

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

# **The role of educational information on the environmental consequences of livestock production, for reducing meat consumption**

A thesis presented in partial fulfilment  
of the requirements for the degree of  
Master of Arts in Sociology  
Massey University, Albany, New Zealand

Chaslyn Margaret Still

2018

# Abstract

Many people remain unaware of the high levels of environmental harm caused by agricultural production. There is a need therefore to raise awareness of the harm with a view to reducing livestock consumption and ultimately production, in order to contribute to a more sustainable environment. This research looked at whether providing information on environmental harm caused by livestock production to regular meat-eaters could contribute to a reduction in meat consumption. I also examined if age played a role in information receptiveness, and I looked at whether a belief that individual actions can contribute to environmental sustainability, was required for changes to occur.

Changing dietary practices is largely dependent on new information superseding existing antecedents. To investigate how this plays out, 12 participants across three age categories took part in focus groups, where a series of images and information about environmental consequences of livestock production were discussed, and pre and post-focus group surveys and food logs were undertaken.

I found the belief that individual dietary choices can make a positive difference to environmental sustainability was only effective for some participants; firstly, those who accepted the information about various environmental impacts of agricultural production provided in the focus group; and secondly, those who had locus of control to make dietary changes. Information receptiveness was highly variable by age, with older individuals being much less receptive than younger participants. Furthermore, antecedent influence was shown to be strongest in the 65+ year age group. Consequently, information targeting younger aged individuals is likely to produce better outcomes in terms of reduced meat consumption, and therefore greater environmental sustainability. For this to be effective however, younger individuals need to also be in a position where they are able to take control of their dietary decisions.

# Acknowledgements

My heartfelt thanks to my supervisor Dr Corrina Tucker, whose passion for environmental sustainability inspired me as an undergraduate. I have been privileged to have her as my supervisor during this journey. Her realistic approaches to my many challenges, and her continued support, guidance, and encouragement, were invaluable.

Thank you to my family for their unfailing support and patience.

My sincerest thanks go to my participants for sharing their views, thoughts, and experiences of meat consumption; and giving up their time to do so. I am deeply indebted to them.

# Table of Contents

## Chapter One: Introduction

1.1 Introduction	8
1.2 Environmental Harm and Meat Production	9
1.3 Food Sustainability and Population Pressures	12
1.4 Individual Action and the Value-Action Gap	15
1.5 Chapter Outline	20

## Chapter 2: Literature Review

2.1 Introduction	22
2.2 Influences of Meat Consumption	23
2.3 Influence of Knowledge on Practice	26
2.4 Influence of Age on Meat Consumption	31
2.5 Ethical Practice	34
2.6 Conclusion	38

## **Chapter 3: Methodology**

<b>3.1 Introduction</b>	<b>39</b>
<b>3.2 Participants</b>	<b>40</b>
<b>3.3 Research Design</b>	<b>42</b>
<b>3.3.1 First Food Diary</b>	<b>44</b>
<b>3.3.2 Focus Groups and Survey</b>	<b>44</b>
<b>3.3.3 Second Food Diary and Survey</b>	<b>48</b>
<b>3.4 Coding and Analysis</b>	<b>49</b>
<b>3.5 Ethical Considerations</b>	<b>50</b>
<b>3.6 Research Limitations</b>	<b>50</b>
<b>3.7 Conclusion</b>	<b>51</b>

## **Chapter 4: Results**

<b>4.1 Introduction</b>	<b>51</b>
<b>4.2 Pre-Focus Group Survey</b>	<b>52</b>
<b>4.3 Focus Groups</b>	<b>55</b>
<b>4.3.1 Information Receptiveness</b>	<b>55</b>
<b>4.3.2 Antecedents</b>	<b>61</b>
<b>4.3.3 Individual Efficacy</b>	<b>62</b>
<b>4.4 Food Logs</b>	<b>63</b>
<b>4.5 Post-Focus Group Survey</b>	<b>67</b>
<b>4.6 Conclusion</b>	<b>68</b>

## **Chapter 5: Discussion**

<b>5.1 Introduction</b>	<b>70</b>
<b>5.2 Information Receptiveness</b>	<b>72</b>
<b>5.3 Age Effect</b>	<b>73</b>
<b>5.4 Antecedents</b>	<b>78</b>
<b>5.5 Individual Efficacy</b>	<b>80</b>
<b>5.6 Value-Action Gap</b>	<b>81</b>
<b>5.7 Conclusion</b>	<b>82</b>

## **Chapter 6: Conclusion**

<b>6.1 Introduction</b>	<b>82</b>
<b>6.2 Research Results Recap</b>	<b>82</b>
<b>6.3 Future Research</b>	<b>83</b>
<b>6.4 Summary</b>	<b>84</b>

## **Tables**

<b>Table 1 Food Log Comparison 16 to 21 Age Group</b>	<b>64</b>
<b>Table 2 Food Log Comparison 35 to 50 Age Group</b>	<b>65</b>
<b>Table 3 Food Log Comparison 65+ Age Group</b>	<b>66</b>
<b>Table 4 Food Log Comparison by Age Group</b>	<b>67</b>

<b>References</b>	<b>86</b>
-------------------	-----------

## **Appendixes**

<b>Appendix a) Food Diary</b>	<b>96</b>
<b>Appendix b) Information Sheet</b>	<b>97</b>
<b>Appendix c) Images</b>	<b>99</b>



## Chapter One:

# Introduction

## 1.1 Introduction

The human appetite for animal flesh is a driving force behind virtually every major category of environmental damage now threatening the human future – global warming, deforestation, erosion, fresh water scarcity, air and water pollution, climate change, biodiversity loss, species extinction, social injustice, the destabilisation of communities, and the spread of diseases (WorldWatch Institute, 2017).

No other single human activity causes as much environmental devastation as livestock production (Walsh, 2013). A report by the United Nations warns that “livestock’s contribution to environmental problems is on a massive scale” that requires urgent attention (Bland, 2012, p2). Alarmingly, the Food and Agriculture Organisation of the United Nations (FAO) note that meat production will have to double by 2050 in order to meet the demand for animal consumption from our growing population (de Bakker, Dagevos, 2011). However, Steinfeld et al (2006, as cited in de Bakker & Dagevos, 2011, p878) argued that “the impact of livestock must be halved only to prevent the current level of ecological damage from being exceeded”, this is before any improvements to environmental health can be made.

Livestock production is singularly responsible for the majority of Earth’s habitat loss (Worldwatch Institute, 2017); it uses considerably more natural resources, and produces far greater Greenhouse Gas (GHG) emissions than plant based farming. For example the “US produces five times more wheat, by mass, than beef, yet wheat is associated with less than 1% of annual US CO<sub>2</sub> emissions, while beef production alone produces approximately 5%” (Sanders & Webber, 2014, p7). Meat production is a substantial contributor to climate change, which is responsible for significant environmental harm, not the least rising sea levels, which will displace many people and reduce arable land (Nasa, 2014). Food security will become increasingly worrying as the human population continues to expand. Not only will consumption

choices be compromised, but also food scarcity will increase (Nasa, 2014). There is an urgent global need to reduce meat consumption as the growing demand for it has caused livestock production to be incompatible with environmental sustainability.

The location of this research was New Zealand, which is a sound setting given the high meat consumption in this country. For example in 2014 the meat consumption per capita in New Zealand was over 72kg (Tucker, 2018), and in 2014, 49% of New Zealand's greenhouse gas emissions (GHG) occurred from agriculture. However, livestock production is of significant value to the New Zealand economy, with the dairy sector alone earning \$13.6 billion from exports in the year ending March 2016 (Walls, 2017).

This thesis examined if information on environmental harm caused by livestock production can contribute to conscientious meat consumption, and if age played a role in information receptiveness. Also examined was the impact of antecedents on meat consumption, and if a belief in individual efficacy played a role in reduction. Research was undertaken via an educational process using information and images of environmental harm resulting from livestock production.

Sociology is an appropriate discipline with which to examine individual views and experiences of meat consumption, given the field of sociology is concerned with the way in which social forces influence and shape practices, as evidenced with meat consumption, whereby culture and social norms are key factors in shaping our meat consumption practices.

## **1.2 Environmental Harm and Meat Production**

Livestock production has a significant and devastating impact on the environment and consequently climate change. However, despite livestock production being recognised as the single largest cause of climate change (WorldWatch Institute, 2017), meat reduction, Carrington (2014) argues, is not widely understood as contributing to environmental sustainability. Livestock production is largely responsible for much of the world's deforestation. The cleared land is used for feed-crop production, which uses one third of the Earth's arable land, while grazing livestock uses 26% of global land (Stanford University, 2007). Awareness of greenhouse gas emission harm emerged in the 1980s and was followed by the realisation that some of Earth's resources were finite. This emphasised the need for environmentally sustainable practices, and initiated the Brundtland Report in 1987.

This report defined the now most commonly used description of sustainability as “Sustainable development that meets the needs of the present without compromising the ability of future generations to meet their own needs”; the report observed that sustainability must meet the basic needs of everyone (United Nations, 1987, p37). Later, Morelli (2011) observed that the notion of sustainability is losing validity unless preceded by some defining criteria such as ecological, fiscal or agricultural, and under that criterion, I argue for ecological sustainability. My position is that anthropogenic demands such as meat production cannot continue unabated if environmental sustainability is to occur.

It is important to note that the existence of human-related climate change was challenged for many years, however, anthropogenic climate change is now widely accepted, with over 95% of the world’s environmental scientists united in this view (Cook, Oreskes, Doran, Anderegg, Verheggan, et al 2016).

The livestock industry “produces more greenhouse gas emissions than all cars, planes, trains and ships combined”, yet twice as many people believe transport to be the leading cause of climate change (Carrington, 2014, p1). This view may be the result of social policies surrounding vehicle emissions, which are given high profile recognition, while environmental harm caused by livestock production remains generally unexamined by policy makers (Hyner, 2015), or as a New Zealand example demonstrates, policy makers may back off from such moves. In 2003 the New Zealand Government attempted to implement a policy aimed at charging livestock farmers a levy for the methane gas emitted by their livestock (Fickling, 2003). However, despite New Zealand’s Resource Management Act’s (1991), “single overarching purpose”, being to promote “the sustainable management of natural and physical resources” (Ministry for the Environment, 2017) a petition to veto the policy was presented to the Government (Fickling, 2003) which resulted in the policy being abandoned.

Dagevos and Voordouw (2013) observe that many Governments show scant “if any interest in strategies to reduce meat consumption”. Moreover, the University of Glasgow’s (2015) sociology lecturer Dr Catherine Happer notes that meat production did not gain a single mention in emission reduction plans at the 2015 Paris talks. This, she posits, is due to government fears of public criticism. However, interviews

and 36 focus groups conducted by University of Glasgow, across several countries (China, Brazil, USA, and the UK) revealed that people were receptive to radical changes in meat consumption practices if governments provided a decisive lead (Wellesley, Happer & Froggatt, 2015).

Examples such as the above suggest that consumption patterns are unlikely to change while there exists a lack of “awareness of the association between meat consumption and climate change” (MacDiarmid, Douglas, Campbell, 2015, p487), or a lack of will to address the matter. Education on “the high environmental burden of meat” (Pohjolainen, Tapio, Vinnari, Jokinen, & Rasanen, 2016 p37) is required if individuals are to engage in sustainable meat consumption practices. Government intervention, Tucker (2018) argues, would provide greater impetus for a reduction in meat consumption, however, this, Tucker posits, is unlikely as “agricultural production is an important source of economic growth” (Tucker, 2018, p21).

Meat production is on the rise, in 2013 the American meat industry processed 33.2 million cattle, 2.3 million sheep, 112 million pigs, 239.4 million turkeys, and 8.6 million chickens, and in 2014 they exported 1.7 billion metric tons of beef (North American Meat Institute, 2015). New Zealand increased dairy cattle farming by 68.6% from 1994 to 2017, in order to meet the growing demand, and in 2017 “farmed 27.37 million sheep, 10.08 million cattle, and 0.85 million deer (Stats, NZ, 2017). These figures from America and New Zealand show alarming production figures, which indicate high demand for animal protein. Moreover, such mass production, whether raised outdoors in fields (as is overwhelmingly the case in New Zealand) or in confined, indoor spaces (a trend that is increasing in places like the USA), contributes a significant environmental impact. This impact is particularly observable in the Waikato (New Zealand), “which supports a third of the national dairy herd” and where “lowland native forest has been reduced to 6% of its former extent” (Leathwick, Clarkson & Whaley, 1995, cited in Jay, 2006, p269).

Land used for livestock production produces “65% of anthropogenic nitrous oxide emissions, 37% of anthropogenic methane, and 64% of anthropogenic ammonia emissions” globally (Joyce, Dixon, Comfort & Hallett, 2012 p2). Furthermore, animal protein production, red meat in particular, and especially cattle, uses up to 100 times more water than vegetable protein. Subsequently water-stressed areas are anticipated to drastically increase by 2025. In the Amazon alone, 70% of

deforestation land is now used for livestock farming (Global Forest Atlas, 2017), while biodiversity loss from land appropriation is resulting in a significant reduction of species. A recent study notes a threshold of forest cover loss, whereby “for every 10% of forest loss, one or two major species are wiped out” and even more alarmingly, after the loss of 43% of forest cover, “the rate of biodiversity loss jumps from between two to up to eight major species lost, per 10% of disappeared forest” (Ochoa-Quintero, 2015, p1).

Further environmental harm is evident in our oceans, whereby ocean dead-zones are occurring as a result of agricultural run-off and climate change. Without environmentally sustainable changes, 90% of all coral reefs are projected to be dead within 30 years, despite having existed for more than 400 million years (Becatoros, 2017). Coral is unable to adjust quickly enough to rapid changes in water temperature, and whilst coral can survive non-severe bleaching, it is at much greater risk of dying if the loss of zooxanthellae (microscopic algae) is prolonged (National Ocean Service, 2012). Although warmer water is primarily the cause, colder water than the coral is accustomed to can also result in bleaching (National Ocean Service, 2012). Coral bleaching provides a tangible and undeniable insight into one of the most significant environmental harms directly attributable to current anthropogenic climate change, of which livestock production is a major contributor (Chasing Coral, 2017; WorldWatch Institute, 2017).

Environmental harm from livestock production is intensifying as increasingly affluent populations, such as in China and Brazil for example; consume more overall, including more meat and other resource intense foods (McMillan, 2018). China’s beef consumption is growing by 28% annually and if this does not change, China will be the largest consumer of beef within 10 years, significantly exceeding USA’s consumption (Widmar, 2017). Between 2000 and 2016, the USA has remained the largest importer of beef, but their imports have remained static, while China, over the same period, increased their imports. In 2012 China imported 85,000 metric tons; by 2016 this had grown to 825,000 metric tons (Widmar, 2017) in order to meet the demand from China’s growing population and emerging middle class.

### **1.3 Food Sustainability and Population Pressures**

In 1800 the human population was 1 billion, and now it is 7.5 billion (Worldometer, 2017). By 2050, the United Nations anticipates the population to be close to 10

billion (Graham, 2017). In a mere 250 years our population will have expanded by 900%. Supplying food to this increasing number of people will become more challenging in a world of finite resources (Drewnowski, Rehm, Martin, Verger, Voinnesson, & Imbert, 2015). Consequently, food consumption patterns must change, as land and water used for producing food will need to be carefully managed (Nasa, 2014). High nutrition food with low carbon footprints will be required (Drewnowski, et al 2015). Moreover, increasing numbers of droughts, wildfires, floods, and high winds will make growing food even more difficult (Nasa, 2014). Dietary choice will become ever more critical to environmental sustainability; by eating more meat-free meals, or reducing portion sizes, individuals that can afford a choice of food can make an important contribution to environmental sustainability (Ajzen 2006).

The environmental devastation caused by livestock production is believed by many, to be the result of demands from an over-populated earth (World Population Balance, 2017). However, whether one views the Earth as overpopulated or not, may depend on certain vested interests. For example, businesses whose goals are financial gain or economic growth may be less likely to view the world as overpopulated. An increased population will, in all probability, result in an increase in business, as seen with livestock production. In the USA alone in 2013, “more the 482,000 workers were employed in the meat and poultry packing and processing industries, their combined salaries totalled more the \$19 billion” (North American Meat Institute, 2015). In New Zealand, the dairy sector singularly contributes \$7.8 billion to the GDP. Moreover, in 2016, New Zealand dairy farmers spent \$711 million on fertilisers and agro chemicals, \$393 million on forage crops, \$190 million on agricultural equipment, \$914 million on agricultural services, \$432 million on financial services, \$197 million on accounting and tax services, \$288 million on packaging and \$174 million on plastic (New Zealand Institute of Economic Research, 2017). Economic sustainability is not dissimilar to Schnaiberg’s (1975) societal-environmental dialectic which argued for economic expansion over biodiversity loss, whereby environmental harm mitigation would only occur if required to manage economic or health disasters. There has been significant population growth since Schnaiberg’s (1975) postulation and the demands from this escalating population has resulted in unsustainable, and frequently unaddressed, environmental harm.

Efforts to understand humans' relationship with resource use and the environment date back centuries. For example in 1798, Malthus observed the Earth's inability to sustain too many people, due to perceived limits on how much food can be grown. However, there are various complexities involved in determining what a sustainable global population is. How one determines their position is largely dependent on the ethical position taken. The Human Exemptionalism Paradigm (Catton & Dunlap, 1978) suggested that because of human's unique abilities, they are exempt from natural constraints as their exclusive skills can overcome any environmental limitations. In 1980 Catton and Dunlap proposed a New Ecological Paradigm (NEP), arguing that this was needed to better serve a post-exuberant age. This paradigm positions humans alongside other species, and provides a greater understanding of the importance of our natural environment and our impact on it. Biodiversity is being destroyed to accommodate human needs, and regardless of what stance one adopts, the Earth does have a finite carrying capacity, or a "maximum persistently supportable load" (Catton, 1986, as cited in Rees, 1996). Rees, furthermore, highlights the plight of other species, whose life sustaining needs are compromised in order to meet the needs of the growing human population. Bryson (2010, p3) observes that no new water and land can be produced, "we have all we are ever going to have, there are no new oceans teeming with life, or some backup Amazonian that we have somehow overlooked, this is all there is".

Although determining an agreed upon global carrying capacity remains challenging, it is deemed to be largely determined by food security (Wilson 2003). McConeghy (2009) observed that scientist's position varies between two billion and forty billion, depending on how other species rights are viewed. Rees (1996) suggested redefining "human carrying capacity as the maximum rates of resource harvesting and waste generation that can be sustained indefinitely without progressively impairing the productivity and functional integrity of ecosystem" (Rees, 1996, p204), and that it be determined by "how large an area of production land is needed to sustain a defined population indefinitely" (Rees, 1996, p203). Under that criteria, we have exceeded our carrying capacity, some argue, by billions, (World Population Balance (2017)). Speciesism, whereby other species requisites are compromised in order to benefit human needs (Singer, 1975), is visible with meat production. Land occupied by other species is appropriated, deforested, and biodiversity reduced. If one values quality of life and other species entitlement to a life that meets their

requirements, along with environmental sustainability; then all indicators suggest we have indeed exceeded our carrying capacity.

The Earth's carrying capacity remains contentious, as it is not an exact science given changes are continually occurring in relation to land use.<sup>1</sup> The World Population Balance (2017) argues that three billion people alive at one time is optimal for environmental sustainability, as this number allows for all human needs to be met without compromising other species requisites. It is likely that this number of humans may well have so little impact on the environment as to render individual responsibility void, but our rapidly expanding population means that individual action to mitigate environmental harm is necessary.

#### **1.4 Individual Action and the Value-Action Gap**

There is increasing evidence to suggest that individual action is required in creating sustainable environmental practices (Hourdequin, 2015). Therefore, there is a need to understand the processes involved in engaging individuals in environmental practices, including in this instance, meat consumption. The value-action gap encompasses both internal and external factors; consequently, psychological aspects are linked with sociological positioning. However, sociologists have frequently "questioned the importance of personal disposition" and have "emphasised social context and norms as determinants of human action" (Ajzen, & Fishbein, 2005, p175). Despite the challenges to 'attitude construct' some years ago, whereby there was a view that "attitudes had little to do with actual behaviour" (Ajzen & Fishbein, 2005, p173), attitudes remain regarded as formative in behavioural change.

Sociologists have long been interested in practice, for example Mead (1934) argued that people are a product of their social conditioning, whereby meaning is ascribed to objects, and their actions are a result of this meaning.

---

<sup>1</sup> An important and unanticipated aside from the escalating human population, is the huge increase in pet ownership. In the USA the most common pet is a cat or dog, which has resulted in a significant demand for meat to feed these pets. This demand now contributes to approximately one third of all meat consumption in North America (Time Inc. 2017, p4). Pets are increasingly being recognised as an additional factor requiring consideration in environmental harm from meat production (Tucker, 2013).



As an outcome of Meads teachings, Blumer later coined the phrase 'symbolic interactionism', (in 1937), whereby practices are determined by meaning attributed to objects, that are formed through social interaction. These meanings are then processed, and may be modified according to each individual. Mead and Blumer's theorisations attribute meaning to practice, while Ajzen's (1985) Theory of Planned Behaviour, posits a behavioural outcome is more likely if the individual believes they have control over the behaviour and the outcome (control beliefs). These two theories are more amalgamated than they appear at first glance; they both suggest that a change in individual practices is possible under the right circumstances.

Ajzen and Fishbein (2005, p178) argue that there is a significant difference in outcome based on general attitudes towards a specific behaviour, compared to specific attitudes directed towards a "behaviour of interest". They argue, that these specific behaviour of interest attitudes are "good predictors of single actions" (Ajzen, Fishbein, 2005, p184). Conversely, they note that broad attitudes are generally a poor basis for "predicting and explaining single behaviours" (Ajzen, Fishbein, 2005, p184). Therefore, activated and reasoned deliberations on the benefits, or costs, of engaging in a specific behaviour in which a defined operational behaviour-plan is enacted by a motivated individual, is likely to result in a positive outcome (Ajzen, 2006). By providing potentially motivating information on environmental harm caused by livestock production and proposing a specific behaviour with an operational plan, this research seeks to see whether reducing meat consumption is possible among the research participants.

I draw on climate change in the following examination as it is largely anthropogenic in cause, of which livestock production is a major contributor. For example production agriculture contributes to over 40 million tonnes of co<sub>2</sub> annually from fertilisers for animal-feed crops alone, and manure putrefaction methane emissions are globally estimated to be 17.5 million tonnes of CH<sub>4</sub> (Steinfeld et al 2006), both are significant contributors to climate change.

Individual awareness of environmentally unsustainable meat production is required if consumption practices are to change. Hiller (2011) and Hourdequin (2010) argue that unilateral choices should be viewed as having the potential to initiate a collective responsibility in efforts to create a sustainable environment. For example, Hiller

(2011) proposes that all individuals contribute to climate change on some level, and as such, each individual is responsible for engaging in mitigating practices. These individual actions, like reduced meat consumption and subsequent reduction in its production can have practical effects in slowing the Earth's rising temperature levels. Problematically, scientific information is often too complex to be able to provide clearly definitive and palpable observations, which many people require for belief to occur (Kaur, 2016). Moreover, social media has provided a platform in which sceptics can share, and reinforce, their climate change (and other) disbeliefs; this Cox (2017) notes, is a huge challenge for the scientific community. It may also explain the increasing distrust about the truthfulness of online information (Reidy, 2017).

De Bakker and Dagevos (2012, p879) state that individuals “can and should be regarded as allies and agents of change” and that individual action can encompass “different routes of change” (de Bakker & Dagevos, 2012, p891). Some may do so for ethical reasons, whilst others may not communicate moral views on dietary choices and environmental sustainability. This should not be seen though, as indicative of a lack of awareness of the issues (de Bakker & Dagevos, 2012, p891). Contrarily, Leiserowitz, Smith and Marlon (2010), argue that many do in fact remain unaware of the issues. Motives for engaging in sustainable practices are complex; a greater understanding of individual dietary environmentally sustainable practices would assist in efforts in engaging individual action.

Dagevos and Voordouw (2013, p4) suggest that efforts to reduce meat consumption continue to be challenging because it is “decidedly off-trend”, and “scant academic attention has been devoted to meat-reducers”. Nonetheless, there are notable areas of academic interest toward the need for reduced meat consumption. For instance, Tucker posits “nose to tail’ (Tucker, 2013, p9) consumption as a beneficial means of helping to meet meat demands whilst eliminating meat wastage, and examines the need to overcome sensory perception barriers to this. Tucker (2018, p7) also argues that “a bottom up approach through activated individual and collectively organised consumers” is essential if consumers are to be encouraged to reduce their “consumption practices towards those of conscientious consumers”. Tucker advances the need for education and information on the environmental impact of food production, in conjunction with other potentially motivational determinants.

Information on the environmental issues is crucial in enabling individuals to make comprehensive choices on animal based consumption practices.

Compounding the difficulties in efforts to engage individual action is that neo-liberal society is entrenched in individual offerings, which will, we are told, improve our health, our life, or the life of others, or benefit the planet, and so forth (Peterson & Lupton, 1996). These social messages of interpellation convert an individual into a subject, which seeks to engage the individual with ideology and social interactions, whereby successful engagement is measured by the desired action of the proposed ideology (Peterson & Lupton, 1996). The belief an individual has in the truth of the message, and how much control they have over the outcome, will help determine their choices and subsequent actions. Creating conscientious meat consumption might, for some, seem like more of the same messages of interpellation; therefore reliable and factual information from authoritative sources is a necessary component to voluntarily changing practices (Ajzen, 2006). Attitudes and actions are multi-faceted, so it is important to note that information which may engage one individual to act, may fail to motivate another. The strength of antecedents, how receptive the individual is to the new information, the strength of the motivation to change existing practices, the confidence that locus of control exists, and a belief that individual action can make a difference, are collectively and powerfully connected to changing a practice (Ajzen, 2006).

It is often argued an individual act cannot make a difference, which raises the question “why go green when it makes no difference?” (Garvey, 2010, p1). Garvey argues that for some, this can be a way of avoiding making unpalatable choices. It can be challenging for an individual to make an ethical choice when it comes at a cost to them in terms of giving up something they enjoy; and even more so, when they feel that their efforts are too insignificant to make a difference. ‘Individual causal inefficacy’, whereby individual actions are viewed as ineffectual, has dominated perception for some time, but this is an erroneous position, argues Hiller (2011). Individual acts can make a significant difference, however the difficulty, is that people struggle to recognise the “moral responsibility with regard to global phenomena” (Hiller, 2011, p5). This impairs their belief that they can make a difference, when in fact individuals can make important contributions towards environmental sustainability (Hiller, 2011). Moreover, Hiller argues that information on

environmental harm should motivate the individual towards being aware of the harmful effects their actions cause and to “take the time to reconsider their actions and act accordingly” as we “should not underestimate the expected helpful effects of any, even seemingly small, individual actions that we are fully capable of performing” (Hiller 2011, p366).

It is important to acknowledge the value-action gap in individual environmentally sustainable practices as it recognises incongruences that arise when values and behavioural intentions are not aligned. This phenomenon is often viewed as the disparity between cognition and attitudes and is generally recognised as a result of both internal and external causes (Chai, Bradley, Lo & Reser, 2015). Gasper (2013, p2961) argues that external causes can be the result of situational or contextual “factors that can constrain or inhibit pro-ecological behaviour”. Chai et al., (2015) examine one of these external causes; that of individual discretionary time and its effect on sustainable practices in relation to environmental harm and climate change. They suggest this is influential in the value-action gap, and that the restriction of discretionary time can act as a constraint to adopting sustainable consumption practices. Chai et al (2015) posit that a reduction in the time needed for individuals to reflect on “their personal values and concerns about climate change, inhibits the extent to which values and concerns are reflected in consumption practices” (Chai et al, 2015, p95).

Chai et al (2015) observed in their research that environmental concern is based on existing climate change knowledge, and a belief that environmental harm’s impact on climate change is a real occurrence. They hypothesised that concern about climate change “is influenced by knowledge and beliefs, social learning and experience of severe weather events”, and that “time-poor individuals will choose to adopt sustainable consumption practices that require relatively less time” (Chai et al 2015, p97). While habits are widely recognised as a major component of practices, they can be contrary to a planned behaviour. For example, if an individual’s socialisation and antecedents favour meat consumption but the behavioural intention is to overrule these and reduce meat consumption, in time scarce situations, the individual reverts to behaviours driven by antecedents. This Chai et al (2015) note is a method to conserve cognitive energy and thereby avoid time intense deliberations. Discretionary time restrictions can cause reliance on habitual patterns of

consumption practices, and when relatively little cognitive attention is engaged, the response to behaviour change is likely to be slower (Chai, et al 2015). This view is similar to Ajzen's (2006) who argues for the necessity of heightened engagement in order for changes in practice to occur.

## 1.5 Chapter Outline

In this Chapter I have introduced this thesis by looking at the demand for meat from an intensely populated planet with finite resources, and how this is impacting on environmental sustainability. I examined views on defining the Earth's carrying capacity and I looked at the increasing challenges in food security resulting from climate change and an expanding population. Finally, I looked at the effect individual action can have on environmental sustainability; and I briefly touched on discretionary time restrictions as one of several external causes of the value-action gap. Most importantly however, is that I have introduced the topic and rationale for this thesis. In order to address the research objectives of examining whether information on environmental harm can contribute to a reduction in meat consumption, I look at three factors. Firstly, if age plays a role in information receptiveness, secondly antecedent strength and how it impacts on changes in practice towards a reduction in meat consumption, and thirdly, whether a belief in individual efficacy is required for a change in practice to occur.

In Chapter Two I begin by examining the literature on reasons for meat consumption and how socialisation guides views and thoughts towards normalised meat consumption practices, and what is required to override existing antecedents. I look at Mannheim's (1954) theory that as people age, their views become more concrete and more resistant to change, and I look at the social structures that create antecedents. I also explore Ajzen's (1985; 1991; 2006) Theory of Planned Behaviour, along with his views on requirements for changes to occur, and Parsons (1951) Sociological Theory. I then proceed to look at why information can be persuasive enough to result in a change in practice for some, but not for others. I consider what type of information is viewed as persuasive, and the role age plays in information receptiveness. Lastly, I review Hourdequin (2010) and Hiller's (2011) views on individual ethical action and whether a belief that individual action can

make a difference towards environmental sustainability are required for behavioural changes to be enacted.

In Chapter Three I explain the methodology used and why I chose it. Qualitative research via a mixed method approach was utilised, and participant criteria were age, and meat consumption of four or more times per week. I used focus groups conducted through social phenomenology, two surveys and two food logs. Finally, in this chapter, coding and analysis undertakings are delineated, as are ethical considerations, and methodological research constraints.

In Chapter Four I present the results of this research. I begin by examining responses to the pre-focus group survey, followed by reviewing participant's experiences and views within each age group. Food log outcomes by frequency of meat consumption meals are shown in graphs for each of the three age groups, and the fourth graph shows the comparison of combined total meat meals between the age groups. I conclude this chapter by looking at the results from the second survey.

In Chapter Five, I discuss the research findings by linking research outcomes to relevant theoretical debates and previous research in this area. I begin by discussing how receptive participants were to the information, and then look at responses, and changes in meat consumption, by age group. I examine the role of participant's antecedents, and their views on individual efficacy, and compare this to previous research.

I conclude this thesis in Chapter Six, I begin by reviewing the research purpose, and I progress to observations on the contribution of my research and how it is situated with regards to other research in this area, and suggestions for further research. I then summarise the main points of the thesis and outline my conclusions.

## Chapter Two

# Literature Review

### 2.1 Introduction

In this thesis I examine whether information through an educational approach on environmental harm caused by livestock production can influence attitudes towards a reduction of meat consumption. I also explore the role age has in receptiveness to information, and if this is influential in attitude changes to environmentally sustainable meat consumption habits. Mannheim (1954) argued that younger people are often more receptive to information because their social beliefs, presuppositions, and responses are still developing, while older people's views become more concrete over time and more resistant to change. Empirical evidence continues to show attitude flexibility is highest amongst young people "and significantly lower in later life" (Krosnick & Alwin, 1998, p1389). To understand the drivers of meat consumption it is important to appreciate the influencers of meat eating practices, for example, whether taste, health, culture, situational context, age, or habit, are singularly motivational, as the stronger the antecedents, the more challenging behaviour changes are (Ajzen, 2006).

This literature review centres on the role knowledge and age play in changing attitudes and practices, how antecedents influence choice, and the challenges in overriding them. Finally, I look at individual efficacy in the context of ethical choices towards environmental sustainability. There are many complexities involved in changing attitudes, but for individual engagement to occur, meaningful connections are required (Hiller, 2011). The view that the issues are real, that individual choice can make a difference, and that the individual has locus of control to make the change, are fundamental in influencing views and practices, argues Hiller (2011). Nonetheless, that's not to suggest that if these conditions are present, attitude and practice modifications would undoubtedly occur, as despite agency, free will is not so easily enacted. External and internal considerations, such as age, gender, motivation, values, responsibilities, emotions, priorities, discretionary time, culture, social influences, and economic impacts, can affect outcomes. These all play a role

to a larger or lesser degree, however, Kollmuss and Agyeman (2002), argue that it is not beneficial or practical to develop a model that encompasses all factors, nor, they argue, could it provide definitive thresholds for attitude changes and agency. Nonetheless, it seems reasonable to assume that a greater understanding of influencers could contribute to a more effective and persuasive form of information and delivery.

The following section looks at findings on factors that influence meat consumption. I then look at the role knowledge has on practice in a broad sense, before looking more specifically at the role of knowledge in influencing meat consumption, followed by consideration of the relationship between meat consumption and age. Lastly I look at environmentally ethical responsibility, with the view to making sustainable consumption choices. The chapter concludes with a summary of key findings in the literature.

## **2.2 Influences on Meat Consumption**

Meat consumption practices are influenced by a range of factors and are largely the result of antecedents, which develop as a result of our socialisation experiences. Sensory factors, understandings of nutritional value, and social context, are all factors that contribute to how meat consumption is perceived and practiced. Even when particular influencing factors appear static, such as nutritional value, social norms and beliefs that we have been socialised into accepting as ‘truth’, can shift. For example, current trends suggest there are health benefits from reduced meat consumption, while other’s view daily meat consumption as an important nutritional dietary component (Annigan, 2018).

Social structures which influence meat consumption occur as a result of active human behaviour, and as with many recurring patterns of structure, they often begin at an early age (Bourdieu, 1973). Consequently the earliest influencers are generally those of familial norms. Bourdieu (1973) described these cultural influencers in terms of habitus, whereby agency patterns are learned through repetition and are often enacted at a subconscious level, and are individually acquired through both active and inactive paths, which are not transmissible. These behaviours Bourdieu observed are the result of socialisation, which have been shaped by one’s culture



and have, over time, become so ingrained that they can be automatically activated. Bourdieu (1973) viewed each area of capital forms of knowledge as separate from each other, with each possessing distinct rule sets and practices. This is particularly relevant with influencers of meat consumption, which have a certain set of guidelines, such as eating meat as part of an evening meal, or eating meat as a form of socialising. For instance a BBQ typically focuses on the meat component, and Christmas dinners are often perceived as incomplete if there is no ham or turkey. Bourdieu (1973) postulated cultural capital as a means of influence in choice, which is guided by the combination of education, the manner of one's speech, dress code, and income. These denote a social stratum and can be evidenced in meat consumption practices, for example the meat component at the evening meal, or a BBQ, or Christmas, for those with a greater income, could encompass quite a different meat component than those with a greatly reduced income. Nonetheless, the environment has been harmed by livestock production, irrespective of the cost, or cut, of the meat consumed.

Gossard and York (2003, p2) posit the need for recognising both “social structure and psychology, as necessary to understand (dietary) behaviour”. Social structures, Gossard and York (2003, p3) argue, are an important mediator in macro structures, while “psychological conditions have the potential to contribute to a fuller explanation of consumer behaviour”. Moreover, Gossard and York posit that social structures have been largely overlooked in the area of environmentally significant consumption. Values and beliefs, Gossard and York observe, underpin consumer food choices, as does an individual's social structure locale. Habit, taste, cost, nutritional value, and culture, are some of the main impetuses in meat consumption, and the strength of these will influence receptiveness to reducing meat consumption.

Findings from Elzerman, Hoek, van Boekel, and Luning's (2011, p234) work, which examined the importance of meat consumption for individuals, showed that “meat is perceived as nutritious and healthy and sensory properties such as flavour and texture are well liked; and that the consumption of meat is embedded in the culture of Western countries”. Tobler (2011, p2) also examined food choices and a willingness to engage in ecologically sound consumption practices, through receptiveness to a reduction in meat consumption, and observed that reducing meat

consumption “was influenced by health and ethical motives”. A study of data by Rimal (2002, p36) on American consumers found that “geographical location, racial and ethnic background, family composition, and household income”, were the largest influencers of meat consumption, while nutritional concerns and socioeconomic variables were influential in reducing meat consumption. Rimal found that those who consumed more meat by geographical areas were largely dependent on the livestock industry, which Rimal posits, may have influenced preference.

Rimal’s (2002, p40) work records income and educational level as influencers in meat consumption, whereby the greater the income and the higher the education, the more likely individuals are to eat less meat. However, education is often a determinant of income, therefore consideration to viewing income as the result of education, should be given, rather than viewing them as discrete entities. Household composition was also influential in meat consumption: those “households with children and married-couple households preferred more meals with meat, than did the households without children, and unmarried households” (Rimal 2002, p40).

Tucker, (2014) also acknowledges the complexities involved in food choices, such as nutritional value, personal values, food habits, monetary cost, sensory appeal, and taste preference. These, Tucker observes, are the result of “socialisation in a given time and place”, which are used to identify “ourselves within society” (Tucker 2014, p 169), and are crucial when considering food consumption practices (Tucker, 2013, p5). Sensory appeal was rated the top concern in research by Presott, Young, O’Neill, Yau and Stevens (2002, cited in Tucker 2014). Tucker (2013, p103) postulates “cultural values are significant when it comes to looking to how food consumption might be influenced toward more environmentally sustainable practices”.

Gossard and York (2003, p2) argue that “consumer habits are greatly influenced by powerful corporate interests”, with high meat consumption being driven by production rather than consumption generating production. Nonetheless, Gossard and York (2003, p7) note that this fails to determine consumer behaviour at an individual level within a “shared political economic context”. Gossard and York (2003, p7) posit that when highlighting the burden of meat production on the environment, social contexts in which consumption is shaped, such as location, traditions,

customs, and meanings, must be acknowledged as cues in “shaping or constraining consumer patterns”.

Tucker (2018) argues that food choice as an environmentally sustainable practice requires much more effort in raising conscientiousness towards a reduction in meat consumption. Tucker (2018, p19) notes there is easily accessible information on meat-based meals, but there is very little information available on “meatless or meat-reduced” meals. Moreover, Tucker (2018) observes that both government and non-government bodies are inactive in encouraging a reduction in meat consumption for environmentally sustainable purposes. In order to reduce livestock production, it is important to understand the factors that influence meat consumption. Tucker astutely observes that “there is still a long way to go”, in this area (Tucker, 2013, p12).

The way in which knowledge or education can act as an influence on practices is explored in the next section.

### **2.3 The Influence of Knowledge on Practice**

The goal of an educational process is to shape human behaviour, and whilst traditional views on environmental education suggest that knowledge is all that is required to motivate individuals to alter behaviours towards sustainable practices, this is now recognised as a one-dimensional view (Hungerford & Volk, 1990); as there are many complexities involved. In this section I review research findings with respect to how, and if, knowledge can influence meat consumption practices.

The influence of knowledge on practice is complex as one’s antecedents differ with each individual, although culture and social norms are largely recognised as forming initial constructs (Ajzen 1991). It is important to understand how information can effect behavioural change and what is needed for this to occur, to simply provide information and ignore the precursors to existing practices would be to ignore significant factors required for changes to happen. In this section I review the work of Parson’s (1951) Sociological Theory and Ajzen’s (1991) Theory of Planned Behaviour (TPB), to explore what it is that can make knowledge more (or less) likely to influence changes in practice, as they offer insight into the complexities involved in individual responses to new information. I then proceed to review research findings in this area.

Parsons (1951) Sociological Theory posits the role of antecedents as being formative in the decision process, and he argues the level of activity will be determined by the level of engagement (Parsons, as cited in King, 2009). Parsons suggests that for the individual, action has motivational influence which is obtained from meaning, and is influenced by personality systems, cultural systems, and social systems (Parsons, 1951). Moreover, these systems, Parsons argues, provide an insight into why some people feel more strongly about certain issues than others. The Theory of Planned Behaviour (Ajzen 1991) recognises the inherent difficulties involved in changing a practice, however, both Ajzen and Parsons agree that the more heightened the engagement is with the intended planned behaviour, and the stronger the perception is that the behaviour can be controlled, the more probable it is that there will be a positive outcome.

The processes involved in individual engagement towards environmentally sustainable practices, Ajzen argues (1991), are not linear, as individual attitudes and values vary in strength. For information to be influential it has to compete with existing attitudes and practices, which over time, have become habits enacted through socialisation and traditional norms. New information must penetrate established norms, it must provide motivation to change the existing attitude, and it must also create salience (Ajzen, 2006). These, Ajzen argues, are pivotal factors in determining intentions and outcomes of behaviour changes. A behavioural change in response to new information, Ajzen (2006) posits, is dependent on the strength of existing views. New information must challenge prevailing views and be persuasive; moreover, it must decisively show the new knowledge is real. Equally important is the decision to initiate a change, that locus of control in undertaking new practices can be enacted, and that social influences can be managed (Hiller, 2011; Ajzen, 2006).

Ajzen (1985) postulates the Theory of Planned Behaviour (TPB) with which to unravel consumer behaviour, through rational choice based on available information and a perception of behaviour control, or agency. The TPB is a “theory designed to predict and explain human behaviour in specific contexts” (Ajzen, 1991, p180), moreover, it continues to be used in “wide range of studies of consumer behaviour, including the purchase of environmentally responsible products” (Ackerman, Palmer,

2014, p529). The TPB recognises the importance of volitional actions and breaks down choice dependence into three categories. Firstly, behavioural beliefs, in which outcome from the behaviour is evaluated, secondly normative beliefs, which occur as a result of “the normative expectations of others and motivation to comply with these expectations” (Ajzen 2006, p1), and thirdly, control beliefs, which are dependent on how strongly other factors are likely to enable or obstruct the behaviour, and how much volitional control the individual believes they have over these factors.

It is generally accepted that behaviour is predicated on one’s belief in the consequences and potential impediments to enacting the behaviour (Ajzen, 2006). Ajzen argues that in order for behavioural changes to occur “behavioural interventions must provide information that change some of these beliefs, or that lead to the formation of new beliefs” (Ajzen 2006, p5), and that in order for the new belief to continue “they must accurately reflect reality” (Ajzen 2006, p5). Even so, accurate information will not guarantee a change in practice, as human behaviour is the result of antecedent’s guiding attitudes and resulting in “a function of salient information, or beliefs relevant to the behaviour” (Ajzen, 1991, p190). These, Ajzen argues, are pivotal factors in shaping intentions and outcomes (Ajzen 2006). However, specific characteristics attributed to action and outcome in which “the outcomes subjective value contributes to the attitude in direct proportion to the strength of the belief” (Ajzen 1991, p191) are providers to the probability of a behavioural outcome.

Ajzen’s three components to behavioural intentions offer further understanding of the processes involved in changing practices. It is important to be mindful that for Ajzen, decisions are not based on one or other of behaviour beliefs, normative beliefs, or control beliefs, but rather that each of them is aggregated and can subsequently “lead to the formation of behavioural intention” (Ajzen 2006, p1). Ajzen argues that information offered in an effort to change behavioural intentions through salient interventions, must challenge pre-existing beliefs by corresponding to a new collection of beliefs which combine “attitudes, subjective norms, and perceived behavioural control” (Ajzen 2006, p2).

While the TPB offers guidelines as to how information can change practices, no methodology can definitively predict “what kind of intervention will be the most

effective” (Ajzen 2006, p2). Guiding the outcome is how convincing the information is, how much control the individual feels they have over their behaviour, and what impact individual choice will have. Whilst these factors are fundamental to attitudes and subsequent behavioural changes, they are only some of the many predictor variables involved in changing practices. Moreover, there are relative weights within these predictor variables, therefore each level of information and each mode of delivery will not always produce the same behavioural outcome. Individual responses to information are subject to each individual’s antecedents, along with the strength and persuasion of the communication. The more heightened the engagement is with the intended behaviour, and the stronger the perception is that the behaviour can be controlled, the more probable the outcome (Ajzen, 2006). These considerations are particularly relevant for this research as it targets a single activity and offers an environmentally sustainable behavioural practice, but as the TPB observes, outcome is reliant on strength of the message, and a strong engagement with the new information. The TPB provides valuable insights into the processes involved in information and its influence on sustainable practice.

For environmental knowledge to be influential in reducing meat consumption, it must cogently explain the issues and provide achievable options with which to mitigate environmental harm (Ajzen, 1991). For knowledge to be motivational, information on the consequences of action, and of inaction, is required, along with the belief that an individual practice can make a difference (Hourdequin, 2012). Much research has been done on animal cruelty and meat consumption, and there is growing research on meat consumption and health, but there is a dearth of studies which examine the effect of knowledge of environmental harm caused by livestock, and meat consumption practices.

Information forms part of an intercession to normative behaviours but it is ineffectual if firstly, it doesn’t engage the individual, or secondly, if the individual is engaged but holds a view that they are unable to carry out the action. Ajzen (2006, p151) argues that in order for information to be effective, individuals should be induced “to form an implementation intention”, which outlines “when, where, and how the behaviour will be performed, thereby making it easier for people to carry out their intended actions”. This procedure formed part of this research, and as the behavioural changes didn’t

require any cues other than meal times, it was a less complex means of activating and measuring changed behaviours through the use of food diaries.

Boer, Schosler, and Boersema, (2012) explore the relationship between climate change and meat consumption and note that hypothetical receptiveness to one or more meat-free meals a week is largely dependent on participant's concern for the natural environment. Those who were sceptical that climate change is a serious concern were less receptive to putatively reducing their meat consumption in order to contribute to environmental sustainability. Reduced meat consumption was not perceived as a good decision as it had a high cost for them in terms of not eating meat, and low outcome benefit in terms of protecting an environment which they're unconvinced needs protecting.

Boer et al (2012, p4) focus their research on determining how consumers "respond to the idea of eating less meat", in order to mitigate environmental harm. Whilst they utilise some demographics, their emphasis was on "the questions on the frequency of meat eating, and the value of care for nature". Boer et al observe responses from "a nationwide sample of consumers in the Netherlands" (Boer, et al, 2012, p4) and their research is a theoretical exploration of motivation processes and the effect on personal values. Incongruence between value and activity, Boer et al argue, can provide a motivation to change an incongruent activity to align with a value. Consumers who recognise the environmental harm caused by livestock production and who are aware that their meat consumption is a contributor, may be more likely to reduce their consumption (Boer, et al, 2012, p5). Increased knowledge of environmental harm from livestock production may diminish disharmonious value connections between consumption and sustainable environmental practices. This, Boer et al (2012) observes, can lead to a shift in practices towards meat reduction and value related congruence.

Boer et al (2012) asked if individuals were aware that they can make a substantial difference in mitigating climate change by eating one or more meat free meals per week. Sixty four percent were familiar with the notion, and when asked if they would be willing to select a meat free meal "15% answered certainly, 41% maybe, 21% they do it already and 23% said that they don't want to change" (Boer, et al, 2012, p16). On motivation, Boer et al (2012) found that core values which relate to

environmental concern, individuals were significantly more motivated to engage in sustainable practices. This, Boer et al (2012) suggest, may be due to a belief that their changed practices are meaningful “rather than seeing their behaviour in terms of self-sacrificing” (Boer et al, 2012, p19). However, others who also took climate change seriously, failed to recognise that eating less meat would contribute to sustainability. Boer et al, (2012, p19) suggest this may occur because “the connection between meat eating and climate change is too vague and too complicated to increase people’s sense of urgency” Furthermore, they note that vehicle emissions may be viewed as more responsible for environmental harm than livestock production.

Anthropogenic climate change, Boer et al (2012, p8) posit, can be a complicated concept for non-experts, moreover “overly dire messages about climate change can backfire with some individuals”. This can result in individuals viewing the problem as too immense for individual practices to make a difference; however, this can be managed by framing information in a manner that can allow individuals to feel their practices can make a difference (Ajzen, 2006). A further complication Boer et al (2012) argue, is that until recently people were often unaware of the connection between agriculture, environmental harm, and climate change. Moreover, they observed that “eating less meat is a very much under-explored option for mitigating climate change” (Boer et al, 2012, p 21). Boer et al concluded by positing a multi-faceted approach to food choices, which included health benefits and environmental sustainable practices. They also noted the role of social influences in motivation and suggested it could be beneficial to address “contextual factors so that a meal without meat may become a more socially valued alternative” (Boer et al, 2012, p 24). Boer et al (2012, p22) argued that it is advantageous to “explore meaningful connections between value-related aspects of meat eating”, as this could provide a deeper understanding of the processes involved in changing attitudes and practices than simply “emphasising the relationship between meat, carbon and climate change”.

#### **2.4 The Influence of age on Meat Consumption**

There is a paucity of literature on whether age related receptiveness to information has any direct effect on engaging individuals in environmentally sustainable meat consumption practices. There is however research that has found that older



individuals see meat in their diets as a “necessary dietary component” (Lea and Worsley, 2001, p134). This finding suggests that it may therefore be difficult to shift consumption practices in older individuals.

The potential for age to have a bearing on individual engagement with environmentally sustainable practices warrants attention, as research reveals that young people are more receptive to new information while older people are significantly more resistant to change, argued Mannheim, (1954) and Visser, Krosnick (1998). I briefly examine Mannheim’s well-regarded views on age and attitudes, and I look at studies that have included age as determinants of behaviour.

Mannheim (1954) argued that younger people can often be more receptive to information because their social beliefs and presuppositions are still evolving, as are their modes of responses. Therefore, a younger person may engage with information at a deeper cognitive level than that of an older person with pre-existing attitudes, and it is this deep engagement with information that is needed to modify practices (Hiller 2011). However, as we age, attitudes, values, and practices become more concrete and more instrumental in the way we respond to new information, and therefore more difficult to alter (Mannheim 1954). Intellectual activity is required when we are presented with new information (Mannheim, 1954), and the level of intellectual activity will be determined by the level of engagement with the issues (Parsons 1951), which, as previously noted, is (arguably) more strongly present in younger individuals, whose values, views, perceptions, and practices are still in the formation stage (Mannheim 1954).

Since Mannheim’s observations, much research has been done on age and its relationship with attitudinal influencers; moreover, there have been many hypotheses on how attitudes are defined and what is required to change an existing practice. However, the majority of “empirical evidence supports the hypothesis that susceptibility is high during early adulthood and significantly lower in later life” (Visser, Krosnick 1998, p1389). Krosnick and Alwin (1989) found attitude flexibility to be highest in young people and antecedent’s significant predictors of attitude amongst older individuals. Whilst Krosnick and Alwin (1989, p423) observe that those aged 18-25 were more receptive to attitude change, they could not definitively say that age was the cause, but rather that those in this age group were more likely

to have greater “exposure to change-inducing events”, such as graduation, beginning a job or a meaningful relationship, and parenting.

In broadly related research, the impact of age on concerns about climate change and environmental sustainability was examined in a survey by Motu (Nelson Mail 2015, p7) and revealed significant differences in age related attitudes to climate change and environmental sustainability. Those aged less than 55 years old were more concerned about the effects of climate change and recorded a stronger perception in their ability to contribute to more environmentally sustainable practices, and people aged 18-34 years old stated they would consider sustainable environmental activities. The majority of participants in all age groups noted their intention to reduce their home-based emissions, although significantly fewer intended to reduce their meat consumption as a mode of contributing to environmentally sustainable practices. The reasons for this were not explored; however, it may be that meat reduction is not perceived to contribute to environmental sustainability (Carrington, 2014). This is the core of this research, whereby information on environmental harm caused by livestock production is essential in order for individuals to make environmentally sustainable meat reduction choices.

Carrigan et al’s (2004) research explored environmentally sustainable purchases and ethical consumption within the older age group. They argue that the older age group has often been socially constructed as being bound by their historical experiences, and as such, negatively perceived in consumption terms. Popular misconceptions, Carrigan et al (2004) note, are that it is problematic for an older person to learn new skills, and that they are reluctant to change practices. Carrigan et al (2004, 403) suggest that the negative view others have towards the older group is not grounded in fact. They observe that “there has been some tentative evidence to suggest that older UK consumers may be among the growing population of ethical consumers”. They note that research by Cowe and Williams (2001, as cited in Carrigan et al, 2004, p404) revealed that “29% of conscientious consumers were aged over 55”. Conversely however, Carrigan et al (2004, p 408) concluded by observing that whilst older people are often knowledgeable about environmental issues, the information “does not remain at the forefront of their consciousness” and unless “a trigger occurs during the purchase, it is unlikely that ethical issues will form a major part of the decision-making process”. This reinforces both Parsons and

Ajzen's argument whereby for information to convert to an environmentally sustainable practice, the information must be salient.

Problematically, reducing meat consumption to contribute to environmental sustainability is an ethical decision, requiring the relinquishing something gratifying in order to contribute to ecological sustainability.

## **2.5 Ethical Practice**

Environmentally sustainable practices are an ethical choice, and consequently likely to require a higher level of individual engagement than a non-ethical practice, particularly as there is no immediate reward (Ajzen & Fishbein, 2005). Hourdequin (2015, p150) observes that the difficulty in addressing the ethics of anthropogenic climate change are due in part to its inability to fit any moral paradigm, which means in turn that there are challenges in "identifying moral wrongs and allocating responsibility for them". This moral dilemma, Hourdequin (2015, p149) argues, poses the question of what constitutes a "fair distribution of burdens, in preventing and addressing harm". Furthermore, Gardener (2015, as cited in Peeters, De Smet, Diependaele & Sterckx, 2015), argues that climate change lacks the urgency of the moral issues needed in a paradigmatic model, and suggests that urgency be made clear by "distinguishing between the moral severity of the problem and the strength of the motivations of agents to address it" (Peeters, et al. 2015, p42). Moral motivation is guided by both external and internal considerations; Gardiner proposes the adoption of externalisation in moral environmental discourse by reasoning that agents could be well equipped to understand and act on the moral severity of climate change concerns. Hourdequin (2015, p151) suggests an effective paradigm should acknowledge environmentally sustainable practices as a moral choice, dependent on the ability to recognise that "global warming is an ethical issue with important psychological dimensions". Reducing meat consumption for environmental sustainability is an ethical decision, and consequently may require a different approach than a decision with individual benefits, one with factual and reliable information on the causes of the harm, and on the consequences of not engaging in mitigating practices, is likely to be more effective.

Hiller argues that we are all responsible for environmentally sustainable practices and that ethical choice can make a significant difference. Hourdequin also shares

Hiller's view, and takes it further by asserting that moral reason can be applied to ethical choice and is "capable of motivating agents independently of their prior interests and desires" (Hourdequin 2011, 403). However, there are those who challenge the view that individual ethical action can make a difference. Sinnott-Armstrong (2005) denies personal obligation by arguing that individual moral acts are too insignificant to be of any importance, and disputes Hiller (2011) and Hourdequin's (2011) view of individual efficacy. Sinnott-Armstrong argues for collective action with which to reduce environmental harm, however, Hourdequin's response to this is to observe that collective action is simply the result of aggregated individual action.

Sinnott-Armstrong (2005) utilises the analogous scenario of an individual's Sunday drive to support his argument, which, he posits, emits so little particle matter to make any difference, therefore, not going for a drive will not have any impact on sustainability. Moreover, he argues that collective action does not always follow on from individual ethical action; nonetheless, he advocates unilateral responsibilities as part of a shared response. However, Sinnott-Armstrong postulates that governments have a moral obligation to keep our environment sustainable and if they fail to ratify policies to address the concerns, then one's individual moral act is not going to be influential enough to be effective. Hiller (2011) and Hourdequin (2010) dispute this notion. Hourdequin posits a form of individualism that asserts collective action is required to address issues, and suggests that individual acts in accordance with one's moral identity and integrity importance, can impact on other's actions.

Hiller (2011) addresses Sinnott-Armstrong's argument by stating that Individual Causal Inefficacy (ICI) is a false position. Hiller (2011, p349) begins by arguing that "if individual actions, such as a Sunday drive, are not causes of climate change, then what does cause climate change?" Vance (2016, p2) also examines moral obligations towards ethically sustainable practices and responds to Sinnott-Armstrong's rejection of individual culpability by observing that if the individual causes no harm, how does "zero plus zero plus zero plus zero" and so on, "add up to a very large amount" of harm. If individual activities are not the cause of environmental harm, Vance (2016, p2) observes, the damage must be the result of some metaphysical entity. Not that Vance intends for his remark to be taken literally, he merely uses it to make the point that anthropogenic environmental harm is

occurring but if it's true that individual actions are exonerated from culpability as Sinnott-Armstrong argues, then what is the cause. Vance (2016, p22) notes a harm principle which posits that if an act cause's harm then it's morally wrong, but, argues Vance, if an individual act is insufficient to cause harm, or intended to cause harm, despite an increased probability that the action will cause harm "as a side-effect of group action", then there is a moral obligation on the individual to cease, or reduce, the act. This view also recapitulates the views of Hourdequin (2015) and Hiller (2011).

Hiller touches on normative theory issues in his examination of environmental responsibility, namely the complexities of ignorance of one's actions and their subsequent impact on environmental sustainability. He notes that individuals should not be unaware of "the expected effect of their actions", and whilst "ignorance does exculpate some individuals" (Hiller 2011, p353), Hiller postulates that those with anthropogenic global climate change knowledge should ensure everyone is made aware of it. This, Hiller argues, removes any disclaimer of liability due to ignorance. Hiller posits the need for individuals to be aware of the expected harm of their actions, and acknowledges that each act may result in dissimilar levels of harm, but if there is an alternative that causes no harm, or less harm; then individuals have a moral obligation to choose that alternative. This perspective is in accordance with sustainable meat consumption practices, whereby some individuals may choose to eat one or more meat free meals a week, while others may choose to reduce portion size.

The challenge in engaging individuals with information on environmental harm caused by livestock production, towards ethical practices, is the view that unilateral action is ineffective. Hiller speculates five erroneous structures as to why people disbelieve that individual action can be effective. Firstly, that whilst we might, on some level, be aware that individual acts can be important, we choose to think that our action will not be significant, therefore we can avoid making moral changes in our actions. Secondly, if environmental sustainability has a tipping point, then our individual action has a very minuscule chance of being the act that tips it. Thirdly, if the threshold tipping point has already been crossed, then what is the point of taking mitigating action? Fourthly, the size of the issues is too large for us to equate to and in "considering the large numbers of people and non-humans who may be harmed

by the effects of anthropogenic global climate change, we may become numb and fail to reason properly” (Hiller 2011, p363). Fifthly, while we may “care deeply about things in our daily lives, our daily lives seem insignificant in the grand scheme of things” (Hiller 2011, p363). In this scenario, Hiller suggests a position whereby we “look carefully at the amount of expected marginal increase in harm if we perform certain actions, and make our moral judgements accordingly”. Hiller (2011, p365) is not suggesting that “we have no political responsibility”, but rather that individual moral responsibility should not be neglected. Hourdequin also argues that individuals have a personal obligation to mitigate harm by engaging in ethical choices. Hourdequin notes Sinnott-Armstrong’s view “that individuals have no obligation to reduce their personal emissions, but that individuals do have obligations to respond to climate change” (Hourdequin 2010, p447). This, Hourdequin posits, can be achieved through collective answers to the issues. This requires political involvement, which no one is disputing the need for (Hourdequin, 2010), but whilst policies can create a collective response, the responses are still aggregated by individual acts, towards a collective action (Hourdequin, 2010). It is this argument that summarises the efficacy of individual practices, and reinforces the need for individuals to understand that an individual act of reducing their meat consumption can make a difference.

The biggest barrier to individual sustainable practice, in the afore mentioned survey conducted by Motu (Nelson Mail 2015, p 7), was the disbelief that individual ethical actions can make a difference in mitigating climate change, only 42% felt their actions could make a difference. Disconcertingly, the summary comment concluded by observing that “this country’s best efforts can only make a small dent in reducing pollution that engenders widespread global indifference” (Nelson Mail, 2015). These observations undermine efforts to engage the individual in sustainable ethical options; moreover, they fail to recognise that collective efforts are the aggregation of individual practices (Hourdequin, 2015).

Hourdequin argues the need to recognise the importance of psychological factors involved in creating awareness of environmental harm, and notes that there is a connection “between our conceptual understanding of climate change as a moral problem and our motivation to act” (Hourdequin, 2015, p151). Individual moral responsibility must be considered with individual environmentally sustainable

practices, but relevant phenomenology needs to be engaged for an “agent to be motivated by reasons that are independent from their own end” (Hourdequin, 2012, p407). The problem, Hourdequin posits, is to determine what the “moral obligations of individuals are in relation to climate change” (Hourdequin, 2015, p153). Whilst many agree that individuals do in fact have moral obligations, defining them in a manner that individuals can rationally concur with is problematic. Johnson (2003, as cited in Hourdequin, 2015) contends that there is no reasonable expectation for individuals to engage in voluntary sustainable action, instead, Johnson argues for a collective agreement. This is precisely what Hourdequin seeks (2012), but through a bottom up approach, via individual choice towards a collective agreement. As observed earlier, Hourdequin recognises that collective actions are the result of aggregated individual actions and without which, there is no collective action. Although Johnson’s argument, whereby people who choose not to engage in environmentally sustainable practices still get to share in the environmental benefits which occur as a result of those who chose moral action, has validity, it does nothing to activate unilateral action, but rather suggests a lack of an incentivising approach (Hourdequin 2015).

## **2.6 Conclusion**

Discussed here are just some of the many factors involved in changing attitudes towards a reduction in meat consumption for environmentally ethical reasons. Age, arguably, has a role in how information is received, and the level of active engagement. Information that can override existing antecedents is the strongest predictor of attitude change, Ajzen (2006) argues. Information which engages the individual is required, moreover, it must be salient and motivational (Hiller, 2011). But irrespective of how persuasive the information is, a belief that individual actions can make a difference is central to engaging unilateral environmentally sustainable choices. The view of individual inefficacy must be eradicated as it is a frequent obstruction to engaging individual action.

A reduction in livestock production is crucial to environmental sustainability, and activating individual practices towards reducing meat consumption can have a significant effect on environmental sustainability. However, antecedents are predictors of actions, and the strength of these provides determinants to behavioural

change receptiveness. Methods with which to challenge and change these precursors must be pursued. As both Ajzen (2011) and Parsons (1951) observe, the more heightened the engagement is with the intended planned behaviour, and the stronger the perception is that the behaviour can be controlled, the more probable it is that there will be a positive outcome. However, the difficulty with moral actions when seeking to incentivise, is that engagement is reliant on one's ethical positioning. Nonetheless, the strongest predictors of attitude change may be those proposed by Ajzen (2006), in which he argues that existing attitude strength must be met with acceptance that the new information is accurate, that social influences can be managed, and control over new practices is achievable, and the changed practice will have an impact (Hiller 2011).

## Chapter Three

# Methodology

### 3.1 Introduction

Can knowledge of environmental harm caused by livestock production contribute to conscientious meat consumption? The purpose of this research is to explore whether information related to environmental devastation caused by livestock production can raise cognition of the issues, and if this might be motivational in reducing meat consumption practices. Also, I want to explore whether age is influential in information receptiveness.

I will be drawing on qualitative research methods, taking a mixed method approach which involves two food diaries (pre and post focus group discussion), two short surveys (pre and post focus group discussion), and a focus group. This approach allows for an understanding of participant's views and practices. Changes that occur as a result of the information provided in the focus group and any subsequent impact on practice can be measured, and whether age is an influencing factor in receptiveness to changing consumption practices can also be analysed with this approach.



In this chapter I begin by introducing participants. I will then explain the research design, the ethical considerations as they pertain to this research, and research limitations.

### **3.2 Participants**

Twelve participants were deliberately chosen from urban environments to avoid incongruity when examining views and opinions on reducing meat consumption, as those from rural sectors often have livelihoods which are dependent on livestock farming. The two main criteria for participant selection were age, and meat consumption practices. I sought four voluntary participants in each of the following age groups, 16 to 21 years, 35 to 50 years, and 65+ years. The decision to confine the research to three specific age groups was not an arbitrary one; I wanted three clearly defined age groups devoid of any potential overlap, in order to examine age related information receptiveness to environmental harm caused by livestock production.

Participants for this research needed to be meat eaters who consumed meat four or more times per week. For the purposes of this study, meat was defined as any animal flesh. It was important to define meat consumption in order for participants to be clear about the meals they were to record in their food diary. It is these norms of regular meat consumption which I attempt to challenge through the provision of information and images on environmental harm caused by meat production. I examine whether the information can motivate participants to consciously think about the environmental harm meat production is causing, towards a reduction in their consumption. While there is much information on how much meat, in terms of weight, a person consumes each day, there is a paucity of information on how many meals containing meat a person in developed countries eat on average, each week. I needed to determine that meat was a regular consumption pattern, and ultimately selected four or more times a week as indicative of meat consumption being a normative practice for them. It is important to note that this is a number I selected as I could find no data by which to determine a normal pattern in terms of the number of days, and times per week, meat is consumed.

Recruiting participants for the 16 – 21 year age group was straight forward. Two of the participants were known to me. I explained to them that I was undertaking post-

graduate study at Massey University, and that the participation criteria were age and consumption of meat four or more times per week. I asked if they would be interested in participating, to which both immediately agreed, and within twenty four hours they had each asked a friend, who also agreed to participate. The participants in this age group were two 16 years old females at High School, one 20 year old male, and one 21 year old male, both at university; all four lived at home with their parents, who purchased the household food and prepared the family meals.

My search for participants in the 65+ years was the most challenging, and time consuming, taking almost four weeks. The first person I approached was known to me. She responded that she ate meat every day and did not want to think about any consequences of her meat consumption as she wished to continue her enjoyment of eating meat, and so would not take part. The next three people I approached (also known to me) responded in a similar manner, in that they were reluctant to think about production consequences. I then emailed a local senior group giving my name and explained that I was doing post graduate study through Massey University, and that I was looking for four participants aged 65+ to take part in my research. I included an information sheet, Consent Form, and Food Diary, but received no response. I then approached two local shops staffed by volunteers, and two local supermarkets. They all agreed to place my information sheet outlining the purpose of my research in their staff room. I also noted that I was seeking four participants aged 65+ years. I did not get any response. I then approached another local senior group and asked the manager if she would forward my request on to the members. She agreed and confirmed that she had passed on my request; however, again I did not receive any response. Next, I approached the manager of another local organisation staffed by volunteers, with the same request. Several days later I received one response via email, asking if I had enough participants and advising me that he ate meat every day and would be happy to participate. I immediately replied, thanking him and advising him that he was the only person to respond and that I would be very pleased to have him as a participant. I attached the food diary and asked if he would be able to begin the food diary over the coming week. He did not often use a computer however; hence there was a delay in him starting his food diary. I continued my search for another three participants aged 65+. I approached family members, friends, and friends of family, asking if they, or anyone they know, might

be interested in participating, but I was unsuccessful. I emailed my one participant advising him that I would be in touch as soon as I found another three participants. He very kindly suggested three people known to him, and provided me with their phone numbers. I immediately contacted them; one no longer ate meat due to health reasons, but the other two, much to my relief, very kindly agreed to participate. I forwarded them the various forms, and continued my search for one more participant. I asked a person in close geographical proximity to me, who agreed. A little over a week later, and after several emails to determine a time suitable to meet for the focus group discussion, we agreed on a date and time. Participants in this group were two females and two males. All were retired, lived in their own home, and purchased their food and prepared their own meals, often in conjunction with their spouse.

After the ease of finding the fourth participant in close geographical proximity to me for the 65+ age group, I decided to ask those in the 35 to 50 year age group who were also in close geographical proximity. I approached four people in person, who all agreed to participate. I provided them each with an information sheet, consent form and food diary, and they all began their food diaries the same day. We then organised a date and time for the focus group. Participants in this group were three females and one male. All four worked, while one also studied and one was on parental leave at the time, all were responsible for purchasing food and preparing the families meals.

### **3.3 Research Design**

To effectively answer the research question I use a mixed method approach beginning with a pre-focus group food diary, which was to be recorded for one week. Once the food diaries had been completed, the focus group discussion was undertaken, which began with a brief survey to examine existing knowledge on environmental harm caused by livestock production. This was followed by my presentation of an information sheet and images related to the environmental impacts of meat production. The discussion began after this. Six weeks after each focus group discussion, participants were emailed the second food diary and the second survey. Participants were asked to complete and return them within two weeks. The second food diary was for one week and was identical to the first food

diary; this was done to determine if there had been any reduction in consumption that could be associated with the information and focus group discussion. A second survey was also completed at this time, which queried whether participant's perceptions and views had changed at all. The total timeframe for conducting the research was a little over four and a half months.

The two food diaries, and the two surveys were self-reports, and as with any self-report, the submitted data is reliant on participant honesty. Participant honesty underpins qualitative research and the data obtained is done so with the view that any deception or misleading is unintentional. Participants had no vested interest in the research outcome, and had previously declared their age, and that they consumed meat four or more times per week. It is also important to remember that qualitative data is subjective and therefore descriptions are not value-free (Watts, 2008). However, I was not seeking value-free observations; I wanted to explore participant's unique views, experiences and thoughts, in order to better understand what might effect a reduction of meat consumption. This research is not designed to prove or disprove, but rather to understand influencing factors. I was not therefore, constrained by the potential for self-interest goals. My focus was on taking all participants' responses seriously, and creating an environment in which they were comfortable in openly sharing their perceptions and experiences, in order for me to better understand if information can effect a change in practice, and if age is an influencing factor. How knowledge effects behaviour is generally dependant on the strength of one's antecedents, and social norms (Ajzen, 1991). The Theory of Planned Behaviour (Ajzen, 1991) identifies the innate complications which make behavioural changes challenging. Ajzen (2006) argues that for changes to occur, the new information must demonstrate that it's real, it must be persuasive, and that locus of control exists. Age, Mannheim (1954) argued, is pivotal in information receptiveness. As we age, our responses become more concrete and less receptive to change, however, younger people's responses are still in the formative stages and consequently, more likely to engage with new information at a deeper level (Parsons, as cited in King, 2009), which is necessary for changes to occur (Hiller 2011).

I had initially hoped to conduct all three focus group discussions over a one week period, however due to challenges with participant recruitment there was a time difference of approximately one and a half weeks between each focus group

discussion, and exactly three weeks from the first focus group discussion to the last. This meant I had to be cognisant of the date for each group's second food diary and survey, so that each group received these six weeks after their focus group discussion, and each group had a two week timeframe for completion. To remain aware of the dates to send each group the food diary and survey, I created a reminder for each group in Outlook, and I also kept a note of the dates on a desk calendar.

### **3.3.1 First Food Diary**

Each participant was asked to complete a food diary for a period of seven days prior to the focus group discussion. The pre-focus group food diary and the post-focus group food diary were identical. I provided each participant with a spread-sheet showing the seven days of the week in the left-hand margin, and along the top was listed Breakfast, Lunch, Dinner, Snack, with corresponding boxes for each of these, linking to each day (see appendix a). Participants simply had to place a tick in the box for each day and each meal in which meat was consumed. To ask participants to record their meat consumption in terms of weight per week would be an arduous task for them. Instead, I was seeking an uncomplicated and time efficient method of recording, which was provided by the tick box for each meal in which meat was consumed.

### **3.3.2 Focus Group and Survey**

Participants were advised to allow 60 to 90 minutes for the focus group discussion. This encompassed introductions, a brief survey, the reading of an information sheet, viewing three images, and the focus group discussion itself. Before beginning the focus group discussion, participants completed a survey requiring seven "Yes", "No", or "Unsure", responses, one question that required selecting one of two answers, and one open ended question. The survey examined participant's current knowledge of environmental harm caused by livestock production, and their views on matters related to this. The questions were as follows:

#### Survey One

Please circle the answer you feel is the most accurate:

- 1) Some say climate change is a natural occurrence, but the major cause of climate change is the speed with which it's occurring and is largely the result of humans and their activities; [yes/ no/ unsure]
- 2) Over 70% of the Amazon Rainforest is now used for livestock production; [yes / no / unsure]
- 3) The leading cause of greenhouse gas emissions globally is? [Transport / Livestock Production]
- 4) Individual actions can have a positive effect on creating a sustainable environment; [yes / no / unsure]
- 5) Ocean dead-zones are occurring as a result of livestock production run-offs and climate change; [yes / no / unsure]
- 6) Without enacting environmentally sustainable practices, within 50 years, over 80% of the Earth's species are predicted to be extinct; [yes / no / unsure]
- 7) Livestock farming is the largest single cause of environmental harm, it is the cause of water contamination, deforestation, erosion, biodiversity loss, species extinction; [yes / no / unsure]
- 8) Should it be the government's responsibility to implement environmentally sustainable policies? [yes / no / unsure]
- 9) Thinking about your meat consumption, is there anything that you think might potentially influence you to eat less of it?

I included Question 8 in order to link responses to question 4; if participants felt that individual choice would not be effective in creating a sustainable environment, I was interested in seeing if they were open to government intervention.

Once participants had completed the surveys, I collected them and gave out an information sheet which corresponded to the survey, as well as three images of environmental harm caused directly and indirectly by livestock production (see appendix c). The information sheet (see appendix b) provided the answers to those questions that they were asked about in the survey, while the three images each represented a different aspect of environmental harm to which agricultural production can in part be attributed. The purpose of the images was to underpin the message

that the issues are real, with clearly defined consequences, thereby making contestation more challenging.

The images were of: 1) before and after deforestation of the Amazon for livestock purposes; 2) before and after images of healthy and bleached coral reefs, a result of the Earth's rapidly rising temperature due largely to anthropogenic climate change, of which livestock production is a significant contributor; and 3) an image of a river covered with dead fish as a result of livestock runoff and climate change.

The discussion began immediately after completing the survey, reading the information sheet, and viewing the images.

Focus group discussions provide the opportunity for participants to share their experiences and to interact with others in the group. Focus group discussions can provide explanatory and illustrative data from a contextual question, and from a relatively small sample. Ritchie and Lewis (2003) suggest that focus groups are synergistic (Ritchie and Lewis 2003, p171) and that the groups work collectively, and it is this interaction that prompts participants to reveal more of their own perceptions, this was precisely the data I was seeking. This method allows for the exploration of any impact from the information provided. Focus groups are generally viewed to be comprised of six to eight participants (Ritchie and Lewis, 2003); however, due to the 60 to 90 minute time frame, I elected to conduct the focus group discussions with four people in order to make it more manageable, as I was both facilitator and note-taker.

Because I was interested in participant's experiences, views, and perceptions of eating meat, I felt that qualitative research through social phenomenology could provide the rich, lived experiences I was seeking. It provides the opportunity for participants to tell their views, perspectives, and experiences of a specific phenomenon, and is therefore the ideal platform for this research. Social phenomenology is a paradigmatic approach grounded in subjectivity, and provides an insight into individual perceptions, motivations and acts. It can illuminate specific views and actions of the phenomenon under study (Lester 1999), and provides an epistemological approach based on each individual's unique perspective. Social phenomenology allows participants to describe their experiences of the phenomenon under study, without the more structured parameters often required in quantitative

research (Waters 2017). Social phenomenology also allows analysis to emerge from each participant's description, while maintaining a focus on the portent. When conducting social phenomenology, it is expedient to be as non-directive as is feasibly possible whilst still maintaining emphasis on participants related experiences and the phenomenon under study (Waters 2017).

As facilitator of the focus group, it was important to create an environment where participants felt comfortable in relaying their thoughts and views on the impact of meat production on the environment. There were times during each focus group when the conversations digressed. On some occasions I let it continue for a few minutes to see where it would go, and other times I would bring the conversation back to their views on the information. However, I largely refrained from being too directive.

For each focus group, I began by introducing myself, and had them introduce themselves. I explained the purpose of my research, which was to examine if information of environmental devastation caused by livestock production can raise awareness of the issues and if this might be motivational in reducing meat consumption, and if age plays a role. I stated that there are no right or wrong responses and that all of their views are of interest to me. I then collected their food diaries and consent forms, and went over the confidentiality agreement. I noted that no personally identifying data would be used in any research output. I then explained the procedure and asked if they had any questions about the process, and then advised them that I was now turning on the audio recording. The 16 to 21 age group discussion began haltingly, but they became more involved when describing the reasons they ate meat. As the discussion moved on to their knowledge of environmental harm, it became clear that they were engaged with environmental concerns. After approximately fifty minutes, the conversation wound down and I advised them that I was turning off the audio recording.

The 35 to 50 age group discussion flowed immediately and it was clear they had some knowledge of environmental issues. Throughout the discussion they were comfortable with both sharing their views, and querying each other's observations. The discussion continued for seventy five minutes before winding down, at which point I advised them I was now turning off the audio recorder. However once I had



turned the audio recording off the conversation picked up again. I advised them that I would like to record this and turned the recorder back on. The conversation continued for a further fifteen minutes.

For the 65+ age group the discussion flowed smoothly, however, it quickly became apparent that they rejected much of the provided information, although they were somewhat hesitant in voicing their scepticism of the information. At this point I reiterated that there are no right or wrong responses, and that everything they think or believe is of interest to me. They then became increasingly comfortable sharing their views. After 90 minutes, the discussion wound down, I then advised them that I was now turning off the audio recording. They expressed an interest in seeing the results, and I assured them that I would provide them with an outline after completion.

### **3.3.3 Second Food Diary and Survey**

Six weeks after each of the focus group discussions, I emailed participants a spreadsheet of the second food diary, which was identical to the first food diary. The second food diary provided a comparison to the first in order to determine if meat consumption had been reduced and if there were any differences between the age groups. During this time participants also completed the second survey which asked if:

- 1) they had become more mindful of the environmental harm caused by livestock production.
- 2) their consumption patterns had changed since the focus group discussion.
- 3) they had thought more about human impact on the environment.
- 4) they had actively sought further information on environmental harm caused by livestock production since the focus group discussion.

Participants were advised to allow 5 to 10 minutes to complete the second survey, and they had up to two weeks to return the completed food diary and survey.

### 3.4 Coding and Analysis

I labelled each participant within their age group as a, b, c, or d. These identifiers were only used for the food diary comparisons and the surveys; they were not applied to the focus groups. The food diary data analysis involved comparing each individual participant's first food diary with their second food diary to determine if a reduction in meat consumption had occurred. Although my primary interest was in seeing if each individual participant's meat consumption had reduced, I also compared the combined number of meat meals between each age group. For example, the total number of meat meals recorded by the 16 to 21 year olds in their first food diary compared to the total number of meat meals recorded in their second food diary and so on for the other age cohorts.

Data provided from the focus group discussion and the two surveys was used to examine the responses within and between the three age groups. As the sole researcher, I took notes, audio-recorded, and transcribed each focus group discussion. I chose to undertake the transcribing myself rather than use software packages, in order to become more familiar with the data. Each focus group discussion took between four to six hours to transcribe. I transcribed approximately 90% of the audio recording; the parts I left out were when conversations digressed to meatless recipes and home grown vegetable gardening. Although there were other conversation digressions, they provided interesting perspectives that were tangentially linked to the topic.

The focus group topic meant that the data was quite structured. This meant I could readily proceed to sorting the data. Coding from the focus group discussions was undertaken via a thematic approach, corresponding to the information sheet provided after the first survey. To identify my selected themes between the three age groups, I colour coded the relevant data as I transcribed. This required me to keep a printed copy of the colour coded key themes in order to cross-check as I transcribed. I used a different colour for comments not directly related to the area of interest but which provided an interesting, and potentially relevant perspective.

For the analysis I examined whether the information might be meaningful enough to encourage mindfulness of the issues, and if there are other factors that might be effective in initiating a reduction of meat consumption. For the conceptual

frameworks, I drew on Parsons Sociological Theory (1951) which posits socialisation as being formative in the decision process, and Ajzen's Theory of Planned Behaviour which is "designed to predict and explain human behaviour in specific contexts" (Ajzen, 1991, p180). Secondly, I look at the role antecedents' play in meat consumption and employ Parsons (1951) and Ajzen's (1991) observations of the impact of antecedents on behavioural choices. I briefly examine Bourdieu's locale of socialised habits. Thirdly, I examined views on individual action and whether participants feel individual choice can make a difference. For this I utilised Hourdequin (2011) and Hiller's (2011) locus of individual efficacy.

### **3.5 Ethical Considerations**

The primary ethical consideration in this research was that of participant confidentiality. I advised participants that all participants' names and other identifying factors would be kept confidential in research outputs, and focus group participants were asked to respect the confidentiality of each other. However, there are limits on confidentiality from the other participants, which was outlined in the 'consent form', and which all participants signed. Participation was voluntary.

To maintain confidentiality, the food diaries and surveys were stored by first name and age group only, transcriptions from the focus group discussions were stored by age group only, and the consent forms were stored separately from the food diaries, surveys, and transcriptions. The only time participants are directly referred to is during the comparison of each individual food diary, for this purpose each participant is recorded as participant a, b, c, or d, within the confines of their relevant age group.

### **3.6 Research Limitations**

Due to the limited sample size, which does not necessarily provide a representation of the greater population, results are unable to be generalised, this is not unusual for qualitative research using social phenomenology. Nonetheless, focus group discussions are a sound method for understanding participant's lived experiences of a specific social concern.

My intention was to have two months between the completion of the first food diary and the beginning of the second food diary; this was to afford a period of time for participants to reflect on the information and the focus group discussion and to

provide time whereby they could undertake their own examination of the issues, should they wish. Whilst the two month time frame was feasible for the first focus group discussion (the 16 to 21 age group), participant recruitment took much longer than I had anticipated for one of the remaining two groups, which meant I had to reduce the two month time frame between the food diaries to six to eight weeks for completion, rather than eight weeks before beginning the food diary. Eight weeks before commencing the second food diary would have been realistic, had I been more proficient at participant recruitment practices.

### **3.7 Conclusion**

Focus groups were utilised and voluntary participation was dependant on consuming meat four or more time per week. Each of the three focus groups was comprised of four participants within three age groups, 16 to 21 years old, 35 to 50 years old and 65+ years old. Social phenomenology, which was utilised within the focus group discussions, limits generalizability, but it does not diminish the value of the data gained from this method. I used a thematic approach for coding the focus group discussion, and ethical considerations were the same for all twelve participants. Although the time between the two food diaries was somewhat reduced due to difficulties with participant recruitment, it had no significant affect.

## **Chapter Four**

# **Results**

### **4.1 Introduction**

This research has sought to determine firstly, if information can influence awareness of the environmental harm caused by livestock production; secondly, if it can effect a reduction in meat consumption; and thirdly, if age plays a role in the willingness to reduce meat consumption as a consequence of such information. This chapter presents the results of this research.

I used three themes to analyse the data from the focus group discussions. Firstly, I looked at how the age groups responded to new information i.e. information receptiveness. Secondly, I considered the role of antecedents in meat consumption practices, and thirdly, views on individual efficacy were examined. These themes encompass the foundations of existing patterns of meat consumption, and the necessary components required for behavioural changes (Ajzen 1991). Parsons (1951) and Ajzen (1991) agree that if behavioural change is to occur, information must be persuasive enough to override existing antecedents, it must be highly engaging, and the individual must believe they have a locus of control.

I examined the findings from the two surveys and the two food logs; and I applied a comparative analysis between each age group, to explore if age is a factor in information receptiveness. I looked at each age group's antecedents, and their views on whether unilateral choice can make a difference to environmental sustainability.

This chapter is organised in a chronological manner, beginning with consideration of the pre-focus group survey. I then proceed to the focus group and examine the discussion in relation to each of the themes outlined above. Next I examine the food logs to determine if a reduction in meat consumption has occurred, and lastly, I note the responses from the second survey to assess participants own views on whether the overall research experience had influenced their views and practices.

## **4.2 Pre-Focus Group Survey**

I conducted a survey prior to the focus group discussion to determine existing knowledge and views of environmental harm caused by livestock production (see chapter three). The survey, consisting of nine questions, revealed some notable patterns, particularly when broken down by age group.

The first question asked about the causes of climate change, and explicitly sought to determine if participants believe anthropogenic activities are the main cause of climate change. All participants, with the exception of two in the 65+ year age group, believed anthropogenic activities are primary the cause.

The second question was about Amazon deforestation and the relationship to agricultural production. Little difference was noted in this instance, between the three age groups, when asked if they are aware that an estimated 70% of the Amazon

deforested land is being used for livestock production. One individual in the 16 to 21 year age group and two in each of the older age groups indicated that they were aware. In short, there were no significant results in terms of age, while overall this demonstrates that for the participants at least, awareness of the issue was mixed.

A significant difference between the oldest group and the two younger age groups was however noted when it came to asking about the leading cause of greenhouse gas (GHG) emissions; livestock production and transport were provided as alternate choice responses for this question. Two in the 16 to 21 year old age group and three in the 35 to 50 year old age group believed that the leading cause of greenhouse gas emissions is livestock production. However, all participants in the 65+ year age group erroneously believed transport to be the leading cause.

There was a strong belief across all age groups that individual action can make a difference to environmental sustainability. In response to this fourth question, three people in the 16 to 21 year age group, three in the 65+ age group, and all four in the 35 to 50 year age group believe that individual action can make a difference.

On quite a different note was a question about oceanic dead zones and the relationship of this to livestock production. There were broad differences between the age groups when asked if the ocean dead-zones are occurring as a result of livestock production run-offs and global warming. One individual in the 16 to 21 year old age group and two in the 65+ year age group did not accept this information, while all participants in the 35 to 50 year age group did.

A further notable difference between the 65+ year age group and the two younger age groups occurred in relation to a question about biodiversity loss. Two in each of the 16 to 21 year old age group and 35 to 50 year old age groups accepted the claim made by Carrington (2014) that without engaging in environmentally sustainable practices, 80% of the Earth's species are predicted to be extinct in fifty years. No one in the 65+ year age group accepted that this was the case.

Question seven asked whether livestock production is the single largest cause of environmental harm. The response to this question revealed the largest difference between the age groups. All four in the 65+ year age group disbelieved livestock

production to be the single largest cause of environmental harm, while three in each of the 16 to 21 and 35 to 50 year age groups accepted that this was true.

In response to question eight whereby participants were asked if they thought it should be the government's responsibility to introduce environmentally sustainable policies, there was mainly a consensus. Three participants from each of the groups answered 'yes', and one from each group answered 'unsure'. In short, no one thought that the government definitely should not be involved in environmental sustainability policies.

The final question revealed a significant difference between the older age group and two younger age groups. When asked whether there is anything that would potentially influence them to eat less meat, other than one in the 16 to 21 year age group who responded 'not really', all others in the 16 to 21 and 35 to 50 year age groups responded with scenarios that could possibly influence them. For example, two comments made in the 16 to 21 year old group were: "where it came from e.g. caged farmed chicken" and "if other options that could replace meat products were cheaper, like if vegan foods were cheaper". Basically, animal welfare and affordability were noted as possible drivers of change. In the 35 to 50 year age group, different factors were mentioned: "Easy vege recipes; access to vege food, i.e. lots of variety and (better) cost", and "weight loss"; and "others in the family becoming vegetarian", while another person noted that "smaller portions" would mean that they would eat less meat. What is particularly interesting with this final question though, was that in the 65+ year old age group, three individuals responded "no" to the question of whether there was anything that would encourage them to reduce their meat consumption. The fourth participant though, did note that health reasons rather than environmental reasons could be influential, health reasons were not mentioned at all in two younger age groups.

The questions on environmental harm caused by, or related to, livestock production elicited very different responses from the older age groups compared to the two younger age groups. The 65+ year age group overwhelmingly rejected the information on environmental harm caused by livestock production, and subsequently didn't consider that they would want to alter their meat consumption practices due to any concerns about the environmental impact of agricultural

production. In contrast, the two younger groups predominantly accepted the information, and noted a range of reasons as to why and how they may consider reducing meat consumption. The information was provided immediately prior to the focus group, all were previously unaware of the extent of environmental harm livestock production caused, however the two younger groups were receptive to the information and endeavoured to seek potential behaviours with which to assist in mitigating environmental harm caused by livestock production. One participant in the 16 to 21 year old age group observed “now that I know this, should I change”, while another asked “can it all be traced back to our growing population, when we will have too many people”. This query prompted a further response from this group on the topic of the growing population being at the foundation of environmental harm “I don’t think people will care about the growing population, well, I don’t think they will take any action until it affects them, I don’t know how it will affect them, but maybe no food, nowhere to live, and bad storms”.

### **4.3 Focus Groups**

Focus group discussions centred on the information from the survey. The following three themes were firstly examined across age groups, and then within the age groups, firstly whether information was meaningful enough to encourage conscientious meat consumption and if there are other factors that might be effective in initiating a reduction of meat consumption, secondly, the role antecedents’ play in meat consumption, and thirdly, views on individual action and whether participants felt individual choice can make a difference. Each themed discussion began with an overall statement about findings, which led into an age-related discussion; this sequence is used as this is where inconsistencies in responses were most notable, therefore findings are most usefully presented in an age-specific way.

#### **4.3.1 Information Receptiveness**

Information receptiveness overall was variable, most notably when considered across the age groups. Neither of the younger two age groups had concerned themselves particularly with thinking about the environmental implications of agricultural production, though the middle age group did have a relatively wide understanding of environmental issues. Both the younger age groups were quite open to accepting and discussing new information. The older age group however



were most reluctant to engage with the new information, or accept any new information that may run counter to their existing beliefs.

The 16 to 21 age group stated that they had never considered meat consumption and production as a cause of such broad environmental harm, but they were familiar with farm runoff causing water contamination, through newspaper. Although this group were unaware of the vast environmental harm caused by livestock production, they did not reject the information. The 35 to 50 group had an understanding of many environmental issues, although they also observed that the extent of harm caused by livestock production was not an environmental issue they were familiar with. The 65+ year age group expressed disbelief in the environmental harm caused by livestock production, which prompted the following comments during the discussion about the difficulty they have in accepting the information:

One of the things I find difficult, is that this whole subject is about finding something that you have absolute reliance on, some fact, there is so much division on much of this.

In this instance, the participant expressed difficulty in knowing what to believe, and seemed dubious about accepting any particular facts. Moreover, one participant in the 65+ year old age group even expressed concern that facts were deliberately being withheld

I think a fear factor comes into it and I think it comes from a higher level and I think we are talked into believing things that are not necessarily true, well there's a truth in it, there is always a truth and a lie, at the same time. It's not necessarily the full truth and it's a fear factor and so therefore we become frightened so therefore I have to do something because I'm frightened, and that worries me. I believe the planet is definitely warming up, there is no doubt about that but I think we are not given the proper facts on some scale and I think that's deliberate.

These comments were in contrast to those from the 16 to 21 year old group who demonstrated much more openness to accepting new information. The following example demonstrates how there is a discussion rather than straight forward rejection of new information.

Scientist's opinions have some effect on what I believe, they're trustworthy. But when I think of the environment and what's harming it, my mind doesn't go to meat, it goes to other factors, like transport.

The 65+ year age group expressed great interest in questioning how facts are determined. Meaningful connections with the information I provided did not appear to have occurred with this older group, two of whom, categorically rejected the statement about livestock production being one of the most problematic environmental issues currently being faced: "well I shouldn't say it but I have difficulty believing that", was a comment made by one person, while "I don't accept it", was the simple statement made by another. A more extended discussion about how different older and younger generations of people are with meat consumption was deliberated by this participant from the older age group:

It may well be a generational thing, partly because it's a natural human process to be defensive of the way we live and what we've done, and therefore it's easier for us to disbelieve. Several of my grandchildren are vegetarian, and it's hard to identify with. I don't remember, as a young person, being aware of anybody, or any guests at my parents place, saying, oh I don't eat meat.

Echoing this statement was one made by another person in the same group "I think that we will find there are going to be many more young people coming through that will eat less meat". Hence, recognition of generational change, or difference, is acknowledged.

It appears then that accepting information that meat production causes significant environmental harm was too challenging for those in the 65+ age group. Their antecedents for meat eating were entrenched, and whilst they recognised that younger people were choosing to forgo meat, they had difficulty understanding that choice.

The 16 to 21 year age group were receptive to new information. One individual noted the quandary being faced when presented with the new information presented in the focus groups:

Facts can influence and change bits but I don't think it can change completely. Over time it can change but in the immediate effect, nothing drastic will change but with knowledge and information. I didn't think twice about my meat consumption and the effect that it has on the environment; now I do know some of the effects, its making me think, like should I be eating meat? Should I change, and try to get my family to change? And it's just knowing the information that can help change your values and want to change when it comes to eating meat.

The 35 to 50 age group did not reject the information but one noted that climate change could simply be due to the Earth's natural cycles. "I think this is partly just the course that the Earth takes, we do contribute considerably to it but it's gone through a heat age and an ice age before". This again points to concern or possible confusion over what information is trustworthy or believable. A response from another focus group member was, "But surely scientists have taken all that into consideration", which is basically challenging the anthropogenic versus 'natural cycles' argument being discussed. This debate was taken further with an added comment in the focus group whereby a participant asserted that they "would accept environmental scientist's knowledge". This suggests a level of vying for scientific credibility and trust, along with scepticism more generally about information sources. Two further comments clearly demonstrate this scepticism; "I believe the planet is warming up, there is no doubt about that but I think that we are not given proper facts, deliberately", and "I think we're sceptical about fact based information". In short, scepticism about anthropogenic climate change was apparent among the two more senior focus group participants.

Information sources and their trustworthiness were clearly a topic deemed worthy of discussion. Feeding into this was a discussion about the use of social media platforms as a source of information. A participant in the 35 to 50 year old focus group proposed that this is a seemingly normal pattern of research for younger people; they also noted that some information from these sources can be inaccurate. One participant commented that she actively seeks information through social media to find out where her food has come from, and observed that her 13 year old daughter also searches on social media for information on food.

I go to my 13 year old daughter and ask what are you watching? and she says 'I'm watching a video about food sustainability', and I go well, 'you keep watching'. So you know, she is informing herself. Sometimes I've said to her that all information is not going to be truthful or correct, some of them are quite conspiracy laden, but I think the more angles she gets, and the more places she looks for herself, then she will make informed decisions.

The role of social media may well be playing an increasingly important role, for better or worse, in how younger generations in particular are getting their information. This factor was not discussed further in these focus groups, but is a noteworthy inclusion here given its probable increasing significance in terms of a belief or disbelief in online information accuracy, and also receptiveness.

When discussing what sort of knowledge could be influential in prompting a reduction in meat consumption, and as eluded to in the survey responses, findings varied. The 16 to 21 year age group noted that images in particular could be quite powerful, for example, "the before and after pictures of the coral reef is pretty hard hitting", while another participant went into a little more detail about how images can be useful in driving home information:

Images show the effect, whereas if you're presented with just the facts it doesn't have as much impact as when you actually see firsthand what it does, so you could say that 70% of the rainforest is being used for livestock but you don't really have any emotional feel until you see the pictures, until you see the damage that has been done, instead of just reading or hearing the facts.

The 35 to 50 age group viewed reducing meat consumption a little differently. One person described how it had to be a conscious choice to reduce meat consumption, and noted that it could just be "one thing, that ultimately makes a difference",

I think it comes down to a real choice at the end of the day, it's like swimming against the tide, so you may have lots of information but at some point or other, unless you make a firm choice to say, 'right, this is what I'm going to do, I'm eating less meat and although that bacon

smelled really nice this morning, I've chosen not to eat meat this week. I'm going to make that conscious choice and I'm going to follow through'. Because otherwise it's unconscious and you just keep cooking the same thing, so it has to be a firm choice and you are going against what you've done before. It's really quite difficult to do that; sometimes it's just one thing that can make the difference.

The 65+ age group could not envisage a scenario in which they would reduce their meat consumption, with the exception of one person who noted that "health reasons would stop me eating meat rather than environmental issues". When discussing the strong scepticism of the information with the 65+ year old age group, one participant described it as being too difficult to believe:

It makes me think we don't want to believe it. We don't want to understand it, perhaps because we see it as something as being too difficult for an individual to make a difference. So I don't know whether, had I believed all of this, whether I would have by now been a non-meat eater. I can't say that, I don't know, but at what point would I become convinced about the statistical information here?

Not only does this participant note that perhaps it is just that they don't want to accept the information, but also questions what it would take for them to actually accept it, or "become convinced about the statistical information". Also of note, is the reference made to how they perhaps see it as "being too difficult for an individual to make a difference", a point picked up on the third theme discussed further on in this chapter.

A final point to make here regarding the 65+ year age group, relates to the simple fact that they are older;

I really cannot see a stage in my life where I stop eating meat. And yet, I live on the sea front so perhaps I face the direct threat [of sea level rise], if this link is as strong as you suggest, then my house will be flooded, but it's a long way away, and perhaps that is what our generation tend to be saying.

In short, this individual suggests that with no perceivable direct impact given one's life stage, there is less impetus to change practices. This form of thinking may indicate that a different type of information is required for it to be persuasive with this age group.

#### **4.3.2 Antecedents**

There was a common thread between all three groups on the reasons they ate meat. All were brought up eating meat and all enjoyed the taste of it. However, views expressed by the 65+ indicated a much stronger enjoyment of eating meat, and revealed a reduction in consumption was unlikely. This age group's antecedents of meat consumption have been reinforced for many years longer than the two younger groups; consequently, their resistance to new information and change appears stronger than that of the younger groups.

The older group discussed their limited food choices growing up, combined with the lack of freedom to reject food that was placed in front of them as children. One older participant observed that it was "waste not want not, when I grew up, the food went on the table at the evening meal, and you ate it, you had no choice, whereas today we waste a lot of food". This type of upbringing may have been common practice at that time, which could explain their perplexity of the younger group's food choices.

However, meat eating norms also existed within the younger age groups; one participant in the 16 to 21 year old age group noted that "I eat meat because my family does, it's not necessarily what I would choose to eat but it's what the family does, and it's there and it's on the table so I eat it because of that". This observation was echoed by two people in the 35 to 50 year old age group who stated that "I eat meat because we were fed it as kids" and "it was always on your plate, so you just ate it".

One participant in the 35 to 50 year old age group observed that it could be quite time consuming to make meals without meat, noting that "you've got to really concentrate, it's a lot more effort and it takes time to decide what you're going to have well in advance so that you have the right [nutritional] balance".

The types of meat consumed varied between the age groups. For those in the 65+ year age group, offal formed part of their normal meat eating patterns as children "we

ate a lot of offal in those days, and I still like it". This group was aware that this type of meat consumption was largely confined to the older generation, with one commenting that "you probably wouldn't find a family now who would give offal to their children". A participant from this group astutely observed that "most of the time rather than the taste, it's how we think of the food",

The 65+ age group noted that they grew up with certain foods which became normal to them. Although no participant in the 16 to 21, or 35 to 50 groups, spoke of eating offal per se, there was one reference to it from a participant in the 35 to 50 group, who raised a concern that "there are lots of augments for using the whole animal, not just taking the nicest pieces and leaving the rest of the animal, sort of dying needlessly, it's like, well, if you're going to kill it you should eat the whole thing". This is indeed a valid argument, and one that is growing within the meat consumption and production debate (Tucker, 2013). However, this type of meat consumption is problematic for younger generations who did not grow up eating all parts of the animal; consequently their antecedents resulted in them rejecting certain parts of the animal as unsuitable for consumption. Offal, for those not brought up eating it, is far less likely to have any sensory appeal, but for the 65+ group who ate it as a child, it continues to be part of their self-identity, as illustrated by the following comment "you acquire a taste for it don't you, which is something that you remember from childhood so it's a comfort food". The younger age groups did not specifically refer to the types of meat they ate, although this could be the result of an assumption that all people consumed similar categories of meat, or it may they are unaware of other parts of an animal that can be consumed, for example offal.

#### **4.3.3 Individual Efficacy**

Hiller (2011) argues that for the individual to be engaged in an issue, they must a) view the issues as real, b) believe that their individual actions can make a difference; and c) that locus of control to make the changes exists. This particular topic elicited a strong response across the focus groups with respect to agreeing that individual action can make a difference (10 out of the 12 participants agreed). And though not directly related to individual efficacy per se, there was also agreement that government should have a role in implementing environmentally sustainable policies (9 out of 12 agreed).

On the efficacy of individual choice, one person in the 16 to 21 year old age group observed that “if everyone thinks that one person can make a difference then it’s all going to accumulate”, but then in contrast, one participant from this group observed that “if they see that other people aren’t doing anything, they might think why should I do something if no one else is?”. This observation was countered by another in this group who suggested that “if one person starts eating less meat, then another person might see that and also start to eat less meat, and it could go on from there”.

When discussing if there were any direct benefits in reducing their meat consumption, one person in the 16 to 21 year old age group argued that “well, we don’t get to eat as much meat, but we’re getting a better ecosystem, so we still get a reward, but it will be gradual, even if all were are doing is slowing down the environmental damage”. This observation could be viewed as a level of personal sacrifice for the greater good.

The 35 to 50 year age group viewed individual efficacy positively but also argued that government needs to play a role in environmental sustainability, “the government has to control policy, and they’ve got to put something in place to monitor it [the environmental damage caused by livestock production]”. This view was echoed by another participant from this age group who argued the need for government implementation of environmentally sustainable policies “so we don’t have to have be worried about every mouthful, we want to feel confident that we’re being good to ourselves and the environment”.

The 65+ year age group shared some commonalities with the 35 to 50 year old age group by stating that “the government should be involved” while another participant from the 65+ age group observed that “there has to be some individual push as well, to make our own sustainable choices, but how do you convince our age group that we should make changes”. These comments indicate antecedents are more entrenched for the older age group, and while they acknowledge the importance of individual action, they appear unlikely to change their practices in the absence of government intervention.

#### **4.4 Food Logs**

Food logs were conducted one week prior to the focus group discussion to provide a base level of participant meat consumption frequency. This base line was then used



as a comparison to a second food log undertaken six to eight weeks after the focus group discussion, in order to see if the focus group information had contributed to a change in meat consumption practice. The pre-focus group and post-focus group food logs were identical, each one was undertaken over a one week period, participants simply had to place a tick beside each meal in which meat was consumed. The two food logs allowed me to compare each participant in each age group, and each age group as a whole, to examine if a change had occurred.

The 16 to 21 year age group food diary's showed a reduction for three of the four participants:

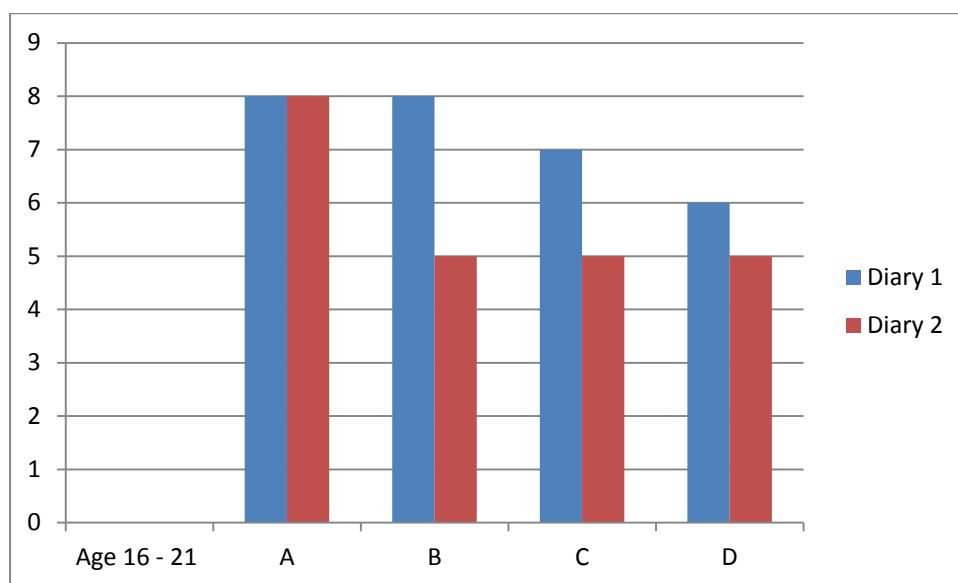


Table 1. Food log comparison by frequency of meals including meat for the 16 – 21 year old age group.

This table indicates that the most meals which included meat eaten in a one week period was nine, this could be interpreted as relatively low given the highest possible number was 21 (i.e. three meals per day times seven days in a week) therefore the reduction in meat meals is seemingly moderate. But in fact their food logs showed that the evening meal is the primary meal for meat consumption, the first food log showed that 22 meat meals out of 30 occurred with the evening meal, and the second food log showed 17 out of 23 meat meals were consumed with the evening meal. Whilst the three reductions seem moderate at first glance, this becomes more significant when considering meat consumption (for these participants) is primarily an evening occurrence.

The 35 to 50 year age group revealed a reduction in meat consumption for all participants, with three participants showing a significant reduction:

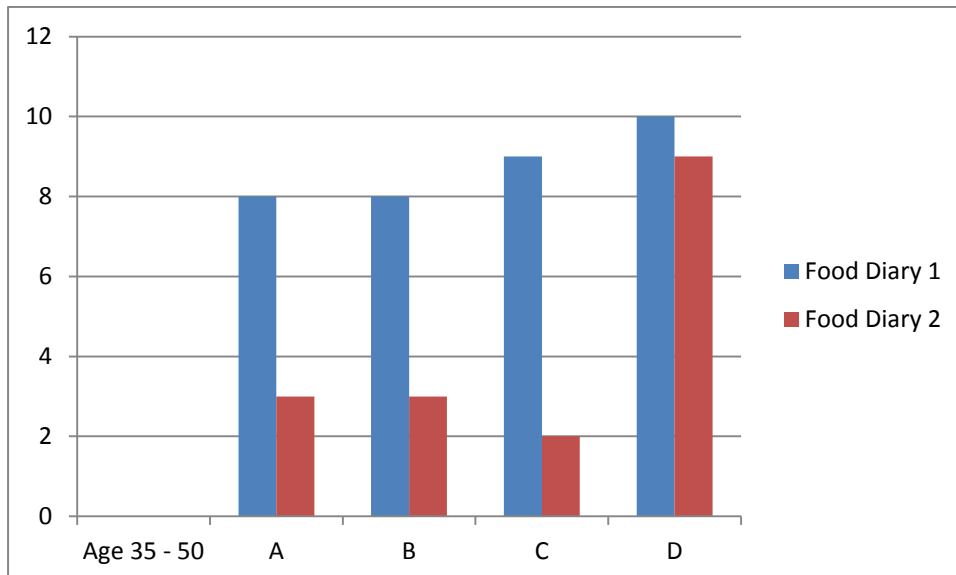


Table 2. Food log comparison by frequency of meals including meat for the 35 – 50 year old age group.

The results for this age group are quite stark. Again, meat consumption could be viewed as relatively low compared to a possible maximum of 21 meals with meat in a seven day period, although this group also primarily consumed meat with their evening meal, the first food diary recorded 22 meat meals out of a total of 35 were consumed with the evening meal, while 14 meat meals out of 17 were recorded in the second food diary. Participants initially consumed between 8 and 10 meat meals in a week. Although all reduced their meat consumption, for three of the participants there was a startling result; from between eight and nine meat meals to between two and three. When considering in terms of 'usual' eating practices, this indicates that some quite substantial adaptations to usual practices have been made.

The 65+ year age group showed the most mixed results; two participants practices remained the same, one increased, and the other individual decreased their consumption (incidentally, the one to decrease their consumption is the person who had stated that any meat reduction would be for health reasons).

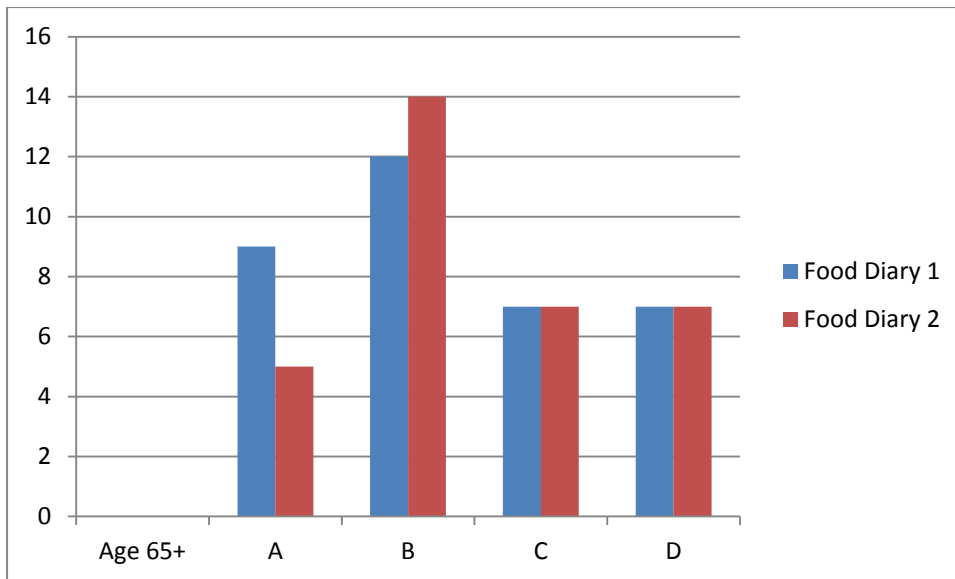


Table 3. Food log comparison by frequency of meals including meat for the 65+ year old age group.

Notably, this age group were quite variable regarding how much meat they ate on a weekly basis when the first food log was undertaken, with the highest meat consumer being in this group (12 meals per week), with the others being more moderate. This variation was also present when compared with the second food log given there was no change for two, an increase for the individual that already consumed the most (from 12 to 14), and a decrease from nine to five for the other. This group also primarily consumed meat with their evening meal, the first food log showed that 23 meat meals out of a total of 35 were consumed at the evening meal, and 25 out of 33 in the second food log.

A comparative analysis of total meat meals between each age group revealed a total reduction of six meat meals for the 16 to 21 year age group; a significant reduction of eighteen meat meals for the 35 to 50 year age group; and a reduction of two meat meals for the 65+ year age group:

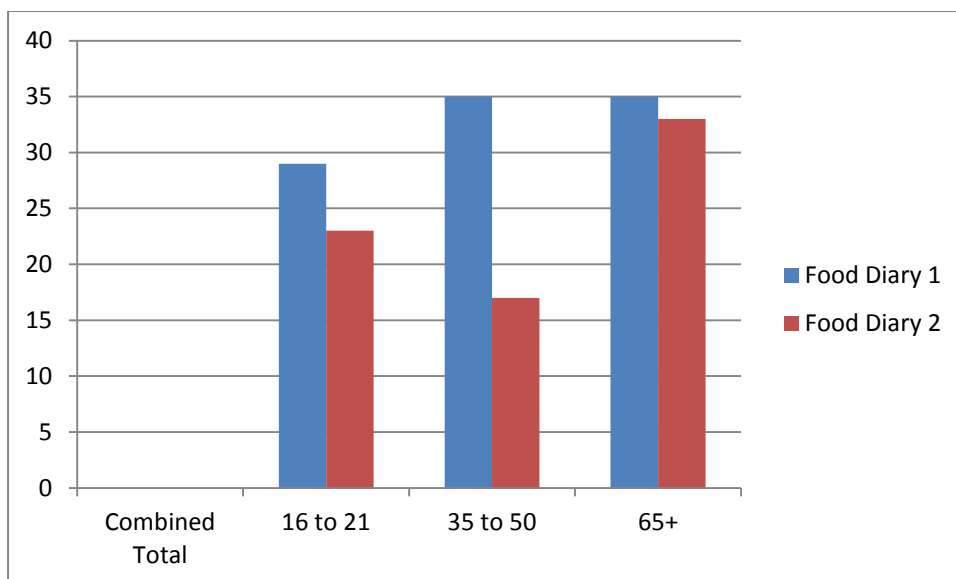


Table 4. Food log comparison of combined total meat meals by age group.

In all, there was a reduction in meat consumption across the participant groups, which was not necessarily consistent with what may have been expected given the findings from focus group discussions. This suggests that, not unexpectedly, the older age group are less likely to make reductions in meat consumption, while the middle age group are the most willing. The youngest age group, while generally willing to embrace the idea of change, are perhaps more constrained in their choices and so are less able, or not as easily able, to amend eating practices (they all lived at home and were not providing for themselves). The post focus group surveys may shed some light on food log comparisons findings.

#### 4.5 Post focus group survey

The post focus group survey was made up of four questions and accompanied the second food log, participants were asked to complete and return the second food log within two weeks (and to return the survey at the same time). All four questions concentrated on whether the information on environmental harm caused by livestock production had resonated with them since the focus group.

When asked if they had become more mindful of the environmental harm that livestock production is causing, just two in the 65+ age group said they had, while all participants in the 35 to 50 year age group and three in the 16 to 21 year age responded that they had.

The second question asked if their meat consumption patterns had changed since the focus group, a question that should result in a response that is in sync with the food log findings. Differences between the age groups self-reporting of changes were evident; no one in the 65+ year old age group reported any change, while three in the 35 to 50 year age group and two in the 16 to 21 year old age group noted a reduction. These findings were overall consistent, other than that one individual in the oldest age group who in fact reduced their meat meal consumption by four, as indicated in their food log comparison.

When asked if they had thought more about the human impact on the environment since the focus group, results were again varied by age. Two of those in the 65+ age group had, and all participants in the 35 to 50 year old age group had, while three in the 16 to 21 age group had thought more about the impact. This is comparable with the findings from question one regarding whether participants were more mindful of environmental harm from livestock production.

The final question asked participants if they had actively sought further information on environmental harm caused by livestock production. None of the 65+ year old age group had; one of the participants in this age group also added the comment that “livestock farming is not causing environmental issues” (interestingly, this comment came from the only participant in the 65+ age group to reduce meat consumption). Also none of the individuals in the 16 to 21 year old age group had, even though they appeared the most engaged with the topics discussed. However, three in the 35 to 50 year age group had sought further information, which perhaps helps explain the quite substantial decreases in meat consumption noted by this group in their food logs.

#### **4.6 Conclusion**

Findings overall are positive with regard to information playing a role in helping to influence a reduction in meat consumption, although this was very much influenced in turn by age, and by associated life stages of participants. The youngest age cohort tended to be the most open to new information and to being willing to change. Meat consumption was reduced for this age group (who also overall ate the lowest amount collectively to begin with), despite their locus of control likely being constrained, as

they all lived with their parents who presumably are mainly responsible for most, if not all, household food choices.

The middle age cohort, the 35 to 50 year olds made the most marked changes overall. They were very engaged in the discussion, open to the new information, and were all considerate of what factors may serve as impetus for reducing their meat consumption. Their meat consumption reduction was itself the most marked; a decrease of 18 meals overall for the group. As with the younger cohort, their life stage and circumstances would likely have played a role in this; they were all in paid employment and live independently, thereby affording them greater locus of control. They also accepted the issues were real, and they believed that individual choice can make a difference to environmental sustainability, all factors required for changes to occur.

Quite different results emerged for the oldest group, 65+ year old age cohort. This group rejected much of the information provided, and acknowledged that they had little desire to make any adjustment to their meat eating practices. An overall reduction in meat meals was noted, but this equated to a total of two meat meals in a one week period for the four participants, with no change for two of the four. Although three participants in this age group believed individual action can make a difference, all believed transport to be the leading cause of greenhouse gas emissions. Consequently, the necessary component for change i.e. a belief the information is real and a strong engagement with the information was not demonstrated, therefore no significant change occurred.

## Chapter Five

# Discussion

### 5.1 Introduction

This research shows that for information to create conscientious meat consumption, the information must be engaging, believable, and it must be persuasive. The results also revealed that age is a notable factor in information receptiveness, as those in the 65+ year age group were not engaged with the information and they did not believe it. Therefore the information was not persuasive enough for there to be any significant reduction in their meat consumption. In contrast, both 16 to 21, and the 35 to 50 year age groups were engaged, believed the issues were real, and believed that individual actions can make a difference. The difference between these two groups lay with the extent of their meat consumption reduction following the focus group; the 35 to 50 year old age group demonstrated significant reduction, while the younger group did not do so to the extent of the 35 to 50 year age group. These results could be due to locus of control as the younger group may have been compromised by their living environment (all were at school or university and lived at home with their parents who would, in all probability, determine food choices), while the 35 to 50 year old age group were more independent and had a stronger locus of control. A belief in individual efficacy was shown to only be effective if the issues were believed to be true and if the information was persuasive enough to overrule antecedents associated with meat consumption, and finally, if locus of control existed.

In this Chapter, I explore the results in conjunction with applicable theoretical debates. I begin by summarizing the environmental harm caused by livestock production, and I briefly revisit the theories used in this research in regards to the necessary requirements involved in changing a practice. I then proceed to interpret the results, and how they connect to the research question, and I conclude by briefly discussing the inferences of this research. For the conceptual frameworks, I draw on

Ajzen's Theory of Planned Behaviour, which is "designed to predict and explain human behaviour in specific contexts" (Ajzen, 1991, p180). I employ Parsons (1951) and Ajzen's (1991 & 2006) observations of the impact of antecedents on behavioural choices, and I briefly examine Bourdieu's locale of socialised habits, and I utilise Hourdequin (2011) and Hiller's (2011) locus of individual efficacy.

The cause of environmental harm is recognised as largely anthropogenic in origin, and the demands from what many believe to be an over-populated earth (Reece, 1996; World Population Balance, 2017) are creating an enormous burden on the environment. Of significant concern, resulting from the Earth's rapidly expanding human population is the environmentally unsustainable demand for animal derived protein. Moreover, population growth is not equal to livestock consumption demands; our avaricious desire for meat has resulted in more consumption per person than any previous generation (Carrington, 2014). Like a number of other researchers (for example Tucker, 2013; Tucker, 2014; de Bakker & Dagevos, 2011; Gossard & York, 2003; Boer et al, 2012), I argue that a decrease in meat consumption is essential in reducing the environmental devastation caused by livestock production; however, changing a practice is complex. There is a need to understand psychological processes in conjunction with social influences in order to recognise and understand how corresponding behaviours are influenced by values and beliefs (Gossard and York, 2003), and how they impact on individual responsibility toward environmental sustainability.

Individual responsibility is increasingly being recognised as a means of mitigating anthropogenic environmental harm; nonetheless, there are those who dispute the efficacy of individual action. For example Sinnott-Armstrong (2005) rejects personal obligations to engage in environmentally sustainable behaviours by arguing that individuals have so little impact on the environment that any change in behaviour would be inconsequential. Even so, he argues for collective action, which is recognised by Hourdequin (2010) as simply the aggregation of individual actions. The recognition that individual actions can make a difference, and collectively can make a significant difference, is pivotal to engaging individuals in behavioural changes, argue Hiller (2011) and Hourdequin (2010). Furthermore, to deny that individuals cause so little environmental harm as to warrant any behavioural modification towards environmental sustainability is to ignore the ramifications of



what is increasingly believed to be an over-populated earth. There are those who dispute the earth is over-populated, but how this is viewed is largely dependent how other species rights are viewed, and if there is a belief that humans have dominant rights over the earth. Sinnott-Armstrong (2005) may well be correct in his observations if the human population was halved, but one of the many compromises humans will increasingly have to make as the population continues to expand, is that of consumption practices. I believe we must no longer assume it our right to consume livestock at current levels, for the burden of production has resulted in a huge and unsustainable cost to our environment. However, for changes in practice to occur, information must be persuasive enough to challenge existing antecedents.

## **5.2 Information**

How receptive participants were to the information I provided, and if it contributed to conscientious meat consumption by way of a reduction, formed the basis of my research. As noted previously, I selected a broad range of information on environmental harm caused directly and indirectly by livestock production, based on the view that specific components of information can be more engaging to some than others, given each individual has differing norms and antecedents (Parsons, 1951). I was looking to see if participants would find some, if not all, aspects compelling enough to challenge existing attitudes and beliefs. I was interested to see if this might result in reasoned action towards a reduction in meat consumption as a means of individually contributing to a more sustainable environment. Furthermore, age was isolated as a particular variable in order to assess this.

Mannheim's (1954) theory of people's views and practices becoming more existent and concrete with age have remained largely undisputed (Krosnick & Alwin, 1998), and my intent was to see if this held true for environmental issues, specifically environmental harm caused by livestock production. While there were some minor variations in receptiveness between the two younger age cohorts, they essentially accepted the information as true; however the 65+ year old age group were united in their rejection of the information.

Based on Mannheim's (1954) theorisation on age and attitudes, and supported by other research over the years (see for example Krosnick & Alwin, 1998), I anticipated age to be a factor in information receptiveness. I was also interested in exploring the

role of antecedent strength, and if it could be challenged by new information towards effecting a change in practice. Believing in individual efficacy as an important component in reducing meat consumption towards environmental sustainability was a further area explored.

Hiller's (2011) and Ajzen (2006) are united in the view that for changes in practice to occur, heightened engagement and a belief that the issues are real, must be present. Moreover, Ajzen argues that for information to change a practice it must be accurate, it must create salience, and it must be persuasive enough to challenge pre-existing beliefs. Ajzen (2006) argues that decisions are not based singularly on behavioural beliefs, normative beliefs, or control beliefs, independently from each other, but rather all three beliefs must be aggregated for behavioural changes to occur. These predictor variables also contain relative weights, therefore each mode of delivery and each level of information will not produce the same outcome for all individuals (Ajzen, 2011). Singular reasoning, for instance information alone, did not appear to be sufficient enough to effect substantial changes. The 16 to 21 age group were engaged with the information and viewed the issues to be real, however their meat reduction, while notable, was not as significant as those in the 35 to 50 age group who were also engaged with the information and viewed the issues to be real. This result appears to connect to Hiller's (2011) and Ajzen (2006) observations whereby three components are necessary for individual motivation. Individuals must firstly believe the issues are real, secondly that individual choice can make a difference, and thirdly they must maintain locus of control to make changes in practice. This research indicates that if these factors are present a reduction in meat consumption is more likely to occur, as was found in the 35 to 50 year age group.

### **5.3 Age Effect**

Age was the strongest predictor of information receptiveness, and the differences between the age groups emerged early and unexpectedly while recruiting for participants. The first four people I approached in the 65+ year age group were all known to me and all consumed meat four or more times per week. However, they refused to participate as they did not want their enjoyment of meat potentially compromised by thinking about the environmental harm livestock production causes. This response was totally unexpected, as I had anticipated they would agree to

participate, and possibly even enjoy the process. This reluctance to participate was not evidenced when recruiting for participants in each of the 16 to 21 and 35 to 50 year age groups.

The relationship between age related receptiveness to information on environmental harm caused by livestock production has been largely unexplored to date. The first survey showed quite divergent views between the age groups on the causes of environmental harm from livestock production. Participants in the two younger age cohorts displayed some awareness, particularly when acknowledging the leading cause of greenhouse gas emissions. Five out of the total eight participants from the two younger age cohort groups believed livestock to be the primary cause, although they did observe that they had not anticipated the extent of the harm. I had not expected this level of heightened awareness, due to high profile government interventions with which to manage greenhouse gasses from transport over the last several years, for example the Emissions Trading Scheme, the Electric Vehicle Programme, the encouragement of biofuel use, and the display of vehicle fuel economy (Ministry of Transport, 2017). But no mention has, to date, been made by the government as to the importance of dietary choice as a means of contributing to environmental sustainability. However, the younger groups noted their familiarity with farm-runoff and consequent contamination, which has been given quite a significant amount of coverage on concerns and mitigation efforts, and which this age cohort noted they had seen on television and read about in newspapers.

Despite research showing that older people are more likely to get their news from television and newspapers than younger people (for example research by Neilson, 2017; Mitchell, Gottfried, Barthel & Shearer, 2016); the 65+ did not mention any awareness of farming and water contamination, although this may be partially due to their denial of livestock farming causing environmental harm. The same research (as above) showed that younger people are far more likely to get their information from online social media platforms, however in the last year or so in New Zealand, there has been a significant increase in mistrust about the accuracy of information available from online social media platforms (Reidy, 2017). It's conceivable that this scepticism is in response to the President of America, Donald Trump's frequent references to 'fake news'. Television and newspapers may be increasingly viewed as a source of reliable information, if this trend continues; it is a method worthy of

serious consideration in future endeavours to inform people of issues such as environmental implications from meat production. However, despite the growing scepticism of online information, it's likely that people will continue to use it as their source of information; the future of online information platforms may require greater proof that the information has been obtained from reliable sources, and is factual.

All participants in the 65+ year old age group mistakenly believed transport to be the leading cause, which should not have been entirely unforeseen given the governments prominent coverage of initiatives to combat fossil fuel harm. Simply because of their age (environmental harm from fossil fuels and transport has been examined for many years, even before the younger age cohort were born), this group are likely to have had greater exposure to examinations of transport and its environmental impact, and subsequent government interventions. Government policy interventions may be perceived as providing an authoritative and therefore believable view that transport is the largest cause of environmental harm. Governments remain reluctant to raise concerns surrounding the environmental harm resulting from livestock production (Hyner, 2015), and Happer (2015, as cited in University of Glasgow) suggests that this is due to government's unease of public disapproval. This unease may have been demonstrated by the New Zealand Government's efforts to implement a methane emissions tax for farmers, which the media frequently referred to as the 'fart tax', despite 90% of livestock methane emissions occurring from burping (Fickling, 2003). Strong protests from farmers led to the government backtracking from implementing a policy. This appeared to contravene The Resource Management Act 1991, whose principal purpose is to encourage sustainable management of physical and natural resources (Ministry for the Environment, 2017).

Participants in my research were fairly united in their response to the question asking if governments should have a responsibility to introduce environmentally sustainable policies. Nine of the total twelve participants believed governments should, and no one was definitively opposed to government intervention. Participants from the 35 to 50 age group stated government policy was important to both implement compliance and to "feel confident that we are being good to ourselves and the environment". This may reflect a perception that the government is capable of creating sound policies based on reliable information, which could ultimately relieve the burden of

individuals having to seek their own information and determine its accuracy, which given the volume of conflicting information now available, is both challenging and time consuming.

Participant response in favour of government intervention is not too far removed from University of Glasgow's research. This revealed that people were open to sweeping changes in meat consumption practices if governments delivered a decisive lead (Wellesley, Happer, Froggatt, 2015). This indicates people are generally of the view that governments can be trusted to make sound environmentally sustainable policies with regards to meat consumption. However, putative support for government policies on environmental sustainability might not have the same support in practice, particularly if policies come at a cost in terms of effort and finance.

Research by Boer et al (2012) showed that individuals, who are motivated to engage in sustainable practices, might view their changed practices as meaningful, rather than self-sacrificing. This was shown to exist with one participant in the 16 to 21 year old age group who noted that reducing her meat consumption would come at a cost to her in terms of consumption enjoyment; however, she would get pleasure from knowing she was contributing to environmental sustainability. Krosnick & Alwin posit "attitudes that are more central or important to individuals are more resistant to change than are non-central or unimportant attitudes" (Krosnick & Alwin, 1989, p416). For the 65+ age group meat consumption was an important practice, and this group were resistant to change, moreover, for this group it may well be that any connection to meat consumption "and climate change is too vague and too complicated" ( Boer et at, 2012, 19).

Ajzen (2006) argues that the strength of a belief or attitude towards a specific behaviour will guide the outcome, but in order to successfully challenge an existing attitude, the information must be perceived as accurate, persuasive, and "provide information that changes some of these beliefs, or that leads to the formation of new beliefs" (Ajzen, 2006, p5). The older age groups desire for the taste and texture of meat was guided by the strength of their antecedents; moreover, they definitively rejected the information and were sceptical as to how trustworthy the information sources were. This scepticism may be partly due to a desire to disbelieve the information in order to relieve themselves of the burden of having to consider reducing their meat consumption, or of feeling accountable for their consumption

being a contributing factor in environmental harm. For example, climate change sceptics and deniers often reject overwhelming evidence of anthropogenic environmental harm in order to preserve their views (Cox, 2017). As noted by one participant from the 65+ year age group “it’s a natural human process to be defensive of the way we live and what we’ve done, therefore it’s easier to disbelieve”. This group also recognised the likelihood of their view being attributed to their specific generation, along with their reluctance to concede they may be a contributor to environmental harm through their meat consumption, which they acknowledged they did not want to change. Although they were aware that some of their grandchildren did not eat meat, they struggled to identify with it, as it was not something they had ever witnessed when growing up. This again reflects how socialisation from childhood (primary socialisation), and reinforced over time, becomes increasingly resistant to change, they had been socialised to eat meat throughout their childhood, primarily as part of their evening meal, this socialisation continued to date, as shown by their food logs, where meat continues to be part of their evening meal. Despite ‘anticipatory socialisation’ occurring through their life, such as marriage, their meat consumption has remained strongly embedded in their social practices. The strength of their views was not challenged by the information, consequently only a very small behavioural change was observed, despite purchasing and preparing their own meals, thereby having locus of control to reduce their meat consumption.

As Mannheim (1954) theorised over half a century ago, younger people are generally more receptive to information because their beliefs and responses are still evolving, consequently they are more likely to engage with the information at deeper level than an older person, whose practice and values, have become more solid over time. Despite extensive research since Mannheim’s observations, the majority of evidence supports Mannheim’s argument that information receptiveness is much lower in later life and high during early adulthood (Visser and Krosnick, 1998, p1389). Although Mannheim noted that younger people are more receptive to new information, the 35 to 50 year age group reported a substantial reduction in meat consumption compared to the 16 to 21 year old age group. However, this does not weaken his argument, as the 16 to 21 year old age group were engaged with the

information but did not have the same locus of control to change consumption behaviours as those in the 35 to 50 year old age group.

#### 5.4 Antecedents

Personal values and social structures underpin food choices (Gossard and York, 2003) and are formative in creating recurring patterns which begin at an early age (Bourdieu, 1973). These cultural influences were termed by Bourdieu as habitus, and are learned through repetition, resulting from socialisation through one's culture. These influences have certain guidelines, such as eating meat as part of the evening meal, and as a form of socialising. Meat consumption practices are largely the result of antecedents, and information intended to change these habitual practices must be convincing and persuasive enough to challenge the strength of existing views (Ajzen, 2006). All participants ate meat four or more times per week, therefore their antecedents for meat consumption were favourably influenced by their meat eating experiences.

All age groups reported eating meat as a normal part of their upbringing however only participants in the 65+ year old age group described how, when they were young, they were required to eat what was put in front of them, and were not afforded the freedom to reject it. No one in the two younger age cohort groups recorded a lack of freedom in their childhood to reject meat. Instead, one participant in the 35 to 50 year old age group noted that "it was always on your plate so you just ate it", while a participant in the 16 to 21 year old age group stated that she ate meat because her family did "it's always on the table so I eat it because of that". No one suggested they wanted to reject it, which may indicate that they experienced a level of enjoyment from consumption, particularly as they continued to eat meat through their adult lives.

The older age group also noted that along with limited freedom in their food choices when growing up, that they had eaten different types of animal protein compared to meat consumed by their children and grandchildren. For example, offal was a normal pattern of meat consumption in their youth and they continue to eat offal to this day because they enjoy it. One participant in the 65+ age group also noted that eating it now brings back fond memories of eating it as a child.

Offal was not part of meat consumption for the two younger groups, although one person in the 35 to 50 year age group referred to previous generation's offal consumption by querying the reason for eating it and suggested poverty and limited food choices, rather than a desire for it, as a reason for consumption. While this may have initially been the reason the oldest age group were fed it as children, it became entrenched through socialisation, into their meat consumption norms and consequent enjoyment of it. Antecedents for the two younger age cohorts did not encompass offal and for them choosing to eat it for enjoyment seemed implausible. The 65+ year age group displayed an awareness of offal being largely restricted to their generation, and they were cognisant that it held no appeal for younger generations. For the 65+ age group, their antecedents were favourably connected to offal, and the strength of their antecedents was revealed by their continuation of offal consumption. However, they disclosed awareness that their children and grandchildren would not eat it, and noted in response "rather than the taste, it's how we think of food". This observation is largely at the core of antecedents, whereby practices have been normalised through socialisation, and for these participants, offal consumption remained enjoyable and a normal pattern of consumption.

The discussion that ensued with reference to offal provides a clear example of the role antecedent's (socialisation) play in ongoing practices. This is in line with Bourdieu's habitus whereby norms are initiated early in life and continue to be enacted, and for the 65+ age cohort, their meat antecedents continued to be reinforced throughout their life. Reducing meat consumption for environmental sustainability seemed not only inconceivable, but also unnecessary, as they did not accept that livestock production is the cause of significant environmental harm. The strength of their antecedents for meat consumption appeared influential in their total rejection of the information. This was revealed through a comment from one participant in the 65+ year old age group when he observed "perhaps we don't want to believe it". To accept the information as real would likely require either choosing to ignore it, or choosing to engage in mitigating practices, for example, meat reduction, however, by rejecting the information outright, no form of action is needed; neither would there be any discord between actions and values.

Participants in the two younger age groups had sound meat consumption norms and antecedents, but they did not have as many years of antecedent reinforcement as



those in the 65+ year age group. As evidenced by the food logs, the two younger age groups were able to successfully challenge their existing desire for meat consumption, and reduce their meat eating in order to contribute to a more sustainable environment. However, individual engagement is problematic as the strength of individual antecedents is complex and varied, and largely driven by social and cultural norms.

Tucker, (2014) acknowledges the complexities involved in food choices, and in research by Presott, Young, O'Neill, Yau and Stevens (2002, as cited in Tucker 2014) found that sensory appeal was rated the top concern for reasons of meat consumption in New Zealand, over "anything else, including price, convenience, and health implications" (Tucker, 2014, p170). The way we think about food, and its sensory appeal and taste preference, are the result of "socialisation in a given time and place" (Tucker, 2014, p169). This socialisation was evident with the 65+ year age group who ate offal throughout their childhood and continue to eat in their adult life, while the 35 to 50 did not; consequently it held no sensory appeal for them. This is in line with Bourdieu's habitus (1973) whereby patterns of behaviour have been shaped over time. Ajzen (2006) also contends that antecedents are the strongest predictor of behaviour, as does Parsons (1951), who argued that antecedents are formative in the decision process. However, meaning varies between individuals and is influenced by personality systems, cultural systems, and social system (Parsons, 1951). Ajzen (2006) also posits the strength of antecedents as being pivotal in determining behaviour change, and parallel to Parsons, notes that the strength of antecedents differs with each individual, and are dependent on one's social norms and constructs (Ajzen, 2006). For the 65+ group whose normative, socialisation practices of eating meat were ingrained by antecedents, the information did not provide a compelling reason to reduce their meat consumption.

### **5.5 Individual Efficacy**

Hiller (2011) and Hourdequin (2016) argue that for a change in practice to occur, there must be a belief that individual action can contribute to environmental sustainability. Problematically, individual choices have no instant self-reward, nor is there an immediately observable environmental change; therefore the decision to reduce meat consumption becomes a moral decision, and ostensibly challenging to

activate. Moral choice was indirectly referred to by one participant in the 16 to 21 year age group who stated that although they would be giving up something they enjoyed eating, thereby surrendering any immediate reward, they would over time be rewarded by a more sustainable environment, one in which everyone will benefit from.

Most participants agreed that individual action can make a difference. At the same time, the majority of participants also viewed government intervention positively. This suggests that a dual approach comprising of both individual and policy initiatives has some merit. Despite the strong belief in individual efficacy as a means of managing environmental harm, this view was not evidenced in the food logs of the 65+ age cohort. If, as Ajzen (2006) argues, the fundamental key to changing behaviours is a belief the issues are real (Ajzen, 2006), then no matter how strongly they viewed individual efficacy, because they did not find the information persuasive, they rejected it and accordingly felt no need to change their meat consumption practices.

### **5.6 Value-Action Gap**

Rejecting the information, as the 65+ age group did, removed any potential for incongruences between practice and value. However, for the 35 to 50 year age group who believed the information to be true, their meat reduction showed that they had endeavoured to align their environmentally sustainable behavioural intentions with actual actions. Chai et al (2015) argue that one of the external causes of the value-action gap is the lack of discretionary time with which to adopt sustainable practices. A participant in the 35 to 50 year age group, who observed that preparing meals without meat was a lot more time consuming, noted this time requirement. Despite the time intense deliberations involved in meatless, or meat reduced meals, this age group showed a significant reduction in their meat consumption. It may be that for this age group, their heightened engagement with the information meant that any incongruence between their core values of dietary intention and actual action was unacceptable. The 16 to 21 year age group did not purchase their food, nor did they generally prepare their meals so were less likely to be effected by time deliberations.

## 5.7 Conclusion

Information designed to change behaviour requires a different method of processing to that of general information not designed to affect behaviour. Effective behaviour interventions must be persuasive enough to create new beliefs, and understanding the processes involved in this is essential to engaging individuals in environmentally sustainable behaviour of reducing meat consumption. The effect of age should be given consideration when endeavouring to encourage behavioural changes.

## Chapter Six

# Conclusion

## 6.1 Introduction

Reducing meat consumption in order to contribute to environmental sustainability continues to be under-explored in academic research. It is vital that awareness of the connection between livestock production and environmental harm be significantly increased. The Earth's growing population is exhausting renewable resources, and individually we must all examine our practices to determine ways in which we can mitigate our environmental footprint. Reducing meat consumption is an important step in diminishing the environmental harm caused by livestock production.

The main contribution of this research is to advance the need for raising awareness of the environmental harm livestock production causes, by looking at how information is received. Age has a role in how we see the world through our unique experiences and where we are situated with regard to information receptiveness. In this final chapter I briefly recap the main research findings and make suggestions for further research, before concluding the thesis.

## 6.2 Research results recap

The results of this research showed age plays a notable part in individual receptiveness to information, and subsequent value weighted choices. The overarching principles of sustainable consumption practices must transcend

normalised motives for eating meat, such as cultural, traditional, and pleasurable practices. Ethical behaviour is dependent on a belief that individual actions can make a difference, however, in this research this belief was found to only be effective when combined with a belief in the information, and locus of control to change meat consumption practices.

### **6.3 Future research**

Engaging the older age group to reduce meat consumption for environmental sustainability was problematic. Possibly because environmental threats may have little direct impact on those over 65 (depending on their life span), which could indicate a different type of information may be required for this age group. Health benefits were given as a reason by the older age group to reduce meat consumption, which is indicative of a normal concern for health as one ages, however it also suggests that for this age group, a reduction in meat consumption was viewed from a personal perspective, making environmentally sustainable choices based on environmental information alone, more challenging. Combining environmental benefits with health benefits may be more efficacious. This is an area which is increasingly being examined (Boer et al, 2012), and has putatively shown to be more effective with the older age groups. Because of their age, the younger age cohorts will experience more direct effects of climate change over the coming years, perhaps as a consequence, they were more receptive to the information. It's possible that the participant in the 16 to 21 year old age group, who noted a willingness to reduce meat consumption in order to contribute to a more sustainable "ecosystem", may in fact be subconsciously acknowledging that because they still have many years to live on this planet, sustainability is of greater direct concern than it is for those in the 65+ year age group. Shown here is that tailoring information on environmental harm caused by livestock production towards specific age groups is likely to produce better outcomes. Thus, it may be that efforts are better spent on educating younger people whilst they remain open to new information, and more accepting of scientific knowledge. It's also possible they may be better positioned to influence older family members in a more persuasive manner, than the provision of information alone. Further research that takes different age cohorts into account, and looks at what combinations of information might resonate more strongly across different ages, would be a fruitful avenue for further research.

Social media platforms can provide a cost effective method of information delivery about the environmental implications of meat production. However we now live in a world where information is instantly, and abundantly available, much of it claiming to be right, although much of it specious, which can lead to scepticism towards all information. The growing scepticism of online information must be considered, providing reliable, factual information is crucial. Social media is a factor worth future consideration when thinking about the role it could play in informing people and changing practices.

Lastly, time constraints in place when undertaking this research (along with some challenges in finding willing participants for the older age group), meant that changes measured across time in meat consumption could only be gauged across a period of between 6 and 8 weeks from the focus group discussion through to when the second food logs were completed. Looking toward a more longitudinal research approach, and one that perhaps incorporates further informational interventions, would be a worthy undertaking in order to better understand which motivators work for different people, over a longer time frame.

#### **6.4 Summary**

Defining environmental sustainability often encompasses economic sustainability. However, environmental sustainability will have to take precedence if we are to adequately feed our quickly approaching over-populated planet (if we haven't already exceeded carrying capacity), whereby food security will be at the forefront of all decisions. I anticipate foods with little or no nutritional value will no longer be acceptable, and food labels stating ingredients, nutritional worth, how much water, and land were used, along with carbon emissions needed to produce each product, will be required. This would challenge producers to be ever searching for high nutritional value food, with low finite resource usage, and low carbon emissions.

Our meat consumption has environmental consequences, despite not always being immediately observable. Awareness that individual actions can have practical effects in slowing the Earth's anthropogenic rising temperature is essential. Despite a noticeable reluctance by governments to implement environmentally sustainable policies around meat production, strong support was indicated by research participants for government involvement. However, in the absence of government

policy, individual environmental responsibility will have to progress at a greater pace to that of the population growth, if we are to contain and ultimately mitigate the environmental harm from livestock production. Reliable information from trustworthy sources is the first step; however, for the 65+ year age group, and despite their belief in individual efficacy, the strength of their antecedents was a barrier to accepting the information. For them, growing up when livestock farming was largely innocuous to the environment was saliently connected to their image of livestock production. Furthermore, purely because of their age, they may anticipate environmental harm is likely to have less direct impact on them. However, the growing frequency of erratic weather events can affect anyone at any time.

Developed and rapidly developing nations' appetite for meat has made us reckless with our environment. We can no longer ignore the catastrophic effects of environmental harm caused by livestock production, nor can we rely on science alone to rectify the harm. I argue that urgent individual action is required, and whilst there are many complexities involved in understanding climate change and the processes involved in changing a practice, the solution does not need to be complex; we simply need to reduce our meat consumption.

It is reductive to claim information alone can result in action, for that would mean ignoring the multifaceted social and psychological considerations that must be taken into account when looking at how normalised social practices might be altered. Nonetheless, information remains the genesis of change and the formation of moral action.

# References

- Ackerman, C.L., Palmer, F.A, 2014, The Contribution of implicit cognition to the Theory Of Reasoned Action, *Journal of Marketing Management*, vol 30, nos., 5-6, pp529-550, <http://dx.doi.org/10.1080/0267257x.2013.877956>
- Ajzen, I., 1985, '*Behaviour Interventions based on the Theory of Planned Behaviour*', viewed 25 April 2018, <https://people.umass.edu/aizen/pdf/tpb.intervention.pdf>
- Ajzen, I., 1991, 'The Theory of Planned Behaviour', *Organisational Behaviour and Human Decision Processes*, Vol., 50, pp179-211.
- Ajzen, I., 2006, *Behavioural Interventions Based on the Theory of Planned Behaviour*. Technical Report, Research Gate, viewed 21 July 2017, [https://www.researchgate.net/publication/245582784\\_Behavioral\\_Interventions\\_Based\\_on\\_the\\_Theory\\_of\\_Planned\\_Behavior](https://www.researchgate.net/publication/245582784_Behavioral_Interventions_Based_on_the_Theory_of_Planned_Behavior)
- Ajzen, I., Fishbein, M., 2005, *The Influence of Attitudes on Behaviour*, pp173- 221, viewed 30 July 2017, [https://www.researchgate.net/publication/264000974\\_The\\_Influence\\_of\\_Attitudes\\_on\\_Behavior](https://www.researchgate.net/publication/264000974_The_Influence_of_Attitudes_on_Behavior)
- Annigan, J, 2018, '*Why Is Meat Important*', viewed May 2018, <http://healthyeating.sfgate.com/meat-important-7213.html>
- Becatoros, E., 2017, '*More than 90 percent of world's coral reefs will die by 2050*' viewed 10 August 2017 <http://www.independent.co.uk/environment/environment-90-percent-coral-reefs-die-2050-climate-change-bleaching-pollution-a7626911.html>
- Bland, A., 2012, '*Is the Livestock Industry Destroying the Planet?, For the earths sake, maybe it's time we take a good, hard look at our dietary habits*', viewed October 2017, <https://www.smithsonianmag.com/travel/is-the-livestock-industry-destroying-the-planet-11308007/>
- Boer, J. de, Schösler, H., & Boersema J.,J., 2012, 'Climate Change and Meat Eating: An inconvenient Couple? Post-print accepted by *Journal of Environmental Psychology*, pp1-39, viewed 10 August 2017

<http://www.sciencedirect.com/science/article/pii/S0272494412000618?via%3Dihub>

- Bourdieu, P., 1973, '*Cultural Reproduction and Social Reproduction*', viewed 7 October 2017 <https://www.scribd.com/doc/39994014/Bourdieu-1973-Cultural-Reproduction-and-Social-Reproduction>
- Bryson, B., 2010, '*An Even Shorter History of Nearly Everything*', Royal Society Anniversary Lecture, Gresham College, London, viewed 2 March 2018, <https://www.gresham.ac.uk/lectures-and-events/royal-society-anniversary-lecture-an-even-shorter-history-of-nearly-everything>
- Carrigan, M., Szmigin, I., Wright, J., 2004, 'Shopping for a better world? An interpretive study of the potential for ethical consumption within the older market', *The Journal of Consumer Marketing*, vol 21, (6), pp401-417.
- Carrington, D., 2014, 'Eating less meat essential to curb climate change, says report.' *The Guardian*, viewed 27 May 2017, <https://www.theguardian.com/environment/2014/dec/03/eating-less-meat-curb-climate-change>
- Catton, W., R., & Dunlap, R., E., 1978, 'Environmental Sociology: A New Paradigm', *The American Sociologist*, vol 13, pp41-49, viewed 24 April, 2018, <https://fenix.tecnico.ulisboa.pt/downloadFile/3779580063239/Dunlap--NEW-PARADIGM..pdf>
- Catton, W., R., & Dunlap, R., E., 1980, 'A New Ecological Paradigm for Post-Exuberant Sociology', *American Behavioural Scientist*, vol24, no1, pp15-47.
- Chasing Coral, 2017, Netflix Original, viewed 10/03/2018, Netflix.
- Chai, A., Bradley, G., Lo, A., & Reser, J., 2015, 'What time to adapt? The role of discretionary time in sustaining the climate change value-action gap', *Ecological Economics*, vol, 116, pp95-107, viewed 21 August 2017, <http://www.sciencedirect.com/science/article/pii/S0921800915001718>
- Cook, J., Oreskes, N., Doran, P.T., Anderegg, W.R.L., Verheggen, B., Maibach, E.W., Carlton, J.S., Lewandowsky, S., Skuce, A.G., Green, S.A., Nuccitelli, D., Jacobs, P., Richardson, M., Winkler, B., Painting, R., Rice, K., 2016, '*Consensus on consensus: a synthesis of consensus estimates on human-caused global warming*', *Environmental Research Letter*, Environ.Res.Lett. 11 048002, viewed January 2018



<https://pdfs.semanticscholar.org/6e98/2e170b198701999b95ee58a86ad29069ebaa.pdf>

- Cook, J., Nuccitelli, D., Green, S.A., Richardson, M., Winkler, B., Painting, R., Way, R., Jacobs, P., Skuce, A., 2013, '*Quantifying the consensus on anthropogenic global warming in the scientific literature*', viewed 4 August 2017, <http://ioscience.iop.org/article/10.1088/1748-9326/8/2/024024/meta>
- Cox, B, 2017, '*Live chat: Professor Brian Cox answers Kiwi questions on the Universe and or place in it*', viewed 6 November 2017, <https://www.stuff.co.nz/entertainment/tv-radio/98586476/live-chat-got-a-burning-question-for-professor-brian-cox-nows-your-chance-to-ask>
- Dagevos, H., & Voorouw, J., 2013, '*Sustainability and Meat Consumption: Is Reduction Realistic?*' viewed October 2017, <http://edepot.wur.nl/279616>
- De Bakker, E., & Dagevos, H., 2012, '*Reducing Meat Consumption in Today's Consumer Society: Questioning the Citizen-Consumer Gap*', *Journal of Agricultural and Environmental Ethics*, vol 25, issue 6, pp877-894.
- Drewnowski, A., Rehm, C.D., Martin, A., Verger, E.O., Voinnesson, M., Imbert, P., 2015, '*Energy and Nutrient Density of Foods in Relation to their Carbon Footprint*', American Society for Nutrition, viewed 14 November 2017 <https://pdfs.semanticscholar.org/cc7f/0c9e15a3065f9fd4fe684d1a3a5520184d5d.pdf>
- Elzerman, J. E., Hoek, A. C., van Boekel, A.J.S., Luning, P. A., 2011, '*Consumer acceptance and appropriateness of meat substitutes in a meal context*' *Food Quality and Preference*, vol 22 (3) pp233-240, viewed 18/7/2017 <http://www.sciencedirect.com/science/article/pii/S0950329310001990>
- Fickling, D., 2003, '*Farmers Raise a Stink over New Zealand 'Fart Tax'*', The Guardian, viewed 18 April 2018 <https://www.theguardian.com/world/2003/sep/05/australia.davidfickling>
- Garvey, J., 2010, '*Climate Change and Causal Inefficacy - Why Go Green When it Makes No Difference?*' viewed December 2018, <https://jamesgarveyactually.files.wordpress.com/2011/03/why-go-green-rip-talk-2010-edit.pdf>
- Gasper, R., 2013, '*Understanding the Reasons for Behavioural Failure: A Process View of Psychosocial Barriers and Constraints to Pro-Ecological Behaviour*', *Sustainability*, vol 5, pp2960-2975.

- Global Forest Atlas, 2017, 'Exploring the Worlds Forests' viewed June 2017  
<https://globalforestatlas.yale.edu/>
- Gossard, M.H., York, R., 2003, 'Social Structural Influences on Meat Consumption'  
*Human Ecology Review*, vol 10 pp1-9  
<http://www.w.humanecologyreview.org/pastissues/her101/101gossardYork.pdf>
- Hiller, A., 2011, '*Climate Change and Individual Responsibility*', *The Monist*, Vol. 94,  
 no 3, pp349-368, Oxford Academic, viewed 6 May 2017  
<https://doi.org/10.5840/monist201194318>
- Hourdequin, M., 2010, 'Climate, Collective Action and Individual Ethical Obligations',  
*Environmental Values*, issue 19, pp443-464, viewed 2 September  
[https://s3.amazonaws.com/academia.edu.documents/31420193/Hourdequin\\_Climate\\_Collective\\_Action\\_Env\\_Values.pdf?AWSAccessKeyId=AKIAIWOWY YGZ2Y53UL3A&Expires=1507417778&Signature=%2BzKxq9OHXFjVS2uMG WfglBQbITA%3D&response-content-disposition=inline%3B%20filename%3DClimate\\_collective\\_action\\_and\\_individual.pdf](https://s3.amazonaws.com/academia.edu.documents/31420193/Hourdequin_Climate_Collective_Action_Env_Values.pdf?AWSAccessKeyId=AKIAIWOWY YGZ2Y53UL3A&Expires=1507417778&Signature=%2BzKxq9OHXFjVS2uMG WfglBQbITA%3D&response-content-disposition=inline%3B%20filename%3DClimate_collective_action_and_individual.pdf)
- Hourdequin, M., 2012, Empathy, Shared Intentionality, and Motivation by Moral Reasons, *Ethical Theory and Moral Practice*, Vol 15, no3 pp403-419, viewed 4 August, <http://www.jstor.org/stable/23254297>
- Hourdequin, M., 2015, *Environmental Ethics*, Bloomsbury Academic, London, New York
- Hourdequin, M., 2011, *Climate Change and Individual Responsibility: A Reply to Johnson*. *Environmental Values* vol 20 pp157-162, viewed 21 July 2017,  
[http://www.jstor.org.ezproxy.massey.ac.nz/stable/23048437?seq=1#page\\_scan\\_tab\\_contents](http://www.jstor.org.ezproxy.massey.ac.nz/stable/23048437?seq=1#page_scan_tab_contents)
- Hungerford, H., R., & Volk, T., L., 1990, 'Changing Learner Behaviour through Environmental Education', *The Journal of Environmental Education*, vol 21, issue 3, pp8-21.
- Hyner, C., 2015, 'A Leading Cause of Everything: One Industry that is Destroying Our Planet and Our Ability to Thrive on it' *Georgetown Environmental Law Review*, viewed April 2017, <https://gelr.org/2015/10/23a-leading-cause-of-everything-one-industry-that-is-destroying-or-planet-and-our-ability-to-thrive-on-it-georgetown-environmental-law-review/>

- Jay, M., 2006, '*The political economy of a productivist agriculture: New Zealand dairy discourses*', viewed 29 April,  
<https://researchcommons.waikato.ac.nz/bitstream/handle/10289/1305/05-food?sequence=1>
- Joyce, A., Dixon, S., Comfort, J., Hallett, J., 2012, *Reducing the Environmental Impact of Dietary Choice: Perspectives from a Behavioural and Social Change Approach*, viewed 14 July 2017 <http://dx.doi.org/10.1155/2012/978672>
- Kaur, C., R., 2016, '*The Science and Understanding of Climate Change*' Berkeley University of California, viewed 17 April, 2017,  
<https://iep.berkeley.edu/content/science-and-understanding-climate-change>
- King, A., 2009, 'Overcoming Structure and Agency, Talcott Parsons, Ludwig Wittgenstein and the Theory of Social Action' *Journal of Classical Sociology*. Vol. 9 (2), pp260-288
- Kollmuss, A., & Agyeman J., 2002, 'Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behaviour?', *Environmental Education Research*, vol, 8, issue 3, pp 239-260.
- Krosnick, J., A., & Alwin, D., F., 1989, 'Aging and Susceptibility to Attitude Change', *Journal of Personality and Social Psychology*, vol 57, pp416-425.
- Lea, E., Worsley, A., 2001, 'Influences on meat consumption in Australia' *Appetite*, vol, 36, pp 127-136, viewed 3 September 2017,  
[http://foodethics.univie.ac.at/fileadmin/user\\_upload/inst\\_ethik\\_wiss\\_dialog/Lea\\_E.Worsley\\_A.\\_2001.\\_Influences\\_on\\_meat\\_consumption\\_in\\_Australia.pdf](http://foodethics.univie.ac.at/fileadmin/user_upload/inst_ethik_wiss_dialog/Lea_E.Worsley_A._2001._Influences_on_meat_consumption_in_Australia.pdf)
- Leiserowitz, A., Smith, N., Marlon, J.R., 2010, '*Americans Knowledge of Climate Change*' Yale University New Haven, CT: Yale Project of Climate Change Communication, viewed 27 May 2017, <http://environment.yale.edu/climate-communication-OFF/files/ClimateChangeKnowledge2010.pdf>
- Lester, S., 1999, '*An Introduction to Phenomenological Research*', Stan Lester Developments, Taunton,  
[https://www.researchgate.net/profile/Stan\\_Lester/publication/255647619\\_An\\_introduction\\_to\\_phenomenological\\_research/links/545a05e30cf2cf5164840df6.pdf](https://www.researchgate.net/profile/Stan_Lester/publication/255647619_An_introduction_to_phenomenological_research/links/545a05e30cf2cf5164840df6.pdf)

- MacDiarmid, J., I., Douglas, F., Campbell, J., 2015, '*Eating like there's no tomorrow: Public awareness of the environmental impact of food and reluctance to eat less meat as part of a sustainable diet*', *Appetite* vol 96, pp487-493, viewed July 2017,  
<https://www.sciencedirect.com/science/article/pii/S0195666315300623>
- Malthus, T., R., 1798, '*An Essay on the Principles of Population*' Oxford University Press, United Kingdom.
- Mannheim, K., 1955, '*Ideology and Utopia: An Introduction to the Sociology of Knowledge*', Mariner Books, Park Avenue South, NY, USA.
- McConeghy, M., 2009, '*Carrying Capacity*', Dr. McConghy's Environmental Science, viewed 3 May 2018  
[http://people.clarkson.edu/~kvisser/es238/docs/Carrying\\_Capacity\\_Dr\\_Matt\\_M.pdf](http://people.clarkson.edu/~kvisser/es238/docs/Carrying_Capacity_Dr_Matt_M.pdf)
- McGregor, J., 2007, '*What is the state of the News Media in New Zealand?*' Speech given at a Hui,  
[media.nzherald.co.nz/webcontent/document/doc/judy%20mcgregor%20speech.doc](http://media.nzherald.co.nz/webcontent/document/doc/judy%20mcgregor%20speech.doc)
- McMillan, T., 2008, '*How China Plans to Feed 1.4 Billion Growing Appetites*', *National Geographic*, viewed May 2018,  
<https://www.nationalgeographic.com/magazine/2018/02/feeding-china-growing-appetite-food-industry-agriculture/>
- Mead, G., H., 1934, '*Mind, Self, and Society*', University of Chicago Press, Chicago, IL, United States.
- Ministry of Transport, New Zealand Government, 2017, Climate Change and Energy, viewed 11 March 2017, <http://www.transport.govt.nz/ourwork/climatechange/>
- Ministry for the Environment, 2017, '*New Zealand's Environmental Legislation*', Resource Management Act 1991, viewed 18 April 2018,  
<http://www.mfe.govt.nz/publications/environmental-reporting/state-new-zealand%E2%80%99s-environment-1997-chapter-four-environment-4>
- Ministry of Transport, 2017, '*Emissions Trading Scheme*' viewed September 2017,  
<https://www.mpi.govt.nz/dmsdocument/4438/loggedIn>

- Mitchell, A., Gottfried, J., Barthel, M., & Shearere, E., 2016, '*How Americans get their news, Pathways to News*', Pew Research Centre, viewed 14 April 2018, <http://www.juornalism.org/2016/07/07pathways-to-news/>
- Morelli, J., 2011, 'Environmental Sustainability: A Definition for Environmental Professionals', *Journal of Environmental Sustainability*, vol 1 issue 1, article2, viewed 2 May 2018, <http://scholarworks.rit.edu/cgi/viewcontent.cgi?article=1007&context=jes>
- Nasa, 2014, '*The Consequences of Climate Change*', Global Climate Change, Vital signs of the Planet, Nasa, viewed 19 August 2017. <https://climate.nasa.gov/effects/>
- National Ocean Service, 2012, '*What is Coral Bleaching*', National Oceanic and Atmospheric Administration U.S. Department of Commerce, viewed 3/12/2017 [https://oceanservice.noaa.gov/facts/coral\\_bleach.html](https://oceanservice.noaa.gov/facts/coral_bleach.html)
- Nelson Mail, 2015, '*What to do about climate Change?*' Motu, pp7-8
- New Zealand Institute of Economic Research, 2017, viewed 11 May, 2018 [https://nzier.org.nz/static/media/filer\\_public/29/33/29336237-3350-40ce-9933-a5a59d25bd31/dairy\\_economic\\_contribution\\_update\\_final\\_21\\_february\\_2017.pdf](https://nzier.org.nz/static/media/filer_public/29/33/29336237-3350-40ce-9933-a5a59d25bd31/dairy_economic_contribution_update_final_21_february_2017.pdf)
- Nielsen, R.,K., 2017, '*Where do people get their news?*', Reuters Institute for the Study of Journalism, Oxford University, viewed 14 April 2018, <https://medium.com/oxford-university/where-do-people-get-people-get-their-news-8e850a0dea03>
- North American Meat Industry, 2015, viewed 3 April 2018, <https://www.meatinstitute.org/index.php?ht=d/sp/i/47465/pid/47465>
- Ochoa-Quintero, J., M., 2015, '*Amazon deforestation 'threshold' causes species loss to accelerate*', University of Cambridge, viewed 24 April 2018 <http://www.cam.ac.uk/research/news/amazon-deforestation-threshold-causes-species-loss-to-accelerate>
- Parsons, T., 1951, '*The Social System*', Rotledge and Kegan Paul Ltd., England
- Peeters, W., De Smet,A., Diependaele,L., Sterckx,S., 2015, '*Climate Change and Individual Responsibility*' Palgrave MacMillan, London.
- Peterson, A., Lupton, D., 1996. *The New Public Health; Discourses, Knowledges, Strategies*, Allen & Unwin, Australia.

- Pohjolainen, P., Tapio, P., Vinnari, M., Jokinen, P., Rasanen, P., 2016, '*Consumer consciousness on meat and the environment – Exploring differences*' *Appetite* vol 101 pp37-45 viewed September 2017, <http://daneshyari.com/article/preview/939285.pdf>
- Rees, W., 1996, 'Revisiting Carrying Capacity: Area Based Indicators of Sustainability' *Population and Environment: A Journal of Interdisciplinary Studies*, vol, 17, no3 Human Sciences Press, Inc., viewed 27 August 2017, <http://dieoff.org/page110.htm>
- Reidy, M., 2017, '*Fake News a Growing Worry for Kiwis*', Stuff, viewed 14 April, 2018 <https://www.stuff.co.nz/business/96066519/kiwis-most-concerned-about-fake-news-and-security-threats-online>
- Rimal, A., P., 2002, 'Factors Affecting Meat Preferences Among American Consumers', *Family Economics and Nutrition Review*, Vol 14, no2 pp36-43.
- Ritchie, J., Lewis, J., 2003, '*Qualitative Research Practice*', Sage Publications Ltd., London
- Sanders, K., T., Webber, M., E., 2014, '*A comparative analysis of the greenhouse gas emission intensity of wheat and beef in the United States*' pp2-10, viewed March 2018 <http://iopscience.iop.org/article/10.1088/1748-9326/9/4/044011/pdf>
- Schnaiberg, A., 1975, 'Social Syntheses of the Societal-Environmental Dialectic: The Role of Distributional Impacts', *Social Science Quarterly*, vol 56, no 1, pp5-20.
- Singer, P., 1985. 'The animal Liberation Movement', viewed 30 July, [https://nwveg.org/files/Singer\\_The\\_Animal\\_Liberation\\_Movement.pdf](https://nwveg.org/files/Singer_The_Animal_Liberation_Movement.pdf)
- Sinnott-Armstrong, 2005, '*It's Not My Fault: Global Warming and Individual Moral Obligations*', viewed October 2017 <https://sites.duke.edu/wsa/papers/files/2011/05/wsa-itsnotmyfault2005.pdf>
- Stanford University, 2007, '*Harmful Environmental Effects of Livestock Production On the Planet 'Increasingly Serious, Says Panel*', ScienceDaily, viewed 6 May 2018, [www.sciencedaily.com/release/2007/02/070220145244.htm](http://www.sciencedaily.com/release/2007/02/070220145244.htm)
- Stats NZ, 2017, '*Change in Livestock Numbers*', viewed 24 April 2018 [http://archive.stats.govt.nz/browse\\_for\\_stats/environment/environmental-](http://archive.stats.govt.nz/browse_for_stats/environment/environmental-)

- [reporting-series/environmental-indicators/Home/Land/livestock-numbers.aspx](http://reporting-series/environmental-indicators/Home/Land/livestock-numbers.aspx)
- Stienfeld, H., Geber, P., Wassenaar, T., Castel, V., Rosales, M., de Haan, c., 2006, '*Livestock's Long Shadow, environmental issues and options*', viewed 11/11/2017  
[https://books.google.co.nz/books?hl=en&lr=&id=1B9LQQkm\\_qMC&oi=fnd&pg=PP18&dq=livestock%27s+long+shadow&ots=LOWZdT9HmL&sig=20jhtPtZN7rAUPsP\\_\\_1s1T8N\\_mo#v=onepage&q=livestock's%20long%20shadow&f=false](https://books.google.co.nz/books?hl=en&lr=&id=1B9LQQkm_qMC&oi=fnd&pg=PP18&dq=livestock%27s+long+shadow&ots=LOWZdT9HmL&sig=20jhtPtZN7rAUPsP__1s1T8N_mo#v=onepage&q=livestock's%20long%20shadow&f=false)
- Time, 2017 '*Time*' vol 190, p4, no 7, August 21.
- Tobler, C., 2011, 'Consumers' willingness to adopt ecological food consumption', *Appetite*, issue 57, no3 pp674-682.
- Tucker, C., A., 2013, "Insects, offal, feet ad faces: acquiring new tastes in New Zealand?" *New Zealand Sociology*, 28 (4), pp101-122.
- Tucker, C., A., 2014, 'The Significance of sensory appeal for reduced meat consumption', viewed 3 August, 2017  
<http://www.sciencedirect.com/science/article/pii/S0195666314002621?via%3Dihub>
- Tucker, C., A., 2018, 'Using environmental imperatives to reduce meat consumption: perspectives from New Zealand', *Kotuitui: New Zealand Journal of Social Sciences Online*, pp99-110, viewed April 2018  
<https://www.tandfonline.com/doi/full/10.1080/1177083X.2018.1452763>
- United Nations, 1987, 'Our Common Future', *Report of the World Commission on Environment and Development*, pp1-247.
- United Nations, Department of Economic and Social Affairs, 2017, '*World population projected to reach 9.8 billion in 2050, and 11.2 billion in 2100*', viewed 26 April, 2018, <https://www.un.org/development/desa/en/news/population/world-population-prospects-2017.html>
- United Nations, 2015, 'World population projected to reach 9.7 Billion by 2050', viewed 4 July 2017,  
<http://www.un.org/en/development/desa/news/population/2015-report.html>

- University of Glasgow, 2015 'Can eating less meat help reduce climate change?' Phys.org, viewed 20 August 2017, <https://phys.org/news/2015-11-meat-climate.html>
- Vance, C., 2016, 'Climate Change, Individual Emissions and Foreseeing Harm', *Journal of Moral Philosophy*, pp1-23, viewed 8 September 2017. <https://wmpeople.wm.edu/asset/index/cvance/jmp>
- Visser, P.,S., & Krosnick, J., A., 1998, 'Development of Attitude Strength Over the Life Cycle: Surge and Decline', *Journal of Personality and Social Psychology*, vol 75 (6) pp1389-1410.
- Walls, J., 2017, '*Dairy Sector Contributes \$8 Billion to GDP*', NBR, viewed, March 2018, <https://www.nbr.co.nz/article/dairy-sector-contributes-8-billion-gdp-jw-199810>
- Walsh, B., 2013, 'The Triple Whopper Environmental Impact of Global Meat Production' *Time*, Dec 16, vol 182, no25
- Waters, J., 2017 '*Phenomenological Research Guidelines*' viewed 1 October 2017 [http://academlib.com/2079/sociology/key\\_idesa\\_perspectives\\_phenomenology](http://academlib.com/2079/sociology/key_idesa_perspectives_phenomenology)
- Wellesley, L., Happer, C., Froggatt, A., 2015 'Changing Climate, Changing Diets, Pathways to Lower Meat Consumption', Chatham House Report, *Chatham House, Royal Institute of International Affairs*, London, viewed 17 November 2017, <http://eprints.gla.ac.uk/113170/1/113170.pdf>
- Widmar, D., A., 2017, '*Global beef trends: China, Brazil, grab spotlight*', viewed May 2018, <http://www.feedstuffs.com/news/global-beef-trends-china-brazil-grab-spotlight>
- Wilson, E., O. 2003, '*The Future of Life*', Random House Inc, New York, USA
- Worldometer, 2017 viewed November 2017 <http://www.worldometers.info/world-population/>
- World Population Balance, 2017, '*Current Population is Three Times the Sustainable Level*', viewed 30 April 2017, <http://www.worldpopulationbalance.org/>
- WorldWatch Insitutute, 2017, '*Is Meat Sustainable*', viewed October 2017, <http://www.worldwatch.org/node/549>



# Appendixes

Appendix a)

## Food Diary

<b>Food Diary</b>				
	Breakfast	Lunch	Dinner	Snacks
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				
Monday				
Please tick a box only for the meals you eat meat				

## Information Sheet

1. Natural climate changes occur over time and the environment can adapt to it, but the speed with which global warming is occurring is due to anthropogenic causes. Over 95% of the world's leading environmental scientists are now in agreement that this significant level of climate change is caused by humans and their activities (Cook, Nuccitelle, Green, Richardson, Winkler, Painting, Way, Jacobs, and Skuce, 2013).
2. Yes, more than 70% of the Amazon Rainforest has been stripped and is now used for livestock farming related activities (Global Forest Atlas, 2017).
3. The livestock industry produces "more greenhouse gas emissions than all cars, planes, trains, and ships combined" (Carrington, 2014), but more than twice as many people believe transport causes more environmental damage.
4. Yes, individual action can have a significant effect; all collective effects are simply the aggregated actions of individuals (Hourdequin, 2015).
5. Ocean dead-zones are occurring as a result of livestock production run-offs and global warming. Without change, our sea life is under dire threat, and 90% of all coral reefs will be dead within 30 years, despite having existed for more than 400 million years (Becatoros, 2017).
6. Without significant changes to reduce biodiversity loss, over 80% of earth's species are predicted to be extinct within 50 years (Carrington, 2014).
7. Livestock farming and the "human appetite for animal protein is a driving force behind virtually every major category of environmental damage now threatening the human future – global warming, deforestation, erosion, fresh water extinction, air and water pollution, climate change, biodiversity loss, species extinction, social injustice, the destabilisation of communities, and the spread of diseases" (WorldWatch Institute 2017).
8. Governments and policy makers have shown little, if any interest in examining strategies that will encourage a reduction in meat consumption and production. This, Happer (2015) suggests, is due to a concern by governments, of public criticism. However, interviews and focus groups conducted by University of Glasgow across several countries revealed that people were receptive to

radical changes in meat consumption practices if governments provided a decisive lead (Happer, 2015).

Appendix c)

# Images (Restriction Free)

Amazon Deforestation



## Coral Bleaching – Great Barrier Reef





Dead Fish from Agricultural Runoff and Climate Change

