Squared statistics. Next, each measure was analysed regarding its regression coefficient (β) and p-value - stating the particular measure's significance and strength in explaining variance found in behavioural intention. These results were then linked back to hypotheses H_1 - H_4. Importantly, only the direct measures which had significant relationships with behavioural intention, at the 5% level of significance, were considered for further analysis in the rest of the study - i.e. in analysing the particular indirect measures and supporting modal salient beliefs, as further discussed below.

4.4.8. Data analysis of indirect measures

The measures for the indirect variables were taken by calculating an overall composite score for each variable and analysing the sign (either positive or negative) of the respective score. The resulting positive/negative sign of the overall composite score indicated a positive/negative relationship with that indirect measure and behavioural intention to engage in an MRD. Further, the analysis of indirect measures was guided by the multiple linear regression findings of direct measures of behavioural intention. The below sections explain the method used to extract modal salient beliefs from the content analysis applied on the elicitation study, how overall composite scores were calculated for indirect IMBP measures, the correlation of indirect and direct IMBP measures, and lastly, descriptive statistics for indirect IMBP measures.

4.4.8.1. Overall composite scores for indirect IMBP measures

Overall composite scores for each indirect measure consisted of a sum of individual belief-specific composite scores. These belief-specific composite scores (s*e) were calculated by multiplying the belief strength (s) (e.g. that MRDs lead to "cravings for meat") with the evaluation of that belief (e) (e.g. feeling "cravings for meat" is:

good/bad). The overall composite score (∑(s*e)) was then calculated by summing these individual belief-specific composite scores for all beliefs of a particular indirect measure.

Seeing as belief evaluations were measured on a 7-point Likert scale, the first step was to re-code these 'evaluation variables' (e), so that low ratings represented an undesirable evaluation and high ratings a desirable evaluation. Fishbein and Ajzen (2010) recoded the belief-evaluation scale by subtracting 4, hence highly rated items would still be positive, while low rated items would be negative. Figure 4.4 below explains how this re-coding was done, giving an example of how a belief-specific composite score (s*e) and an overall composite score (∑(s*e)) was calculated, using an example of one positive and one negative belief associated with experiential attitude.

Please indicate the extent to which you agree / disagree with the following statement: ***Engaging in a meat-reduced diet, as part of my weekly routine, will lead me to feel ...***								
		Strongly disagree	Disagree	Somewhat disagree	Neither	Somewhat agree	Agree	Strongly agree
		1	2	3	4	5	6	7
BELIEF	... Healthy					X		
	... Cravings for meat						X	
Please indicate the extent to which you think the following statement is good / bad:								
		Very bad	Bad	Somewhat bad	Neither	Somewhat good	Good	Very good
		1	2	3	4	5	6	7
EVALUATION	Feeling healthy is ...							X
	Feeling cravings for meat is ...		X					

CALCULATION					
INDIRECT MEASURE	**BELIEF**	**Belief Strength** (s)	**Belief Evaluation** (e) [recoded by subtracting 4]	**Belief-Specific Composite Score** (s*e)	**Overall Composite Score** (∑(s*e))
Experiential Attitude	Healthy	5	3	15	3
	Cravings for meat	6	-2	-12	

Figure 4.4. Calculating Belief-Specific Composite Scores and Overall Composite Scores
(Author's figure)

As seen above, the item measuring belief evaluation (e) was re-coded by subtracting four, showing that the respondent in the above example evaluated the belief of 'cravings for meat' as undesirable (as the resulting evaluation was -2). The belief-specific composite score for '*cravings for meat*' was therefore negative (-12), showing that respondents who believed that MRDs would lead to cravings for meat, would feel negative about engaging in an MRD. The overall composite score, for the above example of indirect experiential attitude, was calculated by summing all of the belief-specific composite scores. In this example, the overall composite score for experiential attitude was +3, showing that respondents in this example had more positive associations, with MRDs than negative associations, when considering to engage in an MRD.

Overall composite scores (∑(s*e)) were therefore calculated on all indirect IMBP measures, where comments were made on the positive/negative sign of these scores.

4.4.8.2. Correlation of indirect and direct IMBP measures

Before carrying out an analysis to identify target beliefs appropriate for intervention, it is essential to determine whether or not indirect measures are assessing the constructs they were designed to measure (Montano & Kasprzyk, 2015). For this reason, a correlation matrix was analysed, in order to assess whether all indirect measures were significantly correlated with their respective direct measures.

4.4.8.3. Descriptive statistics for indirect IMBP measures

Finally, the descriptive statistics on all indirect IMBP measures were calculated, showing the mean and standard deviation for each belief strength (s), belief evaluation (e), belief-specific composite score (s*e) and overall composites score (∑(s*e)). Furthermore, each belief's correlation with behavioural intention was also measured. This analysis provided the researcher with insight into which of the significant indirect IMBP measures held beliefs that were appropriate to target with future intervention messages.

4.4.9. Data analysis of direct versus indirect IMBP measures

To test H_4 (assessing whether or not direct IMBP measures explain more variance in behavioural intention than indirect measures), two multiple linear regression models were run: one with indirect IMBP measures and behavioural intention, and one with direct IMBP measures and behavioural intention. The regression models' *R-Squared* and *Adjusted R-Square* were recorded, in order to assess whether adding the direct measures explained additional variance beyond that explained by the indirect IMBP measures.

4.4.10. Limitations

Several limitations should be mentioned concerning this research methodology. Firstly, this research did not measure respondent's current level of meat consumption, but instead focused on one's beliefs and evaluations concerning the behaviour of 'engaging in an MRD as part of one's weekly routine'. As already mentioned, this study focused on the variable of intention and did not consider the variable of behaviour. This approach of not directly measuring the respondent's meat consumption behaviour, but rather offering a suggested behaviour to which evaluations and beliefs were measured, ensured a direct correspondence with belief measures, a key consideration when using the IMBP to measure intentions and behaviour (Fishbein & Ajzen, 2010; Robbins and Niederdeppe, 2015). Future research could consider utilizing the full IMBP model (i.e. the inclusion of the behaviour variable into the IMBP model) thus providing more in-depth insight into the intention-behaviour relationship, as well as the impact of moderating variables on this relationship. Secondly, the method was useful in identifying beliefs to target in campaign messages that are aiming to promote MRDs (generally in the production stage of campaign development), but procedures say nothing about how these messages should be constructed to maximise persuasive impact. Future research should adopt further methods where these campaign messages are tested (e.g. focus groups with storyboards and message testing surveys) (Robbins and Niederdeppe, 2015).

4.4.11. Ethical Considerations

In order to ensure that respondents had informed consent in their participation in this research, a cover letter was issued at the start of the questionnaire. This cover letter detailed the purpose of this research, that respondent's information was to be kept confidential and anonymous, that respondents could leave the study at any given time and that they could contact the researcher for any further information. In order to ensure autonomy was fully protected, the respondent's personal details were not recorded, and therefore the responses were completely anonymous. This research did not make use of respondents from vulnerable groups. All questions related to sensitive information (such as race, income, education level etc.) included a 'prefer not to answer' response.

4.5. Conclusion

This research followed a methodology very similar to that of Robbins and Niederdeppe (2015), who also applied the IMBP within their research. This methodology involves employing a two-phase process: 1) conducting an elicitation study to elicit the underlying salient beliefs present in the sample population, 2) conducting a population survey to quantitatively measure all key constructs within the IMBP. This methodology is valuable within the area of behavioural theory, as not only does it define the most significant behavioural determinants correlated with behavioural intention (through measurements of direct IMBP variables), but it further identifies the most significant salient beliefs towards the behaviour (through measurements of indirect IMBP variables). This enables the results of this research methodology to further guied and support message strategy seeking to promote MRD behaviour. The following chapter details the empirical results found in this study.

4.6. Chapter Summary

This chapter details how the IMBP was applied to understand better what drives people's intentions to engage in an MRD. A two-phase methodology was adopted, as recommended by Fishbein and Ajzen (2010), where both phases had the common purpose of better understanding the cognitive foundation upon which the intentions to engage in an MRD are based.

Phase one included conducting an elicitation study among 40 respondents, to identify the underlying salient beliefs towards engaging in an MRD. The elicitation study was therefore exploratory and unstructured, containing open-ended questions. Salient behavioural beliefs, salient normative beliefs and salient control beliefs were measured, each aiding the understanding of their respective critical cognitive variable within the model (attitude, perceived norms and personal agency). Ajzen and Fishbein (2010) recommend that researchers: a) conduct an elicitation study with open-ended questions, assessing a population's behavioural, normative and control beliefs, b) perform a content-analysis to rank-order the beliefs, and c) determine the 5-10 most salient beliefs (aka ‘modal beliefs'). These modal beliefs were then utilised in phase two of the research, aiding the measurement of the indirect variables in the model.

Phase two included a population survey among 300 respondents, to quantitatively measure the key cognitive variables (attitude, perceived norms and personal agency) concerning engaging in an MRD. The population survey was therefore descriptive and structured in nature, containing close-ended questions. The measurement of direct variables was taken by applying previously utilised scales. The measurement of the indirect variables was taken by testing the overall evaluation of the modal salient beliefs discovered in the elicitation study. The population survey was created and distributed using an online survey software called Qualtrics. Data was collected

through a non-probability, internet-based sampling technique known as unrestricted self-selected surveys. After collecting responses from 300 respondents, an advanced statistical programme called SPSS was utilised to analyse the data.

The following section will discuss the results gained from the above research methodology, providing deeper insight into the hypothesised relationships between attitude, perceived norms and personal agency, with the intention to engage in an MRD.

CHAPTER 5

RESULTS

5.1. Introduction

The IMBP yields results on both the direct and indirect measures for attitude (experiential and instrumental attitude), perceived norms (injunctive and descriptive norms), and personal agency (self-efficacy and perceived control). When analysing the results there are two important reasons why one should begin by analysing the measures of the direct variables. Firstly, the direct measures are usually more strongly associated with intentions and behaviour than the indirect measures, and secondly because their relationship with intention indicates the relative importance of these variables in predicting behavioural intention (Montano & Kasprzyk, 2015). An essential first step to the analysis is therefore to demonstrate these associations with behavioural intention, thereby isolating the most important determinants of intention, before analysing the indirect measures. These indirect measures yield deeper insight on the specific beliefs supporting each direct measure, which are put forth to guide future intervention messages seeking to promote MRD behaviour (Montano & Kasprzyk, 2015).

This chapter, therefore, begins by reporting the analysis of the direct measures of attitude (experiential and instrumental attitude), perceived norms (injunctive and descriptive norms), and personal agency (self-efficacy and perceived control). This analysis begins by assessing the direct measures' reliability and validity, their descriptive statistics and regression analysis to show their importance in understanding intention. Next, an analysis is performed on the indirect measures of attitude (experiential and instrumental attitude), perceived norms (injunctive and descriptive norms), and personal agency (self-efficacy and perceived control). This analysis begins by firstly assessing the modal salient beliefs associated with each IMBP variable, a correlation matrix showing the association between each direct and indirect measure, and lastly an assessment of the indirect variables' descriptive statistics.

5.2. Direct Measures Within the IMBP

The direct measures for attitude (experiential and instrumental attitude), perceived norms (injunctive and descriptive norms), and personal agency (self-efficacy and perceived control) were analysed first, in order to assess which measure had the most significant correlation with intention. The below sections detail the validity and reliability of these measures, the measures' descriptive statistics, a regression model with behavioural intention, and lastly, each measures correlation with its respective indirect measure.

5.2.1. Validity of the instrument

Exploratory Principal Components Analysis (PCA) using Varimax Rotation was used to assess the construct validity, assessing constructs for related sub-themes. A loading factor of 0.40 or higher was used as the acceptable minimum factor loading (Braun, 2012). Table 5.1 contains the results for this PCA assessment.

Table 5.1. Principal Components Analysis

		Components					
Construct	**Item #**	1	2	3	4	5	6
Experiential & Instrumental Attitude	17a	0.241	0.73	0.287	0.202	0.013	-0.13
	17b	0.182	0.572	0.622	0.083	0.091	0.168
	17c	0.156	0.63	0.625	0.068	0.079	0.169
	17d	0.106	0.67	0.451	-0.023	0.062	0.082
	17e	0.065	0.667	0.313	0.046	0.125	0.254
	17f	0.262	0.801	0.318	0.048	0.006	-0.159
	17g	0.244	0.699	0.301	-0.026	-0.082	-0.144
	17h	0.275	0.784	0.349	0.079	-0.061	-0.085
	17i	0.047	0.62	0.266	0.13	0.276	0.154
	17j	0.134	0.728	-0.132	0.102	0.131	0.13
Injunctive & Descriptive Norms	18a	0.888	0.174	0.158	0.095	-0.014	-0.07
	18b	0.881	0.126	0.181	0.063	-0.025	0.074
	18c	0.902	0.139	0.211	0.112	-0.023	-0.012
	18d	0.897	0.162	0.186	0.089	0	-0.004
	18e	0.859	0.191	0.238	0.104	-0.074	0.072
	18f	0.861	0.178	0.148	-0.008	0	0.197
	18g	0.695	0.234	-0.066	0.063	-0.049	0.404
	18h	0.312	0.055	-0.088	0.027	0.034	0.852
Perceived Control	19a	0.001	0.071	0.046	0.865	0.175	0.051
	19b	0.058	0.096	0.14	0.876	0.128	0.099
	19c	0.077	0.044	0.153	0.877	0.141	0.078
	19d	0.098	0.122	-0.065	0.778	0.171	-0.09
	19e	0.153	0.032	0.04	0.736	0.171	-0.074
Self Efficacy	20a	-0.022	0.069	0.163	0.164	0.7	0.016
	20b	-0.09	0.011	0.195	0.124	0.799	0.14
	20c	-0.021	0.057	0.138	0.253	0.773	0.004
	20d	-0.003	0.08	-0.161	0.094	0.757	-0.068
	20e	-0.009	0.057	-0.071	0.131	0.794	-0.025
Intention	23a	0.249	0.318	0.856	0.099	0.046	-0.075
	23b	0.225	0.35	0.841	0.085	0.067	-0.071

	23c	0.312	0.342	0.78	0.086	0.053	-0.083
	23d	0.253	0.363	0.803	0.095	0.087	-0.058

All items measuring direct instrumental attitude (17a - 17e) and direct experiential attitude (17f - 17j) loaded onto a common factor, all having factor loadings greater than 0.4. Items 17b, 17c and 17d cross-loaded onto the second factor, with loadings greater than 0.4. Costello and Osborne (2005) state that the researcher needs to decide whether or not to drop cross-loaded items from the analysis, considering whether or not doing so compromises the integrity of the data. In the case above, considering that these scales have been previously used by other researchers who had already proved their validity (Braun, 2012; Montano & Kasprzyk, 2015; Robbins & Niederdeppe, 2015), a decision was made to keep these cross-loaded items in the analysis.

Items measuring direct injunctive norms (18a - 18d) and direct descriptive norms (18e - 18h) loaded onto a common factor with factor loadings greater than 0.4, except for item 18h, which only loaded with a factor loading of 0.312. Item 18h (key referent "most South Africans") was, therefore, dropped from the scale.

All items for direct perceived control (19a - 19e), direct self-efficacy (20a - 20e) and intention (23a - 23d) loaded onto their respective factors with factor loadings greater than 0.4. Next, a reliability analysis was performed on each scale.

5.2.2. Reliability of the instrument

This research employed a test for internal consistency reliability, where the commonly agreed-upon lower boundary for Cronbach Alpha is 0.7 (Malhotra, 2010). Table 5.2 describes the results of each scale regarding its number of items and the respective Cronbach Alpha.

Table 5.2 Reliability Analysis of Scales for Direct Variables

SCALE	# Items	Cronbach Alpha
Experiential Attitude	5	0.884
Instrumental Attitude	5	0.926
Injunctive Norms	4	0.962
Descriptive Norms	3	0.897
Perceived Control	5	0.909
Self-Efficacy	5	0.839
Intention	4	0.970

All of the scales had a Cronbach Alpha greater than 0.7. Reliability scores for intention (α = 0.970) were highest, followed by injunctive norms (α = 0.962), instrumental attitude (α = 0.926), perceived control (α = 0.909), experiential attitude (α=0.884), descriptive norms (α=0.897) and self-efficacy (α=0.839).

5.2.3. Descriptive statistics for direct measures

After assessing the validity and reliability for each measure, the descriptive statistics on the direct measures were calculated, where table 5.3 summarises these for each measure.

Table 5.3. Descriptive Statistics for Direct Measures Within the IMBP

	N	Mean	Std. Deviation	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
Intention	275	4.42	1.81	-.418	.147	-.872	.293
Direct Instrumental Attitude	269	4.42	1.62	-.314	.149	-.540	.296
Direct Experiential Attitude	263	4.81	1.40	-.675	.150	.416	.299
Direct Injunctive Norms	275	4.86	1.45	-.837	.147	.264	.293
Direct Descriptive Norms	273	4.49	1.39	-.531	.147	.022	.294
Direct Perceived Control	276	5.92	1.12	-1.793	.147	4.803	.292
Direct Self Efficacy	275	4.64	1.28	-.048	.147	-.709	.293
Valid N (listwise)	258						

All of the measures for the direct variables within the IMBP were measured along 7-point Likert scales, assessing the behavioural intention to engage in an MRD as part of one's weekly routine. Measures for both instrumental attitude (n = 269, $\bar{x}$ = 4.42) and experiential attitude (n = 263, $\bar{x}$ = 4.81) showed that on average respondents felt in between neutral and somewhat positive towards intending to engage in the behaviour. The measures for both injunctive norms (n = 275, $\bar{x}$ = 4.86) and descriptive norms (n = 273, $\bar{x}$ = 4.49) showed that on average respondents felt neutral/somewhat positive towards the views about key referent individuals supporting to the behaviour. The measure for direct perceived control (n = 276, $\bar{x}$ = 5.92) showed that on average respondents felt that their overall perceived control over the behaviour was in fact under their control. The measure for direct self-efficacy (n = 275, $\bar{x}$ = 4.64) showed that on average respondents felt that their perceived ability to perform the behaviour was in between neutral and somewhat easy. Lastly, the measure for behavioural

intention n = 275, $\bar{x}$ =4.42) showed that on average respondents felt neutral/somewhat agreeing towards intending to engage in an MRD.

When looking at the values for skewness and kurtosis, one can see that all measures, except for the measure for direct perceived control, were normally distributed. Direct perceived control was skewed to the right, showing that most of the respondents felt that the behaviour was under their control. The following section describes the results from the multiple linear regression performed on these direct measures.

5.2.4. Multiple linear regression

A multiple linear regression analysis was performed on all direct measures in order to assess their respective significance and predictive power over intention to engage in an MRD as part of one's weekly routine. A full report of the regression results can be found in Appendix D.

The model had a moderately strong coefficient of determination (R-squared) of 0.58, and an adjusted R-square of 0.57, showing that the model explained 57% of the variation in the behavioural intention to engage in an MRD as part of one's weekly routine. The ANOVA results (F = 56.81, p = 0.00) showed at least one coefficient in the model was significantly different from zero, and that there was a linear relationship between the variables within the model. Table 5.4 describes the results found in this regression analysis.

Table 5.4. Multiple Linear Regression on Behavioural Intention to Engage in an MRD Using Direct Variables Within the IMBP

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.91	0.48		-1.89	0.06
Direct Instrumental Attitude	0.52	0.08	0.44	6.68	0.00
Direct Experiential Attitude	0.31	0.09	0.24	3.55	0.00
Direct Injunctive Norms	0.40	0.10	0.32	3.88	0.00
Direct Descriptive Norms	-0.16	0.11	-0.12	-1.46	0.15
Direct Perceived Control	0.00	0.07	0.00	-0.01	1.00
Direct Self Efficacy	0.06	0.06	0.05	1.01	0.31
a. Dependent Variable: INTENTION					

Direct instrumental attitude (β = 0.44, p = 0.00) had a significant, positive relationship with behavioural intention at the 5% level of significance, thus providing evidence in support of H_1A. Of the variables which were significant predictors of behavioural

intention to engage in an MRD, direct instrumental attitude had the greatest predictive power.

Direct experiential attitude (β = 0.24, p = 0.00) had a significant, positive relationship with behavioural intention at the 5% level of significance, thus providing evidence in support of H_1B.

Direct injunctive norms (β = 0.32, p = 0.00) had a significant, positive relationship with behavioural intention at the 5% level of significance, thus providing evidence in support of H_2A.

Direct descriptive norms (β = -0.12, p = 0.15) did not have a significant relationship with behavioural intention at the 5% level of significance, thus providing evidence in support of H_2B.

Direct perceived control (β = 0.00, p = 1.00) did not have a significant relationship with behavioural intention at the 5% level of significance. This result is contrary to the prediction of H_3A, which predicted a significant negative relationship between direct perceived control and behavioural intention.

Direct self efficacy (β = 0.05, p = 0.31) did not have a significant relationship with behavioural intention at the 5% level of significance. This result is contrary to the prediction of H_3B, which predicted a significant, negative relationship between direct self-efficacy and behavioural intention.

Before analysing the indirect IMBP measures, it is important to note that the only significant direct IMBP measures were experiential attitude, instrumental attitude, and injunctive norms. This means that only indirect IMBP measures for experiential attitude, instrumental attitude, and injunctive norms were relevant to answer this study's research question. The below section, therefore, details the results of all indirect IMBP measures and then takes a closer look at those relevant to answer the research question.

5.3. Indirect Measures Within the IMBP

Indirect measures for attitude (experiential and instrumental attitude), perceived norms (injunctive and descriptive norms), and personal agency (self-efficacy and perceived control) were analysed in order to provide deeper insight into the key beliefs associated with each key variable within the IMBP. The below sections provide results on the content analysis that was performed from the elicitation study results, yielding the modal salient beliefs, followed by the composite score results on each indirect IMBP measure, a correlation matrix between direct and indirect measures, and lastly, the descriptive statistics associated with each belief.

5.3.1. Modal salient beliefs associated with each key IMBP variable

The elicitation study was performed in order to determine the modal salient beliefs, present in the sample population, concerning each key construct within the IMBP and the intention to engage in an MRD. As recommended by Ajzen (2006), a content analysis of the responses to the open-ended elicitation study questions was performed, where the full content analysis results can be seen in Appendix B. Table 5.5 describes the results of the content analysis, yielding the modal salient beliefs associated with the indirect IMBP measures.

Table 5.5. Modal Salient Outcome Beliefs, Normative Beliefs and Control Beliefs

Belief	Variable	Question	Modal Salient Beliefs	Percentage of Respondents Holding This Belief
Outcome beliefs	Experiential Attitude	*What would you **like** most about engaging in a meat-reduced diet?*	Health	33.33%
			Sustainability	22.22%
			Animal Concern	22.22%
		*What would you **hate** about engaging in a meat-reduced diet?*	Cravings for meat	25.00%
			Restricted Food Variety	21.43%
			Meal Preparation Time	14.29%
	Instrumental Attitude	*What are some of the **benefits** that might result from engaging in a meat-reduced diet?*	Health & Nutrition	36.63%
			Animal welfare	15.84%
			Environmentally friendly	14.85%
		*What are some of the **drawbacks** that might result from engaging in a meat-reduced diet?*	Social Criticism	19.28%
			More effort	15.66%
			Lack of Protein	9.64%
Normative Beliefs	Injunctive & Descriptive Norms	*List the **individuals/groups** who would approve/disapprove of you in engaging in a meat-reduced diet*	Family	24.79%
			Friends	19.66%
			Environmentalists & Animal Welfare Groups	13.68%
			Vegans & Vegetarians	9.40%
			Health Professionals	6.84%
Personal Agency Beliefs	Self-efficacy & perceived control	*What factors would make it **easy** for you to engage in a meat-reduced diet?*	Social acceptance	22.22%
			Meat-free restaurant options	11.11%
			Education	11.11%
		*What factors would make it **difficult** for you to engage in a meat-reduced diet?*	Lack of options when eating out	11.76%
			Having to expend more effort	11.76%
			Higher cost	9.80%

Indirect experiential attitude was therefore measured via three positive outcome beliefs ("Healthy"; "Sustainable"; "Animal Concern") and three negative outcome beliefs ("Cravings for Meat"; "Restricted Food Variety"; "Meal Preparation Time"). Similarly, indirect instrumental attitude was measured via three positive outcome beliefs ("Health & Nutrition"; "Animal welfare"; "Environmentally friendly") and three negative outcome beliefs ("Social criticism"; "More effort"; "Lack of protein"). Indirect injunctive norms and descriptive norms were measured via the beliefs of five key referent groups/individuals ("Family"; "Friends"; "Environmentalists & Animal Welfare Groups"; "Vegans & Vegetarians"; "Health Professionals"). Indirect self-efficacy and indirect perceived control were measured via three enabling factors ("Social acceptance"; "Meat-free restaurant options"; "Education") and three preventative factors ("Lack of options when eating out"; "Having to expend more effort"; "Higher costs"). The following section yields the results of the correlations between indirect and direct IMBP measures.

5.3.2. Correlation between direct and indirect measures

Before carrying out an analysis to identify target beliefs for intervention, it is essential to determine whether or not indirect measures are assessing the constructs they were designed to measure (Montano & Kasprzyk, 2015). Table 5.4, therefore, shows the correlation between indirect and direct measures of the same constructs.

Table 5.6. Correlation Matrix Between All Measures of Behavioural Beliefs and Behavioural Intentions

	Correlation Matrix Between All Measures of Behavioral Beliefs and Behavioral Intentions													
		1	2	3	4	5	6	7	8	9	10	11	12	13	13
1	Intention	1													
2	Direct Experiential Attitude	.587**	1												
3	Direct Instrumental Attitude	.675**	.734**	1											
4	Direct Injunctive Norms	.427**	.398**	.461**	1										
5	Direct Descriptive Norms	.324**	.312**	.368**	.552**	1									
6	Direct Self Efficacy	.508**	.441**	.447**	.210**	.187**	1								
7	Direct Perceived Control	.215**	.211**	.230**	.344**	.286**	.233**	1							
8	Indirect Experiential Attitude	.695**	.526**	.584**	.409**	.308**	.366**	.223**	1						
9	Indirect Instrumental Attitude	.690**	.570**	.590**	.384**	.330**	.470**	.214**	.776**	1					
10	Indirect Injunctive Norms	.488**	.411**	.486**	.395**	.281**	.364**	.356**	.443**	.408**	1				
11	Indirect Descriptive Norms	.435**	.385**	.431**	.371**	.259**	.317**	.333**	.454**	.410**	.862**	1			
12	Indirect Self Efficacy	.165**	.179**	.139*	-.125*	-0.033	.267**	0	.124*	.171**	-0.01	-0.007	1		
13	Indirect Perceived Control	.177**	.184**	.204**	0.088	0.049	.174**	0.058	.133*	.201**	.167**	.131*	.338**	1	1
	Correlation is significant at the 0.01 level (2-tailed).**														
	Correlation is significant at the 0.05 level (2-tailed).*														

Indirect measures for attitude (experiential and instrumental attitude) were computed from six belief outcomes associated with engaging in an MRD. Both indirect experiential attitude (r = 0.526, p = 0.00) and indirect instrumental attitude (r= 0.590, p = 0.00) had a moderate and positive correlation with their direct measures. Indirect measures for perceived norms (both injunctive and descriptive norms) were measured from the beliefs related to five key referent individuals' views on MRDs. Both indirect injunctive norms (r = 0.395, p = 0.00) and indirect descriptive norms (r = 0.259, p = 0.00) had a moderate/weak, positive correlation with their direct measures. Indirect measures for personal agency (self-efficacy and perceived control) were measured from the beliefs concerning the certainty of behavioural performance under six different conditions. Indirect self-efficacy (r = 0.267, p = 0.00) was weakly, positively correlated to its direct measure, while indirect perceived control (r = 0.058, p = 0.75)

did not have a significant correlation with its direct measure at the 5% level of significance. This indicates that the indirect IMBP measure for perceived control is not measuring the underlying construct it is supposed to measure, and conclusions should, therefore, be taken with caution.

5.3.3. Descriptive statistics for indirect measures

Indirect IMBP measures were assessed based on their respective overall composite scores, as well as the correlation of specific modal beliefs with behavioural intention. The full analysis of all modal salient beliefs can be seen in Appendix E, however only the indirect IMBP measures whose direct IMBP measures were found to be significant predictors of behavioural intention are commented on below. Table 5.7, therefore, details the descriptive statistics related to each modal salient belief associated with experiential attitude, instrumental attitude, and injunctive norms.

Table 5.7. Descriptive Statistics For Indirect IMBP Measures - Experiential Attitude, Instrumental Attitude and Injunctive Norms

Outcome Expectancy (Experiential)	*Belief Strength (s) (Range 1 to 7)*		*Evaluation (e) (Range -3 to -3)*		*Composite (s*e)*		r with Intention
	M	SD	M	SD	M	SD	r
Healthy	4.96	1.58	2.84	0.38	14.18	5.10	0.591**
Sustainable	5.19	1.60	2.39	0.75	12.57	5.98	0.515**
Free from animal cruelty	4.97	1.85	2.24	0.99	11.64	7.25	0.426**
Cravings for meat	4.24	1.76	-0.18	1.26	-0.47	6.16	-0.59
Restricted in my food variety	4.40	1.84	-1.28	1.00	-6.02	6.02	0.442**
More time pressed to prepare meals	3.99	1.78	-1.28	1.03	-5.33	5.71	0.205**
Composite Index of Indirect Experiential Attitude					26.73	21.72	0.587**
Sample size (n)	266		267		260		
Outcome Expectancy (Instrumental)	*Belief Strength (s) (Range 1 to 7)*		*Evaluation (e) (Range -3 to -3)*		*Composite (s*e)*		r with Intention
	M	SD	M	SD	M	SD	r
Improved health & nutrition	4.70	1.68	2.68	0.59	12.83	5.63	0.609**
Improved animal welfare	5.22	1.59	2.40	0.79	13.01	6.42	0.535**
Improved environmental sustainability	5.34	1.54	2.51	0.76	13.84	6.26	0.554**
Social criticism	3.57	1.54	-0.75	1.08	-2.60	4.67	0.054
More effort	4.62	1.64	-0.46	1.24	-2.18	6.66	0.282**
A lack of protein	4.17	1.80	-1.89	0.89	-7.97	5.79	0.425**
Composite Index of Indirect Instrumental Attitude					26.89	22.29	0.675**
Sample size (n)	274		271		269		

Injunctive Normative Beliefs	*Belief Strength (s) (Range 1 to 7)*		*Evaluation (e) (Range -3 to -3)*		*Composite (s*e)*		r with Intention
	M	SD	M	SD	M	SD	r
Friends	3.32	1.58	-1.90	1.26	1.43	2.31	0.332**
Family	3.14	1.62	-1.22	1.64	1.92	2.55	0.259**
Environmentalists and animal welfare groups	5.83	1.35	-1.08	1.71	31.38	11.90	0.300**
Vegans & vegetarians	6.10	1.27	-1.58	1.58	-9.41	10.35	0.271**
Health professionals	4.33	1.40	0.87	1.63	4.00	7.45	0.238**
Composite Index of Indirect Injunctive Norms					29.33	22.39	0.427**
Sample size (n)	273		276		272		272
Descriptive Normative Beliefs	*Belief Strength (s) (Range 1 to 7)*		*Evaluation (e) (Range -3 to -3)*		*Composite (s*e)*		r with Intention
	M	SD	M	SD	M	SD	r
Friends	3.08	1.62	-1.59	1.35	-4.67	5.44	-0.08
Family	2.78	1.64	-0.84	1.69	-2.02	5.60	-0.007
Environmentalists and animal welfare groups	5.27	1.28	-1.03	1.60	-5.11	8.84	0.369**
Vegans & vegetarians	6.37	1.04	-1.27	1.57	-7.78	10.32	0.382**
Health professionals	4.17	1.29	-0.51	1.63	2.25	7.16	0.248**
Composite Index of Indirect Descriptive Norms					-17.37	26.62	0.324**
Sample size (n)	274		276		274		274

Indirect measures of specific experiential outcome expectancy beliefs (“Healthy”; “Sustainable”; “Free from animal cruelty”; “Restricted in my food variety”; “More time pressed to prepare meals”) were all significantly correlated to behavioural intention at the 1% level of significance. The only belief that was not significantly correlated with behavioural intention was the belief “Cravings for meat” (r = - 0.59). The overall mean composite score ($\overline{x}[\sum(s*e)]$) for indirect experiential attitude was +26.73, showing that on average respondents felt more positive than negative emotions when considering engaging in an MRD.

Indirect measures of specific instrumental outcome expectancy beliefs (“Improved health & nutrition”; “Improved animal welfare”; “Improved environmental sustainability”; “More effort”; “A lack of protein”) were all significantly and positively correlated with behavioural intention at the 1% level of significance, with the exception of the belief “social criticism” (r = 0.054). The overall mean composite score ($\overline{x}[\sum(s*e)]$) for indirect instrumental attitude was +26.89, showing that on average respondents saw more advantages than disadvantages when considering engaging in an MRD.

Indirect injunctive normative beliefs (“Friends”; “Family”; “Environmentalists and animal welfare groups”; “Vegans & vegetarians”; “Health professionals”) were all positively correlated with behavioural intention at the 1% level of significance. The overall mean composite score ($\overline{x}[\sum(s*e)]$) for indirect injunctive norms was +29.33,

showing that on average respondents believed that key referent groups/individuals supported the behaviour of engaging in an MRD

5.3.4. Identifying beliefs for intervention messages

Identifying beliefs which were appropriate to target with intervention messages that promote MRDs began with an analysis on the indirect IMBP measures whose respective direct IMBP measures were significant in the multiple linear regression results, in section 5.2.4. The result was an assessment of indirect experiential attitude, indirect instrumental attitude and indirect injunctive norms, assessing which of the modal salient beliefs associated with these IMBP measures were most appropriate to develop message strategies upon.

The first step to this analysis was assessing which modal salient beliefs were most strongly correlated with behavioural intention. If targeted with message strategy promoting MRDs, changes in these beliefs would significantly alter behavioural intention to engage in an MRD. Secondly, Fishbein and Cappella (2006) recommend using additional criteria suggested by Hornik and Woolf (1999) to select beliefs for intervention targets: there should be enough people who do not already hold the belief to make intervention worthwhile. Hornik and Woolf (1999) state that if only a low percentage of respondents disagree with the belief, it means that many people already hold the belief and therefore the campaign would only affect a few. Comparatively, Hornik and Woolf (1999) further state that if a high percentage of people disagree with the belief, it could mean that intervention messages could struggle to change the minds of the masses, as they would be promoting information which is new / not believed in by most. For this reason, this research considered beliefs that were disagreed upon by 20-65% of the respondents.

Identifying which beliefs were most appropriate was therefore based on the significance of the correlation between the respective belief and behavioural intention, as well as the criteria of the particular belief having a significant percentage of respondents who disagreed with that belief. Table 5.8 describes these results.

Table 5.8. Identifying Modal Salient Beliefs for Intervention Message Strategies

Indirect Measure	Modal Salient Beliefs	r with Intention	Percentage of Respondents who Disagree With the Belief
Experiential Attitude	Healthy	0.591**	9.71%
	Sustainable	0.515**	8.46%
	Free from animal cruelty	0.426**	15.27%
	Cravings for meat	-0.59	22.99%
	Restricted in my food variety	0.442**	24.45%
	More time pressed to prepare meals	0.205**	29.82%
Instrumental Attitude	Improved health & nutrition	0.609**	13.36%
	Improved animal welfare	0.535**	10.51%
	Improved environmental sustainability	0.554**	8.66%
	Social criticism	0.054	30.69%
	More effort	0.282**	17.39%
	A lack of protein	0.425**	23.91%
Injunctive Norms	Friends	0.332**	54.55%
	Family	0.259**	64.31%
	Environmentalists and animal welfare groups	0.300**	14.37%
	Vegans & vegetarians	0.271**	15.27%
	Health professionals	0.238**	21.88%
*Note: *p<0.05. **p<0.001*			

When considering experiential attitude, all beliefs (except for “cravings for meat”) showed a positive and significant correlation with behavioural intention at the 1% level of significance. Of these significant beliefs, those who also met the criteria of 20-65% of respondents disagreeing with the belief, were the beliefs that MRDs lead to one being “restricted in my food variety” and being “more time pressed to prepare meals”.

When considering instrumental attitude, all beliefs except for “social criticism” were significantly correlated with behavioural intention. Of these significant beliefs, those who also met the criteria of 20-65% of respondents disagreeing with the belief, was the belief that MRDs lead to “a lack of protein”.

When considering injunctive norms, all beliefs associated with the key referent groups/individuals were all positively and significantly correlated with behavioural intention at the 1% level of significance. Of these significant beliefs, those who also met the criteria of 20-65% of respondents disagreeing with the belief, were beliefs related to key referent individuals/groups being “friends”, “family” and “health professionals”.

5.4. Predictive Ability of Direct vs Indirect Measures

In order to test the predictive ability of direct versus indirect measures, and thereby test H_4, a series of multivariate regressions of the indirect measures and the direct measures on behavioural intention were performed, as seen in table 5.9.

Table 5.9. Standardised Regression Coefficients from Regression Classes of Cognition (Measured Indirectly and Directly) on Behavioural Intention

	Models Using Indirect Measures	*Models Using Direct Measures*
Classes of Cognition	*Intention*	*Intention*
Experiential Attitude	0.132	0.26**
Instrumental Attitude	0.432**	0.44**
Injunctive Norm	0.158**	0.32**
Descriptive Norm	-0.01	-0.12
Self-Efficacy	0.207**	0.00
Perceived Control	-0.031	0.05
Sample size (n)	237	258
Model R-Square	0.534	0.576
Model Adjusted R-Square	0.552	0.566
*Note: *p<0.05. **p<0.001*		

As seen above, the models using direct measures had a higher *R-Squared* (0.576 versus 0.534) and *Adjusted R-Square* (0.566 versus 0.552) than the models using indirect measures. This shows evidence that the direct IMBP measures explain more variance in behavioural intention than the indirect measures alone - providing evidence in support of H_4.

5.5. Participant Characteristics

Of the 300 respondents who answered the questionnaire, 22 did not meet the target population criteria, resulting in a final sample of 278 respondents. Table 5.10 below gives the percentage of respondents that fell into each demographic group.

Table 5.10. Demographic Data

GENDER	Percentage
Female	67.00%
Male	33.00%
RACE	**Percentage**
White	90.60%
Other	3.30%
Black	2.50%
Indian	2.20%
Coloured	1.40%
EDUCATION LEVEL	**Percentage**
Matric	8.00%
Diploma	12.00%
Bachelor's Degree	27.20%
Postgraduate Diploma	10.10%
Honours Degree	29.30%
Master's Degree	12.30%
Doctor's Degree	1.10%
MONTHLY HOUSEHOLD INCOME	**Percentage**
R6,001 - R10,000	4.40%
R10,001 - R25,000	28.80%
R25,001 - R50,000	26.60%
R50,001 - R80,000	15.90%
R80,000 +	24.40%
LANGUAGE	**Percentage**
English	90.50%
Afrikaans	8.00%
Tswana	0.70%
Sepedi	0.40%
Zulu	0.40%
AGE GROUP	**Percentage**
18 - 25	40.60%
26 - 35	23.90%
26 - 50	7.60%
51 - 65	21.40%
65 +	5.80%

The above demographic variables were slightly skewed towards females (67%), white race (90.6%), English language (90.5%) and people below the age of 35 (64.5%). While the above demographic variables do hold potential interest, there is no empirical evidence in prior literature which suggests that they impact MRD behaviour, with exception to gender (Ruby & Heine, 2011; Rothgerber, 2013; Sobal, 2005), income levels (Ciera & Masset, 2010) , and education (Gossard & York, 2003).

5.6. Conclusion

Previous chapters have stated that “determining the fundamental influences on MRD adoption and practice is an important contribution to health and wellbeing research” (Hayley *et al*., 2015: 98). Further, due to the high environmental impact of meat production, “reducing meat consumption is central to many scientific debates on healthy, sustainable diets” (Macdiarmid *et al.,* 2015: 487). The above empirical results give insight and understanding into the cognitive foundation supporting intentions to engage in an MRD - measured both directly and indirectly via IMBP measures. The following chapter discusses these insights, and how future researchers and marketing practitioners can make use of them, firstly in order to develop the field of research on MRD behaviour, and secondly to develop messages and intervention strategies which promote MRDs. Furthermore, the following section will detail the limitations of this research, as well as recommendations for future research.

5.7. Chapter Summary

These empirical results sought out to provide quantitative data to answer the below three research questions:

1. *Which categories of cognition (attitudinal, normative or personal agency) will most strongly predict whether or not middle to upper-income South African intends to engage in an MRD as part of their weekly routine?*
2. *Of the indirect measures, which underlying salient beliefs should be used to build target messages and intervention strategies to promote MRDs?*
3. *Of the categories of cognition (attitudinal, normative or personal agency), will the indirect measures or direct measures explain more variance in the intentions of middle to upper-income South Africans to engage in an MRD as part of their weekly routine?*

Results indicated that the categories of cognition that most strongly predict whether or not middle to upper income South African intends to engage in an MRD as part of their weekly routine were direct experiential attitude, direct instrumental attitude and direct injunctive norms. Experiential attitude beliefs which were seen as appropriate to target via intervention messages promoting MRDs were beliefs that MRDs will lead to one being "restricted in [their] food variety" and being “more time pressed to prepare meals”. Instrumental attitude beliefs which were seen as appropriate to target via intervention messages promoting MRDs was the belief that MRDs lead to "a lack of protein". Injunctive norm beliefs which were seen as appropriate to target via intervention messages promoting MRDs were beliefs associated with the key referent individuals/groups being "friends", "family" and "health professionals". Lastly, direct measures (*Adj R-Square* = 0.566) were found to have explained additional variance beyond that explained by the indirect IMBP measures (*Adj R-Square* = 0.525).

CHAPTER 6

DISCUSSION AND CONCLUSION

6.1. Introduction

This study contributes to the well-established field of research using the reasoned action approach to understand behaviour, applying the latest iteration of this theory: the IMBP (Fishbein, 2000; Fishbein & Cappella, 2006; Kasprzyk *et al.*, 1998). The current study tested the implications for message design in a unique and important health behaviour context: engaging in an MRD. A two-phase design was used to administer the measurement instrument to assess the IMBP's key theoretical constructs. Many of the results echoed prior evidence on the cognitive foundation aiding meat consumption, and intentions to engage in an MRD, and new findings were also discovered. This further justifies research on the topic of reduced meat consumption, and the consumer behaviour therein.

The below sections discuss the main findings of this research, aiding the overall purpose of this study. First, an overview and discussion of the key empirical results are given, comparing and contrasting these findings with the findings of previous research and to hypothesised relationships. Next, the main contributions of this research are given, after which the limitations and suggestions for future research are stated. Finally, a conclusion and chapter summary are given.

6.2. Key Areas of Cognition Aiding Behavioural Intention to Engage in an MRD

The first research question this study sought to answer was as follows:

> *Which categories of cognition (attitudinal, normative or personal agency) will most strongly predict whether or not middle to upper income South African intends to engage in an MRD as part of their weekly routine?*

The analysis revealed that instrumental attitude, injunctive norms, and experiential attitude (in order of importance) were the strongest predictors of behavioural intention. Direct measures of descriptive norms, self-efficacy and perceived control were not found to be significant predictors of behavioural intention, and as a result, their corresponding indirect IMBP measures were not further analysed. The following sections discuss the key findings related to each of these significant direct IMBP measures, comparing them to their hypothesised relationships.

6.2.1. Attitude towards intending to engage in an MRD

The analysis revealed that direct measures of attitudes, both instrumental and experiential attitudes, were important when understanding intentions to engage in an

MRD, and thus important for marketers seeking to promote MRDs. As predicted, direct instrumental attitude was found to be significant, and positively correlated with behavioural intention to engage in an MRD, where this variable was, in fact, the strongest predictor of behavioural intention. Marketers should therefore be aware that respondents placed a significant amount of importance on the perceived benefits/drawbacks of engaging in an MRD, and therefore messaging promoting MRDs should highlight these benefits. Similarly, as predicted, direct experiential attitude was found to be a significant predictor of behavioural intention to engage in an MRD, where this variable's correlation with behavioural intention was significant and positive. Marketers should therefore be aware that respondents are more likely to intend to engage in an MRD if it makes them feel good. These findings provide evidence in support of H_1A and H_1B. Measures for both instrumental attitude (n = 269, $\bar{x}$ = 4.42) and experiential attitude (n = 263, $\bar{x}$ = 4.81) showed that on average respondents felt in between neutral and somewhat positive towards intending to engage in the behaviour. The significance of direct experiential attitude and direct instrumental attitude in predicting behavioural intention, meant that their respective indirect measures were further analysed.

6.2.2. Perceived norms towards intending to engage in an MRD

Direct injunctive norms were found to be the second strongest predictor of behavioural intention to engage in an MRD, where, as predicted by H_2A, they showed a significant and positive relationship with behavioural intention. Further, as predicted by H_2B, the IMBP measure for direct descriptive norms was not found to be a significant predictor of behavioural intention to engage in an MRD, and hence the indirect IMBP measures for descriptive norm were not assessed further. Marketers should therefore draw on injunctive norms, rather than descriptive norms, when seeking to promote MRDs.

Interestingly, this finding is slightly inconsistent with previous research, which has reported the significant impact that norms (inclusive of descriptive norms) have on dietary choice (particularly MRD choice) (Lindquist, 2013; Joy, 2011; Ruby, 2012; Zaraska, 2016). Albeit, a lot of the prior research considering the impact of perceived norms on dietary behaviour does not distinguish between injunctive norms and descriptive norms. There is, therefore, an opportunity for future research to make this distinction when researching the normative influence on dietary behaviour.

The measures for both injunctive norms (n = 275, $\bar{x}$ = 4.86) and descriptive norms (n = 273, $\bar{x}$ = 4.49) showed that on average respondents felt neutral / somewhat positive towards the views about key referent individuals supporting to the behaviour.

6.2.3. Personal agency towards intending to engage in an MRD

The IMBP measures for direct self-efficacy and direct perceived control were not found to be significant predictors of behavioural intention to engage in an MRD.

Consequentially, they did not aid this study's research question, and as a result, the indirect IMBP measures for these variables were not explored in further detail.

These findings were not aligned with the predictions of H_3A and H_3B, which predicted both variables would have a significant, negative impact on behavioural intention. However, these hypotheses were based on the limited sources of literature which had explored the barriers and enablers towards engaging in an MRD, where more barriers had been cited. Future research could, therefore, expand upon the variable of 'personal agency' towards engaging in an MRD so that a deeper level of insight can be gathered.

6.3. Underlying Salient Beliefs Appropriate to Target via Message Intervention

The second research question this study sought to answer was as follows:

> *Of the indirect measures, which underlying salient beliefs should be used to build target messages and intervention strategies which promote MRDs?*

Determining which beliefs were appropriate to build target messages and intervention strategies upon was based off two criteria: 1) beliefs had to be significant predictors of behavioural intention (Montano & Kasprzyk, 2015), and 2) there should be enough people who do not already hold the respective belief (at least 20-65% of respondents who disagreed with the belief) (Fishbein & Cappella, 2006; Hornik and Woolf, 1999). Lastly, only the indirect IMBP measures, whose counterpart direct IMBP measures were found to be significant predictors of behavioural intention, were analysed (Montano & Kasprzyk, 2015). The below sections, therefore, discuss the empirical findings related to the indirect IMBP measures for instrumental attitude, experiential attitude and injunctive norm. The below sections discuss each measure's overall composite score, as well as their underlying salient beliefs - commenting on which beliefs could be considered appropriate to build target messages and intervention strategies upon.

6.3.1. Outcome expectancy beliefs

The overall composite score for indirect instrumental attitude was positive, indicating that, on average, respondents saw more advantages than disadvantages when considering engaging in an MRD. When considering the specific outcome expectancy beliefs, the perceived advantages ("improved health and nutrition", "improved environmental sustainability" and "improved animal welfare") were the strongest predictors of behavioural intention amongst the instrumental outcome expectancy beliefs. Of the perceived disadvantages, only the beliefs that MRDs require "more effort" and lead to a "lack of protein" were significant predictors of behavioural intention.

When considering experiential outcome expectancy beliefs, the overall composite score was also positive, indicating that, on average, respondents felt more positive than negative emotions when considering engaging in an MRD. Further analysis revealed that the three positive beliefs ("healthy", "sustainable", "free from animal cruelty") were the strongest predictors of behavioural intention amongst the experiential outcome expectancy beliefs. Of the perceived negative emotions, the beliefs "restricted in my food variety" and "more time-pressed to prepare meals" were also significant predictors of behavioural intention, but not as strong as the positive beliefs.

Of all of these significant outcome expectancy beliefs, those who also met the criteria of 20-65% of respondents disagreeing with the belief, were the instrumental outcome belief that MRDs lead to “a lack of protein”, and the experiential outcome expectancy belief that MRDs result in one feeling “restricted in [their] food variety” and “more time pressed to prepare meals”. If one follows the message strategy development process of Hornik and Woolf (1999) and Fishbein and Cappella (2006), then these three attitudinal beliefs would be considered appropriate to build target messages and intervention strategies upon.

These findings are mostly in line with that of other researchers, who have consistently cited consumer’s positive outcome associations with engaging in MRDs as: improved animal welfare, improved environmental sustainability and improved personal health (Bar & Chapman, 2002; Hoek *et al.*, 2004; Ruby, 2012; Vanhonacker *et al.*, 2007). Similarly, the common negative associates with engaging in MRDs cited by past research include: missing the taste of meat, more time consuming and specific nutrition concerns. Past research also cited further negative associations being: health-related reasons (weakness, fatigue and anaemia), changes in living situations (e.g. cooking for family members who eat meat) and unwillingness to change eating habits (Barr & Chapman, 2002; Lea & Worsley, 2003). The differences in some of the beliefs cited in past research versus those found in this study can likely be attributed to the fact that the process of extracting beliefs via an elicitation study, makes the salient beliefs relevant concerning a specific target sample population (Montano & Kasprzyk, 2015).

6.3.2. Normative beliefs

The overall composite score for injunctive normative beliefs was positive, indicating that, on average, respondents felt that the key referent groups/individuals would support their behaviour of engaging in an MRD. This finding supports hypothesis H_2A. All beliefs associated with the key referent groups/individuals were found to be significant predictors of behavioural intention. The support of "friends" was most strongly correlated with behavioural intention, reasonably followed by the support of "environmentalists and animal welfare groups" and "vegans and vegetarians".

Interestingly, the support of "health professionals" was the least correlated with behavioural intention to engage in an MRD.

These findings are similar to those of Fedusiv and Bai (2016), who found that respondents were more likely to trust the views and support of their friends and family over health professionals when it came to eating recommendations. Similarly, Ruby (2012) also found that having family and friends that support one's dietary choice is a significant factor contributing to one's decision to maintain an MRD. While the beliefs associated with "friends" and "family" had significant relationships with behavioural intention, it is important to note that respondents did not think that these referents supported the behaviour of engaging in an MRD, as indicated by their belief strength (s). Comparatively, while the belief associated with "health professionals" had a weaker correlation with behavioural intention, respondents believed that health professionals were neutral / somewhat positive regarding issuing their advice for one to follow an MRD. When considering the evaluation of each normative belief, "health professionals" was the only referent which yielded a positive evaluation, indicating that they were the only referent whom respondents perceived positively when evaluating whose advice they wanted to follow, concerning deciding whether or not to engage in an MRD.

Of all of these significant injunctive norm beliefs, those who also met the criteria of 20-65% of respondents disagreeing with the belief, were beliefs associated with “friends”, “family” and “health professionals”. If one follows the message strategy development process of Hornik and Woolf (1999) and Fishbein and Cappella (2006), then these three normative beliefs would be considered appropriate to build target messages and intervention strategies upon.

6.4. Direct Versus Indirect Behavioural Measures

The third research question this study sought out to answer was as follows:

> *Of the categories of cognition (attitudinal, normative or personal agency), will the indirect measures or direct measures explain more variance in the intentions of middle to upper-income South Africans to engage in an MRD as part of their weekly routine?*

Through running a series of multivariate regressions of the indirect measures and the direct measures of behavioural intention, the above research question was answered. The regression results indicated that the models including direct IMBP measures explained more variance in behavioural intention to engage in an MRD than the indirect IMBP measures. This result is in line with Montano & Kasprzyk (2015:73) who stated that "direct measures are usually more strongly associated with intentions and behaviours than indirect measures". Interestingly, the R-Squared and Adjusted R-Squared, for the model including direct IMBP measures were only marginally larger

than those for the model including indirect IMBP measures (0.576 versus 0.534, and 0.566 versus 0.552 respectively). Future research could therefore further explore the indirect IMBP measures - perhaps including more modal beliefs to which these measures are assessed and a more thorough way of extracting them via the elicitation study.

6.5. Contributions

This study attempted to assess the utility of the IMBP to predict and explain the behavioural intention to engage in an MRD, amongst middle to upper-income South Africans. This assessment can aid the advancement of the field of sustainable consumption, specifically the over-consumption of meat, and guide the development of initiatives that promote MRDs. The sustainability impact of the current and predicted future levels of meat consumption makes it imperative to attend to this growing sustainability concern (Reisch *et al.*, 2013; Schösler *et al.*, 2012). This study makes three primary contributions, namely: a theoretical contribution, contributions to marketing practitioners, and lastly, developing the IMBP framework. Each of these contributions has been discussed below.

6.5.1. Literary and Theoretical contributions

As seen in table 2.2 in chapter 2, there is a considerable amount of existing research within the topic of meat consumption, as well as emerging research on the topic of vegetarianism, meat alternatives and MRDs. The primary theoretical contribution this study made was that it is one of the first studies to quantitatively assess the cognitive foundation aiding behavioural intention to engage in an MRD. While other studies have touched on certain behavioural elements within the broad topic of meat consumption, this study was able to produce a more theoretical view of the behaviour of engaging in an MRD through applying the IMBP and critically analysing all key behavioural determinants. Various social psychologists have argued that behavioural intentions are the single strongest contributing factor to behaviour (Fishbein & Ajzen, 2010), hence this research adds significant value to the growing field of literature concerning meat consumption, sustainable behaviour and behavioural theory. The theoretical contributions of this study were threefold.

6.5.1.1. Sustainable consumption and behavioural theory towards MRDs

A literature review was written, summarising and synthesising past research assessing sustainable consumption and behavioural theory, concerning engaging in an MRD. The literature review began by giving readers a good foundational understanding of why there is a need to shift behaviour away from the high rates of meat consumption, where the key takeaways can be seen in Figure 6.1 below:

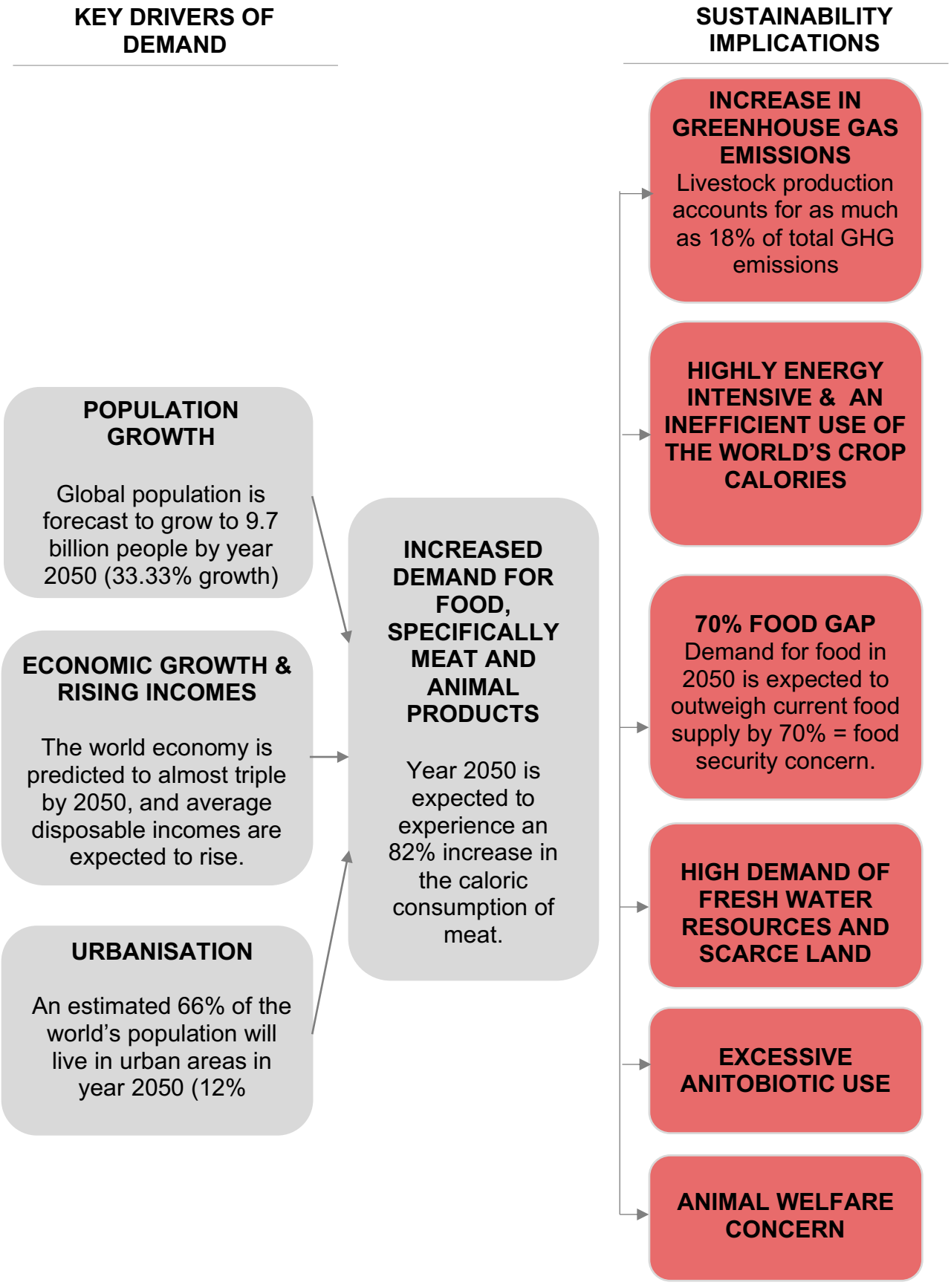

Figure 6.1. Sustainability Implications of the Growing Demand for Meat and Animal Products
(Author's summary)

The literature review articulated the sustainability concern of both the current and predicted future of meat consumption, and the need to shift this behaviour.

The literature review then proceeded to give insight into the findings of past research regarding what drives people's behaviour towards engaging in an MRD, specifically analysing variables contributing toward a reasoned action approach, as seen below:

Table 6.1 Past research concerning the cognitive foundation aiding MRD behaviour

VARIABLE	KEY FINDINGS
Attitude	Positive outcome associations with MRDs have been consistently cited as: • Improved animal welfare • Improved environmental sustainability • Improved health Negative outcome associations with MRDs have been consistently cited as: • Health related reasons • Missing the taste of meat • Changes in living situations • Time consuming • Unwillingness to change eating habits While attitudes towards MRDs have been found to generally be positive, most of these attitudes are weak, as they are not embedded in personal experiences, and are therefore ineffective at impacting purchase behaviour.
Perceived Norms	• Eating meat has been cited as being natural, normal and necessary - an essential force impacting the way we frame our diets. • There have been citations of an open dislike towards vegetarians, as well as negative stereotypes of vegetarians being created • Meat consumption is closely related to masculinity • Meat has played a central role in many cultures - having a high social value
Personal Agency	Perceived barriers to MRD adoption were consistently cited as: • Lack of convenience and ease of preparation • Lack of information • Unwillingness to change eating habits • Fear that family wouldn't change eating habits Hardly any perceived benefits to MRD adoption were cited.

The above findings in past research were therefore used to build the hypotheses this research sought to test. As discussed in section 6.5.2 below on marketing contributions.

6.5.1.2. Behavioural beliefs supporting intentions to engage in an MRD

Through conducting exploratory research in phase one of this methodology (the elicitation study), more profound insights and understanding were gained regarding the cognitive foundation supporting these behavioural intentions (Ajzen & Fishbein, 1980). More specifically, this exploratory research enabled the researcher to identify the modal salient beliefs supporting behavioural intention to engage in an MRD, present within the target sample population. Table 6.2 summarises these below, comparing modal beliefs associated with MRDs discovered in this study to those found in past research.

Table 6.2 A Comparison of Modal Salient Beliefs Associated With MRDs Discovered in this Study versus Past Research

VARIABLE	SIMILAR TO PAST RESEARCH	UNIQUE
Attitude	Positive/negative associations with MRDs: • Healthy • Improved environmental sustainability • Free from animal cruelty Cravings for meat • More time pressed to prepare meals	Positive/negative associations with MRDs: • Restricted in food variety • Social criticism • A lack of protein
Norms	Key referent groups/individuals: • Friends • Family • Health professionals	Key referent groups/individuals: • Environmentalists and animal welfare groups • Vegans & vegetarians
Personal Agency	Barriers: • Having to expend more effort	Enablers: • Social acceptance • Meat-free restaurant options • Education Barriers: • Higher costs • Lack of options when eating out

Many of the beliefs towards MRDs were similar to those discovered in past research, while a significant amount of beliefs were unique too – indicating that there is further

opportunity to research the cognitive foundation supporting MRDs. The process of extracting beliefs from the sample population via an elicitation study was a part of this methodology which made the findings of this research contextually relevant.

By applying the IMBP to assess behavioural intention towards engaging in quantify the key behavioural constructs aiding this behavioural intention. Until now, there have been no studies which have applied behavioural theory to assess behavioural intentions towards engaging in an MRD - hence this research fulfilled this gap, providing a roadmap for future marketers to leverage when promoting sustainable consumption. As further discussed in the following chapter, future marketers can leverage the insight that instrumental attitude, experiential attitude, and injunctive norms were the only significant predictors of behavioural intention to engage in an MRD – a finding which has not been stated in previous research.

6.5.2 Marketing contributions

This research offers marketing practitioners insight into what behavioural shift is required to promote the behaviour of engaging in an MRD. Through applying the IMBP, each key behavioural determinant was isolated and further analysed - aiding marketing practitioners with insight into the current state of the cognitive foundation supporting this behaviour. Furthermore, the empirical results of applying the IMBP gives marketers insight into the underlying beliefs associated with each key behavioural determinant, therefore aiding the development of message strategy seeking to promote MRDs. Marketers first need to understand whether or not the various behavioural variables (attitude, perceived norms and personal agency) are significant in predicting intention to engage in an MRD, thereafter analysing the significant behavioural beliefs supporting the respective behavioural variable, and finally the beliefs which should be focused upon in message strategy.

6.5.2.1. Attitude towards engaging in an MRD

When considering attitude, marketers in South Africa looking to promote MRDs can leverage two main insights. Firstly, attitude is a significant predictor of behavioural intention towards engaging in an MRD, and thereby, through manipulating outcome expectancy beliefs associated with MRDs, marketers could significantly alter people's intentions to engage in an MRD. The significant outcome expectancy beliefs which were discovered in this research were analysed by looking at instrumental attitude as well as experiential attitude.

When considering experiential attitude, the main positive feelings (found to significantly predict behavioural intention towards MRDs) that marketers should promote are the beliefs that MRDs are healthy, sustainable, and free from animal cruelty, and therefore, marketers should reinforce these positive beliefs. Similarly, marketers should try and break down the negative beliefs found to significantly predict

behavioural intention towards MRDs. These significant negative beliefs are that MRDs leave one feeling restricted in their food variety and more time-pressed to prepare meals. Furthermore, when considering instrumental attitude, the target population of this research generally saw more advantages than disadvantages, when considering engaging in an MRD. Marketers looking to promote MRDs should, therefore, reinforce these perceived advantages found to significantly predict behavioural intention – that MRDs lead to improved health and nutrition, improved animal welfare and improved environmental sustainability. Similarly, marketers should try and break down the perceived disadvantages found to significantly predict behavioural intention – that MRDs lead to a lack of protein in one's diet.

While the abovementioned beliefs are significant in predicting behavioural intention, according to Hornik and Woolf (1999) as well as Fishbein and Cappella (2006), only those beliefs which yield a significant amount of respondents disagreeing with that belief (20-65%) should be focused upon in message strategy. For this reason, marketers seeking to manipulate attitudinal beliefs associated with MRDs should attempt to break down the negative beliefs that MRDs lead to one feeling restricted in their food variety, being more time-pressed to prepare meals and that MRDs lead to a lack of protein. To offer a few examples of how marketers could action upon using attitude to promote MRDs, they could:

- Partner with restaurants who offer meat-free options, thereby communicating the availability of MRD food choices.
- Partner with food magazines/forums, offering recipes and cooking suggestions on how to approach a MRD – both in the kitchen, socially, and from a time-management point of view.
- Partner with medical professionals, such as nutritionists/dieticians, who can offer some insight around peoples' fear that MRDs lead to a lack of protein. Considering that this fear has been one that meat-marketers have used to their advantage in previous years (Simon, 2013), MRD marketers need to reverse the message strategy here.

6.5.2.2. Perceived norms towards engaging in an MRD

When considering norms, marketers in South Africa looking to promote MRDs can leverage two central insights. Firstly, descriptive norms were not found to be a significant predictor of behavioural intention to engage in an MRD, and therefore marketing messages should not base their efforts on messages hinged on descriptive normative beliefs (e.g. that one's friends engage in an MRD). Secondly, injunctive norms were found to be a significant predictor of behavioural intention to engage in an MRD. The target population of this research generally felt that their key referent groups/individuals (friends, family, environmentalists and animal welfare groups, vegans and vegetarians, and health professionals) did support the idea of them

engaging in an MRD – where all of these individuals/groups were significant predictors of behavioural intention to engage in an MRD.

The message strategy of Hornik and Woolf (1999) as well as Fishbein and Cappella (2006) shows that marketers in South Africa looking to promote MRDs should focus on the key referent groups/individuals being: friends, family and health professionals. Messages should therefore focus on the point that these referent groups/individuals support the idea of one engaging in an MRD.

6.5.2.3. Personal agency towards engaging in an MRD

Personal agency was not found to be a significant predictor of behavioural intention to engage in an MRD, and as a result, the beliefs supporting this variable were not further analysed. The beliefs related to the personal agency variable were beliefs that would enable one to engage in an MRD (social acceptance, meat-free restaurant options, and education) as well as the beliefs that would serve as a barrier towards engaging an MRD (having a lack of options when eating out, having to expend more effort, and having high costs). Marketers should, therefore, not focus their message strategy on these control beliefs nor perceived power beliefs, as neither of these variables significantly predicted behavioural intention to engage in an MRD.

6.5.3. Methodological contributions

This study applied a two-phase methodology as recommended by Fishbein and Ajzen (2010) and utilised by Robbins and Niederdeppe (2015). Utilising the two-phase methodology enabled this research to gain more profound insights and understanding of the cognitive foundation upon which behavioural intentions are routed (as detailed in section 6.5.2 above). In order to provide these insights, this research followed the step by step process of applying the IMBP to the behaviour of engaging in an MRD, as seen in Table 6.3 below.

Table 6.3. A Step by Step Process to Applying the IMBP

STEP #	ACTION	REFER TO
1	Conduct an elicitation study with open-ended questions, assessing a population's behavioural, normative and control beliefs.	Appendix A
2	Perform a content-analysis on the elicitation study results, to rank-order the beliefs.	Appendix B
3	Determine the 5-10 most salient beliefs.	Appendix B
4	Conduct a population survey to quantitatively measure all IMBP measures - both indirectly (guided by the findings of step 1, 2 and 3) and directly (guided by the use of predetermined scales).	Appendix C

5	Perform a regression analysis to determine which direct IMBP measures are significant predictors of behavioural intention.	Appendix D Chapter 5, Table 5.4
6	Calculate the composite scores (∑(s*e)) of each modal salient belief, in order to measure the indirect IMBP measures.	Chapter 4, section 4.4.8.1 Chapter 5, Table 5.7
7	Calculate the correlation of indirect IMBP measures to direct IMBP measures.	Chapter 5, Table 5.6
8	Identify modal salient beliefs appropriate to use in message strategy, by 1) assessing their significance in predicting behavioural intention, 2) assessing the percentage of respondents who disagreed with the beliefs.	Chapter 5, Table 5.7 and Table 5.8
9	Calculate the predictive ability of direct IMBP measures versus indirect IMBP measures by performing a regression analysis.	Chapter 5, Table 5.9

This step by step process has been unclear in past research. As seen in Table 3.2 (chapter 3), of past research which has applied/utilised the IMBP, few have clearly explained how to apply the two-phase methodology. This paper, therefore, aimed to clearly define how to apply the IMBP to a particular behaviour – providing detail of the step-by-step process mentioned in Table 6.3 throughout the paper.

This study, therefore, further contributes to the well-established body of research using the reasoned action approach to understanding behaviour, using the latest iteration of this theory: the IMBP (Fishbein, 2000; Fishbein & Cappella, 2006; Kasprzyk, Montaño & Fishbein, 1998). The reasoned action approach states that although an infinite number of variables may in some way influence behaviour, a small number of variables can be identified that together explain a great proportion of variance in the data (Fishbein, 2008; Fishbein & Ajzen, 1975, 2010). Table 6.3 above details the step-by-step process that was followed in order to identify the variables explaining the variance in behavioural intention to engage in an MRD.

The IMBP has been praised for its application within the realm of health behaviour, as it helps identify which categories of cognition (attitudes, perceived norms and perceived control) most strongly predict whether or not an individual is likely to engage in a preventative behaviour (Robbins & Niederdeppe, 2015; Yzer, 2012). As seen in Table 3.2 in chapter 3, the IMBP has been applied to a variety of behaviours, predominantly in the area of health behaviour, over the past years. This study contributes to the development of the IMBP by applying the model within the behavioural context of diet, specifically intentions to engage in an MRD. While the IMBP has been applied to a range of health behaviours, dietary behaviour (such as engaging in an MRD) has received comparatively less attention. This research,

therefore, further develops the IMBP within the behavioural topic of diet, specifically focusing on intentions to engage in an MRD.

6.6. Limitations and Recommendations for Future Research

The following sections detail some of the limitations encountered in this study - explaining each of them, as well as proposing suggestions for future research.

6.6.1 Broad definition of the behaviour of interest

It is recommended that when applying behavioural theory using the reasoned action approach, one should define behaviour according to the four-component view (explaining behaviour as an *action* directed at a *target*, performed in a particular *context*, at a certain point in *time)* (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010). While a definition for MRDs exists (Latvala *et al.*, 2012), the behaviour of engaging in an MRD has not been well defined in previous research, according to these four components. As a result, this study adopted a broad definition of MRD behaviour: *"engaging (action) in an MRD (target) as part of one's weekly routine (context & time)".* Yzer (2012) states the importance of defining the behaviour of interest in precise terms - as the more specific the definition of behaviour, the more likely the behavioural recommendations will be interpreted as intended. There is, therefore, the opportunity for future researchers to clearly define MRDs using the four-component view - as a change in any single component may result in significantly different behavioural outcomes.

Future researchers could further apply the IMBP to specific types of MRDs: low-meat/plant-based diets, forms of semi-vegetarianism and flexitarianism, pescetarianism, Lacto-Ovo-vegetarianism, and veganism (Ruby, 2012). There is also opportunity to further specify behavioural differences towards different types of meat, thereby further specifying the behaviour of interest – improving the likelihood of the findings being interpreted correctly. Considering that the IMBP has not been previously applied within the area of diet, future researchers could further apply the IMBP to an array of different dietary practises (not limited to diets related to meat reduction) – assessing whether or not attitudes, norms and personal agency show similar trends across different dietary practises. Similarly, the IMBP could be applied to other sustainability-related phenomena (e.g. recycling, water reduction, electricity reduction).

6.6.2. Incomplete IMBP model

Due to the scope of this research, the full IMBP model was not applied. This methodology did not include the measurement of the behaviour variable (but instead focused on behavioural intention), nor the moderating variables (skills and knowledge, the salience of behaviour, environment, and habit). Excluding the variable measuring

people's actual behaviour, limits the ability to understand how behavioural intentions translate into actual behaviour. This further results in a lack of insight into whether or not the above-mentioned proposed message strategies would translate into MRD behaviour. Future research should include the behavioural construct when applying the IMBP so that more robust and holistic results can be gathered. Further, through excluding the moderating variables within the IMBP, this research was limited regarding the insight into the general competence people feel towards engaging in an MRD (i.e. skills and knowledge) and their perceived means towards engaging in an MRD (i.e. environment, and habit). This means that even if behavioural intentions were found to be significant and positive, they might not result in actual behaviour due to a lack of competence (e.g. not knowing how to cook meat-free meals and being unaware of nutritional guidelines) or means (e.g. not having enough fridge space for fresh produce). Future studies should, therefore, apply the full IMBP, testing the intention-behaviour gap, as well as the impact that moderating variables have on this relationship.

6.6.3. Methodological constraints

The following sections detail various constraints faced by this research in conducting the abovementioned two-phase methodology. These include elicitation study constraints, sampling constraints, behaviour constraints and lastly – constraints in the contributions to message strategy.

6.6.3.1. Elicitation study constraints

Elicitation studies have been criticised for their limited level of detail they can extract from a sample population because in-depth explanations and clarifying questions are not possible (Hogan *et al.*, 2016). While the elicitation study utilised in this paper was, in fact, able to extract modal salient beliefs, future research should consider adopting a different sampling process - such as using focus groups, when conducting the elicitation study. Robbins and Niederdeppe (2015) utilised focus groups to gather their elicitation study research, which enabled them to ease participants into the discussion and help direct their thinking toward the behavioural context. This limitation was not considered severe, as the elicitation study used in this research was only a small part of the total data gathered in this study, and simply aimed to gather insight and understanding into the salient beliefs supporting each key variable. Furthermore, the elicitation study utilised made use of suggested and previously utilised questions in gathering this data.

6.6.3.2. Sampling constraints

The use of convenience sampling in this research can be mentioned as another possible limitation, as the demographics of the data are significantly skewed, not reflecting the average South African consumer. The respondent demographics were

skewed towards females, upper income, more educated and white race respondents. Future research should consider using alternative techniques, using random sampling strategies within a variety of populations. This way, more salient beliefs would be extracted (more closely reflecting the true salient beliefs within the population) and more generalisable data would be gathered. Furthermore, results could be analysed from a demographic perspective – assessing the gender, cultural and age differences in behavioural intentions to engage in an MRD.

6.6.3.3 Behaviour constraints

This research did not measure respondent's current level of meat consumption, but instead focused on one's beliefs and evaluations concerning the behaviour of 'engaging in an MRD as part of one's weekly routine'. As already mentioned, this study focused on the variable of intention and did not consider the variable of behaviour. This approach of not directly measuring the respondent's meat consumption behaviour, but rather offering a suggested behaviour to which evaluations and beliefs were measured, ensured a direct correspondence with belief measures, a key consideration when using the IMBP to measure intentions and behaviour (Fishbein & Ajzen, 2010; Robbins and Niederdeppe, 2015). Future research could consider utilizing the full IMBP model (i.e. the inclusion of the behaviour variable) thus providing more in-depth insight into the intention-behaviour relationship, as well as the impact of moderating variables on this relationship.

6.6.3.4 Contributions to message strategy

This method was useful in identifying beliefs to target in campaign messages aiming to promote MRDs (generally in the production stage of campaign development), but procedures say nothing about how these messages should be constructed to maximise persuasive impact. Future research should adopt further methods where these campaign messages are tested (e.g. focus groups with storyboards and message testing surveys) (Robbins and Niederdeppe, 2015).

6.7. Conclusion

Research assessing the behavioural theory supporting meat consumption, specifically reduced meat consumption, is limited. Conversely, there have been multiple calls towards the need for humans to reduce their levels of meat being consumed if we are to meet a sustainable diet. In recent years, the levels of meat consumption have come under criticism and debate, primarily due to its impact on the environment, and for social and ethical reasons too. Through applying the IMBP, this research was able to identify and define the cognitive foundation supporting behavioural intentions to engage in an MRD - findings which are valuable to future researchers and marketers who might seek to promote MRD behaviour. Furthermore, this paper applied the latest iteration of the reasoned action approach: the IMBP - where this research further

developed the model by applying it to dietary behaviour, which has received comparatively less attention in past research. The overall findings of this paper give insight and understanding into the cognitive foundation supporting behavioural intentions to engage in an MRD - where suggested improvements for future researchers to further build upon these findings have been mentioned.

6.8. Chapter Summary

This research sought out to identify and define the key categories of cognition which most strongly predict whether or not middle to upper-income South Africans intend to engage in an MRD as part of their weekly routine. The analysis revealed that instrumental attitude, injunctive norms, and experiential attitude were the only significant predictors of behavioural intention to engage in an MRD. Many of the positive salient beliefs associated with the outcome expectancies were similar to the findings of past research; however, the negative salient beliefs differed slightly (where context was suggested as a reason for this difference). Injunctive norms were further found to have a significant, positive relationship with behavioural intention, and overall, respondents felt that their key referent groups/individuals would support their behaviour of engaging in an MRD. The normative findings were similar to those of previous research, who also found that ‘friends' and ‘family' played a significant role in people's food choices, more so than ‘health professionals’.

This paper contributed towards the theory of meat consumption - giving deeper insight and understanding into the cognitive foundation supporting one's intentions to engage in an MRD. This paper further contributed to marketing practitioners, aiding their insight into the behavioural shift that is required in order to promote MRD behaviour. Lastly, this paper contributed to the development of the IMBP, applying the model to dietary behaviour - which has received comparatively less attention in the past.

Three main limitations were mentioned. Firstly, instead of a specific behavioural definition, a broad definition of the behaviour of interest was given (due to previous research not defining the MRD behaviour according to the four component view). Secondly, this research only applied part of the IMBP, due to the scope of the paper, and as a result, not all relationships were defined (specifically, the intention-behaviour relationship, and the moderating variables therein). Lastly, the methodology utilised was limited in its sampling procedure utilised to gather data in the elicitation study, as well as the quote sampling utilised - which resulted in a skewed demographic target sample population.

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APPENDIX A

The Elicitation Study Questionnaire

UNIVERSITY OF CAPE TOWN

FACULTY OF COMMERCE

Igniting Knowledge and Opportunity

Dear Respondent,

This questionnaire forms phase 1 of a study conducted by a Masters student from the University of Cape Town. The results from this phase 1 questionnaire will be used develop the second phase of questionnaires needed for this Masters dissertation, which will aim to analyse the key behavioural constructs aiding a meat-reduced diet. The questionnaire will only take approximately 10 minutes to complete. Please be assured that anything you answer will remain completely confidential and your identity will be kept anonymous. Please be assured that this study has been approved by the UCT Faculty Research Ethics Committee. You may leave the study at any point if necessary. If you would like any further information on this study, you can contact the researcher at: kristin24ransome@gmail.com

Q1 Are you a South African citizen?

- ○ YES
- ○ NO

Q2 Does your monthly household income exceed R6,000.00?

- ○ YES
- ○ NO

Q3 Does meat currently form part of your diet?

- ○ YES
- ○ NO

If you answered “YES” to the above three questions, please continue with the rest of the questionnaire. If you answered “NO” to any of the above questions, you do not have to complete the rest of the questionnaire - thank you for your time.

Before answering the remaining questions, please read the below definition for a "meat-reduced diet":

Meat-reduced diets (MRDs) limit the frequency, type, and/or portion of meat in one’s average diet, including a continuum of diet practices such as low-meat/plant-based diets and forms of semi-vegetarianism. MRDs are correlated with decreased consumption of harmful levels of animal fats, and increased consumption of protective foods such as fruit, vegetables, legumes, nuts/seeds, and, for some MRDs, fish protein and oils.

Q4 If you were to engage in a meat-reduced diet, which of the following strategies would you most likely follow?

- ○ Weekday vegetarian (weekends are for meat eating)
- ○ Vegetarian before 18:00 (strict vegetarian before 18:00)
- ○ Meatless Monday (or another chosen day)
- ○ Vegetarian
- ○ Vegan
- ○ I will just try to cut out meat where I can

Q5 If you were to engage in a meat-reduced diet, which of the following would be a leading motivation for doing so:

- ○ Protecting the environment
- ○ Improving my personal health
- ○ Saving farmed animals
- ○ A combination of the above
- ○ None of the above

The following questions will assess your attitude towards engaging in a meat-reduced diet.

Q6 How do you feel about the idea of engaging in a meat-reduced diet?

_____

Q7 What would you like most about engaging in a meat-reduced diet?

_____

Q8 What would you hate about engaging in a meat-reduced diet?

_____

Q9
What are some of the benefits that might result from engaging in a meat-reduced diet?

- ○ Benefit 1 _____
- ○ Benefit 2 _____
- ○ Benefit 3 _____
- ○ Benefit 4 _____
- ○ Benefit 5 _____

Q10
What are some of the negative effects that might result from engaging in a meat-reduced diet?

- ○ Negative Effect 1
  _____
- ○ Negative Effect 2
  _____
- ○ Negative Effect 3
  _____
- ○ Negative Effect 4
  _____
- ○ Negative Effect 5
  _____

The following questions will assess the normative influence on your engagement in a meat-reduced diet.

Q11 List the individuals/groups who would approve of you in engaging in a meat-reduced diet

- ○ Individual/group 1 _____
- ○ Individual/group 2 _____
- ○ Individual/group 3 _____
- ○ Individual/group 4 _____
- ○ Individual/group 5 _____

Q12 List the individuals/groups who would disapprove of you in engaging in a meat-reduced diet

- ○ Individual/group 1 _____
- ○ Individual/group 2 _____
- ○ Individual/group 3 _____
- ○ Individual/group 4 _____
- ○ Individual/group 5 _____

The following questions will assess your personal agency towards engaging in a meat reduced diet.

Q13 What factors would make it easy for you to engage in a meat-reduced diet?

- Factor 1 _____
- Factor 2 _____
- Factor 3 _____
- Factor 4 _____
- Factor 5 _____

Q14 What factors would make it difficult for you to engage in a meat-reduced diet?

- Factor 1 _____
- Factor 2 _____
- Factor 3 _____
- Factor 4 _____
- Factor 5 _____

Q15 To what extent are you confident in your ability to control what you eat?

_____

Q16 If your friends were pressuring you to eat less meat, how difficult would it be to abstain from eating meat?

- Easy
- Moderate
- Difficult

Q17 If your friends were pressuring you to eat a lot of meat, how difficult would it be to moderate the amount of meat in your diet?

- ○ Easy
- ○ Moderate
- ○ Difficult

APPENDIX B

The Elicitation Study Content Analysis

Table 1B: Elicitation Study Content Analysis - Salient Beliefs & Model Salient Beliefs

Belief Influence	Question	Salient Beliefs		Modal Salient Beliefs	Construct Measured by These Beliefs
		Key Themes	Percentage of respondents		
Attitudinal Influence	What would you like most about engaging in a meat-reduced diet?	Health	33.33%	Health	Experiential Attitude
		Sustainability	22.22%	Sustainability	
		Animal Concern	22.22%	Animal Concern	
		Food Preference	14.81%		
		Cost Savings	7.41%		
	What would you hate about engaging in a meat-reduced diet?	Cravings for meat	25.00%	Cravings for meat	
		Restricted Food Variety	21.43%	Restricted Food Variety	
		Nothing	17.86%	Meal Preparation Time	
		Meal Preparation Time	14.29%		
		Hunger/Energy Loss	7.14%		
		Socially Restricting	3.57%		
		Cost	3.57%		
		Not Willing	3.57%		
		Guilt of Eating Some Meat	3.57%		
	What are some of the benefits that might result from engaging in a meat-reduced diet?	Health & Nutrition	36.63%	Health & Nutrition	Instrumental Attitude
		Animal welfare	15.84%	Animal welfare	
		Environmentally friendly	14.85%	Environmentally friendly	
		Cost Saving	12.87%		

		Weight loss/control	5.94%		
		Conscious	0.99%		
		Better Food Planning	0.99%		
		Self sustaining	0.99%		
		Less wastage in Supermarkets	0.99%		
		Cost Savings	0.99%		
		More Energy	0.99%		
		Being More Enlightened About What I eat	0.99%		
		Less alcohol consumption	0.99%		
		Self sufficiency	0.99%		
		Would explore new food options	0.99%		
		Taking more time to plan and understand what I am putting my body	0.99%		
	What are some of the drawbacks that might result from engaging in a meat-reduced diet?	Social Criticism/Behaviour	19.28%	Social criticism	
		More effort	15.66%	More effort	
		Lack of Protein	9.64%	Lack of Protein	
		Restricted eating, when dining out	8.43%		
		Health & Nutrient Levels	8.43%		
		Knowledge & habits	7.23%		
		Cravings & taste	6.02%		
		None	4.82%		
		Higher cost	2.41%		
		Planning Ahead	2.41%		
		Hunger	2.41%		

		Loss to farmers & meat industry	2.41%		
		Mood	2.41%		
		Lack of energy & strength	2.41%		
		Guilt on when you do eat meat	1.20%		
		Eating more plants leads to deforestation	1.20%		
		Overpopulation of animals	1.20%		
		Availability	1.20%		
		Wastage	1.20%		
Normative influence	List the individuals/groups who would approve/disapprove of you in engaging in a meat-reduced diet	Family	24.79%	Family	Injunctive Norm & Descriptive Norm
		Friends	19.66%	Friends	
		Environmentalists & Animal Welfare Groups	13.68%	Environmentalists & Animal Welfare Groups	
		Vegans & Vegetarians	9.40%	Vegans & Vegetarians	
		Health Professionals	6.84%	Health Professionals	
		Farmers & the meat industry	4.27%		
		None	4.27%		
		Colleagues	2.56%		
		Animals	1.71%		
		Restaurants	1.71%		
		Shops	1.71%		
		The Youth	0.85%		
		Myself	0.85%		
		Society	0.85%		

		Neighbours	0.85%		
		Most people	0.85%		
		Meat eaters	0.85%		
		Men	0.85%		
		Afrikaners	0.85%		
		Hunters	0.85%		
		Celebrations	0.85%		
		People on a high fat diet	0.85%		
Control influence	What factors would make it easy for you to engage in a meat-reduced diet?	Social acceptance	22.22%	Social acceptance	Self-Efficacy & Perceived Control
		Meat-free restaurant options	11.11%	Meat-free restaurant options	
		Education	11.11%	Education	
		Meal planning	7.41%		
		Plant based diets becoming more popular	7.41%		
		Ready-made foods	7.41%		
		New and exciting meal options	7.41%		
		Variety	3.70%		
		None	3.70%		
		Increase in organic veg consumption	3.70%		
		Environmental impacts	3.70%		
		Habits	3.70%		
		Doing it at a less busy and stressful time	3.70%		
		Supermarkets providing me more choices	3.70%		

	What factors would make it difficult for you to engage in a meat-reduced diet?	Lack of options when eating out	11.76%	Lack of options when eating out	
		Having to expend more effort	11.76%	Having to expend more effort	
		Higher cost	9.80%	Higher cost	
		Social norms, pressure & occasions	9.80%		
		Lack of information	7.84%		
		Family eating meat	7.84%		
		Missing the taste of meat	5.88%		
		Needing to shop and cook more often	5.88%		
		Hunger	3.92%		
		Availability	3.92%		
		Doing it alone	3.92%		
		Ignorance	3.92%		
		Laziness	1.96%		
		Lifestyle	1.96%		
		Cooking experience	1.96%		

APPENDIX C

The Population Survey

UNIVERSITY OF CAPE TOWN

FACULTY OF COMMERCE

Igniting Knowledge and Opportunity

Dear Respondent,

This questionnaire is being conducted by a Masters student from the University of Cape Town as part of a final dissertation. The aim of this dissertation is to analyse the key behavioural constructs aiding a meat-reduced diet. The questionnaire will take approximately 15-20 minutes to complete. Please be assured that anything you answer will remain completely confidential and your identity will be kept anonymous. Please be assured that this study has been approved by the UCT Faculty Research Ethics Committee. You may leave the study at any point if necessary. If you would like any further information on this study, you can contact the researcher at: kristin24ransome@gmail.com

Question 1
Are you a South African Citizen?

- ○ Yes
- ○ No

Question 2
Is your household income above R6,000.00 per month?

- ○ Yes
- ○ No

Question 3
Does meat currently form part of your diet?

- ○ Yes
- ○ No

Yes/No If you answered "No" to any of the above questions, you do not need to continue with this questionnaire. Thank you for your time. If you answered "Yes" to all of the above questions, please continue with the rest of this questionnaire.

Before answering the remaining questions, please read the below definition for a "meat-reduced diet":

“Meat-reduced diets (MRDs) limit the frequency, type, and/or portion of meat in one’s average diet, including a continuum of diet practices such as low-meat/plant-based diets and forms of semi-vegetarianism. MRDs are correlated with decreased consumption of harmful levels of animal fats, and increased consumption of protective foods such as fruit, vegetables, legumes, nuts/seeds, and, for some MRDs, fish protein and oils.”

Question 4

Please indicate the extent to which you agree/disagree with each of the following statements, by selecting the appropriate circle.

Engaging in a meat-reduced diet in my weekly routine will lead to me feeling the following:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Healthy	○	○	○	○	○	○	○
Sustainable	○	○	○	○	○	○	○
Free from animal cruelty	○	○	○	○	○	○	○
Cravings for meat	○	○	○	○	○	○	○
Restricted in my food variety	○	○	○	○	○	○	○
More time pressed to prepare meals	○	○	○	○	○	○	○

Question 5
Please indicate the extent to which each of the following statements is **bad/good**, by selecting the appropriate circle.

	Very bad	Bad	Somewhat bad	Neither good nor bad	Somewhat good	Good	Very good
Feeling healthy is ...	○	○	○	○	○	○	○
Feeling my behaviour is sustainable is ...	○	○	○	○	○	○	○
Feeling free from animal cruelty is ...	○	○	○	○	○	○	○
Feeling cravings for meat is ...	○	○	○	○	○	○	○
Feeling restricted in my food variety is ...	○	○	○	○	○	○	○
Feeling more time pressed to prepare meals is ...	○	○	○	○	○	○	○

Question 6
Please indicate the extent to which you **agree/disagree** with each of the following statements, by selecting the appropriate circle.

Engaging in a meat-reduced diet in my weekly routine will lead to the following ...

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Improved health and nutrition	○	○	○	○	○	○	○
Improved animal welfare	○	○	○	○	○	○	○
Improved environmental sustainability	○	○	○	○	○	○	○
Social criticism	○	○	○	○	○	○	○
More effort	○	○	○	○	○	○	○
A lack of protein	○	○	○	○	○	○	○

Question 7
Please indicate the extent to which each of the following statements is **bad/good**, by selecting the appropriate circle.

	Very bad	Bad	Somewhat bad	Neither good nor bad	Somewhat good	Good	Very good
Having improved health and nutrition is ...	○	○	○	○	○	○	○
Improved animal welfare is ...	○	○	○	○	○	○	○
Improved environmental sustainability is ...	○	○	○	○	○	○	○
Experiencing social criticism is ...	○	○	○	○	○	○	○
Having to exert more effort is ...	○	○	○	○	○	○	○
Having a lack of protein is ...	○	○	○	○	○	○	○

Question 8
Please indicate the extent to which you **agree/disagree** with each of the following statements, by selecting the appropriate circle.

The following groups/individuals think I should engage in a meat-reduced diet in my weekly routine...

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
My friends	○	○	○	○	○	○	○
My family	○	○	○	○	○	○	○
Environmentalists and animal welfare groups	○	○	○	○	○	○	○
Vegans and vegetarians	○	○	○	○	○	○	○
Health professionals	○	○	○	○	○	○	○

Question 9
Please indicate the extent to which you **agree/disagree** with each of the following statements, by selecting the appropriate circle.

When it comes to matters of weekly eating routines, I want to do what ...

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
... my friends think I should do	○	○	○	○	○	○	○
... my family thinks I should do	○	○	○	○	○	○	○
... environmentalists and animal welfare groups think I should do	○	○	○	○	○	○	○
... vegans and vegetarians think I should do	○	○	○	○	○	○	○
... health professionals think I should do	○	○	○	○	○	○	○

Question 10
Please indicate the extent to which you **agree/disagree** with each of the following statements, by selecting the appropriate circle.

The following groups/individuals engage in a meat-reduced diet in their weekly routines ...

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Most of my friends	○	○	○	○	○	○	○
Most of my family	○	○	○	○	○	○	○
Most environmentalists and animal welfare groups	○	○	○	○	○	○	○
Most vegans and vegetarians	○	○	○	○	○	○	○
Most health professionals	○	○	○	○	○	○	○

Question 11
Please indicate the extent to which you **agree/disagree** with each of the following statements, by selecting the appropriate circle.

When it comes to matters of weekly eating routines, I want to do what ...

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
... my friends do	○	○	○	○	○	○	○
... my family does	○	○	○	○	○	○	○
... environmentalists and animal welfare groups do	○	○	○	○	○	○	○
... vegans and vegetarians do	○	○	○	○	○	○	○
... health professionals do	○	○	○	○	○	○	○

Question 12
Please indicate your degree of certainty with each of the following statements:

If the following facilitators/barriers were present, how confident are you that you could engage in a meat-reduced diet as part of your weekly routine:

	Very unconfident	Unconfident	Somewhat unconfident	Neither confident nor unconfident	Somewhat confident	Confident	Very confident
Having social acceptance	○	○	○	○	○	○	○
Having meat-free restaurant options	○	○	○	○	○	○	○
Having education about meat-reduced diets	○	○	○	○	○	○	○
Having a lack of options when eating out	○	○	○	○	○	○	○
Having to expend more effort	○	○	○	○	○	○	○
Having higher costs	○	○	○	○	○	○	○

Question 13
Please indicate the degree of ease/difficulty with each of the following statements:

If the following facilitators/barriers were present, how difficult/easy would it be to engage in a meat-reduced diet as part of your weekly routine:

	Very difficult	Difficult	Somewhat difficult	Neither easy nor difficult	Somewhat easy	Easy	Very easy
Having social acceptance	○	○	○	○	○	○	○
Having meat-free restaurant options	○	○	○	○	○	○	○
Having education about meat-reduced diets	○	○	○	○	○	○	○
Having a lack of options when eating out	○	○	○	○	○	○	○
Having to expend more effort	○	○	○	○	○	○	○
Having higher costs	○	○	○	○	○	○	○

Question 14
Please indicate the extent to which you agree/disagree with each of the following statements:

The following elements would <u>enable</u> me to engage in a meat-reduced diet in my weekly eating routine:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Social acceptance	○	○	○	○	○	○	○
Meat-free restaurant options	○	○	○	○	○	○	○
Education about meat-reduced diets	○	○	○	○	○	○	○

Question 15
Please indicate the extent to which you agree/disagree with each of the following statements:

The following elements would <u>prevent/deter</u> me from engaging in a meat-reduced diet in my weekly eating routine:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Having a lack of options when eating out	○	○	○	○	○	○	○
Having to expend more effort	○	○	○	○	○	○	○
Higher costs	○	○	○	○	○	○	○

Question 16
Please indicate the extent to which you **agree/disagree** with each of the following statements, by selecting the appropriate circle.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I believe that engaging in a meat-reduced diet in my weekly routine will have social acceptance within in the next few weeks	○	○	○	○	○	○	○
I believe that I will have access to meat-free restaurant options within the next few weeks	○	○	○	○	○	○	○
I believe that I will have access to education about meat-reduced diets within the next few weeks	○	○	○	○	○	○	○
I believe that I will encounter a lack of meat-reduced options when eating within the next few weeks	○	○	○	○	○	○	○
I believe that I would have to expend more effort to engage in a meat-reduced diet in my weekly routine, within the next few weeks	○	○	○	○	○	○	○
I believe that I would encounter higher costs if choosing to engage in a meat-reduced diet in my weekly routine, within the next few weeks	○	○	○	○	○	○	○

Question 17

Please mark the relevant circles to answer the following questions:

Overall, I think that engaging in a meat-reduced diet as part of my weekly eating routine is:

	1	2	3	4	5	6	7	
Embarrassing	○	○	○	○	○	○	○	Liberating
Unenjoyable	○	○	○	○	○	○	○	Enjoyable
Unpleasant	○	○	○	○	○	○	○	Pleasant
Boring	○	○	○	○	○	○	○	Interesting
Dull	○	○	○	○	○	○	○	Amusing
Bad	○	○	○	○	○	○	○	Good
Harmful	○	○	○	○	○	○	○	Beneficial
Foolish	○	○	○	○	○	○	○	Wise
Stressful	○	○	○	○	○	○	○	Relaxing
Shy	○	○	○	○	○	○	○	Social

Question 18
Please indicate the extent to which you **agree/disagree** with each of the following statements, by selecting the appropriate circle.

The following individuals/groups would <u>support/approve</u> of me engaging in a meat-reduced diet as part of my weekly eating routine:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
People who are important to me	○	○	○	○	○	○	○
My friends	○	○	○	○	○	○	○
People whose opinion I value	○	○	○	○	○	○	○
People who matter to me	○	○	○	○	○	○	○
My best friends	○	○	○	○	○	○	○
Most of my friends	○	○	○	○	○	○	○
Most of my colleagues	○	○	○	○	○	○	○
Most South Africans	○	○	○	○	○	○	○

Question 19
Please indicate the extent to which each of the following statements is **under your control**, by selecting the appropriate circle.

	Totally not under my control	Not under my control	Somewhat not under my control	Neither	Somewhat under my control	Under my control	Totally under my control
Abstaining from eating meat is ...	○	○	○	○	○	○	○
Limiting my meat consumption is ...	○	○	○	○	○	○	○
Engaging in a meat-reduced diet in my weekly eating routine is ...	○	○	○	○	○	○	○
Turning down offers to eat meat with my friends is ...	○	○	○	○	○	○	○
Refusing another bite after I've already eaten some meat is ...	○	○	○	○	○	○	○

Question 20
Please indicate your perceived **ease/difficulty** with each of the following statements, by selecting the appropriate circle.

	Very Difficult	Difficult	Somewhat difficult	Neither difficult nor easy	Somewhat easy	Easy	Very Easy
Monitoring how much meat I consume is ...	○	○	○	○	○	○	○
Controlling whether I consume meat is ...	○	○	○	○	○	○	○
Refusing to eat meat is ...	○	○	○	○	○	○	○
Dealing with peer pressure to eat meat is ...	○	○	○	○	○	○	○
Limiting my meat consumption when I'm in social settings is ...	○	○	○	○	○	○	○

Question 21
Please indicate the extent to which you **agree/disagree** with each of the following statements, by selecting the appropriate circle.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I intend to engage in a meat-reduced diet in my weekly eating routine	○	○	○	○	○	○	○
I plan to engage in a meat-reduced diet in my weekly eating routine	○	○	○	○	○	○	○
I am willing to engage in a meat-reduced diet in my weekly eating routine	○	○	○	○	○	○	○
I expect to engage in a meat-reduced diet in my weekly eating routine	○	○	○	○	○	○	○

The following questions aim to gather more personal data. Please be reminded that all answers are anonymous and confidential.

Question 22
Please indicate your **age group**:

- ○ 18 - 25
- ○ 26 - 35
- ○ 36 - 50
- ○ 51 - 65
- ○ 65+
- ○ Prefer not to answer

Question 23
Please indicate your **gender**:

- ○ Male
- ○ Female
- ○ Prefer not to answer

Question 24
Please indicate your **race**:

- ○ White
- ○ Black
- ○ Coloured
- ○ Indian
- ○ Asian
- ○ Other
- ○ Prefer not to answer

Question 25
Please indicate your highest achieved **level of education**:

- ○ Primary school
- ○ Matric certificate
- ○ Diploma
- ○ Bachelor's degree
- ○ Postgraduate diploma
- ○ Honors degree
- ○ Masters degree
- ○ Doctors degree

Question 26
Please select the answer related to your level of household monthly income:

- ○ R6,001 - R10,000
- ○ R10,001 - R25,000
- ○ R25,001 - R50,000
- ○ R50,001 - R80,000
- ○ R80,000 +

Question 27
Please select the answer related to your official home **language**:

- ○ English
- ○ Afrikaans
- ○ Ndebele
- ○ Sepedi
- ○ Xhosa
- ○ Venda
- ○ Tswana
- ○ Southern Sotho
- ○ Zulu
- ○ Swazi
- ○ Tsonga

End of Q You have reached the end of this questionnaire - thank you for your time!

APPENDIX D

Regression Results

Table 1D: Multiple Linear Regression Analysis Results

MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1.00	0.76	0.58	0.57	1.20	0.58	56.81	6.00	251.00	0.00

a Predictors: (Constant), Direct Self Efficacy, Direct Descriptive Norms, Direct Perceived Control, Direct Instrumental Attitude, Direct Experiential Attitude, Direct Injunctive Norms

b Dependent Variable: DIRECT INTENTION MS

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	487.58	6.00	81.26	56.81	0.00
Residual	359.07	251.00	1.43		
Total	846.65	257.00			

a. Dependent Variable: INTENTION

b Predictors: (Constant), Direct Self Efficacy, Direct Descriptive Norms, Direct Perceived Control, Direct Instrumental Attitude, Direct Experiential Attitude, Direct Injunctive Norms

COEFFICIENTS

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.91	0.48		-1.89	0.06
Direct Instrumental Attitude	0.52	0.08	0.44	6.68	0.00
Direct Experiential Attitude	0.31	0.09	0.24	3.55	0.00
Direct Injunctive Norms	0.40	0.10	0.32	3.88	0.00
Direct Descriptive Norms	-0.16	0.11	-0.12	-1.46	0.15
Direct Perceived Control	0.00	0.07	0.00	-0.01	1.00
Direct Self Efficacy	0.06	0.06	0.05	1.01	0.31

a. Dependent Variable: INTENTION

COEFFICIENT CORRELATIONS

		Direct Self Efficacy	Direct Descriptive Norms	Direct Perceived Control	Direct Instrumental Attitude	Direct Experiential Attitude	Direct Injunctive Norms
Correlations	Direct Self Efficacy	1.00	0.04	-0.33	-0.08	-0.04	0.04

	Direct Descriptive Norms	0.04	1.00	0.05	-0.09	-0.06	-0.83		
	Direct Perceived Control	-0.33	0.05	1.00	-0.11	0.04	-0.12		
	Direct Instrumental Attitude	-0.08	-0.09	-0.11	1.00	-0.71	0.02		
	Direct Experiential Attitude	-0.04	-0.06	0.04	-0.71	1.00	-0.08		
	Direct Injunctive Norms	0.04	-0.83	-0.12	0.02	-0.08	1.00		
Covariances	Direct Self Efficacy	0.00	0.00	0.00	0.00	0.00	0.00		
	Direct Descriptive Norms	0.00	0.01	0.00	0.00	0.00	-0.01		
	Direct Perceived Control	0.00	0.00	0.01	0.00	0.00	0.00		
	Direct Instrumental Attitude	0.00	0.00	0.00	0.01	-0.01	0.00		
	Direct Experiential Attitude	0.00	0.00	0.00	-0.01	0.01	0.00		
	Direct Injunctive Norms	0.00	-0.01	0.00	0.00	0.00	0.01		
a. Dependent Variable: INTENTION									

RESIDUALS STATISTICS

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	0.39	7.00	4.44	1.38	258.00
Residual	-3.32	4.63	0.00	1.18	258.00
Std. Predicted Value	-2.95	1.86	0.00	1.00	258.00
Std. Residual	-2.77	3.87	0.00	0.99	258.00
a. Dependent Variable: INTENTION					

APPENDIX E

Descriptive Statistics for Indirect IMBP Measures

Table 1E: Descriptive Statistics for Behavioural, Normative and Personal Agency Beliefs and Their Correlation With Behavioural Intention

Outcome Expectancy (Experiential)	*Belief Strength (s) (Range 1 to 7)*		*Evaluation (e) (Range -3 to -3)*		*Composite (s*e)*		r with Intention
	M	SD	M	SD	M	SD	r
Healthy	4.96	1.58	2.84	0.38	14.18	5.10	0.591**
Sustainable	5.19	1.60	2.39	0.75	12.57	5.98	0.515**
Free from animal cruelty	4.97	1.85	2.24	0.99	11.64	7.25	0.426**
Cravings for meat	4.24	1.76	-0.18	1.26	-0.47	6.16	-0.59
Restricted in my food variety	4.40	1.84	-1.28	1.00	-6.02	6.02	0.442**
More time pressed to prepare meals	3.99	1.78	-1.28	1.03	-5.33	5.71	0.205**
Composite Index of Indirect Experiential Attitude					26.73	21.72	0.587**
Sample size (n)	266		267		260		
Outcome Expectancy (Instrumental)	*Belief Strength (s) (Range 1 to 7)*		*Evaluation (e) (Range -3 to -3)*		*Composite (s*e)*		r with Intention
	M	SD	M	SD	M	SD	r
Improved health & nutrition	4.70	1.68	2.68	0.59	12.83	5.63	0.609**
Improved animal welfare	5.22	1.59	2.40	0.79	13.01	6.42	0.535**
Improved environmental sustainability	5.34	1.54	2.51	0.76	13.84	6.26	0.554**
Social criticism	3.57	1.54	-0.75	1.08	-2.60	4.67	0.054
More effort	4.62	1.64	-0.46	1.24	-2.18	6.66	0.282**
A lack of protein	4.17	1.80	-1.89	0.89	-7.97	5.79	0.425**
Composite Index of Indirect Instrumental Attitude					26.89	22.29	0.675**
Sample size (n)	274		271		269		
Injunctive Normative Beliefs	*Belief Strength (s) (Range 1 to 7)*		*Evaluation (e) (Range -3 to -3)*		*Composite (s*e)*		r with Intention
	M	SD	M	SD	M	SD	r
Friends	3.32	1.58	-1.90	1.26	1.43	2.31	0.332**
Family	3.14	1.62	-1.22	1.64	1.92	2.55	0.259**

Environmentalists and animal welfare groups	5.83	1.35	-1.08	1.71	31.38	11.90	0.300**
Vegans & vegearians	6.10	1.27	-1.58	1.58	-9.41	10.35	0.271**
Health professionals	4.33	1.40	0.87	1.63	4.00	7.45	0.238**
Composite Index of Indirect Injunctive Norms					29.33	22.39	0.427**
Sample size (n)	273		276		272		272
Descriptive Normative Beliefs	*Belief Strength (s) (Range 1 to 7)*		*Evaluation (e) (Range -3 to -3)*		*Composite (s*e)*		r with Intention
	M	SD	M	SD	M	SD	r
Friends	3.08	1.62	-1.59	1.35	-4.67	5.44	-0.08
Family	2.78	1.64	-0.84	1.69	-2.02	5.60	-0.007
Environmentalists and animal welfare groups	5.27	1.28	-1.03	1.60	-5.11	8.84	0.369**
Vegans & vegetarians	6.37	1.04	-1.27	1.57	-7.78	10.32	0.382**
Health professionals	4.17	1.29	-0.51	1.63	2.25	7.16	0.248**
Composite Index of Indirect Descriptive Norms					-17.37	26.62	0.324**
Sample size (n)	274		276		274		274
Self Efficacy Beliefs	*Belief Strength (s) (Range 1 to 7)*		*Evaluation (e) (Range -3 to -3)*		*Composite (s*e)*		r with Intention
	M	SD	M	SD	M	SD	r
Social acceptance	4.55	1.58	0.70	1.33	4.33	6.60	0.370**
Meat-free restaurant options	5.08	1.57	1.15	1.47	7.57	8.20	0.517**
Education about meat-reduced diets	5.12	1.53	1.09	1.35	7.05	7.48	0.533**
A lack of options when eating out	3.65	1.77	-0.66	1.61	-0.78	6.74	0.132*
Having to expend more effort	3.77	1.66	-0.72	1.42	-1.37	5.98	0.256**
Having higher costs	3.35	1.72	-1.08	1.46	-2.08	5.47	0.163**
Composite Index of Indirect Self Efficacy					14.58	27.23	0.508**
Sample size (n)	274		271		269		269
Perceived Control Beliefs	*Belief Strength (s) (Range 1 to 7)*		*Evaluation (e) (Range -3 to -3)*		*Composite (s*e)*		r with Intention
	M	SD	M	SD	M	SD	r
Social acceptance	5.01	1.66	-0.30	1.67	-0.16	6.38	.161**
Meat-free restaurant options	4.93	1.55	-0.17	1.74	0.71	8.47	.205**
Education about meat-reduced diets	5.01	1.59	-0.01	1.64	-0.09	9.01	.293**

A lack of options when eating out	2.99	1.59	0.26	1.62	0.51	5.72	0.046
Having to expend more effort	3.07	1.47	0.68	1.64	1.21	5.86	-0.087
Having higher costs	2.77	1.49	0.57	1.69	0.79	5.24	-0.051
Composite Index of Indirect Perceived Control					2.96	23.51	0.157**
Sample size (n)	272		274		272		272