

TAILORING FEEDBACK AND MESSAGES TO ENCOURAGE MEAT CONSUMPTION
REDUCTION

by

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B.A., Calvin College, 2011
M.S., Kansas State University, 2013

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Psychological Sciences
College of Arts and Sciences

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2016

Abstract

Though the research on vegetarianism and meat consumption reduction has dramatically increased over the last few decades, almost all of this research focuses on current vegetarians/meat reducers and non-vegetarians' perceptions of vegetarianism (Boyle, 2007; Ruby, 2012). Research targeting non-vegetarians and attempting to influence their meat consumption is virtually non-existent. Thus, the intent of the present dissertation was to effectively decrease individuals' meat consumption habits and alter individuals' attitudes toward meat. As research has repeatedly found that messages that are tailored to an individual are more persuasive and effective at influencing health behaviors (Bull et al., 2001; Ryan & Lauver, 2002) and attitudes (e.g., Murray-Johnson & Witte, 2003; Rimal & Adkins, 2003), the present dissertation specifically sought to determine the effectiveness of tailored meat consumption reduction feedback and messages to influence individuals' intentions to consume meat and attitudes toward meat consumption. Specifically, this dissertation investigated the effectiveness of messages specific to individuals' behavior (a behavioral feedback approach), messages oriented to individuals' self-schemas, egoistic and altruistic oriented messages, and feedback/messages tailored to individuals' values. Contrary to the hypotheses, the results of the present studies suggested that individuals' willingness to reduce their meat consumption is not differentially affected by different types of feedback/messages; however, this lack of significant impact for tailored feedback/messages may be due to various limitations that are discussed at length within the present dissertation. Despite the possible limitations of the studies conducted, the present dissertation has made significant contributions to the meat consumption reduction literature. The first of its kind, this dissertation importantly illustrates the importance of and need for research encouraging meat consumption reduction.

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Approved by:

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Dr. Laura A. Brannon

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Though the research on vegetarianism and meat consumption reduction has dramatically increased over the last few decades, almost all of this research focuses on current vegetarians/meat reducers and non-vegetarians' perceptions of vegetarianism (Boyle, 2007; Ruby, 2012). Research targeting non-vegetarians and attempting to influence their meat consumption is virtually non-existent. Thus, the intent of the present dissertation was to effectively decrease individuals' meat consumption habits and alter individuals' attitudes toward meat. As research has repeatedly found that messages that are tailored to an individual are more persuasive and effective at influencing health behaviors (Bull et al., 2001; Ryan & Lauver, 2002) and attitudes (e.g., Murray-Johnson & Witte, 2003; Rimal & Adkins, 2003), the present dissertation specifically sought to determine the effectiveness of tailored meat consumption reduction feedback and messages to influence individuals' intentions to consume meat and attitudes toward meat consumption. Specifically, this dissertation investigated the effectiveness of messages specific to individuals' behavior (a behavioral feedback approach), messages oriented to individuals' self-schemas, egoistic and altruistic oriented messages, and feedback/messages tailored to individuals' values. Contrary to the hypotheses, the results of the present studies suggested that individuals' willingness to reduce their meat consumption is not differentially affected by different types of feedback/messages; however, this lack of significant impact for tailored feedback/messages may be due to various limitations that are discussed at length within the present dissertation. Despite the possible limitations of the studies conducted, the present dissertation has made significant contributions to the meat consumption reduction literature. The first of its kind, this dissertation importantly illustrates the importance of and need for research encouraging meat consumption reduction.

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Acknowledgements

I would not be where I am today or be the researcher that I am today without the guidance of my advisor, Dr. Laura Brannon, from whom I have learned so much. Her knowledge, patience, support, and encouragement have undoubtedly helped me grow as a researcher. I cannot imagine my graduate school career with anyone else as my advisor and mentor. I also owe thanks to my dissertation committee members, Dr. Clive Fullagar, Dr. Richard Harris, Dr. Bimal Paul, and Dr. Sara Rosenkranz, for their valuable feedback and suggestions. I would also like to acknowledge the contribution of my former undergraduate research assistant, Sarah Haley, for her initial interest in this research and for sparking my interest as well. I would be amiss not to thank all of the Kansas State University Department of Psychological Sciences faculty and graduate students for making my graduate education and experience what it is. I would particularly like to thank Dr. Don Saucier for investing and believing in me as an instructor. To Dr. Julie Yonker, Dr. Blake Riek, and all of the other Psychology faculty at Calvin College who ignited and fueled my passion for Psychology and continue to root for me – I aspire to one day be as much of an inspiration to my students as you all were to me. To all of my friends and family who have provided endless encouragement and support throughout my education endeavors, I am eternally grateful for your love. I am particularly indebted to my parents, Randy and Lori Schnabelrauch, for teaching me and encouraging me to pursue my dreams. And finally, to my husband, David Arndt, who began this graduate school journey with me and who is my constant source of motivation – you inspire me every day to be a better person, teacher, and researcher. Words cannot express how thankful I am to have you by my side through this journey and to be by yours.

Chapter 1 - Introduction

Meat Consumption

History of meat consumption

In the United States, the history of meat consumption can be traced all the way back to Native American practices before Europeans began settling in America. Native Americans had scarce food supplies (Drache, 1996 as cited in Boyle, 2007; 2011b); thus, meat was essential in sustaining them (Boyle, 2007; 2011b). The pilgrims also relied heavily on meat to survive their first winter (Boyle, 2007). As livestock supplies improved, however, meat became not just a necessity but a staple in meals (Boyle, 2007; 2011b). This tradition of meat as the main part of a meal continues today, and fast food restaurants are partly the reason this tradition still exists (Boyle, 2007). The primary items in fast food restaurants are meat products (hamburgers, hot dogs, chicken products, etc.; McIntosh, 1995 as cited in Boyle, 2007). The hamburger first became popular at the 1904 World's Fair in St. Louis and has ever since been the "trademark for 20th Century American life" (Rifkin, 1992, p. 261 as cited in Boyle, 2007). Though Americans are beginning to move away from red meat, this decrease is compensated with an increase in poultry product consumption (Willard, 1997 as cited in Boyle, 2007; 2011b). Even still, Americans are currently eating more meat than is recommended (Dietary Guidelines Advisory Committee, 2015a), and consume more meat per capita than most other countries (Food and Agriculture Organization of the United Nations Statistics Division, 2014). In fact, recent overall meat consumption in America has increased the world's intake of meat and it is now at an all-time high (Boyle, 2007; 2011b; U.S. Department of Agriculture, 2003).

Vegetarianism

Definition of vegetarianism

Vegetarianism is often considered to be the voluntary exclusion of meat from an individual's diet; however, defining vegetarianism more specifically proves to be a complex task. Though the Dietary Guidelines Advisory Committee (DGAC; 2015b) specifically defines three different vegetarian diets (vegans do not eat meat, fish, eggs, or dairy; lacto-ovo vegetarians do eat eggs and dairy, but no fish or meat; and pesco-vegetarians eat fish but not meat), there are discrepancies in what laypeople consider to be vegetarian, even among people who consider themselves to be vegetarian (Barr & Chapman, 2002; Boyle, 2011a; Ruby, 2012; Weinsier, 2000; White, Seymour, & Frank, 1999). Some people consider only those who refrain from eating meat to be vegetarian, while others allow seafood (e.g., fish, crab, shrimp, lobster) consumption, and others allow poultry (white meat; e.g., turkey, chicken) consumption in addition to seafood (Ruby, 2012; White, Seymour, & Frank, 1999). Vegans are typically considered to be individuals who refrain from consuming or using (not just eating) any sort of animal product (e.g., eating eggs and dairy products, buying leather, fur, and wool products; Boyle, 2011a; White, Seymour, & Frank, 1999); however, abstaining from consuming any sort of animal product is considered by some to be vegetarianism. This discrepancy among vegetarians in defining what constitutes vegetarianism presents a problem for social science researchers (Weinsier, 2000). Thus, a variety of definitions have been used across social science research on vegetarianism; however, two specific definitions have been popular and frequently utilized.

3 types of vegetarianism

In an attempt to find a solution and create a comprehensive definition for vegetarianism in research, some researchers have classified different “types” of vegetarians into three categories: vegans, lactovegetarians, and lacto-ovovegetarians. Vegans, as previously mentioned, are individuals who refrain from eating any food that has an animal origin (honey is sometimes an exception). Lactovegetarians do not eat any meat or eggs but will eat dairy products, and lacto-ovovegetarians do not eat any meat but will eat eggs in addition to dairy products (White & Frank, 1994).

Vegetarianism as a continuum

Beardsworth and Keil (1991b; 1992) have also put forth an attempt at a comprehensive definition for vegetarianism by putting vegetarianism on a spectrum of varying consumption restrictions. The least restrictive type of vegetarianism is classified on Beardsworth and Keil’s scale as a Type I vegetarianism. Type I vegetarians occasionally eat red meat (e.g., pork, venison, beef) and poultry (white meat), but usually only do so if vegetarian food options are unavailable or inconvenient. Type II vegetarians are more restrictive than Type I vegetarians – they avoid eating any red meat and poultry, but do not refrain from eating seafood and fish. Type III and Type IV vegetarians refrain from all red meat, poultry, and seafood/fish consumption, but Type IV individuals also refrain from eating eggs. Type V vegetarians refrain from all meat consumption as well as eggs, and additionally do not consume dairy products that are produced with an enzyme called rennet, which is taken from the stomach of young calves. At the most restrictive end of the spectrum is Type VI vegetarianism, which is also commonly considered veganism. Type VI vegetarians, or vegans, abstain from consuming any products that come from animals.

History of vegetarianism

Voluntary vegetarianism has been around for centuries, dating all the way back to ancient Greece (Spencer, 1993 as cited in Ruby, 2012). Back in ancient Greece, philosophers such as Pythagoras, Plato, Plutarch, and Porphyry advocated for the ethical and spiritual issues associated with eating meat (Spencer, 1993 as cited in Ruby, 2012). Pythagoras, in particular, was influential in the history of vegetarianism (Gregerson, 1994 as cited in Boyle, 2007). Until about the 1840s, vegetarianism was known as the Pythagorean diet, which held the belief that anything that had life should not be killed (Hughes, 1980 as cited in Boyle, 2007). Buddha, in India, also encouraged abstinence from meat due to a similar rationale, and around the same time as Pythagoreas (Hughes, 1980 as cited in Boyle, 2007).

Vegetarianism today

Though most cultures have specific animal meat that they refrain from eating (e.g., traditional Hindus refrain from eating beef, many Americans refrain from eating dog meat), some individuals – regardless of culture – abstain completely from eating meat. In most cultures, these individuals who abstain from eating any meat (i.e., vegetarians) are a minority of the population (Ruby et al., 2013; Stahler, 2009); however, rates of vegetarianism are increasing in many countries (Ruby et al., 2013).

Recent rise in popularity

Vegetarianism is rapidly becoming one of the fastest growing dietary lifestyles (i.e., diets that reflect personal preferences) in the United States (Ginsberg, 2013; White & Frank, 1994) and around the world. For the past 20 years in the United Kingdom, meat consumption has been declining and the proportions of vegans and vegetarians have doubled (Baker, Thompson, & Palmer-Barnes, 2002). Likewise, rates of vegetarians and vegans in the United States

(Vegetarian Resource Group, 2000) – as well as other countries such as Canada and India (Barr & Chapman, 2000; Boyle, 2007) – have increased in recent years. It is estimated that about 3% of the United States population (Stahler, 2009), about 9.5 million adults, have converted to vegetarianism, and this number is anticipated to continue to increase (Ginsberg, 2013; Ruby et al., 2013; White & Frank, 1994).

Recent reductions in non-vegetarians' meat consumption

Paralleling the increasing rates of vegetarianism, there has recently been a growing trend in Western cultures, where some non-vegetarian individuals are consuming less meat (Baker, Thompson, & Palmer-Barnes, 2002). Forty percent of people in the United Kingdom (UK) can be classified as “meat reducers” (Baker, Thompson, & Palmer-Barnes, 2002) and one study found that 28% of people reported actively reducing their meat consumption over the span of a year (Richardson, Shepherd, & Elliman, 1993). In Canada, meat substitute (e.g., tofu) sales have been on the rise (ACNielsen, 2004 as cited in Ruby, 2012) and 40% of the population reports frequently eating meatless meals (Serecon Management Consulting Inc., 2005). Americans (Breidenstein, 1988 as cited in Ruby, 2012), Norwegians (Bjørkum, Lien, & Kjærnes, 1997 as cited in Holm & Møhl, 2000), and Danes (Haraldsdóttir, Holm, Jensen, & Møller, 1987 cited in Holm & Møhl, 2000) show similar trends with 20% of the population reducing their meat consumption, and about 15% of American college students consuming meatless meals on an average day (Walker, 1995 as cited in Ruby, 2012).

Research on vegetarianism

Due to the increasing rates of vegetarianism and meat-reducers, vegetarianism is well worth researching (Ruby, 2012), and an increasing number of researchers are doing just that (Ruby, 2012). While quite a bit of research has been conducted on the topic, the focus has been

primarily on current vegetarians. The research that has focused on non-vegetarians has focused on non-vegetarians' perceptions of vegetarians and vegetarianism.

What motivates vegetarians' dietary choices

In the U.S., very few people are vegetarians for their entire lives – most convert to vegetarianism at some point (Beardsworth & Keil, 1992). Given the growing numbers of vegetarians as well as the movement of many to actively reduce their meat consumption, the question naturally arises what motivates these individuals to cut out or restrict meat in their diets. Consequently, a large portion of the research by social scientists that has investigated vegetarianism has focused on why current vegetarians became vegetarians in the first place (e.g., Beardsworth & Keil, 1992; Roth, 2005; Stiles, 1998). Research has found that these reasons are as diverse as are the definitions for vegetarianism (Ruby et al., 2013), but certain motivating factors to be more popular than others.

Moral and ethical concerns

Stemming back from ancient Greece, the most popular motivation for people to convert to vegetarianism is the concern for the lives of animals (Baker, Thompson, & Palmer-Barnes, 2002; Barr & Chapman, 2002; Beardsworth & Keil, 1991a; 1992; Cooper, Wise, & Mann, 1985; Dwyer et al., 1974; Fox & Ward, 2008a; Jabs, Devine, & Sobal, 1998b; Janelle & Barr, 1995; Kim et al., 1999; Rozin, Markwith, & Stoess, 1997; Ruby, 2012; Santos & Booth, 1996; White, Seymour, & Frank, 1999). Particularly of concern to many is the unethical animal rearing methods and the idea of animal slaughter for food (Beardsworth & Keil, 1992). Studies have shown that vegetarians often have negative perceptions of meat and associate it with cruelty, killing, and disgust (Barr & Chapman, 2002). Even among children, the primary reason to not eat meat is often expressed as a moral issue (Hussar & Harris, 2009).

Health and medical concerns

Research has repeatedly found that the second most common motivation for individuals to become vegetarian is personal health and medical concerns (Baker, Thompson, & Palmer-Barnes, 2002; Barr & Chapman, 2002; Beardsworth & Keil, 1991a; 1992; Dwyer et al., 1974; Fox & Ward, 2008a; 2008b; Janelle & Barr, 1995; Kim et al., 1999; Rozin, Markwith, & Stoess, 1997; Ruby, 2012; Santos & Booth, 1996; White, Seymour, & Frank, 1999). This motivation has gained popularity in more recent years since first emerging in the 19th century (Beardsworth & Keil, 1991a; Fox & Ward, 2008a; 2008b; Rozin, Markwith, & Stoess, 1997). The recent heightened awareness of meat-related health issues has partly been due to food safety issues, given that most of the publicized food safety issues in recent decades have been meat-related (Baker, Thompson, & Palmer-Barnes, 2002). Perhaps fueled by the food safety issues, many people have also become increasingly concerned with the toxins (e.g., concentrated heavy metals; White & Frank, 1994) and additives (e.g., antibiotics, growth hormones, additives included during processing; Cooper, Wise, & Mann, 1985) in meat products. Adding even more reason for concern, research has linked meat consumption to antibiotic immunity, allergic reactions, diabetes, hypertension, gallstones, and reduced fitness, and the fats and proteins from meat have been linked to various types of cancers (see Baker, Thompson, & Palmer-Barnes, 2002; Friel et al., 2009; McMichael et al., 2007; Neumann et al., 2010; and Pan et al., 2012 for reviews of the literature).

In addition to the many health risks associated with meat consumption (particularly red meat and processed meat; Dietary Guidelines Advisory Committee, 2015b), research has also found many medical benefits associated with abstaining from meat and eating less meat (especially eating less red meat; Dietary Guidelines Advisory Committee, 2015a). Because

vegetarians avoid the consumption of the fats, proteins, and calories from meat, vegetarians tend to have lower cholesterol levels (White, Seymour, & Frank, 1999), blood pressures, saturated fat intake (White, Seymour, & Frank, 1999), and body mass (Janelle & Barr, 1995; Mayo Clinic, 2014; White, Seymour, & Frank, 1999) than non-vegetarians (see White & Frank, 1994 for a review of the literature). Furthermore, vegetarians also have lower rates of heart disease (Mayo Clinic, 2014; White, Seymour, & Frank, 1999), cancer, type II diabetes (Pan et al., 2013; White, Seymour, & Frank, 1999), gallstones, and osteoporosis (see Delichatsios et al., 2001 and White & Frank, 1994 for reviews of the literature). Based on these health and medical benefits, some have suggested that people, particularly those who are high at risk for cardiovascular disease and cancer, should adopt a vegetarian diet or at least reduce their meat consumption (White & Frank, 1994). In addition to avoiding the fats, toxins, antibiotics, and hormones in meat, research has also found that vegetarians tend to consume more fiber and on average have a better intake of most vitamins (e.g., Vitamin A, Vitamin C, Vitamin E, thiamine, and riboflavin; Janelle & Barr, 1995), and overall have lower mortality rates than non-vegetarians (see White & Frank, 1994 for a review of the literature).

Environmental sustainability concerns

Even more recently than concerns about health, another popular reason many vegetarians refrain from eating meat is the environmental impact of meat consumption (Baker, Thompson, & Palmer-Barnes, 2002; Barr & Chapman, 2002; Beardsworth & Keil, 1991a; 1992; Dwyer et al., 1974; Fox & Ward, 2008a; Janelle & Barr, 1995; Kim et al., 1999; Rozin, Markwith, & Stoess, 1997; Ruby, 2012; Ruby et al., 2013; Santos & Booth, 1996; White, Seymour, & Frank, 1999).

The production of meat is a process that uses a lot of natural resources. Just one pound of beef requires thousands of gallons of water (Mekonnen & Hoekstra, 2010; World Watch

Institute, 2004), sixteen pounds of grain and soy (Lappé, 1991 as cited in White & Fank, 1994), and one gallon of gasoline (for the processing and transportation of the meat; Rifkin, 1992 as cited in White & Frank, 1994; World Watch Institute, 2004) to produce. Perhaps, though, the most important natural resource that the meat industry utilizes is land. Thirty percent of the Earth's land is devoted to the meat industry (Food and Agriculture Organization of the United Nations, 2006). About 33% of the total farmable land in the world is devoted to growing crops for livestock, and the amount of land needed for the livestock themselves accounts for 26% of the Earth's land that is not covered in ice (Food and Agriculture Organization of the United Nations, 2006). To make room for all of this land, millions of rainforest acres are constantly destroyed (Food and Agriculture Organization of the United Nations, 2006); two-thirds of the rainforests in Central American have already been destroyed for this purpose (Happy Cow, 2015; Sarma, 2014). Rainforests play a key role in converting carbon dioxide in the air back into oxygen; thus, deforestation is one of the leading causes of air pollution (Schmidt, 2010). It has been estimated, given the amount of deforestation that occurs to make room for the raising of livestock, that the meat industry is responsible for 18% of total air pollution, which is more than the pollution from transportation (Food and Agriculture Organization of the United Nations, 2006). A further consequence of deforestation and the clearing of land to make room for the livestock industry is the decline of biodiversity (Bland, 2012). The numbers of native antelope, bison, and other wild animals in the Great Plains have been severely diminished due to the expansion of land for livestock and the growth of crops for livestock (Bland, 2012).

Another environmental consequence of the meat industry is the land degradation caused by overgrazing. About 20% of the world's pastures have been overgrazed, which often causes soil erosion, which then pollutes water sources (Food and Agriculture Organization of the United

Nations, 2006). It has been estimated that the livestock industry is responsible for 55% of the erosion contamination in fresh-water supplies (Food and Agriculture Organization of the United Nations, 2006). Further polluting water sources, herbicides and pesticides used on the crops grown to feed livestock absorb into the ground and find their way into nearby water supplies (Happy Cow, 2015). These chemicals then pollute rivers, streams, lakes, and even oceans, and traces can be found in fish all over the world (Happy Cow, 2015). It has been estimated that the meat industry contributes to 37% of the pesticides and 32% of nitrogen present in fresh-water resources (Food and Agriculture Organization of the United Nations, 2006).

Not only is the meat industry a major source of water pollution, it also depletes water resources directly. California devotes more acres to growing alfalfa than any other crop (Bland, 2012). The alfalfa is primarily grown for feeding livestock, and is a crop that needs a lot of water to grow (Bland, 2012). The amount of water used to grow California's alfalfa contributes to the declines in wild salmon runs (Bland, 2012), and the alfalfa grown specifically in Imperial Valley is ultimately causing the Colorado River to recede (Bland, 2012). Though the farming of crops for direct human consumption also contributes to the water pollution and water shortages, the amount of crops used for raising livestock are much greater than the crops grown for human consumption. In fact, the amount of crops grown to feed livestock is enough to end world hunger (Happy Cow, 2015). Of all the land in the world used for agriculture, 70% is devoted to the meat industry (Food and Agriculture Organization of the United Nations, 2006). This large amount of land is largely being wasted – one acre of land can be used to grow 20,000 pounds of potatoes, but only 165 pounds of edible meat (Happy Cow, 2015).

Economic consequences of purchasing meat

Some vegetarians report that a motivation to stop eating meat is the budgetary consequences of purchasing it (Baker, Thompson, & Palmer-Barnes, 2002; Dwyer et al., 1974; Rozin, Markwith, & Stoess, 1997). Though research has found that this concern is very infrequently the primary motivation vegetarians report for becoming vegetarian, it is nonetheless a benefit of vegetarianism that plays a role in an individual's decision to make and maintain such a dietary change.

Many vegetarian food options rival the nutritional value (e.g., protein and/or fiber content) of meat for a fraction of the price (Null & Feldman, 2011). For example, a five-and-a-half ounce steak contains the same amount of protein as approximately six-and-a-half slices of whole-wheat bread, but can cost more than five times the price (Null & Feldman, 2011). Plant foods cost less than meat products because the contained nutrients can be consumed first-hand – eating foods higher up the food-chain (e.g., animal products) has an associated cost. There are many more steps that go into producing meat than go into many other foods, and each of these steps adds to the overall price tag (Null & Feldman, 2011). One of these steps is the raising of the animal. The grain and water for the animal's consumption as well as the water to grow the grains to feed the animal are costs that increase the overall price of the final meat product. Additionally, the cost of meat products are inflated to cover the rancher's overhead for raising the animal and any medical treatments necessary to keep the animal healthy (e.g., veterinarian visits and check-ups, antibiotics, hormones; Null & Feldman, 2011). Another step in the production of meat is the processing and transportation of the product. This step includes the costs of labor and equipment for the animal's slaughter, processing, and packaging, as well as the

price of the resources needed to process (e.g., water and gasoline), package, and transport the meat (Null & Feldman, 2011).

In addition to the costs of purchasing meat, consuming meat can be costly in terms of medical expenses. As previously discussed, eating meat is associated with a variety of health risks. Two decades ago, it was estimated that due to the health consequences associated with meat consumption, the health care costs of eating meat were comparable to the health care costs of smoking – a whopping \$50 billion dollars each year (Brody, 1995). The combined costs associated with meat consumption and smoking are further estimated to be more than the costs needed to provide health care for all uninsured Americans (Brody, 1995).

Dislike of taste/texture of meat

Though perhaps not one of the more common motivations to be a vegetarian, some vegetarians do report that they refrain from eating meat simply due to a dislike of the taste and/or texture of meat (Beardsworth & Keil, 1992; Rozin, Markwith, & Stoess, 1997; Ruby, 2012), though only a few indicate that this is a primary motivation (Beardsworth & Keil, 1992).

Multiple motivations and shifts in motivations

Though there are certainly distinct motivations for becoming a vegetarian, research has found that many vegetarians identify more than one motivation as influential on their dietary choices (Beardsworth & Keil, 1992; Fox & Ward, 2008a). Sometimes these multiple motivations are rated as equally motivating, and sometimes a primary and secondary motivation are easily identified (Beardsworth & Keil, 1992). Furthermore, research has found that it is not uncommon for individuals' motivations for not eating meat to change over time (Beardsworth & Keil, 1992; Hamilton, 2006). For example, some people originally become vegetarian for health reasons, but become more concerned with animal welfare over time, and others have an opposite experience

– they became a vegetarian because of animal welfare concerns, but over time their motivation to remain vegetarian becomes primarily due to health reasons (Beardsworth & Keil, 1992).

What motivates non-vegetarians' decisions to reduce their meat consumption

Studies show that individuals who do eat meat but who actively reduce and limit their meat consumption do so for similar reasons vegetarians give for abstaining from meat (Ruby, 2012). Furthermore, the popularity of each reason given by non-vegetarians to reduce their own meat-consumption parallels the popularity of vegetarians' reasons; non-vegetarians primarily express concern about animal welfare in the meat industry. Books that discuss the consequences of the meat industry have experienced recent popularity and influence among non-vegetarians. One study found that college students who read Michael Pollan's (Pollan, 2006) book *The Omnivore's Dilemma* (named one of the ten best books of 2006; New York Times, 2006) were more reluctant to consume meat (Hormes et al., 2013).

Demographics, characteristics, and attitudes and beliefs of current vegetarians

Though the majority of the research on vegetarianism has focused on individuals' motivations for becoming vegetarian, another large domain of research on vegetarianism focuses on the characteristics and demographics of current vegetarians (e.g., Allen et al., 2000; Dwyer et al., 1974; Freeland-Graves et al., 1986; Hamilton, 1993; Lester, 1979; Ruby et al., 2013; West 1972).

Demographics and characteristics

Research consistently finds that, across cultures, more vegetarians are female than male (Barr & Chapman, 2002; Beardsworth & Bryman, 1999; Beardsworth & Keil, 1992; Gale et al., 2007; Hamilton, 1993; Heleski, Mertig, & Zanella, 2006; White & Frank, 1994; Worsley & Skrzypiec, 1998) and that females overall eat less meat than males (Beardsworth & Bryman,

1999; Beardsworth et al., 2002; White & Frank, 1994), particularly red meat (Rozin et al., 2012). Males are also more likely to endorse the belief that meat is necessary for a healthy diet (Beardsworth et al., 2002). Research also finds that American vegetarians tend to be, on average, more educated than the general American population (Beardsworth & Keil, 1992; Gale et al., 2007) and tend to have a higher household income than the average American household (White & Frank, 1994). Vegetarians also have been found to have more knowledge regarding health, engage in exercise more, and consume fewer calories and less fatty food than non-vegetarians (White & Frank, 1994; White, Seymour, & Frank, 1999). As compared to non-vegetarians, vegetarians have even been found to have higher well-being (Dwyer et al., 1974), more positive moods, and lower depression and anxiety scores (see Ruby, 2012 for a review of the literature); however, very few studies have investigated these relationships.

Attitudes and beliefs

A fair amount of research has also focused on the attitudes and beliefs of vegetarians and how they contrast with those of meat-eaters (see Ruby, 2012 and Ruby et al., 2013 for reviews of the literature). Not surprisingly, vegetarians tend to have more negative attitudes toward meat as compared to non-vegetarians (Barr & Chapman, 2002; Ruby, 2012). Research has overall found that vegetarians in Western society tend to be more liberal (Allen et al., 2000; Gale et al., 2007; White, Seymour, & Frank, 1999), have more concern for and endorse altruistic values such as equality, peace, and social justice (Allen et al., 2000; Ruby et al., 2013), and also have a greater concern for environmental and economic consequences of the food industry (Ruby et al., 2013). Vegetarians also tend to have more opposition toward violence (e.g., capital punishment; Hamilton, 2006) and more empathy toward others. Using fMRI scans, Filippi et al. (2010) found

that vegetarians and vegans show more activity in empathy-related areas in the brain when viewing depictions of human and animal suffering.

Demographics and characteristics of non-vegetarian meat reducers

Research on non-vegetarians who actively limit their meat consumption has demonstrated that such individuals are characteristically and demographically similar to vegetarians. Meat-reduction has been shown to be related to higher education and income levels (see Ruby, 2012 for a review of the literature).

Other research on vegetarianism

In addition to the majority of vegetarian research that has focused on who vegetarians are, what their beliefs, attitudes, and worldviews are, and what motivates their dietary lifestyle choices, a few smaller bodies of research on vegetarianism do exist.

Non-vegetarians' perceptions of vegetarianism

Some studies have examined how vegetarians are perceived by non-vegetarians, and with some exceptions, these studies find that vegetarians are generally viewed positively (Chin, Fisak, & Sims, 2002; Ruby, 2012). Females tend to view vegetarians more positively than males do (Chin, Fisak, & Sims, 2002), and one study even found that females considered the body odor of males on non-meat diets to be more attractive, pleasant, and intense than the body odor of males on meat diets (Havlicek & Lenochova, 2006). Other research has found that non-vegetarians view an individual who prefers vegetables to meat dishes as less masculine (Rozin et al., 2012), which is often a negative perception if the individual is a male. A study by Lea and Worsley (2003) investigated non-vegetarians' perceptions of why vegetarians become vegetarian in the first place. They found that non-vegetarians actually endorse health reasons as the most popular

reason individuals become vegetarian, which is actually the second most popular primary motivation given by vegetarians, as discussed previously.

Barriers to becoming a vegetarian

Just as much research has investigated the motivations for becoming vegetarian, a study conducted by Lea and Worsley (2003) looked at reasons why individuals *do not* become vegetarian. They found that the most common barrier to becoming vegetarian is an enjoyment of meat, followed by an unwillingness to alter eating habits. The third most popular barrier is the belief that one should consume meat in one's diet, followed closely by family tradition (an individual has always eaten meat), and a lack of familiarity with vegetarian diets. Lea and Worsley (2003) also found that females are more likely to report that a barrier to becoming a vegetarian is a spouse's/partner's or family's unwillingness to become vegetarian.

Factors in maintaining or abandoning vegetarianism

Another small line of research that has emerged on the topic of vegetarianism focuses on the factors that influence the continuation or abandonment of vegetarianism. One study found that personal factors (e.g., personal conviction, maintaining a healthy weight, skills and knowledge about vegetarian cooking), social networks (e.g., number of close vegetarian friends, support from family), and environmental resources (e.g., availability of vegetarian options) are the key components that influence an individual's maintenance of a vegetarian lifestyle (Jabs, Devine, & Sobal, 1998a). The few studies that have investigated the reasons why vegetarians abandon vegetarianism have found that health concerns (e.g., fatigue, anemia), missing the taste of meat, experiencing a change of living situation (e.g., moving in with non-vegetarians), and the perception that preparing vegetarian meals take too much time are the main reasons why vegetarians stop being vegetarian (Barr & Chapman, 2002).

What research needs to be conducted

Though the research on vegetarianism and meat-reduction has dramatically increased over the last few decades, this abundance of research focuses heavily on current vegetarians and perceptions of vegetarianism (Boyle, 2007; Ruby, 2012). Studies targeting non-vegetarians and attempting to influence their meat consumption are virtually non-existent. To the knowledge of the researcher, only two studies to date have examined the influence of information on non-vegetarians' attitudes toward meat consumption quantitatively. One study by Allen and Baines (2002) found that participants informed of the previously determined links between meat consumption and beliefs in social hierarchies and characteristics of social domination rated meat less favorably following learning the information. In another study, as previously mentioned, Hormes et al. (2013) discovered that college students who had read Michael Pollan's *The Omnivore's Dilemma* (Pollan, 2006) addressing the issues surrounding, and ramifications of, the meat industry and consuming meat were more reluctant to consume meat as compared to others who had not read the book. Despite the contributions of these two studies to knowledge regarding the influence of information on individuals' attitudes toward meat, no studies have yet examined the influence of different messages and feedback on non-vegetarian individuals' attitudes toward and willingness to reduce their meat consumption.

Tailoring Feedback/Messages

One particular area of research that has yet to be applied to the research on vegetarianism and meat reduction is the idea of tailoring messages and feedback to influence individuals' consumption of and attitudes toward meat. Previous research has repeatedly found that messages are more persuasive and effective in influencing individuals' behaviors and attitudes when tailored to an individual (e.g., Murray-Johnson & Witte, 2003; Rimal & Adkins, 2003).

Individuals pay more attention to messages that are personalized and tailored (Campbell et al., 1994; Rimal & Adkins, 2003; Ryan & Lauver, 2002), remember the information from tailored messages better (Rimal & Adkins, 2003; Ryan & Lauver, 2002), and furthermore like (Brug et al., 1996; Ryan & Lauver, 2002), agree with (Ryan & Lauver, 2002), and trust (Rimal & Adkins, 2003; Ryan & Lauver, 2002) the content of tailored messages more than non-tailored messages. Message tailoring can be (and has been) personalized to many different aspects of an individual, such as an individual's behaviors, personality characteristics, values, motivations, self-perceptions, and feelings (Brannon & Pilling, 2008). Given the effectiveness of tailored messages, it has been argued that messages encouraging health behaviors in particular should be tailored to an individual's personal factors in order to increase the appeal of the messages and make the messages more relevant and effective (Campbell et al., 1994; Murray-Johnson & Witte, 2003). Indeed a number of studies have done just that and have found support for the effectiveness of personally tailored messages on individuals' health behaviors (Bull et al., 2001; Ryan & Lauver, 2002).

Tailoring messages to behavior

One way that researchers have utilized personalization of messages to influence attitudes and behaviors is by personalizing messages in response to an individual's reported behavior (e.g., Brug et al., 1996; Pilling & Brannon, 2007; Ryan & Lauver, 2002). Such an approach is commonly referred to as a behavioral feedback approach. Tailoring messages to an individual's behavior has previously been demonstrated to be more persuasive and effective than a social norms marketing approach that tailors messages to a group of people rather than to the behaviors of individuals (Brannon & Pilling, 2008).

Tailoring messages to behavior to encourage healthier behaviors

Tailoring messages based on an individual's behavior has often been successfully implemented to specifically encourage healthier behavior. Several studies have previously used this message tailoring approach and successfully increased health-related behavior compliance (see Kroeze, Werkman, & Brug, 2006 for a review of the literature). Specifically, studies have successfully encouraged healthy sun behavior (Parrott et al., 1999; Parrott et al., 1998), physical activity (Bull, Kreuter, & Scharff, 1999; DeBar et al., 2009; Friedman et al., 1998; Kreuter & Strecher, 1996; Rosen, 2000), weight loss (Bauer, de Niet, Timman, & Kordy, 2010; Foree-Gävert & Gävert, 1980) and weight maintenance (Foree-Gävert & Gävert, 1980), and have also been implemented to encourage reductions in alcohol consumption (Baer et al., 1992; Marlatt et al., 1998; Miller, Sovereign & Krege, 1988; Neighbors, Larimer, & Lewis, 2004; Walters, 2000; Walters, Bennett, & Miller, 2000) and smoking (Strecher et al., 1994; Prochaska et al., 1993). Many studies have also successfully utilized message tailoring to specifically target healthy dietary habits (Brug, Campbell & van Assema, 1999; Brug et al., 1996; Campbell et al., 1994; DeBar et al., 2009; Glasgow, Toobert, & Hampson, 1996; Winett et al., 1988) such as reducing fat consumption (Brug et al., 1996; Campbell et al., 1994; Kroeze, Werkman, & Brug, 2006; Wright et al., 2011), reducing cholesterol intake (Hopp, 1992), and increasing fruit (Bech-Larson & Grønhøj, 2013; Brug et al., 1996; Campbell et al., 1994; Delichatsios et al., 2001; Wright et al., 2011; Kroeze, Werkman, & Brug, 2006) and vegetable consumption (Bech-Larson, & Grønhøj, 2013; Brug et al., 1996; Campbell et al., 1994; Delichatsios et al., 2001; Kroeze, Werkman, & Brug, 2006). Some studies have even successfully employed individual message tailoring to encourage protein and calorie consumption in hospitalized anorexic (Agras, Barlow, Chapin, Abel, & Leitenberg, 1974 as cited in Mahon et al., 1984) and severe burn (Mahon et al., 1984) patients.

These studies most often use written feedback tailored to an individual's reported food consumption or another indication of an individual's eating habits. For example, Winett et al. (1988) found that participants who received personalized written feedback on their weekly food purchases made more food purchase changes as compared to other methods that attempted to reduce fat consumption and price spent on groceries. This personalized written feedback consisted of the costs for purchased food items and the overall carbohydrate, protein, total fat, and saturated fat percentages of the participants' purchases. This information was also accompanied with statements identifying how far above or below each category (e.g., total fat) percentage was as compared to the specified National Cancer Institute's (NCI) goals (e.g., 40% total fat as compared to the NCI's recommended 30% total fat; Winett et al., 1988). Similar to Winett et al.'s (1988) comparison of individuals' food purchase content to the NCI percentage recommendations, other studies provide tailored feedback to individuals regarding their eating behaviors by comparing an individual's food consumption to peer group food consumption norms (Brug et al., 1996; Campbell et al., 1994). Brug et al. (1996), for example, paired participants' fat, fruit, and vegetable intake scores with the average fat, fruit, and vegetable intake scores for each individual's sex group as a feedback method in order to give participants a norm reference with which to evaluate their scores. They found that in doing so, participants reported more positive attitudes toward changing their dietary habits than did participants who only received general nutrition information. Furthermore, Brug et al. (1996) found that the tailored feedback was effective at influencing participants' actual eating habits to be healthier (e.g., consuming more fruits and vegetables and less fat).

Researchers have suggested that making feedback concrete and explicit (e.g., numerical blood pressure and cholesterol readings) is the most effective behavioral feedback method for

encouraging lifestyle change (Becker & Janz, 1987 as cited in Hopp, 1992; Ryan & Lauver, 2002; Schoenbach, Wagner, & Beery, 1987 as cited in Hopp, 1992). Furthermore, coupling specific feedback with suggested behavior changes further increases the likelihood of lifestyle changes (Havas et al., 1989 as cited in Hopp, 1992; Havas et al., 1988 as cited in Hopp, 1992). For example, based on participants' reports of how frequently they eat certain foods, Campbell et al. (1994) provided participants with information regarding how many servings of fats, fruits, and vegetables they consumed each day. Participants who were not meeting suggested guidelines (e.g., eating more servings of fat or eating too few servings of fruits and vegetables than recommended) were given diet tips and recipes that provided participants with tangible advice how to improve their dietary lifestyle (Campbell et al., 1994). Campbell et al. (1994) found that when compared to participants who received no nutrition information and participants who received general nutrition and dietary recommendations, participants who received personalized nutrition feedback significantly improved their dietary habits by reducing their total and saturated fat intake.

Tailoring messages to behavior to encourage less meat consumption

To the extent of the researcher's knowledge, only one published study to date has attempted to influence individuals' meat consumption using tailored behavioral feedback (Delichatsios et al., 2001). Delichatsios et al. (2001) attempted to encourage individuals to increase their fruit and vegetable consumption as well as decrease their red meat consumption to overall achieve better health. Participants utilized an interactive computer system that asked them regularly about their eating habits (e.g., "How many apples and pears have you eaten in the past 3 days?" Delichatsios et al., 2001, p. 218). Based on participants' responses, the computer system provided feedback messages to encourage healthier choices (e.g., "It appears you average

1 piece of fruit a day...How about between now and your next call that you try to eat 3 fruits a day?" Delichatsios et al., 2001, p. 218). Delichatsios et al. (2001) found that, as compared to a control group, participants who frequently reported their eating habits and received personalized feedback reported eating more vegetables, less red and processed meats, more whole fat dairy and whole grain foods, and consumed more nutrients and vitamins. Though Delichatsios et al.'s (2001) study did attempt to reduce individuals' red meat consumption, this goal was not the sole focus of the study. Additionally, the researchers only focused on decreasing individuals' *red* meat consumption and did not attempt to reduce individuals' overall meat consumption. The present dissertation not only aims to reduce individuals' overall intended meat consumption (not just red meat), but also aims to influence individuals' *attitudes* toward meat consumption using messages tailored to individuals' reported meat consumption habits.

Tailoring messages to self-schemas

An alternative way that researchers have utilized personalization of messages to influence attitudes and behaviors is by personalizing messages to aspects of an individual's personality, rather than to their behavior as previously discussed. As people are particularly responsive to stimuli that is relevant to themselves (Brannon & McCabe, 2002; Markus & Wurf, 1987), tailoring messages to a person's personality and how they see themselves is particularly effective in increasing attitude and behavior compliance (Pilling & Brannon, 2007). One specific way that messages can be tailored to an individual's personality is to tailor messages to a person's self-schema. As a cognitive schema is a mental representation of a concept (Fiske & Taylor, 1991 as cited by Brannon & McCabe, 2002; Stillings et al., 1987 as cited by Brannon & Brock, 1994), *self*-schemas are cognitive frameworks that provide a comprehensive view of oneself based on multiple aspects of one's personality. In other words, a self-schema is an integration of

information that an individual has about him/herself (Sentis & Markus, 1986 as cited by Brannon & Brock, 1994), rather like a summary. These self-“summaries” consist of the most important beliefs an individual has about him/herself (Brannon & McCabe, 2002). Self-schemas are believed to influence the way individuals process information (Cacioppo et al., 1996; Markus & Wurf, 1987; Petty, Wheeler, & Bizer, 2000), as well as an individual’s goals, motivations, behaviors, affect, social perceptions, social comparisons, and social interactions (Markus & Wurf, 1987). Previous studies that have tailored messages to a person’s self-schema have been more successful than non-tailored messages in encouraging behavior and attitude change (Brannon & Brock, 1994; Brannon & McCabe, 2002; Brannon & Pilling, 2008; Brock, Brannon, & Bridgwater, 1990; Cacioppo, Petty, & Sidera, 1982; Sentis & Markus, 1986 as cited by Brannon & Brock, 1994).

Tailoring messages to self-schemas to encourage healthier behaviors

Previous research has repeatedly demonstrated that tailoring messages to individuals’ self-schemas increases the effectiveness of messages encouraging healthy behaviors (Brannon & Brock, 1994; Brannon & McCabe, 2002; Brock, Brannon, & Bridgwater, 1990; Pease, Brannon, & Pilling, 2006; Pilling & Brannon, 2007). Specifically, studies have found success with self-schema tailored messages in encouraging responsible drinking (Miller, 2009; Pease, Brannon, & Pilling, 2006; Pilling & Brannon, 2007), responsible sexual behavior (Pease, Brannon, & Pilling, 2006), and improving knowledge about AIDS (Brannon & McCabe, 2002). In addition to the successes of self-schema message tailoring to encourage healthy behaviors, some studies have specifically used self-schema tailored messages to encourage healthier dietary choices. For example, Brock, Brannon, and Bridgwater (1990) successfully used messages tailored to self-schemas to encourage previous dieters to return to their dieting program. There are no known

studies to date that have used self-schema message tailoring to encourage reduction of or complete elimination of meat consumption in one's diet. Thus, the present dissertation aims to investigate the influence of self-schema tailored messages on individuals' attitudes toward meat and intentions to eat less meat.

Tailoring messages to self-schemas using four self-schemas

The majority of the past research on tailoring messages to individuals' self-schemas have utilized a specific self-schema categorization method that has repeatedly been demonstrated to be effective (e.g., Brannon & Brock, 1994; Brannon & McCabe, 2002; Brock, Brannon, & Bridgwater, 1990; Pease, Brannon, & Pilling, 2006; Pilling & Brannon, 2007), reliable (Brannon & Brock, 1994), and valid (Brock, Brannon, & Bridgwater, 1990). Participants are simply asked to choose one of four personality schemas that they feel is most characteristic of them (Lowry, 1987 as cited by Brannon & Brock, 1994) – researchers have found that individuals are easily able to use this schema organization to categorize themselves (Brock, Brannon, & Bridgwater, 1990). Originally proposed by Keirse and Bates (1978 as cited in Brannon & Brock, 1994), the four self-schemas are an alternative to the Myers-Briggs Type Indicator (MBTI) which consists of 16 different personality schemas. Keirse and Bates' four schema types are labeled as responsible, adventurous, compassionate, and logical. Each schema is accompanied with four adjectives that describe the personality type as well as a description using a series of "I am" statements. The responsible self-schema is characterized as being responsible, dependable, helpful, and sensible; the adventurous schema is described as adventuresome, skillful, competitive, and spontaneous; the compassionate schema type is characterized as warm, communicative, compassionate, and feeling; and the logical schema type is described as being versatile, wise, conceptual, and curious. After participants choose one of the four personality

schemas that they feel best characterizes their perception of themselves, they then receive a message regarding a health issue tailored to their chosen schema type that attempts to persuade their attitudes and/or behaviors.

For example, Pilling and Brannon (2007) tailored brief (2-5 sentences) anti-binge drinking messages to participants' self-schemas using the four schema types. The responsible schema tailored message emphasized the irresponsibility of binge drinking and argued that excessive alcohol consumption interferes with a person's ability to be dependable and helpful, whereas the message tailored to the adventurous schema type pointed out the depressant qualities of alcohol and argued that engaging in binge drinking would actually limit fun and excitement and an intoxicated person would not be able to thoroughly enjoy parties and activities. The message tailored to the compassionate self-schema emphasized that excess alcohol consumption hinders communication and interaction with others and can have a negative impact on relationships. The logical schema tailored message stated that binge drinking kills brain cells and thus limits a person's ability to rationalize and think. The present dissertation likewise tailors messages encouraging less meat consumption to individuals' self-schemas using the four self-schema profiles (Lowry, 1987 as cited by Brannon & Brock, 1994) in attempts to reduce individuals' intentions to consume meat and alter individuals' attitudes toward meat.

Tailoring messages to egoistic and altruistic motivations

Another way that researchers have increased compliance and effectively influenced individuals' attitudes and behaviors is by tailoring messages to be either egoistic (self-oriented) or altruistic (others-oriented). Egoistic tailored messages emphasize the benefits or consequences for oneself, whereas altruistic tailored messages emphasize the benefits or consequences for others. For example, an egoistic tailored message encouraging reduced meat consumption might

focus primarily on what an individual has to gain from reducing his/her meat consumption. Conversely, an altruistic tailored message might emphasize how an individuals' meat consumption reduction could benefit others. Many studies have investigated a variety of prosocial attitudes and behaviors to determine whether altruistic or egoistic motivations are more prominent. Participants in such studies are selected on the basis of their interest in a specific issue (e.g., environmental concerns) or engagement in a specific behavior (e.g., volunteering, giving) and are asked to report the reason(s) why they care (Schultz, 2000; Schultz & Zelezny, 1998) and/or take action (e.g., volunteer or give money). The provided reasons are then categorized as either being altruistic or egoistic. Some of these studies conclude that altruistic concerns are more common than egoistic concerns (Schultz, 2002; Schulz et al., unpublished paper as cited in Schultz & Zelezny, 2003); however, others conclude that individuals' motivations often cannot be categorized as distinctly egoistic or altruistic due to many individuals indicating both altruistic and egoistic reasons as well as many reasons being a combination of both altruism and egoism (Clary & Snyder, 1999; De Dreu, 2006).

Of more relevance to the current study, some researchers have gone beyond categorizing individuals' reasons for prosocial behavior and attitudes as altruistic and/or egoistic and have turned the tables in order to determine which type of reason is more effective at encouraging prosocial behavior. For example, studies by Gopalan, Brannon, and others (Gopalan & Brannon, 2010; Gopalan, Miller, & Brannon, 2012) have utilized egoistic and altruistic message tailoring to encourage family members' support for and appreciation of a family member that acts as a caregiver to an elderly parent. In Gopalan and Brannon's 2010 study, participants read either a control, altruistic, or egoistic message regarding family caregiving stress. The control message only gave general information about the stress a family caregiver experiences. The altruistic

message included the information from the control message, but also highlighted the importance of appreciating the family caregiver and the positive influence that such appreciation can have on the family caregiver's well-being and feelings of stress. The egoistic message, like the altruistic message, included the information from the control message and highlighted the importance of appreciating the family caregiver; however, this message instead focused on the self-serving reasons one should appreciate the family caregiver. These self-serving reasons included avoiding guilt for not being supportive and being supportive so that the family caregiver will continue to take care of the rest of the family (including oneself). Paralleling the finding that altruistic reasons are more commonly given as motivation for prosocial behavior (Schultz, 2002; Schulz et al., unpublished paper as cited in Schultz & Zelezny, 2003), Gopalan and Brannon's findings suggest that altruistic appeals are more effective than egoistic or control appeals at encouraging family caregiver support. Other researchers investigating various other prosocial behaviors (e.g., volunteering) have also found that altruistic messages are overall more effective than egoistic messages in encouraging prosocial behavior (e.g., Stiff et al., 1987). On the other hand, some others have found that altruistic and egoistic arguments are equally persuasive (e.g., Feiler, Tost, & Grant, 2012).

Tailoring messages to egoistic and altruistic motivations to encourage healthier behaviors

Though no studies have examined the effectiveness of altruistic and egoistic tailored messages to influence individuals' future intentions to consume meat and individuals' attitudes toward meat, one study by Kareklas, Carlson, and Muehling (2014) utilized altruistic and egoistic tailoring to specifically influence individuals' organic food purchase decisions. They found that altruistic (e.g., buying organic food is more environmentally friendly) and egoistic

(e.g., buying organic food is healthier) advertisements promoting purchasing organic food were both similarly effective in influencing participants' attitudes toward and intent to purchase organic food products. Though purchasing organic food products is not necessarily a behavior that goes hand in hand with abstaining from meat or reducing one's meat consumption, the four reasons outlined by Kareklas, Carlson, and Muehling (2014) why people purchase, or do not purchase, organic food are the same reasons that people give for becoming vegetarian or reducing their meat consumption (as previously elaborated). Kareklas, Carlson, and Muehling (2014) argue that concerns for the humane treatment of livestock, personal health benefits, environment, and the cost of organic food products are the factors that influence whether an individual will or will not purchase organic food products. They further classify each of these reasons as being either altruistic (concern for the humane treatment of livestock, concern for the environment) or egoistic (personal health benefits, cost of organic food products).

Though the reasons individuals give for abstaining from meat and purchasing organic food products tend to be either altruistic or egoistic by nature, each of these reasons have both benefits and consequences to the self and others that can be highlighted. Kaplan (2000) argued that environmental appeals can be tailored to egoistic motivations despite the natural arguments often being other-oriented (DeYoung, 1990). Kaplan (2000) specifically proposes that focusing on the rewards to oneself such as feeling competent, being needed, making a difference, and improving life are specific ways that environmental messages can be framed egoistically. It naturally follows, then, that moral and ethical appeals – which often lend themselves as altruistic arguments – could also be reframed to be egoistic by focusing on potential benefits and consequences for oneself. Furthermore, health concerns and economic concerns – arguments that

tend to focus on egoistic benefits and consequences – could also be reframed to focus on the benefits/consequences for others, rather than for the self.

Though Kaplan (2000) argues that environmental appeals can be tailored to egoistic and altruistic motivations, he does not actually test the effectiveness of doing so. Thus, one goal of the present dissertation is to investigate the effectiveness of egoistic and altruistic tailored environmental messages on individuals' attitudes and behaviors, specifically regarding meat consumption. Furthermore, as noted earlier, Kaplan (2000) exclusively focuses on the tailoring of environmental appeals and does not entertain the egoistic and altruistic tailoring of other topics that may be of interest to individuals.

Tailoring messages to values and motivations

Kaplan (2000) proposed that environmental messages can be tailored to be oriented either to the self or others. Because Kaplan's study was only concerned with environmental concerns, it lacks the inclusion of other topics that are often valued by individuals that motivate their behavior. In light of the discussion regarding tailoring messages, the present dissertation seeks to extend Kaplan's study by including other topics beyond environmental sustainability concerns that often motivate individuals to reduce their meat consumption or give up eating meat entirely and investigate the effectiveness of messages customized to a topic that an individual values and is motivated by.

A person's values can be defined as his/her standards that motivate and guide behavior (Schwartz & Bilsky, 1987), and previous studies have had success influencing individuals' behaviors and attitudes by tailoring messages to one's values and motivations. Clary et al. (1994) had participants rate a series of motivations (e.g., concern for others, desire to gain new experiences and learn new skills, concern for relationships with others, career-related benefits,

avoidance of guilt) in order of importance and then gave participants a message that encouraged volunteering. Participants received a message that either was or was not matched to their most importantly ranked motivation (Clary et al., 1994). They found that participants who received a message matching their previously rated most important motivation reported a higher intention to volunteer in the future (Clary et al., 1994). Subsequent studies by Clary et al. (1998) have found further support for the tailoring of messages to a person's motivations in increasing volunteer behavior and attitudes. Another study by Schultz and Zelezny (2003) investigated the reasons behind individuals' environmental behaviors and found that a person's values influences his/her lifestyle choices regarding environmental issues. Additionally, Snyder and DeBono (1985) found that a message customized to appeal to image was more persuasive for individuals who are concerned with how they appear to others.

Due to the influence of value/motivation tailored messages on individuals' attitudes and behaviors, many researchers have called for more studies to utilize value-relevant arguments (e.g., messages tailored to values and motivations) when possible in order to increase the effects of the message (Petty, Wheeler, & Bizer, 2000; Schultz & Zelezny, 2003). Therefore, the current dissertation investigates the effectiveness of messages that are tailored to individuals' values by using the reasons vegetarians and meat-reducers frequently give for choosing to abstain from or eat less meat (moral and ethical concerns, health and medical concerns, environmental sustainability concerns, and economic concerns).

Dissertation Overview

As previously elaborated, the majority of existing research on vegetarianism and meat reduction focuses on current vegetarians and meat reducers and perceptions of vegetarianism (Boyle, 2007; Ruby, 2012). Since vegetarianism and meat-consumption reduction is such a

rapidly-growing trend (Ginsberg, 2013; White & Frank, 1994) that has multiple health benefits (e.g., White & Frank, 1994; White, Seymour, & Frank, 1999), it is becoming of utmost importance that social scientists begin focusing research on non-vegetarians (Ruby, 2012) and investigating ways to encourage reductions in meat consumption. Given the research supporting the effectiveness of tailored messages on individuals' health behaviors (Bull et al., 2001; Ryan & Lauver, 2002), it seems a logical extension of the research to individually tailor messages to encourage meat consumption reduction. Thus, the present dissertation seeks to determine the effectiveness of tailored meat consumption reduction messages in influencing individuals' intentions to consume meat and attitudes toward meat consumption. Specifically, this dissertation aims to investigate the effectiveness of messages tailored to an individual's behavior (a behavioral feedback approach), messages tailored to an individual's self-schema, egoistic and altruistic tailored messages, and messages tailored to an individual's values and motivations.

Tailoring messages to behavior

To determine the effectiveness of tailoring messages to behavior (i.e., behavioral feedback) in reducing individuals' attitudes toward and intention to consume meat, participants in the present dissertation were exposed to messages regarding the consequences of meat consumption and benefits of meat consumption reduction. The messages either provided feedback regarding the consequences of the individual's own meat consumption habits (personalized feedback) or the consequences of the average American's meat consumption habits (generalized feedback). It was hypothesized that providing feedback personalized to an individual's eating habits would be more effective at reducing individuals' intended meat consumption and attitudes toward meat than would generalized feedback regarding the

consequences of the average American's meat consumption and potential outcomes of the average American's overall meat consumption reduction.

Tailoring messages to self-schemas

To investigate the effectiveness of tailoring messages to an individual's self-schema on individuals' attitudes toward and intended consumption of meat, the dissertation exposed participants to a message that either was or was not oriented to his/her self-schema. Participants' self-schemas were assessed using the four self-schema types (Lowry, 1987 as cited by Brannon & Brock, 1994) in which participants selected the schema type (responsible, adventurous, compassionate, or logical) that they felt best characterizes them (as previously explained). Messages were then worded such as to appeal to each of the four schema types, and participants either received a message that was tailored to or was not tailored to their selected self-schema. It was hypothesized that self-schema oriented messages would be more effective than non-self-schema oriented messages at reducing individuals' intended meat consumption and attitudes toward meat.

Tailoring messages to egoism and altruism

The present dissertation also assessed the effectiveness of egoistically and altruistically tailored messages on individuals' future intentions to consume meat and attitudes toward meat. Participants read messages framing the consequences of eating meat and the benefits of eating less or eating no meat as either self-oriented (egoistic) or other-oriented (altruistic). As reviewed earlier, previous research comparing altruistic and egoistic oriented messages offer conflicting results regarding whether the message orientations differ in their effectiveness. Some previous research shows that altruistic oriented messages are more effective than egoistic oriented messages (e.g., Gopalan & Brannon, 2010; Stiff et al., 1987) while others have found that

altruistic and egoistic oriented arguments are equally persuasive (e.g., Feiler, Tost, & Grant, 2012; Kareklas, Carlson, & Muehling, 2014). Consequently, two competing hypotheses were proposed for the present dissertation: 1) altruistic and egoistic oriented messages would be equally effective in reducing individuals' intended meat consumption and attitudes toward meat; 2) altruistic oriented messages would be more effective than egoistic oriented messages in reducing individuals' intended meat consumption and attitudes toward meat. Though not as supported by research, it was also considered possible that egoistic oriented messages would be more effective than altruistic oriented messages in reducing individuals' intended meat consumption and attitudes toward meat. Additionally, it was hypothesized that both altruistic and egoistic oriented messages would be more effective than non-oriented messages in reducing individuals' intended meat consumption and attitudes toward meat.

Tailoring messages to values and motivations

To tailor meat-reduction messages to individuals' values and motivations, the present dissertation utilized the four most common reasons why vegetarians become vegetarian and meat reducers eat less meat: moral and ethical concerns, health and medical concerns, environmental sustainability concerns, and economic concerns. Participants identified whether they most value and are motivated by animal welfare, personal health, environmental sustainability, or personal finances in regard to the issues surrounding meat consumption and then received a message that was either tailored or not tailored to their selected value/motivation. It was hypothesized that messages tailored to an individuals' values and motivations would be more persuasive than non-tailored messages at encouraging meat consumption reduction and less favorable attitudes toward meat.

It is important to note that egoism and altruism can be considered values that can motivate an individual. For example, particular individuals may be more others-oriented and concerned about the well-being of others more than their own. It is justifiable that concern for others could be an overarching value that an individual is motivated by. Conversely, some individuals may place more value on their own interests and well-being as compared to others' and be more motivated by potential consequences and benefits to themselves rather than consequences and benefits to others. Despite the arguments that could be made to consider egoism and altruism as values and motivations, for the purposes of this dissertation, egoism and altruism were examined as distinct from the four previously outlined topics that individuals may value and be motivated by (animal welfare, personal health, environmental sustainability, and personal finances).

Tailoring messages to more than one aspect of the individual

In addition to investigating the efficacy of tailored messages in regard to the four aspects as explained above, it was of interest to determine the combined effects of these tailoring methods to assess whether messages tailored to an individual in more than one way (e.g., a message oriented to one's self-schema *and* tailored to one's values/motivations) are *more* effective than messages tailored to just one aspect (e.g., oriented to an individual's self-schema) and non-tailored messages. Specifically, it was of interest whether messages that are tailored to an individual's reported values/motivations *and* to either specific to an individual's meat consumption habits, oriented to an individual's self-schema, oriented to egoism, or oriented to altruism are effective above and beyond messages targeting just one aspect (e.g., specific to an individual's behavior, oriented to an individual's self-schema, oriented to altruism, oriented to egoism, tailored to an individual's values) in reducing individuals' intended meat consumption

and attitudes toward meat. As past literature shows that tailoring messages to an individual is more effective than not tailoring messages (e.g., Murray-Johnson & Witte, 2003; Rimal & Adkins, 2003), it was hypothesized that messages that are targeted to *more* than one aspect of an individual would be *more* effective than messages targeted to only one aspect of an individual. Specifically, it was hypothesized that messages tailored to individuals' values *in addition* to being either personalized to individuals' behavior or oriented to individuals in some other way (e.g., oriented to individuals' self-schema, oriented to altruism, or oriented to egoism) would be more effective at reducing participants' intended meat consumption and altering individuals' attitudes toward meat than would messages only tailored to individuals' values *or* targeted to individuals in some other way (e.g., personalized to individuals' behavior, oriented to individuals' self-schema, oriented to altruism, or oriented to egoism).

The investigation of the previously mentioned types of tailoring was implemented using two studies. Each of the studies sought to determine the efficacy of different types of tailoring (e.g., behavior, self-schema, altruism, egoism, values) as compared to non-tailored messages in influencing individuals' intentions to consume meat and attitudes toward meat. The first study tailored messages to individuals' values and personalize feedback to individuals' behaviors (e.g., meat consumption habits). The second study tailored messages to individuals' values and oriented messages to either: individuals' self-schemas, altruism, or egoism.

Study 1

The first study investigated the influence of specific behavior feedback and value tailoring on individuals' intentions to consume meat and attitudes toward meat consumption. Participants either received feedback regarding the specific consequences of their own meat consumption habits (personalized feedback message) or feedback regarding the general

consequences of the average American's meat consumption (generalized feedback message). Furthermore, this feedback was either tailored or not tailored to the individual participants' self-reported values. As previously explained, participants identified whether they most value and are motivated by the issue of animal welfare, personal health, environmental sustainability, or personal finances in regard to meat consumption. For the purposes of Study 1, the value of personal health was separated more specifically into medical health and personal appearance.

Hypotheses

It was hypothesized that feedback that is both personalized to individuals' personal meat consumption and tailored to individuals' valued topics would be the most effective at reducing participants' intentions consume meat and their attitudes toward meat. Furthermore, it was hypothesized that feedback that is not personalized to individuals' personal meat consumption and not tailored to individuals' values would be less effective than any of the tailored or personalized feedback (e.g., feedback personalized to own meat consumption, feedback tailored to values, and feedback personalized to own meat consumption *and* tailored to values) but more effective than a control condition in which participants did not receive any feedback at all.

Study 2

The second study investigated the efficacy of self-schema, altruistic, and egoistic oriented messages as well as value-tailored messages on individuals' intention to reduce their meat consumption and their attitudes toward meat. Participants either received a message oriented to their self-schema, an altruistic oriented message, an egoistic oriented message, or a non-specific oriented message. Furthermore, each of these messages were either tailored or not tailored to individuals' self-reported values and motivations. As previously explained, participants identified whether they most value and are motivated by the issue of animal welfare, personal

health, environmental sustainability, or personal finances in regard to the issues surrounding meat consumption.

It is important to acknowledge that some of the content included in the self-schema, egoistic, and altruistic oriented messages overlap. For example, both the messages oriented to the compassionate self-schema and the egoistic oriented messages emphasize the importance of reducing one's meat consumption in order to benefit others. However, as previously mentioned, Kaplan (2000) argued that environmental messages could be approached from both an altruistic and egoistic perspective. It is therefore justifiable that each self-schema message can likewise be approached from both an altruistic and egoistic perspective. Thus, in order to isolate the effects of altruistic and egoistic arguments for the present study, self-schema oriented messages contained elements of both altruistic and egoistic arguments and the egoistic and altruistic oriented messages focused exclusively on either self- or other-oriented arguments.

Hypotheses

Similar to the hypotheses of Study 1, it was hypothesized that the messages that most target the individual (e.g., messages tailored to individuals' values *and* oriented to altruism, egoism, or an individuals' self-schema) would be more effective at reducing participants' intentions consume meat and their attitudes toward meat than would messages tailored to only one aspect. Furthermore, it was hypothesized that a message not tailored to individuals' values nor specifically oriented (e.g., not oriented to altruism, egoism, or an individuals' self-schema) would be less effective than any of the messages that are either tailored to individuals' values *or* oriented in some way (e.g., self-schema oriented, altruistic oriented, or egoism oriented) but more effective than a control condition in which participants received no meat reduction message. Two competing hypotheses were proposed regarding differences between altruistic and

egoistic oriented messages: 1) altruistic and egoistic oriented messages would be equally effective in reducing individuals' intended meat consumption and attitudes toward meat, or that 2) altruistic oriented messages would be more effective than egoistic oriented messages in reducing individuals' intended meat consumption and attitudes toward meat. There is currently no research that has compared the effectiveness of self-schema oriented messages and altruistic and egoistic oriented messages; therefore, Study 2 sought to answer the question how self-schema oriented messages compare to altruistic and egoistic oriented messages in encouraging meat reduction and producing more negative attitudes toward meat.

Chapter 2 - Study 1

Method

Participants

201 non-vegetarian/vegan participants in the United States were recruited through Amazon Mechanical Turk (MTurk; <http://www.mturk.com>; see Buhrmester, Kwang, & Gosling, 2011), a national workforce website run by Amazon, and were compensated \$0.10 for their participation in the online study. Of these 201 participants, 67 were male (33.3%), 131 were female (65.2%), and 3 (1.5%) preferred not to say their gender. Participants' ages ranged from 18 to 73, with an average age of 37 ($SD = 12$). The majority of the participants had completed high school ($N = 199$). About one-quarter of the participants ($N = 57$) reported that the highest level of education completed was some college, and around 30% of the participants ($N = 61$) reported that a 4-year degree was the highest level of education they had completed. Additionally, 21 participants (10.4%) reported that the highest level of education they had completed was a 2-year degree, and 28 participants (13.9%) had earned a graduate or professional degree. Two participants reported "other" as the highest level of education

completed, and three participants indicated that they preferred not to indicate their highest level of education completed.

Design

To investigate the influence of feedback personalized to individuals' behavior and most important value on individuals' intentions to consume meat and attitudes toward meat consumption, a 2 (*behavioral feedback: personalized feedback vs. generalized feedback*) x 2 (*values tailoring: tailored to values vs. not tailored to values*) between-subjects design study was conducted for Study 1. The independent variable *feedback personalization* is a between-subjects variable; participants received either *personalized feedback* or *generalized feedback*. Participants who received *personalized feedback* received feedback regarding the specific consequences of their own meat consumption habits (based on participants' self-reported meat consumption) and potential benefits of reducing their own meat consumption. Participants who received *generalized feedback* received feedback regarding the general consequences of society's meat consumption as a whole and the possible societal benefits of overall meat consumption reduction.

The other independent variable, *values tailoring*, is also a between-subjects variable. Before receiving feedback, participants chose one of five values that is most important to them. The five values for this study are: *animal well-being*, *personal medical health*, *personal appearance*, *environmental sustainability*, and *personal finances*. Participants who received *values tailored feedback* received feedback tailored to the value that the participants chose as most important to them. For example, *feedback tailored to the value personal appearance* only addresses the consequences of the consuming meat on one's appearance (e.g., calories and fat consumed). Participants who received *feedback not tailored to values* received feedback that

mentions the consequences of meat consumption – equally emphasizing the consequences of all five values: *animal well-being, personal medical health, personal appearance, environmental sustainability, and personal finances*.

In addition to the participants who were randomly assigned to receive feedback (either *personalized* or *generalized* which is either *tailored* or *not tailored to values*), some participants were randomly assigned to a control condition in which no feedback or values tailoring was received. Participants in the control condition completed the initial meat attitudes and consumption measures (see materials and procedure section below), but did not receive any feedback before reporting their intended future meat consumption and attitudes toward meat (see materials and procedure section below). In order to avoid any undesired priming, participants in the control condition reported the value of most importance to them (*animal well-being, personal medical health, personal appearance, environmental sustainability, personal finances*) after reporting their intended meat consumption.

The dependent variables for this study are individuals' intended consumption of meat and attitudes toward meat.

Materials and procedure

Participants completed the present study using an online survey created on Qualtrics which was distributed online through Amazon Mechanical Turk (MTurk; <http://www.mturk.com>). After reading and indicating agreement with the informed consent, participants proceeded to answer questions regarding their own meat consumption habits and attitudes toward meat.

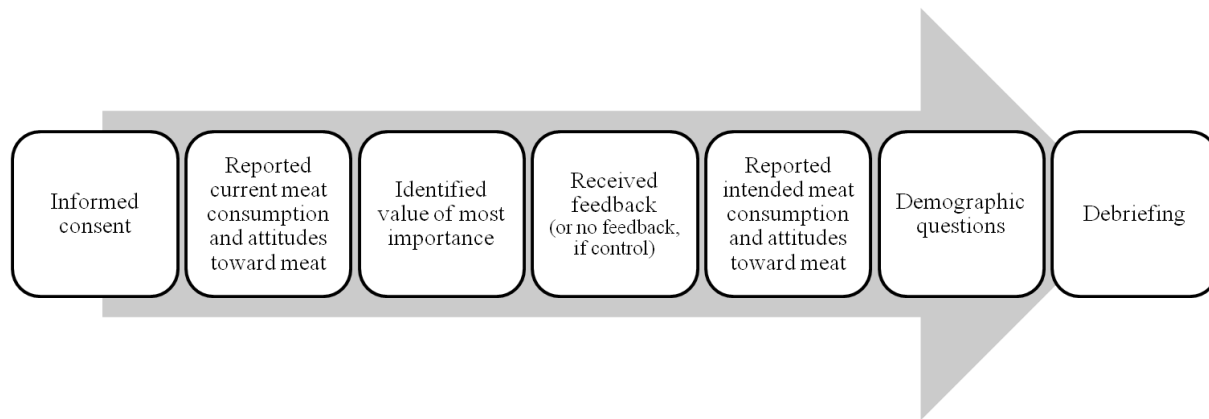


Figure 1. Procedure for Study 1.

Initial meat consumption and attitudes

Previous data collected has suggested that individuals' red meat, white meat (poultry), and seafood/fish consumption habits are not differentially affected by messages encouraging meat consumption reduction (Schnabelrauch Arndt, Brannon, & Haley, unpublished data); therefore, the present study asked participants questions regarding their overall attitudes toward and consumption of meat (not specifying what type of meat). Asking participants generally about meat without distinguishing between the types of meat (i.e., red meat, white meat/poultry, and seafood/fish) is a common practice among psychology researchers studying meat consumption (e.g., Allen & Baines, 2002; Allen et al., 2000).

Initial meat consumption.

To acquire a baseline meat consumption for participants as well as to gather information regarding individuals' meat consumption habits for later feedback tailoring, participants indicated their meat consumption habits (see Appendix A). Participants were first asked to identify how often they eat meat on a five-point scale ranging from *never* to *regularly*. As another measure of meat consumption habits, participants then selected one of eight descriptions that they feel best describes how often they eat meat (*never, once a year, a few times a year,*

once a month, a few times a month, once a week, a few times a week, daily). Participants then were asked to report at how many meals they consumed meat in the past three days (*0 meals to 9+ meals*). Participants were also asked to report how many servings of meat they consume in an average day. For this question, a serving of meat was defined as three ounces of meat and is compared to the size of a bar of soap, a computer mouse, and a deck of cards (American Cancer Society, 2014; American Heart Association, 2015). Participants were also informed that a quarter-pound hamburger patty is approximately one serving of meat. Lastly, participants were asked to report what percentage of the food they consume on an average day is meat.

Initial meat attitudes

Following participants' indications of their current meat consumption habits, participants then indicated their attitudes toward meat using two 7-point Likert scale questions taken from Allen and Baines (2002; see Appendix B). Participants first rated their attitude toward eating meat on a 1 (*eating meat is bad*) to 7 (*eating meat is good*) scale, and then rated their liking of eating meat on a 1 (*I very much dislike eating meat*) to 7 (*I very much like eating meat*) scale.

Values

After participants indicated their current meat consumption habits and attitudes toward meat, participants then ranked five topics in order of importance to them personally in regard to the issues surrounding meat (see Appendix C). The five topics are: *animal welfare, personal medical health, personal appearance, environmental sustainability, and personal finances*.

Feedback

As previously mentioned, participants in this 2 (*feedback personalization: personalized vs. generalized*) x 2 (*values tailoring: tailored to values vs. not tailored to values*) design study were randomly assigned to either receive *personalized feedback* regarding the specific

consequences of their own meat consumption habits or *generalized feedback* regarding the consequences of the average American's meat consumption. Furthermore, the feedback that they received was either *tailored* or *not tailored* to the individual participants' previously self-reported value of most importance (*animal well-being, personal medical health, personal appearance, environmental sustainability, personal finances*). Participants (who were not randomly assigned to the control group) thus received one of four types of feedback (see Figure 2 below): 1) personalized feedback regarding the consequences of individuals' own meat consumption habits tailored to the individual's previously reported value (for example: consequences of one's own meat consumption habits on one's personal appearance), 2) personalized feedback regarding the consequences of an individual's own meat consumption habits not tailored to the individual's previously reported value, 3) generalized feedback tailored only to the individual's value but not specific to the individual's own meat consumption (i.e., generally regarding the consequences of the average American's meat consumption), or 4) generalized feedback neither specific to the individual's own personal meat consumption nor tailored to the individual's reported value.

Control condition (no feedback)		Personalizing feedback to an individuals' meat habits	
		Personalized feedback (Feedback regarding the specific consequences of one's <i>own</i> meat consumption habits.)	Generalized feedback (Feedback regarding the consequences of <i>the average American's</i> meat consumption.)
Tailoring feedback to values	Feedback tailored to participants' values	<i>Personalized feedback tailored to values</i>	<i>Generalized feedback tailored to values</i>
	Feedback not tailored to participants' values	<i>Personalized feedback not tailored to values</i>	<i>Generalized feedback not tailored to values</i>

Figure 2. Visual display of conditions for Study 1.

Personalized feedback tailored to values

Participants randomly assigned to receive *personalized feedback tailored to their reported value* received feedback regarding the consequences of their own meat consumption regarding the value that they identified as most important to them (see Appendix D). In order to personalize feedback to be specific to participants' meat consumption habits, information in the personalized feedback tailored to values was customized based on participants' previously reported estimate number of servings of meat consumed on an average day ("*How many servings of meat do you consume in an average day?*"). Throughout each personalized feedback (as can be seen in Appendix D), there are numerous equations that are computed for each individual participant. For example, for a participant who reports that he/she consumes 2 servings of meat on an average day, the personalized feedback tailored to animal welfare would read that he/she is

responsible for the death of approximately 101 animals. The number 101 was calculated by multiplying 50.75 by the number of reported servings (e.g., 2), which is approximately 101.

Participants who ranked animal well-being as their most important value received *personalized feedback tailored to animal well-being* informing them how the amount of meat that they personally consume consequently affects the lives and well-being of animals. Participants were told how many animal deaths they are personally responsible for as a consequence of their personal meat consumption.

Participants who indicated that personal medical health is most important to them received *personalized feedback tailored to personal health* informing them approximately how much their meat consumption could be increasing their own personal cholesterol and blood pressure. Furthermore, participants received feedback informing them that meat consumption can increase their risk of heart disease, cancer, type II diabetes, and mortality.

Participants who ranked personal appearance as the value of most importance to them received *personalized feedback tailored to personal appearance* informing them of the number of calories and amount of fat they consume just from eating meat. A study by Fitch et al. (2009) displayed information on fast-food menu boards that informed participants how long they would have to run to burn off the calories for different fast-food menu items. Similarly, participants in the present study were informed how many minutes they would have to run in order to burn off the calories from meat that they consume.

Participants who indicated environmental sustainability was the value of primary importance to them received *personalized feedback tailored to environmental sustainability* informing them of the consequences their own personal meat consumption has on the environment. Specifically, they were informed how much water and gasoline are used to produce

the amount of meat that they personally consume. They were also informed how much carbon dioxide gasses are emitted into the environment each day as a result of their own personal meat consumption.

Participants who ranked personal finances as having the highest personal value received *personalized feedback tailored to personal finances* informing them of how much money they spend solely on meat products. Participants were also informed how much money they could save by reducing their own meat consumption.

Personalized feedback not tailored to values

Participants that were randomly assigned to receive *personalized feedback not tailored to the individuals' values* received personalized feedback regarding the consequences of their own meat consumption and potential benefits of reducing their own meat consumption; however, because this condition is not tailored to individuals' most important value, participants did not receive feedback regarding the consequences of their own meat consumption on all of the values, but each value was addressed in less depth than is included in the feedback tailored to values (see Appendix E). Just as the personalized feedback tailored to values, information in the personalized feedback not tailored to values was customized based on participants' previously reported estimate number of servings of meat consumed on an average day ("*How many servings of meat do you consume in an average day?*"). Throughout each personalized feedback (as can be seen in Appendix E), there are numerous equations that are computed for each individual participant. Individuals who received personalized feedback not tailored to values were informed based on their reported meat consumption how many animal deaths their personal meat consumption results in, how much cholesterol and blood pressure increases they could

experience, the number of calories and fat they consume, the amount of water and gasoline their meat consumption uses, and finally how much money they spend solely on meat products.

Generalized feedback tailored to values

Participants that were randomly assigned to receive *generalized feedback tailored to the individuals' reported value of importance* received feedback regarding the consequences of the average American's meat consumption regarding what they value (see Appendix F). These feedback messages are similar to the previously described *personalized feedback tailored to the individuals' values*; however, the *generalized feedback tailored to participants' values* contain information regarding the consequences of the average American's meat consumption, rather than highlighting the consequences of the participant's own meat consumption. Thus, participants either received *generalized feedback tailored to animal well-being* informing them of the number of animal deaths the average American's meat consumption is responsible for; *generalized feedback tailored to personal medical health* informing them of the consequences the average American's meat consumption has on their cholesterol levels, blood pressures, and the rates of heart disease, cancer, type II diabetes, and mortality; *generalized feedback tailored to personal appearance* informing them of the number of calories and amount of fat consumed by the average American from eating meat; *generalized feedback tailored to environmental sustainability* informing them of the amount of water and gasoline utilized for the average American's meat consumption; or *generalized feedback tailored to personal finances* informing them of the amount of money the average American spends on meat.

Generalized feedback not tailored to values

Participants randomly assigned to the *generalized feedback not tailored to values* condition received information on the consequences of the average American's meat

consumption, rather than highlighting the consequences for the individual (see Appendix G). This generalized feedback is not tailored to a particular value and thus the impact the average American's meat consumption has on each of the five value topics (*animals' well-being, society's medical health, society's physical appearance, the environment, and society's finances*) was included. The impact of the average American's meat consumption on each value was presented in less depth than in the *values tailored feedback*.

Post-feedback intended meat consumption and attitudes

Immediately following the feedback, participants were asked to indicate their intended meat consumption behavior and their attitudes toward meat.

Post-feedback intended meat consumption

Participants responded to six questions indicating their intentions to consume meat after reading the feedback (see Appendix H). Participants first indicated how willing they would be to reduce their meat consumption on a scale ranging from 1 (*not at all willing to reduce the amount of meat I eat even a little*) to 5 (*very willing to stop eating meat entirely*). Participants then were asked the same five questions regarding their meat consumption that they were asked before receiving their feedback. These post-feedback questions, however, asked participants about their *intended* meat consumption rather than their current meat consumption habits. They were first asked to identify how often they intend to eat meat in the future on a five-point scale ranging from *never* to *regularly*. As another measure of meat consumption habits, participants then selected one of eight descriptions that they feel best describes how often they intend to eat meat in the future (*never, once a year, a few times a year, once a month, a few times a month, once a week, a few times a week, daily*). Participants then were asked to report at how many meals they intend to consume meat in the next three days (*0 meals to 9+ meals*) and how many servings of

meat they intend to eat in an average day. Finally, participants were asked to report what percentage of food that they intend to consume on an average day will be meat.

Post-feedback meat attitudes

Following participants' indications of their intended meat consumption habits, participants then proceeded to again indicate their attitudes toward meat using the two 7-point questions from Allen and Baines (2002; see Appendix I). Participants first rated their attitude toward eating meat on a 1 (*eating meat is bad*) to 7 (*eating meat is good*) scale, and then rated their liking of meat on a 1 (*I very much dislike eating meat*) to 7 (*I very much like eating meat*) scale.

Demographic questions

Finally, participants were asked to report their age, the gender with which they identify, and the highest level of education that they completed (*less than high school, high school, some college, 2-year degree, 4-year degree, graduate or professional degree, other*).

Debriefing

Upon the completion of the study, participants were be debriefed about the study and thanked for their participation.

Results

Dependent measures

For each of the following analyses, the dependent measures to be tested include participants' post-feedback responses (see Appendices H and I). Thus, each mentioned analysis is conducted on each of the following post-feedback dependent measures:

- 1) Participants' willingness to reduce their meat consumption (*not at all willing to reduce the amount of meat I eat even a little – very willing to stop eating meat entirely*).
- 2) Participants' intended frequency of meat consumption (*never – regularly*).
- 3) Participants' intended frequency of meat consumption (*never – daily*).
- 4) Participants' intended number of meals including meat to be consumed in the next three days (*0 meals – 9+ meals*).
- 5) Participants' number of intended daily meat serving consumption (*free response*).
- 6) Participants' intended daily percentage of food consumed that is meat (*0% - 100%*).
- 7) Participants' attitude toward eating meat (*eating meat is bad – eating meat is good*).
- 8) Participants' liking of eating meat (*I very much dislike eating meat – I very much like eating meat*).

Though each of the above measures are similar at face value, it is unknown whether one of these measures is a better measure of meat consumption habits/attitudes than the others. Thus, aggregating participants' responses on the measures may mask possible effects. For this reason, the analyses in this study are conducted separately on each of the post-feedback dependent measures. It is acknowledged that analyzing dependent variables separately results in more analyses conducted, which in turn can increase Type I error rates. The results of the analyses conducted are overall non-significant; however, had the results been significant, it would have been appropriate (and necessary) to adjust *p*-values to make results more conservative in order to reduce the possibility of Type I errors.

Participants

Initially, 201 participants completed Study 1. Though all of these 201 participants identified themselves as non-vegetarian and non-vegan, 22 participants (10% of the sample) reported meat consumption habits and attitudes toward meat that were much lower than the rest of the sample. Because these individuals did not seem to eat as much meat as the rest of the sample and may very well be considered meat-reducers, they were excluded from analyses. Participants were thus excluded if they reported that: 1) they seldom or never eat meat, 2) they do not eat meat on [at least] a weekly basis, 3) they consumed no meals in the past three days containing meat, 4) they eat zero servings of meat on an average day, 5) less than 10% of what they eat on an average day is meat, 6) they believe that eating meat is bad (as indicated by a 1 or 2 rating on the attitude toward meat scale), 7) they dislike eating meat (as indicated by a 1 or 2 rating on the liking of meat scale). Thus, the breakdown of the number of participants from Study 1 excluded from the analyses are as follows: 3 participants who reported that they seldom eat meat, 2 participants who reported that they only eat meat once a month, 3 participants who reported that they only eat meat a few times a month, 2 participants who reported that they ate zero meals containing meat in the past three days, 2 participants who reported that they eat zero servings of meat in an average day, 8 participants who reported that less than 10% of what they eat on an average day is meat, 1 participant who rated a 2 on the 1 (*eating meat is bad*) – 5 (*eating meat is good*) scale, and 1 participant who rated a 2 on the 1 (*I very much dislike eating meat*) – 5 (*I very much like eating meat*) scale.

Excluding these 22 participants did not drastically change the overall demographics of the sample. Of the 179 participants that were included in the analyses, 64 (35.8%) were males, 114 (63.7%) were females, and 1 participant preferred not to disclose their gender. Participants'

ages ranged from 19 to 73, and the average age was 37 ($SD = 12$). The majority of the participants had completed high school ($N = 177$). About $\frac{1}{4}$ of the participants reported that the highest level of education completed was some college ($N = 49$). Around 30% of the participants reported that a 4-year degree was the highest level of education they had completed ($N = 56$). Additionally, 18 (10.1%) participants reported that the highest level of education they had completed was a 2-year degree, and 27 (15%) of the participants had earned a graduate or professional degree. Finally, 1 participant reported “other” as the highest level of education completed, and 1 male participant indicated that he preferred not to say his highest level of education completed.

Of the 179 participants, 37 participants were randomly assigned to the *personalized feedback tailored to values* condition, 37 participants to the *personalized feedback not tailored to values* condition, 36 participants to the *generalized feedback tailored to values* condition, 29 participants to the *generalized feedback not tailored to values* condition, and 40 participants to the *control* (no feedback) condition.

Of the five values participants were asked to rank in order of importance to them, the most popular choice was *personal medical health* followed by *personal finances*. Of the 179 participants, over half of the participants ($N = 95$, 53.1%) chose *personal medical health* as the most important value to them in regard to the issues surrounding meat. The second most popular value, *personal finances*, was ranked as most important by 44 (24.6%) of the participants. 26 participants (14.5%) ranked the value *animal welfare* as the most important value to them in regard to the issues surrounding meat, and 11 participants (6.1%) ranked *environmental sustainability* as the most important. The least frequently chosen value was *personal appearance*, which only 3 participants (1.7%) ranked as the most important.

Descriptive statistics

Before the results of analyses comparing participants' responses in each of the randomly assigned conditions are presented, the descriptive statistics of participants' pre- and post-feedback meat consumption and attitudes toward meat are detailed. All of these descriptive statistics apply to the overall Study 1 participant sample – differences between responses for different feedback conditions are explored following this section.

Pre-feedback meat consumption

Participants' pre-feedback responses indicated that, overall, the participants included in this study eat meat often. When asked to report how often they eat meat on a five-point scale ranging from 1 (*never*) to 5 (*regularly*), participants on average responded 4.35, with a standard deviation of 0.70. When asked to report how often they eat meat on a different scale (1 = *never*, 2 = *once a year*, 3 = *a few times a year*, 4 = *once a month*, 5 = *a few times a month*, 6 = *once a week*, 7 = *a few times a week*, 8 = *daily*), participants on average responded that they eat meat multiple times a week ($M = 7.49$), with very little variation in their responses ($SD = 0.57$).

Participants' pre-feedback responses also indicated that the participants included in this study eat more meat than they should be eating. Participants reported, on average, that in the past three days they consumed meat at four-and-a-half meals ($M = 4.44$, $SD = 2.06$). Sixty-six participants (36%) indicated that they consumed meat at 6 or more meals in the last three days – which equals having meat at 2 meals per day – and 9 participants indicated that they consumed meat at 9 or more meals in the past three days – which equals having meat at all 3 meals per day. Participants also indicated that they consume close to 3 servings of meat (defined as three ounces of meat) on an average day ($M = 2.73$, $SD = 2.09$), which exceeds the recommended number of daily servings of meat, which is 2 (American Heart Association, 2016; Center for Nutrition

Policy and Promotion, 2014; U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015). In fact, 67 participants (37%) exceeded the recommended number of daily servings of meat, and 26 of these participants reported they consume at least double the recommended number of daily servings (4 servings) on an average day. On average, participants also reported that on an average day, over a third of the food that they eat is meat ($M = 36.70\%$, $SD = 18.06\%$). Given the dietary guidelines set by the United States Department of Agriculture and Department of Health and Human Services, meat should only make up about 12%-13% of an individual's daily diet (Center for Nutrition Policy and Promotion, 2014). This guideline was exceeded by 167 (93%) of the 179 participants in this study. Of these 167 participants, 120 participants estimated that more than 26% of the food that they eat daily is meat, which is more than double the daily recommendation. Even more concerning, about one-fourth of the participants ($N = 43$) reported that on an average day, 50% or more of what they eat is meat.

Pre-feedback meat attitudes

In regard to participants' pre-feedback attitudes toward meat, participants' average attitude toward meat was approximately a 6 on a 1 (*eating meat is bad*) to 7 (*eating meat is good*) scale ($M = 6.02$, $SD = 1.21$). Similarly, participants responded an overall liking of meat ($M = 6.35$, $SD = 1.00$; scale from 1 [*I very much dislike eating meat*] to 7 [*I very much like eating meat*]).

Post-feedback meat consumption

Participants' post-feedback responses indicated that participants were overall somewhat willing to reduce their meat consumption. When asked to report how willing they would be to reduce their meat consumption on a scale ranging from 1 (*not at all willing to reduce the amount*

of meat I eat even a little) to 5 (very willing to stop eating meat entirely), participants, on average, responded somewhat close to the middle of the scale ($M = 2.55$, $SD = 1.06$).

Additionally, participants' reports of how often they intend to eat meat in the future on the same five-point scale ranging from 1 (*never*) to 5 (*regularly*) used to measure pre-feedback meat habits, participants intended (on average) to eat meat less often ($M = 3.94$, $SD = 0.94$) than they previously did/currently do (pre-feedback: $M = 4.35$, $SD = 0.70$). When asked to report how often they intend to eat meat on the other frequency scale (1 = *never*, 2 = *once a year*, 3 = *a few times a year*, 4 = *once a month*, 5 = *a few times a month*, 6 = *once a week*, 7 = *a few times a week*, 8 = *daily*), participants on average responded that they intend to eat meat a few times a week ($M = 7.11$, $SD = 0.93$), which was a slight decrease when compared to their pre-feedback responses ($M = 7.49$, $SD = 0.57$).

Participants reported, on average, that in the next three days they intend to consume meat at nearly four meals ($M = 3.86$, $SD = 2.31$), which is almost one less meal containing meat than they reported they had consumed in the past three days ($M = 4.44$, $SD = 2.06$). When compared to the three servings of meat that participants reported they currently consume on an average day, participants reported intending to consume closer to two servings of meat on an average day in the future ($M = 2.37$, $SD = 1.99$). Overall, participants reported that they intend to consume meat as 31% ($M = 31.14\%$, $SD = 19.90\%$) of their daily food, which is less than the 36% average that participants reported they currently eat.

Post-feedback meat attitudes

Mirroring participants' slight willingness to reduce their meat consumption, participants' average post-feedback attitudes toward meat rating ($M = 5.50$, $SD = 1.64$; scale from 1 [*eating meat is bad*] to 7 [*eating meat is good*]) indicates that participants' attitude toward meat became

slightly more negative (pre-feedback: $M = 6.02$, $SD = 1.22$). Similarly, participants' average liking of meat was more negative post-feedback ($M = 6.03$, $SD = 1.29$) as compared to participants' pre-feedback ratings ($M = 6.35$, $SD = 1.00$; scale from 1 [*I very much dislike eating meat*] to 7 [*I very much like eating meat*]). Though participants' attitudes toward meat and liking of meat did decrease, it is important to note that participants' post-feedback meat attitudes remain quite positive.

Descriptive statistics summary

Participants' reports of how much meat they currently consume exceed recommended amounts, demonstrating the importance of this study. Overall, participants expressed intentions to eat less meat and eat meat less often than their current/previous habits; however, for particular measures, participants' pre- and post-feedback responses do not greatly differ. The average intended number of daily servings and daily percentages are still higher than is recommended; however, the slight decreases are nonetheless positive. For a complete table of pre- and post-feedback responses on each of the dependent measures, see Table 1.

Effects of feedback personalization and tailoring to values

It was hypothesized that personalized feedback would be more effective than generalized feedback at reducing individuals' intended future meat consumption and attitudes toward meat. It was further hypothesized that feedback tailored to individuals' values would be more effective than feedback not tailored to individuals' values at reducing individuals' intended future meat consumption and attitudes toward meat. Accordingly, it was hypothesized that personalized feedback tailored to individuals' values would be most effective at influencing individuals' willingness to reduce their meat consumption and attitudes toward meat and that generalized feedback not tailored to individuals' values would be the least effective.

To test these hypotheses, multiple 2 (*feedback personalization: personalized feedback vs. generalized feedback*) x 2 (*values tailoring: tailored to values vs. not tailored to values*) between-subjects Analysis of Covariances (ANCOVAs) were separately conducted on each of the previously mentioned dependent measures. For each ANCOVA, the respective pre-feedback meat consumption/attitude item was included as a covariate. For example, the ANCOVA looking at how many meals in the next three days participants intend to eat meat controlled for how many meals participants ate including meat in the past three days, as was reported prior to reading the meat-consumption reduction feedback.

Participants' intended frequency of meat consumption

To determine how often participants intended to consume meat in the future, participants responded to two items: they were first asked to identify how often they intend to eat meat in the future on a five-point scale (ranging from 1 [*never*] to 5 [*regularly*]), and were then asked to select one of eight descriptions that they felt best described how often they intend to eat meat in the future (*never, once a year, a few times a year, once a month, a few times a month, once a week, a few times a week, daily*). For this second item, “*never*” responses were coded as a 1, “*daily*” responses were coded as an 8, and the in-between responses were coded 2-7 accordingly.

For the item that asked participants to identify how often they eat meat on a five-point scale (ranging from 1 [*never*] to 5 [*regularly*]), the ANCOVA results revealed that there were no significant effects when controlling for participants' pre-feedback responses to the question how often they eat meat on a five-point (*never – regularly*) scale. There was not a significant main effect of feedback personalization when controlling for participants' pre-feedback responses, $F(1, 134) = 0.01, p = .935$. Participants that received personalized feedback ($M = 3.85, SD = 0.96$) did not significantly differ in their intended frequency to eat meat than participants that

received generalized feedback ($M = 3.94$, $SD = 1.01$). There was also not a significant main effect of tailoring to values when controlling for participants' pre-feedback responses, $F(1, 134) = 0.04$, $p = .849$. Participants that received feedback tailored to their chosen value ($M = 3.92$, $SD = 1.02$) did not significantly differ on their intended frequency to eat meat in the future than participants that received feedback that was not tailored to their chosen value ($M = 3.86$, $SD = 0.94$). In addition to the non-significant main effects for this analysis, there was also no significant feedback personalization x tailoring to values interaction effect when controlling for participants' pre-feedback responses, $F(1, 134) = 0.13$, $p = .717$. For a comprehensive display of means and standard deviations for each feedback condition, please see Table 2.

Similar to the previous ANCOVA, for the item that asked participants to choose one of eight descriptions (*never - daily*) that they feel best describes how often they intend to eat meat in the future, there were no significant effects when controlling for participants' pre-feedback responses to the question asking them to choose from eight descriptions (*never - daily*) how often they eat meat. There was not a significant main effect of feedback personalization when controlling for participants' pre-feedback responses, $F(1, 134) = 0.16$, $p = .689$. Participants who received personalized feedback ($M = 6.69$, $SD = 0.85$) did not significantly differ on their intended frequency to eat meat than participants who received generalized feedback ($M = 7.09$, $SD = 1.11$). There was also not a significant main effect of tailoring to values when controlling for participants' pre-feedback responses, $F(1, 134) = 0.07$, $p = .789$. Participants that received feedback tailored to their chosen value ($M = 7.05$, $SD = 1.08$) did not significantly differ in their intended frequency to eat meat in the future than participants that received feedback that was not tailored to their chosen value ($M = 6.98$, $SD = 0.86$). In addition to the non-significant main effects for this analysis, there was also no significant feedback personalization x tailoring to

values interaction effect when controlling for participants' pre-feedback responses, $F(1, 134) = 0.17, p = .679$. For a comprehensive display of means and standard deviations for each feedback condition, please see Table 3.

Participants' intended number of meals including meat to be consumed in the next three days

The ANCOVA testing whether participants' intended number of meals containing meat in the next three days differed depending on the feedback condition received revealed that when controlling for participants' reported number of meals containing meat consumed in the past three days, there were no significant effects. There was no main effect of feedback personalization when controlling for participants' past three day meal consumption, $F(1, 134) = 0.61, p = .437$. Participants that received personalized feedback ($M = 3.31, SD = 2.04$) did not significantly differ from participants that received generalized feedback ($M = 3.75, SD = 2.26$) in their reported number of intended meals containing meat. When controlling for participants' past three day meal consumption, there was also no main effect of tailoring to values, $F(1, 134) = 0.15, p = .703$. Participants that received feedback tailored to values ($M = 3.58, SD = 2.13$) and participants that received feedback not tailored to values ($M = 3.45, SD = 2.19$) reported that they intend to eat around three-and-a-half meals containing meat in the next three days. Finally, when controlling for participants' previous three-day meat meal consumption, there was no significant feedback personalization x tailoring to values interaction effect, $F(1, 134) = 1.64, p = .202$. For a comprehensive display of means and standard deviations for each feedback condition, please see Table 4.

Participants' number of intended daily meat serving consumption

The ANCOVA testing whether participants' intended number of daily servings of meat differed depending on the feedback condition received revealed that after controlling for participants' current/past daily servings of meat, there were no significant main effects. There was no main effect of feedback personalization when controlling for participants' past daily servings of meat, $F(1, 134) = 0.35, p = .553$. Participants that received personalized feedback ($M = 2.14, SD = 2.10$) did not significantly differ from participants that received generalized feedback ($M = 2.48, SD = 1.83$) in their intended daily servings of meat. When controlling for participants' past daily servings of meat, there was also no main effect of tailoring to values, $F(1, 134) = 0.21, p = .646$. Participants that received feedback tailored to values ($M = 2.19, SD = 1.68$) and participants that received feedback not tailored to values ($M = 2.41, SD = 2.27$) reported that they intend to eat around two servings of meat daily.

Though there were no significant main effects, there was a significant feedback personalization x tailoring to values interaction effect when controlling for participants' current daily servings of meat, $F(1, 134) = 5.12, p = .025$ (see Figure 5). Simple effects analyses revealed that the effect of personalizing feedback on participants' intended daily servings of meat depended on whether the feedback was tailored to participants' chosen values. When feedback was tailored to participants' chosen value, participants that received personalized feedback reported intention to consume significantly less servings of meat daily ($M = 1.70, SD = 1.17$) than participants that received generalized feedback reported ($M = 2.69, SD = 1.97; F(1, 134) = 4.38, p < .05$). However, when feedback was not tailored to participants' chosen value, participants' intended number of daily servings of meat did not significantly differ depending on whether the participants' received personalized feedback ($M = 2.57, SD = 2.68$) or generalized

feedback ($M = 2.21$, $SD = 1.63$; $F(1, 134) = 1.33$, $p > .05$). For a comprehensive display of means and standard deviations for each feedback condition, please see Table 5.

Participants' intended daily percentage of food consumed that is meat

The ANCOVA testing whether participants' intended daily percentage of food consumed that is meat differed depending on the feedback condition received revealed that when controlling for participants' reported daily percentage of food consumed that is meat, there were no significant effects. There was no significant main effect of feedback personalization when controlling for participants' reported daily percentage of food consumed that is meat, $F(1, 134) = 1.15$, $p = .285$. Participants that received personalized feedback ($M = 28.35$, $SD = 19.40$) did not significantly differ from participants that received generalized feedback ($M = 31.88$, $SD = 20.05$) in their reported intended daily percentage of food consumed that is meat. When controlling for participants' reported daily percentage of food consumed that is meat, there was also no main effect of tailoring to values, $F(1, 134) = 0.15$, $p = .699$. Participants that received feedback tailored to values ($M = 32.29$, $SD = 20.72$) and participants that received feedback not tailored to values ($M = 27.47$, $SD = 18.35$) reported that on an average day in the future, between one-quarter and one-third of the food that they consume will be meat. Finally, when controlling for participants' reported daily percentage of food consumed that is meat, there was no significant feedback personalization x tailoring to values interaction effect, $F(1, 134) = 1.30$, $p = .256$. For a comprehensive display of means and standard deviations for each feedback condition, please see Table 6.

Participants' attitude toward eating meat

The ANCOVA testing whether participants' post-feedback attitudes toward eating meat (on a scale ranging from 1 [*eating meat is bad*] to 7 [*eating meat is good*]) differed depending on

the feedback received revealed that when controlling for participants' pre-feedback attitudes toward eating meat, there were no significant effects. When controlling for participants' pre-feedback attitudes toward eating meat, there was no significant main effect of feedback personalization, $F(1, 134) = 0.45, p = .506$. Participants who received personalized feedback ($M = 5.26, SD = 1.70$) did not significantly differ in their post-feedback attitudes toward meat from participants who received generalized feedback ($M = 5.60, SD = 1.71$). Furthermore, there was no significant main effect of tailoring to values when controlling for participants' pre-feedback attitudes toward eating meat, $F(1, 134) < 0.01, p = .985$. Participants who received feedback tailored to their chosen value ($M = 5.52, SD = 1.76$) did not significantly differ in their post-feedback attitudes toward meat from participants who received feedback not tailored to a particular value ($M = 5.30, SD = 1.66$). Finally, when controlling for participants' pre-feedback attitudes toward eating meat, there was no significant feedback personalization x tailoring to values interaction, $F(1, 134) = 1.29, p = .257$. For a comprehensive display of means and standard deviations for each feedback condition, see Table 7.

Participants' liking of eating meat

The ANCOVA testing whether participants' post-feedback liking of meat (on a scale ranging from 1 [*I very much dislike eating meat*] to 7 [*I very much like eating meat*]) differed depending on the feedback received revealed that when controlling for participants' pre-feedback liking of meat, there were no significant effects. When controlling for participants' pre-feedback liking of meat, there was no significant main effect of feedback personalization, $F(1, 134) = 0.31, p = .582$. Participants who received personalized feedback ($M = 5.91, SD = 1.27$) did not significantly differ in their post-feedback liking of meat from participants who received generalized feedback ($M = 6.06, SD = 1.38$). Furthermore, there was no significant main effect of

tailoring to values when controlling for participants' pre-feedback liking of meat, $F(1, 134) = 0.59, p = .443$. Participants who received feedback tailored to their chosen value ($M = 5.95, SD = 1.45$) did not significantly differ in their post-feedback liking of meat from participants who received feedback not tailored to a particular value ($M = 6.02, SD = 1.17$). Finally, when controlling for participants' pre-feedback liking of meat, there was no significant feedback personalization x tailoring to values interaction, $F(1, 134) = 2.67, p = .105$. For a comprehensive display of means and standard deviations for each feedback condition, please see Table 8.

Participants' willingness to reduce their meat consumption

Because participants only reported how willing they would be to reduce their meat consumption *after* reading the feedback, a 2 (*feedback personalization: personalized feedback vs. generalized feedback*) x 2 (*values tailoring: tailored to values vs. not tailored to values*) ANOVA was conducted to compare participants' willingness to reduce their meat consumption (as measured on a 1 [*not at all willing to reduce the amount of meat I eat even a little*] to 5 [*very willing to stop eating meat entirely*] scale). Analyses revealed that there were no significant effects. There was no significant main effect of feedback personalization, $F(1, 135) = 0.89, p = .348$. Participants' willingness to reduce their meat consumption was similar regardless of whether the participant received personalized feedback ($M = 2.61, SD = 1.07$) or generalized feedback ($M = 2.43, SD = 1.10$). There was also no significant main effect of tailoring to values, $F(1, 135) = 0.09, p = .763$. Regardless of whether or not participants received feedback tailored ($M = 2.49, SD = 1.12$) or not tailored ($M = 2.56, SD = 1.05$) to their chosen value, their reported willingness to reduce their meat consumption was similar. Finally, there was no significant feedback personalization x tailoring to values interaction, $F(1, 135) = 0.02, p = .895$. For a

comprehensive display of means and standard deviations for each feedback condition, please see Table 9.

Control group comparison

Each of the previously described analyses compared the effects of feedback personalization/generalization and tailoring/not tailoring to values. However, none of the previous analyses included the control (no feedback) condition in these comparisons. To compare each of the feedback conditions to the no feedback (control) condition, multiple one-way between-subjects ANCOVAs were conducted to compare each of the four feedback conditions (*personalized feedback tailored to values*, *generalized feedback tailored to values*, *personalized feedback not tailored to values*, and *generalized feedback not tailored to values*) to the control (no feedback) condition on each of the previously mentioned dependent measures. Similar to the previous ANCOVAs, the respective pre-feedback meat consumption/attitude item was included as a covariate. It was hypothesized that participants in the control condition that received no meat-consumption reduction feedback would report the highest intended future meat consumption and most positive attitudes toward meat as compared to all of the feedback conditions.

Participants' intended frequency of meat consumption

As previously described, participants responded to two separate items measuring how often they intend to consume meat in the future. The first item asked participants to respond on a five-point scale ranging from 1 (*never*) to 5 (*regularly*) how often they intend to eat meat in the future. The ANCOVA results revealed that when controlling for participants' pre-feedback reports of how often they eat meat (on the same 1 to 5 scale), there were no significant differences between any of the conditions, $F(4, 173) = 0.51, p = .730$. Though participants in the

control condition ($M = 4.13$, $SD = 0.76$) did report the highest intended frequency of meat consumption, this intended frequency was not significantly greater than the intended frequencies reported by participants in any of the feedback conditions (see Table 10 for the means and standard deviations for each condition).

For the second item that participants responded to that measured their intended frequency to consume meat in the future (ranging from 1 [*never*] to 8 [*daily*]), the ANCOVA results revealed that when controlling for participants' pre-feedback reports of how often they eat meat (on the same 1 to 8 scale), there were no significant differences between any of the conditions, $F(4, 173) = 1.24$, $p = .297$. Similar to the previous measure of intended frequency to eat meat, though participants in the control condition ($M = 7.40$, $SD = 0.63$) did report the highest intended frequency of meat consumption, this intended frequency was not significantly greater than the intended frequencies reported by participants in any of the feedback conditions (see Table 11 for the means and standard deviations for each condition).

Participants' intended number of meals including meat to be consumed in the next three days

The ANCOVA testing whether participants' intended number of meals containing meat in the next three days differed depending on the study condition revealed that when controlling for participants' reported number of meals containing meat consumed in the past three days, there was a significant main effect of condition, $F(4, 173) = 3.80$, $p = .006$ (see Table 12 and Figure 6). Tukey multiple comparisons showed that participants in the control group intended to eat significantly more meals including meat in the next three days ($M = 5.05$, $SD = 2.47$) than did participants in all of the other feedback conditions (all $ps < .05$; all $Ms < 4.05$) except the generalized feedback tailored to values condition, which did not significantly differ from any of

the other conditions (all $ps > .05$). The results of this analysis support the hypothesis that participants in the control (no feedback) condition would report the highest intended future meat consumption. The results also partially support the hypothesis that participants in the personalized feedback tailored to values condition would report the lowest intended future meat consumption. Though participants in the personalized feedback tailored to values condition did report the lowest intended future meat consumption ($M = 3.14$, $SD = 1.80$), their intended number of meals were only significantly lower than participants' intended number of meals in the control (no feedback) condition.

Participants' number of intended daily meat serving consumption

The ANCOVA testing whether participants' intended number of daily servings of meat differed depending on the study condition revealed that when controlling for participants' current/past daily servings of meat, there were no significant differences between conditions, $F(4, 173) = 1.56$, $p = .187$ (see Table 13 for the means and standard deviations for each condition).

Participants' intended daily percentage of food consumed that is meat

The ANCOVA testing whether participants' intended daily percentage of food consumed that is meat differed depending on the study condition revealed that when controlling for participants' current daily percentage of food consumed that is meat, there were no significant differences between conditions, $F(4, 173) = 1.36$, $p = .252$ (see Table 14 for the means and standard deviations for each condition).

Participants' attitude toward eating meat

The ANCOVA testing whether participants' post-feedback attitudes toward meat (on a 1 [eating meat is bad] to 7 [eating meat is good]) differed depending on the study condition

revealed that when controlling for participants' pre-feedback reported attitude toward meat, there were no significant differences between conditions, $F(4, 173) = 1.32, p = .265$. Though participants in the control (no feedback) condition did report the most favorable attitudes toward meat ($M = 5.80, SD = 1.36$), their attitudes were not significantly greater than the attitudes reported by participants in any of the feedback conditions (see Table 15 for the means and standard deviations for each condition).

Participants' liking of eating meat

The ANCOVA testing whether participants' post-feedback liking of eating meat (on a 1 [*I very much dislike eating meat*] to 7 [*I very much like eating meat*]) differed depending on the study condition revealed that when controlling for participants' pre-feedback reported liking of eating meat, there were no significant differences between conditions, $F(4, 173) = 2.06, p = .088$. Similar to the results for participants' attitudes toward meat, though participants in the control (no feedback) condition did report the most liking of eating meat ($M = 6.20, SD = 1.16$), their attitudes were not significantly greater than the attitudes reported by participants in any of the feedback conditions (see Table 16 for the means and standard deviations for each condition).

Participants' willingness to reduce their meat consumption

Because participants only reported how willing they would be to reduce their meat consumption (on a 1 [*not at all willing to reduce the amount of meat I eat even a little*] to 5 [*very willing to stop eating meat entirely*] scale) after reading the feedback, a one-way ANOVA was conducted to compare participants' willingness to reduce their meat consumption. In accordance with the majority of the previous analyses, there were no significant differences between participants' willingness to reduce their meat consumption between each condition, $F(4, 174) = 0.34, p = .853$ (see Table 17 for the means and standard deviations for each condition).

Effects of feedback personalization and tailoring to values summary

It was hypothesized that personalized feedback would be more effective than generalized feedback and feedback tailored to individuals' values would be more effective than feedback not tailored to individuals' values at reducing individuals' intended future meat consumption and attitudes toward meat. It was furthermore hypothesized that participants in the control condition that received no meat-consumption reduction feedback would report the highest intended future meat consumption and most positive attitudes toward meat as compared to all of the feedback conditions and that participants that received personalized feedback tailored to their chosen value would report the lowest intended future meat consumption and least positive attitudes toward meat. Contrary to the hypotheses, the results of most of the analyses from Study 1 revealed that participants' intentions to reduce their meat consumption and participants' attitudes toward meat did not significantly differ depending on what condition they were randomly assigned to.

Of all of the analyses investigating the main effects of feedback personalization and tailoring to values, there were no significant differences between personalized feedback and generalized feedback, nor any significant differences between feedback tailored to values and feedback not tailored to values. Furthermore, only one of the analyses revealed a significant feedback personalization x tailoring to values interaction. This single analysis revealed that the effect of feedback personalization on participants' intended daily number of meat servings depends on whether the feedback is tailored or not tailored to an individual's values. Parallel to the hypothesis that personalized feedback tailored to individuals' values would be the most effective at getting participants to reduce the amount of meat they intend to eat, participants in this feedback condition did report the least number of intended servings, which was significantly less than the reported intended daily servings of meat by participants in the generalized feedback

tailored to values condition. Thus, when feedback is tailored to values, personalized feedback is more effective than generalized feedback. This did not hold true, however, for the feedback conditions not tailored to values.

Of all of the analyses comparing the control (no feedback) condition responses to the feedback condition responses, only one analysis (how many meals in the next three days) showed significant differences between the five conditions. Participants in the control group reported intending to eat significantly more meals including meat in the next three days than did participants in all of the other feedback conditions (except the generalized feedback tailored to values condition). The results of this analysis support the hypothesis that participants in the control (no feedback) condition would report the highest intended future meat consumption. The results also partially support the hypothesis that participants in the personalized feedback tailored to values condition would report the lowest intended future meat consumption. Though participants in the personalized feedback tailored to values condition did report the lowest intended future meat consumption, their intended number of meals was only significantly lower than participants' intended number of meals in the control (no feedback) condition.

Demographic analyses

Though not the main purpose of the present study, it was of interest to determine whether there were demographic differences in meat consumption reduction and if certain individuals are more willing to reduce their meat consumption, have more negative attitudes toward meat, and/or are more affected by certain meat-reduction feedback. It is important to note that the following demographic analyses were not initially planned and are purely exploratory. Accordingly, any and all results from the demographic analyses reported below should be

interpreted with caution and awareness that the number of analyses conducted could very well have resulted in Type I errors.

Gender

Because previous literature shows that males and females differ in their attitudes toward meat as well as their meat-eating behaviors (e.g., Barr & Chapman, 2002; Beardsworth & Bryman, 1999; Beardsworth & Keil, 1992; Gale et al., 2007; Hamilton, 1993; Heleski, Mertig, & Zanella, 2006; White & Frank, 1994; Worsley & Skrzypiec, 1998), it was of interest in the present study to compare males' and females' attitudes toward meat and meat-eating behaviors.

Descriptive statistics

For all of the pre-feedback reports, males reported eating more meat and liking meat more than females reported. Furthermore, for all of the post-feedback reports, males reported intentions to eat more meat and intentions to eat meat more often than females reported, and males' post-feedback reports of their attitude toward and liking of meat were more favorable than females' post-feedback reports. For a comprehensive display of means and standard deviations for males' and females' pre-feedback reports on each of the dependent measures, see Table 18. For a comprehensive display of means and standard deviations for males' and females' post-feedback reports on each of the dependent measures, see Table 19.

Gender differences

To determine whether males' and females' meat-consumption habits and attitudes toward meat significantly differed and to also examine whether males and females differently changed their attitudes toward meat and their meat-consumption habits, multiple repeated-measures Analysis of Variances (ANOVAs) were conducted on each of the dependent measures. For all of the analyses, there were significant main effects of time (all $ps < .05$; see Table 20) such that

participants' pre-feedback reports of their meat-consumption habits and attitudes toward meat were higher than their post-feedback intentions to eat meat and attitudes toward meat.

Furthermore, for all but two of the analyses, there were significant/marginally significant main effects of gender (see Table 21) such that males reported eating/intending to eat meat more often, eating/intending to eat more meat, and having more positive attitudes toward meat than did females.

In addition to males generally reporting that they eat more meat and have more positive attitudes toward meat than females reported, for two of the dependent measures (frequency of eating meat [*never – daily*] and number of meals containing meat) there were significant time x gender interactions (see Table 22). Both males and females significantly decreased how often they intend to eat meat (*never – daily*; both $ps < .05$) as compared to their reports of how often they currently eat meat; however, females decreased how often they intend to eat meat more than males did, $F(1, 176) = 6.32, p = .013$. In regard to how many meals including meat individuals eat (and intend to eat), the significant interaction ($F(1, 176) = 5.01, p = .027$) revealed that while females significantly decreased how many meals including meat they intend to eat ($p < .01$), males did not ($p > .05$). For a comprehensive display of means and standard deviations for males' and females' pre- and post-feedback reports on each of the dependent measures, see Tables 18 and 19.

In addition to the repeated-measures ANOVAs conducted to determine whether there were any gender differences on each of the dependent measures, a t-test was conducted to compare males' and females' reported willingness to decrease their meat consumption, since this question was only asked after the meat-reduction feedback. In line with previous research

findings, the *t*-test revealed that females were significantly more willing ($M = 2.70, SD = 1.03$) than males ($M = 2.25, SD = 1.05$) to reduce their meat consumption, $t(176) = -2.79, p = .006$.

Gender x condition effects

Though the previous analyses found no evidence that participants' meat-consumption behaviors or attitudes toward meat were differentially influenced by the feedback, it was of interest to explore whether gender served as a moderator. Thus, exploratory analyses were conducted to determine whether males' and females' post-feedback reports differed for the different feedback conditions. Multiple ANCOVAs (similar to the previously detailed ANCOVAs) were used to test the gender x condition (comparing all four feedback conditions and the control condition) interaction on each of the dependent measures while controlling for the respective pre-feedback meat consumption/attitude item. With the exception of the analysis on the number of servings of meat, there were no significant gender x condition interactions (all $ps > .05$; see Table 23). For the analysis on participants' reported intended number of daily servings of meat, there was a significant gender x condition interaction, $F(4, 167) = 2.70, p = .033$. Simple effects revealed that there were only gender differences for the personalized feedback not tailored to values condition (males reported intention to eat more daily servings of meat than females; $F(1, 167) = 12.66, p < .05$). Given that this gender difference is observed in only one feedback condition and no other gender differences were observed in any of the other analyses of the other dependent measures, this finding is most likely a Type I error. Thus, it is generally concluded that when controlling for participants' pre-feedback reports, the effect of condition on participants' post-feedback reports did not differ depending on the gender of the participant. For a comprehensive display of means and standard deviations for males' and females' post-feedback reports for each condition, see Tables 24-30.

A gender x condition ANOVA on participants' reports of how willing they would be to reduce their meat consumption (which was only asked post-feedback) similarly resulted in a non-significant gender x condition interaction, $F(4, 168) = 0.78, p = .537$. Though females are more willing to reduce the amount of meat that they consume and more willing to reduce their attitudes toward meat (as demonstrated in the analyses described previously), this effect does not differ depending on the feedback that the individual receives. For a display of comprehensive means and standard deviations, see Table 31.

Education and age

Because previous research has demonstrated that current vegetarians and meat reducers differ from the overall population in regard to their education level (Beardsworth & Keil, 1992; Gale et al., 2007; Ruby, 2012), and it seems logical that age might also be related to individuals' meat consumption and attitudes toward meat, it was of interest to investigate whether individuals' highest level of education completed and age would relate to their willingness and intention to reduce their meat consumption as well as their attitudes toward meat.

Education

To determine whether individuals' highest level of education completed is related to their initial (pre-feedback) meat-consumption habits and attitudes toward meat, multiple bivariate correlations were conducted between participants' reported highest level of education completed and participants' responses on each of the pre-feedback questions. Contrary to previous research findings, the analyses conducted using the present data showed no significant correlations between participants' highest level of education completed and current/past meat consumption (all $ps > .05$; see Table 32). Similarly, there were no significant correlations between

participants' highest level of education completed and their attitudes toward meat (all $ps > .05$; see Table 32).

To determine whether individuals' highest level of education completed is related to their willingness to reduce their meat consumption, intention to reduce their meat consumption, and post-feedback attitudes toward meat, multiple bivariate correlations were conducted between participants' reported highest level of education completed and each of the post-feedback dependent measures. The results showed no significant correlations between participants' highest level of education completed and their willingness to reduce their meat consumption, intended meat-eating behaviors, or their post-feedback attitudes toward meat (all $ps > .05$; see Table 32).

Age

To determine whether age is related to individuals' initial/past (pre-feedback) meat-consumption habits and attitudes toward meat, multiple bivariate correlations were conducted between participants' ages and participants' responses on each of the pre-feedback questions. The results indicated that participants' ages were significantly related to participants' frequency of meat consumption (scale ranging from 1 [*never*] – 5 [*regularly*]; $r[178] = -.151, p = .043$), the daily percentage of food participants eat that is meat ($r[178] = -.166, p = .026$), participants' attitudes toward eating meat ($r[178] = -.195, p = .009$), and participants' liking of meat ($r[178] = -.149, p = .047$). Each of these significant relationships are negative, indicating that older participants consume meat less often, consume less meat daily, have more negative attitudes toward meat, and like meat less than younger participants. The other three items (*how often do you eat meat [never-daily]*, *number of meals containing meat consumed in the past three days*, and *average number of daily servings of meat*), though not significant, also displayed negative correlations with the variable *age*, which parallels the significant correlations previously

mentioned. Table 33 displays the correlations between age and each of the pre-feedback responses.

To determine whether individuals' age is related to their willingness to reduce their meat consumption, intention to reduce their meat consumption, and post-feedback attitudes toward meat, multiple bivariate correlations were conducted between participants' age and each of the post-feedback dependent measures. Similar to the correlations between age and participants' pre-feedback responses, all but one of the correlations between age and each of the post-feedback responses (except willingness) were in the direction that indicated that older aged participants intended to reduce their meat consumption and less favorable toward eating meat. However, unlike the correlations between age and each of the pre-feedback responses, only one of the post-feedback responses was significant; older participants indicated that they intend to make meat a significantly smaller percentage of the food that they consume on an average day than younger participants reported, $r(178) = -.153, p = .040$. Table 33 displays the correlations between age and each of the post-feedback responses.

Demographic analyses summary

Overall, the demographic analyses conducted supported previous findings that males generally eat more meat and have more positive attitudes toward meat than females. The analyses further confirmed previous findings that females are more receptive to reducing their meat consumption than are males. Contrary to previous findings, however, the exploratory analyses conducted did not find that education level was correlated with meat consumption habits or attitudes toward meat. Similarly, the analyses in the present study conclude that one's level of education is neither related to one's willingness to reduce one's meat consumption nor one's intended meat-consumption habits. The results of the aforementioned exploratory analyses

do suggest that age is negatively related to one's meat consumption habits and attitudes toward meat.

Chapter 3 - Study 2

Method

Participants

338 non-vegetarian/vegan participants in the United States were recruited through Amazon Mechanical Turk (MTurk; <http://www.mturk.com>; see Buhrmester, Kwang, & Gosling, 2011), a national workforce website run by Amazon, and were compensated \$0.10 for their participation in the online study. Of these 338 participants, 120 were male (35.5%), 213 were female (63%), and 5 (1.4%) preferred not to say their gender. Participants' ages ranged from 18 to 72, with an average age of 37 ($SD = 13$). The majority of the participants had completed high school ($N = 334$). About one-quarter of the participants ($N = 87$) reported that the highest level of education completed was some college, and around 30% of the participants ($N = 110$) reported that a 4-year degree was the highest level of education they had completed. Additionally, 50 participants (14.8%) reported that the highest level of education they had completed was a 2-year degree, and 53 participants (15.6%) had earned a graduate or professional degree. Two participants reported "other" as the highest level of education completed.

Design

To investigate the influence of self-schema oriented, altruistic oriented, and egoistic oriented messages and messages tailored to individuals' values on individuals' intentions to consume meat and attitudes toward meat consumption, a 4 (*message orientation: self-schema oriented message vs. altruistic oriented message vs. egoistic oriented message vs. non-specific oriented message*) x 2 (*values tailoring: tailored to values vs. not tailored to values*) between-

subjects design was used in Study 2. The independent variable *message orientation* is a between-subjects variable. Participants either received a *message oriented to match their self-schema* (which they self-identified), an *altruistic oriented message*, an *egoistic oriented message*, or a *non-specifically oriented message*. Before receiving a message, participants identified which of four self-schemas is most characteristic of themselves. The four self-schemas are: *responsible*, *adventurous*, *compassionate*, and *logical*. Participants who received a *message oriented to match their self-schema* received a message that informed them of the consequences of the meat industry and meat consumption, and were informed how reducing their own personal meat consumption is congruent with their previously selected self-schema. For example, a message oriented to the *responsible self-schema* argues that due to the individuals' responsible and dependable nature, the individual should take responsibility and reduce his/her own meat consumption in order to reduce the effects of the meat industry and meat consumption. Participants who receive an *altruistic-oriented message* read a message regarding the consequences of the meat industry and meat consumption and were informed how reducing their own personal meat consumption can benefit others. Participants who received an *egoistic-oriented message* read a message regarding the consequences of the meat industry and meat consumption and were informed how reducing their own personal meat consumption can benefit themselves. Participants who received a *non-specific oriented message* read a message simply addressing the consequences of the meat industry and informed that they should reduce their own personal meat consumption.

The other independent variable, *values tailoring*, is also a between-subjects variable. Before receiving a message, participants chose one of four values that is most important to them. The four values for this study are: *animal well-being*, *personal health*, *environmental*

sustainability, and *personal finances*. Participants who received a *values tailored message* received a message tailored to the value that the participants chose as most important to them. For example, a *message tailored to the value personal health* only addresses the consequences of consuming meat on one's personal health. Participants who received a *message not tailored to values* received a message that mentions the consequences of meat consumption – equally emphasizing the consequences for all four values: *animal well-being*, *personal health*, *environmental sustainability*, and *personal finances*.

In addition to the participants that were randomly assigned to receive a message (either a *self-schema oriented message*, an *altruistic oriented message*, an *egoistic oriented message*, or a *non-specific oriented message*) that is either *tailored* or *not tailored* to participants' previously chosen value, some participants were randomly assigned to a control condition in which no message was received. Participants in the control condition completed the initial meat attitudes and consumption measures (see materials and procedure section below), but did not receive any message before reporting their intended future meat consumption and attitudes toward meat (see materials and procedure section below). In order to avoid any undesired priming, participants in the control condition reported the value (*animal well-being*, *personal health*, *environmental sustainability*, *personal finances*) of most importance to them as well as the self-schema type that is most characteristic of them (*responsible*, *adventurous*, *compassionate*, *logical*) after reporting their intended meat consumption.

Like Study 1, the dependent variables for Study 2 are individuals' intended consumption of meat and their attitudes toward meat.

Materials and procedure

Participants completed the present study using an online survey created on Qualtrics which was distributed online through Amazon Mechanical Turk (MTurk; <http://www.mturk.com>). After reading and indicating agreement with the informed consent, participants proceeded to answer questions regarding their own meat consumption habits and attitudes toward meat.

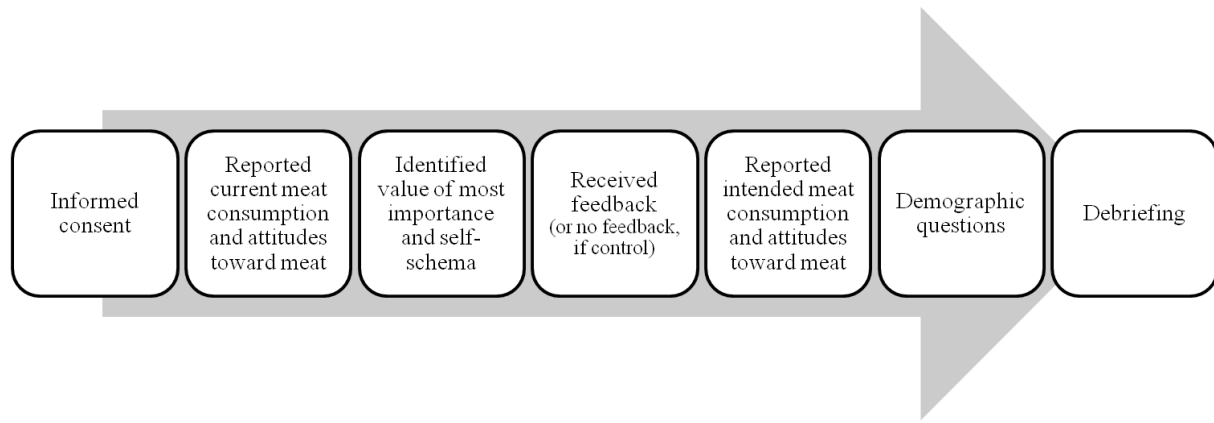


Figure 3. Procedure for Study 2.

Initial meat consumption and attitudes

As mentioned for Study 1, previous data collected has suggested that individuals' red meat, white meat (poultry), and seafood/fish consumption habits are not differentially affected by messages encouraging meat consumption reduction (Schnabelrauch Arndt, Brannon, & Haley, unpublished data), and previous studies investigating meat consumption generally do not distinguish between the types of meat (e.g., Allen & Baines, 2002; Allen et al., 2000); therefore, the present study asked participants questions regarding their overall attitudes toward and consumption of meat (not specifying what type of meat).

Initial meat consumption

Identical to Study 1, participants began by indicating their meat consumption habits to acquire a baseline meat consumption for each participant (see Appendix J). Participants were first asked to identify how often they eat meat on a five-point scale ranging from *never* to *regularly*. Participants then selected one of eight descriptions that they felt best describes how often they eat meat (*never, once a year, a few times a year, once a month, a few times a month, once a week, a few times a week, daily*), and were asked to report at how many meals they consumed meat in the past three days (*0 meals to 9+ meals*). Participants were also asked to report how many servings of meat they consume in an average day. For this question, a serving of meat was defined as three ounces of meat and compared to the size of a bar of soap, a computer mouse, and a deck of cards (American Cancer Society, 2014; American Heart Association, 2015). Participants were also informed that a quarter-pound hamburger patty is approximately one serving of meat. Lastly, participants were asked to report the percentage of the food they consume on an average day that is meat.

Initial meat attitudes

Again identical to Study 1, participants then indicated their initial attitudes toward meat using two 7-point questions from Allen and Baines (2002; see Appendix K). Participants first rated their attitude toward eating meat on a 1 (*eating meat is bad*) to 7 (*eating meat is good*) scale, and then rated their liking of meat on a 1 (*I very much dislike eating meat*) to 7 (*I very much like eating meat*) scale.

Values

After participants indicated their meat consumption habits and initial meat attitudes, participants were asked to rank four values in order of importance (regarding the issues

surrounding meat) to them personally (see Appendix L). Contrary to Study 1, this study only examines four values (*animal welfare, personal health, environmental sustainability, and personal finances*) rather than separating *personal health* into *medical health* and *personal appearance*. Participants in the control condition that did not receive any message ranked their values *after* reporting their intended meat consumption and attitudes toward meat (see below).

Self-schemas

Upon indicating which value is of most importance to them, participants chose one of four self-schemas that is most characteristic of them (see Appendix M). Specifically, participants were instructed to select which of the four self-schemas that they feel best describes them or is the most similar to their personality. As previously discussed, the four self-schemas were originally proposed by Keirse and Bates (1978 as cited in Brannon & Brock, 1994) and are an alternative to the Myers-Briggs Type Indicator (MBTI). Keirse and Bates' four schema types are labeled as *responsible, adventurous, compassionate, and logical*. Each schema is accompanied with four adjectives that describe the personality type as well as a description using a series of "I am" statements.

The *responsible schema type* is characterized as being responsible, dependable, helpful, and sensible. The description reads:

I need to be responsible. I want to fulfill my duties and obligations, to organize and structure my life as I see fit. I am practical, sensible, and punctual, and believe that people should earn their way through work and service to others.

The *adventurous schema type* is described as being adventuresome, skillful, competitive, and spontaneous. The description reads:

I need to be free to act on a moment's notice, impulsively and spontaneously. I believe that life is to enjoy, so I thrive on fun, variety, and excitement. Living in the moment, I act on every opportunity.

The *compassionate schema type* is characterized as warm, communicative, compassionate, and feeling. The description reads:

I need to search for the meaning and significance of life. I want to find ways to make my life count and matter, to become my own authentic self. Integrity, harmony, and honesty are very important to me. I feel that I am highly idealistic and spiritual by nature.

The *logical schema type* is described as being versatile, wise, conceptual, and curious. The description reads:

I need freedom to pursue knowledge and wisdom and to develop competency by acquiring skills and capabilities. I think life is something to make sense of, to be understood and explained.

Participants in the control condition that did not receive any message selected their self-schema after reporting their intended meat consumption and attitudes toward meat (see below).

Messages

Participants in this 4 (*message orientation: self-schema oriented message vs. altruistic oriented message vs. egoistic oriented message vs. non-specific oriented message*) x 2 (*values tailoring: tailored to values vs. not tailored to values*) design study were randomly assigned to either receive a *self-schema oriented, altruistically oriented, egoistically oriented, or not-specifically oriented* message that discusses the consequences of the meat industry and meat consumption and urges the individual to reduce his/her own meat consumption. Furthermore, the

message participants received was either *tailored* or *not tailored* to the individual participants' previously self-reported values (*animal well-being, personal health, environmental sustainability, personal finances*). Participants thus received one of eight types of messages (see Figure 4 below): 1) a self-schema oriented message tailored to the individuals' previously reported value, 2) an altruistic oriented message tailored to individuals' previously reported value, 3) an egoistic oriented message tailored to individuals' previously reported value, 4) a non-specific oriented message tailored to individuals' previously reported value, 5) a self-schema oriented message that is not tailored to the individuals' previously reported value, 6) an altruistic oriented message that is not tailored to individuals' previously reported value, 7) an egoistic oriented message not tailored to individuals' previously reported value, and 8) a non-specific oriented message not tailored to individuals' previously reported value.

		Orienting messages			
		<i>Self-schema oriented message</i>	<i>Altruistic oriented message</i>	<i>Egoistic oriented message</i>	<i>No specific orientation message</i>
Control condition (no message)					
Tailoring messages to values	<i>Messages tailored to participants' values</i>	<i>Self-schema oriented messages tailored to participants' values</i>	<i>Altruistic oriented messages tailored to participants' values</i>	<i>Egoistic oriented messages tailored to participants' values</i>	<i>No specific orientation messages tailored to values</i>
	<i>Messages not tailored to participants' values</i>	<i>Self-schema oriented messages not tailored to participants' values</i>	<i>Altruistic oriented messages not tailored to participants' values</i>	<i>Egoistic oriented messages not tailored to participants' values</i>	<i>No specific orientation message not tailored to values</i>

Figure 4. Visual display of conditions for Study 2.

Self-schema oriented messages tailored to values

Individuals randomly assigned to receive a *self-schema oriented message tailored to the individual's previously reported value* received a message regarding the consequences of the meat industry and meat consumption tailored to the value that they previously identified as most important to them. The message also informed them how reducing their own personal meat consumption is congruent with their previously chosen self-schema.

Each message begins with two self-schema sentences corresponding with the individuals' schema type. The responsible self-schema oriented messages start off saying: "You are a responsible person. You pride yourself on being dependable, and others know they can always rely on you for help." The adventurous self-schema oriented messages start off with: "You are an adventurous person. You pride yourself on being spontaneous, and others know that you live life to the fullest." The compassionate self-schema oriented messages begin: "You are a compassionate person. You pride yourself on being warm and communicative, and others know that you are always honest and strive for harmony." The logical self-schema oriented messages read: "You are a logical person. You pride yourself on your ability to make sense of and understand things, and others know that you are knowledgeable and competent."

The next part of the *self-schema oriented messages tailored to values* addresses the consequences of the meat industry and meat consumption specific to the value individuals chose as most important to them. The *animal well-being tailored messages* address the number of animals killed each year for the average American's meat consumption and also acknowledge the overcrowded, cramped quarters the animals live in while alive. The *personal health tailored messages* highlight the health problems and risks associated with meat consumption as well as the toxins, additives, and diseases that meat products can contain. The *environmental*

sustainability tailored messages point out the large quantities of natural resources used in meat production (water, gasoline, and land), the consequences of the meat industry's deforestation, and the pollution caused by the meat industry. The *personal finance tailored messages* address the higher cost of meat and as compared to vegetables, grains, and wheat-based products and the similar nutrient content in meat and non-meat products.

Following the sentences specific to *animal well-being*, *personal health*, *environmental sustainability*, or *personal finance*, each message readdresses the individual's self-schema with a sentence challenging the application of the specific meat consequences information received. For example, the *responsible self-schema message tailored to animal well-being* concludes with: "You have a responsibility, duty, and obligation to reduce the number of animals that give their lives for human consumption. You can do this by reducing the amount of meat that you purchase and consume." The *adventurous self-schema message tailored to personal health* reads: "In order for you to fully enjoy life's adventures, you need to be in good physical health. You can ensure this by reducing the amount of meat that you purchase and consume." The *compassionate self-schema message tailored to personal finances* states: "To be true to yourself and make your life count, it is important that you adequately manage your personal finances so that you have money to invest in things that are important to you. You can do this by reducing the amount of meat that you purchase and consume." Lastly, an example from the *logical self-schema messages* is the message tailored to *environmental sustainability*: "You understand the consequences of consuming meat on the sustainability of the environment and natural resources. You can apply your knowledge by reducing the amount of meat that you purchase and consume." The *responsible*, *adventurous*, *compassionate*, and *logical oriented self-schema messages tailored to each value* can be viewed in their entirety in Appendices N through Q, respectively.

Altruistic oriented messages tailored to values

Participants who were randomly assigned to receive an *altruistic oriented message that is tailored to individuals' reported value* received a message that begins: "It is of the utmost importance in life that you make a difference in others' lives and change the world around you for the better. It is crucial that you help others and do things that don't just benefit yourself." Each of the altruistic messages then go on to address the consequences of the meat industry and meat consumption specific to the value participants choose as most important to them. The *animal well-being tailored messages* address the number of animals killed each year for the average American's meat consumption and also acknowledge the overcrowded, cramped quarters the animals live in while alive. The *personal health tailored messages* highlight the health problems and risks associated with meat consumption as well as the toxins, additives, and diseases that meat products can contain. The *environmental sustainability tailored messages* point out the large quantities of natural resources used in meat production (water, gasoline, and land), the consequences of the meat industry's deforestation, and the pollution caused by the meat industry. The *personal finance tailored messages* address the higher cost of meat as compared to vegetables, grains, and wheat-based products and the similar nutrient content in meat and non-meat products.

Following the consequences of the meat industry and meat consumption specific to *animal well-being, personal health, environmental sustainability, or personal finance*, each *altruistic oriented message* concludes by addressing the altruistic benefits one can gain from reducing one's meat consumption. For example, the *altruistic oriented message tailored to personal finances* concludes: "You can better manage your personal finances to have more

money to help others in need by reducing the amount of meat that you purchase and consume.” Each of these *altruistic oriented messages tailored to values* can be viewed in Appendix R.

Egoistic oriented messages tailored to values

Similar to the previously described *altruistic oriented messages tailored to individuals' values*, participants who randomly received an *egoistic oriented message tailored to their previously chosen value* received a message addressing the consequences of meat specific to the participants' chosen value. Before addressing the consequences of meat specific to one of the four values, each egoistic message begins: “It is of the utmost importance that you look out for yourself and do things that improve your own life and increase your well-being.” Following the specific consequences of meat for one of the four values, each egoistic message concludes by addressing the benefits that an individual can personally gain (specific to the individual's chosen value) from reducing his/her meat consumption are addressed. For example, the *egoistic oriented message tailored to animal well-being* concludes: “You can feel good about saving animal lives and avoid the guilt of contributing to their deaths by reducing the amount of meat that you purchase and consume.” Each of these *egoistic oriented messages tailored to values* can be viewed in Appendix S.

No-specific orientation messages tailored to values

As in previous message conditions, the *no-specific orientation messages tailored to individuals' values* address the consequences of the meat industry and meat consumption specific to the value chosen as most important for each individual. Unlike the *self-schema*, *altruistic*, and *egoistic oriented messages*, however, the *no-specific orientation messages* simply conclude with a sentence stating that individuals can reduce the consequences of meat by reducing the amount of meat that they purchase and consume. This concluding sentence in each message does not

highlight the potential benefits for the individual (like the *altruistic oriented message*), the potential benefits for others (like the *egoistic oriented message*), nor does it address the individuals' self-schema. Each of these *non-specific orientation messages tailored to each value* can be viewed in Appendix T.

Self-schema oriented messages not tailored to values

The messages oriented to individuals' self-schema but not tailored to individuals' values begin identically to the previously discussed *self-schema oriented messages tailored to individuals' values*. Each message begins with two self-schema sentences that match individuals' previously identified self-schema. The *responsible self-schema oriented message* starts off: "You are a responsible person. You pride yourself on being dependable, and others know they can always rely on you for help." The *adventurous self-schema oriented message* starts off with: "You are an adventurous person. You pride yourself on being spontaneous, and others know that you live life to the fullest." The *compassionate self-schema oriented message* begins: "You are a compassionate person. You pride yourself on being warm and communicative, and others know that you are always honest and strive for harmony." The *logical self-schema oriented message* reads: "You are a logical person. You pride yourself on your ability to make sense of and understand things, and others know that you are knowledgeable and competent."

Each message then equally emphasizes the consequences of the meat industry and meat consumption on all four values: *animal well-being*, *personal health*, *environmental sustainability*, and *personal finances*. The body of each *non-value-tailored message* thus reads:

Based on the average American's meat consumption, the average American is responsible for the death and maltreatment of 90 animals raised for food each year. On top of that, meat consumption has been linked with a number of health

problems, including high blood pressure, cholesterol, diabetes, hypertension, heart disease, cardiovascular disease, cancer, and even death. The meat industry also has a severe impact on the environment. The production of meat uses a large amount of natural resources such as water and gasoline, and a large percentage of the Earth's land is devoted to the meat industry – large portions of rainforests are destroyed as a consequence. To top it all off, meat is expensive. Pound for pound, meat on average costs far more than foods that have similar nutritional value such as vegetables, grains, and wheat-based products.

To conclude each of these *self-schema oriented messages not tailored to values*, each message readdresses the individual's chosen self-schema with a sentence challenging the application of the specific meat consequences information received. For example, the *responsible self-schema message* concludes: "You have a responsibility, duty, and obligation to reduce the number of animals that die, maintain your health, conserve natural resources and take care of the environment, and manage your finances. You can do this by reducing the amount of meat that you purchase and consume." Each of these *self-schema oriented messages not tailored to values* can be viewed in Appendix U.

Altruistic oriented message not tailored to values

Individuals who received an *altruistic oriented message not tailored to values* received a message that begins identical to the *altruistic oriented messages tailored to values* with an altruistic opening: "It is of the utmost importance in life that you make a difference in others' lives and change the world around you for the better. It is crucial that you help others and do things that don't just benefit yourself." Following these altruistic sentences, the *altruistic oriented message not tailored to values*, like the *self-schema messages not tailored to values*,

equally emphasizes the consequences of meat regarding each of the four values: *animal well-being, personal health, environmental sustainability, and personal finances*. The *altruistic oriented message not tailored to values* then concludes with an altruistic application to acknowledge how one's reduction of meat consumption could benefit others:

You can make a difference in the lives of others by reducing the amount of meat that you purchase and consume. You can decrease the number of animals that die, better the environment, example to others how to be healthier, and have more money to help others in need.

The *altruistic oriented message that is not tailored to values* can be viewed in Appendix V.

Egoistic oriented message not tailored to values

The *egoistic oriented message not tailored to values* is identical to the *altruistic oriented message not tailored to values*; however, the message begins and concludes with an egoistic, rather than an altruistic, application. The *egoistic oriented message not tailored to values* thus begins: "It is of the utmost importance in life that you look out for yourself and do things that improve your own life and increase your well being," and concludes:

It is in your best interest to look out for yourself. You can decrease the impact meat has on you personally by reducing the amount of meat that you purchase and consume. You can feel good about saving animal lives, improve your own personal health, better your own environment, and save money.

The *egoistic oriented message that is not tailored to values* can be viewed in Appendix W.

No-specific orientation message not tailored to values

The *no-specific orientation message not tailored to values* is identical to the previously described *altruistic* and *egoistic oriented messages not tailored to values* with exception to the beginning and ending of the message. The *no-specific orientation message not tailored to values* does not begin by addressing altruism or egoism, and rather begins by addressing the consequences of the meat industry and meat consumption on each of the four values (all values equally emphasized). The *no-specific orientation message not tailored to values* then concludes with the text: “You can reduce the consequences of meat by reducing the amount of meat that you purchase and consume.” This concluding sentence does not highlight the potential benefits for the individual (like the *altruistic oriented message*), the potential benefits for others (like the *egoistic oriented message*), nor does it address the individuals’ self-schema. The *no-specific orientation message that is not tailored to values* can be viewed in Appendix X.

Post-message intended meat consumption and attitudes

Following reading one of the previously described messages, participants were asked to indicate their intended meat consumption behavior and their attitudes toward meat. As described earlier, participants in the control condition that did not receive any message rated their intended meat consumption and attitudes toward meat immediately after rating their previous meat consumption habits and meat attitudes.

Post-message intended meat consumption

Participants responded to six questions indicating their intentions to consume meat after reading the message (see Appendix Y). Participants first indicated how willing they would be to reduce their meat consumption on a scale from 1 (*not at all willing to reduce the amount of meat I eat even a little*) to 5 (*very willing to stop eating meat entirely*). Participants were then asked

the same five questions regarding their meat consumption that they were asked before receiving a message. These post-message questions, however, asked participants about their *intended* meat consumption rather than their current meat consumption habits. They were first asked to identify how often they intend to eat meat in the future on a five-point scale ranging from *never* to *regularly*. As another measure of meat consumption habits, participants then selected one of eight descriptions that they feel best describes how often they intend to eat meat in the future (*daily, a few times a week, once a week, a few times a month, once a month, a few times a year, once a year, never*). Participants were then asked to report at how many meals they intend to consume meat in the next three days (*0 meals* to *9+ meals*) and how many servings of meat they intend to eat in an average day. Finally, participants were asked to report what percentage of food that they intend to consume on an average day will be made up of meat.

Post-message meat attitudes

Following participants' indications of their intended meat consumption habits, participants proceeded to again indicate their attitudes toward meat using two 7-point questions from Allen and Baines (2002; see Appendix Z). Participants first rated their attitude toward eating meat on a 1 (*eating meat is bad*) to 7 (*eating meat is good*) scale, and then rated their liking of meat on a 1 (*I very much dislike eating meat*) to 7 (*I very much like eating meat*) scale.

Control condition values and self-schemas

As mentioned previously, to avoid any undesired priming effects, participants who were randomly assigned to the control condition in which no message was received did not identify the value of most importance to them or the self-schema most characteristic of them earlier in the study. Thus at this point in the study, participants in the control condition were asked to rank the four values (*animal well-being, personal health, environmental sustainability, personal finances*)

in order of importance to them personally (see Appendix L) and to choose the self-schema (*responsible, adventurous, compassionate, logical*) that is most characteristic of them (see Appendix M).

Demographic questions

Finally, participants were asked to report their age, the gender with which they identify, and the highest level of education that they completed (*less than high school, high school, some college, 2-year degree, 4-year degree, graduate or professional degree, other*).

Debriefing

Upon the completion of the study, participants were debriefed about the study and thanked for their participation.

Results

Dependent measures

Identical to Study 1, for each of the following analyses, the dependent measures to be tested include participants' post-message responses (see Appendices Y and Z). Thus, each mentioned analysis is conducted on each of the following post-message dependent measures:

- 1) Participants' willingness to reduce their meat consumption (*not at all willing to reduce the amount of meat I eat even a little – very willing to stop eating meat entirely*).
- 2) Participants' intended frequency of meat consumption (*never – regularly*).
- 3) Participants' intended frequency of meat consumption (*never – daily*).
- 4) Participants' intended number of meals including meat to be consumed in the next three days (*0 meals – 9+ meals*).
- 5) Participants' number of intended daily meat serving consumption (*free response*).

- 6) Participants' intended daily percentage of food consumed that is meat (0% - 100%).
- 7) Participants' attitude toward eating meat (*eating meat is bad – eating meat is good*).
- 8) Participants' liking of eating meat (*I very much dislike eating meat – I very much like eating meat*).

As previously mentioned in the Study 1 results, though each of the above measures are similar in face value and may be highly correlated, it is unknown whether one of these measures is a better measure of meat consumption habits/attitudes than the others. Thus, aggregating participants' responses on the measures may mask possible effects. For this reason, the analyses in this study are conducted separately on each of the post-message dependent measures. It is acknowledged that analyzing dependent variables separately results in more analyses conducted, which in turn can increase Type I error rates. The results of the analyses conducted are overall non-significant; however, had the results been significant, it would have been appropriate (and necessary) to adjust *p*-values to make results more conservative in order to reduce the possibility of Type I errors.

Participants

Initially, 338 participants completed Study 2. Though all of these 338 participants identified themselves as non-vegetarian and non-vegan, 42 participants (12% of the sample) reported meat consumption habits and attitudes toward meat that were much lower than the rest of the sample. Because these individuals did not seem to eat as much meat and may very well be considered meat-reducers, they were excluded from the study. Participants were thus excluded if they reported that: 1) they seldom or never eat meat, 2) they do not eat meat on [at least] a weekly basis, 3) they consumed no meals in the past three days containing meat, 4) they eat zero servings of meat on an average day, 5) less than 10% of what they eat on an average day is meat,

6) they believe that eating meat is bad (as indicated by a 1 or 2 rating on the attitude toward meat scale), 7) they dislike eating meat (as indicated by a 1 or 2 rating on the liking of meat scale).

Thus, the breakdown of the number of participants from Study 2 excluded from the analyses are as follows: 9 participants who reported that they seldom eat meat, 11 participants who reported that they only eat meat a few times a month, 1 participant who reported that they ate zero meals containing meat in the past three days, 3 participants who reported that they eat zero servings of meat in an average day, 8 participants in who reported that less than 10% of what they eat on an average day is meat, and 10 participants who rated a 2 on the 1 (*eating meat is bad*) – 5 (*eating meat is good*) scale.

Excluding these 42 participants did not drastically change the overall demographics of the sample. Of the 296 participants that were included in the analyses, 107 (36.1%) were males, 184 (62.1%) were females, and 4 participants preferred not to disclose their gender. Participants' ages ranged from 18 to 72, and the average age was 37 ($SD = 13$). The majority of the participants had completed high school ($N = 293$). About $\frac{1}{4}$ of the participants reported that the highest level of education completed was some college ($N = 77$). Around 30% of participants reported that a 4-year degree was the highest level of education they had completed ($N = 96$). Additionally, 45 (15%) participants reported that the highest level of education they had completed was a 2-year degree, and 44 (15%) of the participants had earned a graduate or a professional degree. Finally, 2 participants reported “other” as the highest level of education completed.

Of the 296 participants, 42 participants were randomly assigned to the *self-schema oriented message tailored to values* condition, 33 participants to the *altruistic-oriented message tailored to values* condition, 29 participants to the *egoistic-oriented message tailored to values*

condition, 29 participants to the *no-orientation message tailored to values* condition, 30 participants to the *self-schema oriented message not tailored to values* condition, 37 participants to the *altruistic-oriented message not tailored to values* condition, 38 participants to the *egoistic-oriented message not tailored to values* condition, 30 participants to the *no-orientation message not tailored to values* condition, and 40 participants to the *control* (no feedback) condition.

Of the four values participants were asked to rank in order of importance to them, the most popular choice was *personal health* followed by *personal finances*. Of the 296 participants, over half of the participants ($N = 155, 52.4\%$) chose *personal health* as the most important value to them in regard to the issues surrounding meat. The second most popular value, *personal finances*, was ranked as most important by 75 (25.3%) of the participants. 45 participants (15.2%) ranked the value *animal welfare* as the most important value to them in regard to the issues surrounding meat, and 21 participants (7.1%) ranked *environmental sustainability* as the most important.

Descriptive statistics

Before the results of analyses comparing participants' responses in each of the randomly assigned conditions are presented, the descriptive statistics of participants' pre- and post-message meat consumption and attitudes toward meat are detailed. All of these descriptive statistics apply to the overall Study 2 participant sample – differences between responses for different feedback conditions are explored following this section.

Pre-message meat consumption

Participants' pre-message responses indicated that, overall, the participants included in this study eat meat often. When asked to report how often they eat meat on a five-point scale ranging from 1 (*never*) to 5 (*regularly*), participants on average responded 4.41, with a standard

deviation of 0.72. When asked to report how often they eat meat on a different scale (1 = *never*, 2 = *once a year*, 3 = *a few times a year*, 4 = *once a month*, 5 = *a few times a month*, 6 = *once a week*, 7 = *a few times a week*, 8 = *daily*), participants on average responded that they eat meat multiple times a week ($M = 7.50$), with very little variation in their responses ($SD = 0.58$).

Participants' pre-message responses also indicated that the participants included in this study eat more meat than they should be eating. Participants reported, on average, that in the past three days, they consumed meat at four-and-a-half meals ($M = 4.86$, $SD = 2.15$). 124 participants (42%) indicated that they consumed meat at 6 or more meals in the last three days – which equals having meat at two meals per day – and 23 participants indicated that they consumed meat at 9 or more meals in the past three days – which equals having meat at all 3 meals per day. Participants also indicated that they consume close to 3 servings of meat (defined as three ounces of meat) on an average day ($M = 2.46$, $SD = 1.57$), which exceeds the recommended number of daily servings of meat, which is 2 (American Heart Association, 2016; Center for Nutrition Policy and Promotion, 2014; U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015). In fact, 102 participants (34%) exceeded the recommended number of daily servings of meat, and 53 of these participants reported they consume at least double the recommended number of daily servings (4 servings) on an average day. On average, participants also reported that on an average day, over a third of the food that they eat is meat ($M = 36.30\%$, $SD = 17.37\%$). Given the dietary guidelines set by the United States Department of Agriculture and Department of Health and Human Services, meat should only make up about 12-13% of an individual's daily diet (Center for Nutrition Policy and Promotion, 2014). This guideline was exceeded by 272 (92%) of the 296 participants in this study. Of these 272 participants, 215 participants estimated that more than 26% of the food that they eat daily is

meat, which is more than double the daily recommendation. Even more concerning, about a fourth of the participants ($N = 70$) reported that on an average day, 50% or more of what they eat is meat.

Pre-message meat attitudes

In regard to participants' pre-message attitudes toward meat, participants' average attitude toward meat was a 6 on a 1 (*eating meat is bad*) to 7 (*eating meat is good*) scale ($M = 6.01$, $SD = 1.21$). Similarly, participants responded an overall liking of meat ($M = 6.36$, $SD = 0.99$; scale from 1 [*I very much dislike eating meat*] to 7 [*I very much like eating meat*]).

Post-message meat consumption

Participants' post-message responses indicated that participants were overall somewhat willing to reduce their meat consumption. When asked to report how willing they would be to reduce their meat consumption on a scale ranging from 1 (*not at all willing to reduce the amount of meat I eat even a little*) to 5 (*very willing to stop eating meat entirely*), participants, on average, responded somewhat close to the middle of the scale ($M = 2.49$, $SD = 1.05$). Additionally, participants' reports of how often they intend to eat meat in the future on same five-point scale ranging from 1 (*never*) to 5 (*regularly*) used to measure pre-message meat habits, participants intended (on average) to eat meat less often ($M = 3.89$, $SD = 0.88$) than they previously did/currently do (pre-message: $M = 4.41$, $SD = 0.72$). When asked to report how often they intend to eat meat on the other frequency scale (1 = *never*, 2 = *once a year*, 3 = *a few times a year*, 4 = *once a month*, 5 = *a few times a month*, 6 = *once a week*, 7 = *a few times a week*, 8 = *daily*), participants on average responded that they intend to eat meat a few times a week ($M = 7.02$, $SD = 1.01$), which was a slight decrease when compared to their pre-message responses ($M = 7.50$, $SD = 0.58$).

Participants reported, on average, that in the next three days they intend to consume meat at nearly four meals ($M = 3.83$, $SD = 2.28$), which is one less meal containing meat than they reported they had consumed in the past three days ($M = 4.86$, $SD = 2.15$). Participants reported intending to consume closer to two servings of meat on an average day in the future ($M = 2.30$, $SD = 1.93$), which was similar to the number of servings of meat per day that they currently eat (pre-message: $M = 2.46$, $SD = 1.57$). Overall, participants reported that they intend to consume meat as only 30% ($M = 30.37\%$, $SD = 18.12\%$) of their daily food, which is less than the 36% average that participants reported they currently eat (pre-message: $M = 36.46\%$, $SD = 17.37\%$).

Post-message meat attitudes

Mirroring participants' slight willingness to reduce their meat consumption, participants' average post-message attitudes toward meat rating ($M = 5.33$, $SD = 1.61$; scale from 1 [*eating meat is bad*] to 7 [*eating meat is good*]) indicates that participants' attitude toward meat became slightly more negative (pre-message: $M = 6.01$, $SD = 1.21$). Similarly, participants' average liking of meat was less post-message ($M = 6.05$, $SD = 1.25$) as compared to participants' pre-message ratings ($M = 6.36$, $SD = 0.99$; scale from 1 [*I very much dislike eating meat*] to 7 [*I very much like eating meat*]). Though participants' attitudes toward meat and liking of meat did show a decrease, it is important to note that participants' post-message meat attitudes remain quite positive.

Descriptive statistics summary

Similar to Study 1, Study 2 participants' reports of how much meat they consume exceed recommended amounts. This demonstrates the importance of this study. Overall, participants express intention of eating less meat and eating meat less often than their current/previous habits; however, for particular measures, participants' pre- and post-message responses do not greatly

differ. The average intended number of daily servings and daily percentages are still higher than is recommended; however, the slight decreases are nonetheless positive. For a complete table of pre- and post-message responses on each of the dependent measures, see Table 34.

Effects of feedback personalization and tailoring to values

It was hypothesized that messages with a specific orientation (self-schema orientation, altruistic orientation, or egoistic orientation) would be more effective than messages with no orientation at reducing individuals' intended future meat consumption and attitudes toward meat. It was further hypothesized that messages tailored to individuals' values would be more effective than messages not tailored to individuals' values at reducing individuals' intended future meat consumption and attitudes toward meat. Accordingly, it was hypothesized that self-schema oriented messages tailored to individuals' values, altruistic-oriented messages tailored to individuals' values, and egoistic-oriented messages tailored to individuals' values would be most effective at influencing individuals' willingness to reduce their meat consumption and attitudes toward meat and that a message not tailored to individuals' values that also has no specific orientation would be the least effective.

To test these hypotheses, multiple 4 (*message orientation: self-schema vs. altruistic vs. egoistic vs. no-orientation*) x 2 (*values tailoring: tailored to values vs. not tailored to values*) between-subjects Analysis of Covariances (ANCOVAs) were separately conducted on each of the previously mentioned dependent measures. Similar to the ANCOVAs conducted in Study 1, for each ANCOVA, the respective pre-message meat consumption/attitude item was included as a covariate. For example, the ANCOVA looking at how many meals in the next three days participants intend to eat meat controlled for how many meals participants ate including meat in the past three days, as was reported prior to reading the meat-consumption reduction message.

Participants' intended frequency of meat consumption

To determine how often participants intended to consume meat in the future, participants responded to two items: they were first asked to identify how often they intend to eat meat in the future on a five-point scale (ranging from 1 [*never*] to 5 [*regularly*]), and were then asked to select one of eight descriptions that they felt best described how often they intend to eat meat in the future (*never, once a year, a few times a year, once a month, a few times a month, once a week, a few times a week, daily*). For this second item, “*never*” responses were coded as a 1, “*daily*” responses were coded as an 8, and the in-between responses were coded 2-7 accordingly.

For the item that asked participants to identify how often they eat meat on a five-point scale (ranging from 1 [*never*] to 5 [*regularly*]), the ANCOVA results revealed that there were no significant effects when controlling for participants' pre-message responses to the question how often they eat meat on a five-point (*never – regularly*) scale. There was not a significant main effect of message orientation when controlling for participants' pre-message responses, $F(3, 247) = 1.05, p = .369$. There was also not a significant main effect of tailoring to values when controlling for participants' pre-message responses, $F(1, 247) = 1.26, p = .263$. Participants that received a message tailored to their chosen value ($M = 3.91, SD = 0.84$) did not significantly differ in their intended frequency to eat meat in the future than participants that received a message that was not tailored to their chosen value ($M = 3.82, SD = 0.91$). In addition to the non-significant main effects for this analysis, there was also no significant message orientation x tailoring to values interaction effect when controlling for participants' pre-message responses, $F(3, 247) = 2.53, p = .058$. For a comprehensive display of means and standard deviations for each message condition, please see Table 35.

Similar to the previous ANCOVA, for the item that asked participants to choose one of eight descriptions (*never - daily*) that they feel best describes how often they intend to eat meat in the future, there were no significant effects when controlling for participants' pre-message responses to the question asking them to choose from eight descriptions (*never - daily*) how often they eat meat. There was not a significant main effect of message orientation when controlling for participants' pre-message responses, $F(3, 247) = 0.60, p = .618$. There was also not a significant main effect of tailoring to values when controlling for participants' pre-message responses, $F(1, 247) < 0.01, p = .994$. Participants that received a message tailored to their chosen value ($M = 6.99, SD = 1.04$) did not significantly differ in their intended frequency to eat meat in the future than participants that received a message that was not tailored to their chosen value ($M = 6.99, SD = 1.00$). In addition to the non-significant main effects for this analysis, there was also no significant message orientation x tailoring to values interaction effect when controlling for participants' pre-message responses, $F(3, 247) = 0.61, p = .611$. For a comprehensive display of means and standard deviations for each message condition, please see Table 36.

Participants' intended number of meals including meat to be consumed in the next three days

The ANCOVA testing whether participants' intended number of meals containing meat in the next three days differed depending on the message condition received revealed that when controlling for participants' reported number of meals containing meat consumed in the past three days, there were no significant effects. There was no main effect of message orientation when controlling for participants' past three day meal consumption, $F(3, 247) = 0.50, p = .685$. When controlling for participants' past three day meal consumption, there was also no main

effect of tailoring to values, $F(1, 247) = 0.35, p = .552$. Participants that received a message tailored to values ($M = 3.92, SD = 2.19$) and participants that received a message not tailored to values ($M = 3.50, SD = 2.24$) reported that they intend to eat around three-and-a-half meals containing meat in the next three days. Finally, when controlling for participants' previous three-day meat meal consumption, there was no significant message orientation x tailoring to values interaction effect, $F(3, 247) = 2.21, p = .087$. For a comprehensive display of means and standard deviations for each message condition, please see Table 37.

Participants' number of intended daily meat serving consumption

The ANCOVA testing whether participants' intended number of daily servings of meat differed depending on the message condition received revealed that when controlling for participants' current/past daily servings of meat, there were no significant main effects. There was no main effect of message orientation when controlling for participants' current/past daily servings of meat, $F(3, 247) = 1.40, p = .242$. When controlling for participants' current/past daily servings of meat, there was also no main effect of tailoring to values, $F(1, 247) = 0.22, p = .638$. Participants that received a message tailored to values ($M = 2.27, SD = 1.95$) and participants that received a message not tailored to values ($M = 2.20, SD = 1.88$) reported that they intend to eat around two servings of meat daily. Finally, when controlling for participants' reported daily percentage of food consumed that is meat, there was no significant message orientation x tailoring to values interaction effect, $F(3, 247) = 0.89, p = .446$. For a comprehensive display of means and standard deviations for each message condition, please see Table 38.

Participants' intended daily percentage of food consumed that is meat

The ANCOVA testing whether participants' intended daily percentage of food consumed that is meat differed depending on the message condition received revealed that when controlling

for participants' reported daily percentage of food consumed that is meat, there were no significant effects. There was no main effect of message orientation when controlling for participants' reported daily percentage of food consumed that is meat, $F(3, 247) = 0.54, p = .652$. When controlling for participants' reported daily percentage of food consumed that is meat, there was also no main effect of tailoring to values, $F(1, 247) = 1.25, p = .265$. Participants that received a message tailored to values ($M = 29.77, SD = 16.04$) and participants that received a message not tailored to values ($M = 29.00, SD = 18.59$) reported that on an average day in the future, close to one-third of the food that they consume will be meat. Finally, when controlling for participants' reported daily percentage of food consumed that is meat, there was no significant message orientation x tailoring to values interaction effect, $F(3, 247) = 0.97, p = .410$. For a comprehensive display of means and standard deviations for each message condition, please see Table 39.

Participants' attitude toward eating meat

The ANCOVA testing whether participants' post-message attitudes toward eating meat (on a scale ranging from 1 [*eating meat is bad*] to 7 [*eating meat is good*]) differed depending on the message condition received revealed that when controlling for participants' pre-message attitudes toward eating meat, there were no significant effects. When controlling for participants' pre-message attitudes toward eating meat, there was no significant main effect of message orientation, $F(3, 247) = 0.42, p = .739$. Furthermore, there was no significant main effect of tailoring to values when controlling for participants' pre-message attitudes toward eating meat, $F(1, 247) = 0.54, p = .462$. Participants who received a message tailored to their chosen value ($M = 5.40, SD = 1.58$) did not significantly differ in their post-message attitudes toward meat from participants who received a message not tailored to a particular value ($M = 5.10, SD = 1.66$).

Finally, when controlling for participants' pre-message attitudes toward eating meat, there was no significant message orientation x tailoring to values interaction, $F(3, 247) = 0.29, p = .836$. For a comprehensive display of means and standard deviations for each message condition, please see Table 40.

Participants' liking of eating meat

The ANCOVA testing whether participants' post-message liking of meat (on a scale ranging from 1 [*I very much dislike eating meat*] to 7 [*I very much like eating meat*]) differed depending on the message received revealed that when controlling for participants' pre-message liking of meat, there were no significant effects. When controlling for participants' pre-message liking of meat, there was no significant main effect of message orientation, $F(3, 247) = 0.42, p = .738$. Furthermore, there was no significant main effect of tailoring to values when controlling for participants' pre-message liking of meat, $F(1, 247) = 1.58, p = .210$. Participants who received a message tailored to their chosen value ($M = 6.13, SD = 1.24$) did not significantly differ in their post-message liking of meat from participants who received a message not tailored to a particular value ($M = 5.90, SD = 1.33$). Finally, when controlling for participants' pre-message liking of meat, there was no significant message orientation x tailoring to values interaction, $F(3, 247) = 0.05, p = .987$. For a comprehensive display of means and standard deviations for each message condition, please see Table 41.

Participants' willingness to reduce their meat consumption

Because participants only reported how willing they would be to reduce their meat consumption *after* reading the message, a 4 (*message orientation: self-schema vs. altruistic vs. egoistic vs. no-orientation*) x 2 (*values tailoring: tailored to values vs. not tailored to values*) ANOVA was conducted to compare participants' willingness to reduce their meat consumption

(as measured on a 1 [*not at all willing to reduce the amount of meat I eat even a little*] to 5 [*very willing to stop eating meat entirely*] scale). Analyses revealed that there were no significant effects. There was no significant main effect of message orientation, $F(3, 248) = 1.41, p = .240$. There was also no significant main effect of tailoring to values, $F(1, 248) < 0.01, p = .947$. Regardless of whether or not participants received a message tailored ($M = 2.48, SD = 1.01$) or not tailored ($M = 2.47, SD = 1.08$) to their chosen value, their reported willingness to reduce their meat consumption was similar. Finally, there was no significant message orientation x tailoring to values interaction, $F(3, 248) = 0.71, p = .550$. For a comprehensive display of means and standard deviations for each message condition, please see Table 42.

Control group comparison

Each of the previously described analyses compared the effects of message orientation and tailoring/not tailoring to values. However, none of the previous analyses included the control (no feedback) condition in these comparisons. To compare each of the message conditions to the no message (control) condition, multiple one-way between-subjects ANCOVAs were conducted to compare each of the eight message conditions (*self-schema oriented message tailored to values, altruistic-oriented message tailored to values, egoistic-oriented message tailored to values, no-orientation message tailored to values, self-schema oriented message not tailored to values, altruistic-oriented message not tailored to values, egoistic-oriented message not tailored to values, and no-orientation message not tailored to values*) to the control (no feedback) condition on each of the previously mentioned dependent measures. Similar to the previous ANCOVAs, the respective pre-message meat consumption/attitude item was included as a covariate. It was hypothesized that participants in the control condition that received no meat-

consumption reduction message would report the highest intended future meat consumption and most positive attitudes toward meat as compared to all of the message conditions.

Participants' intended frequency of meat consumption

As previously described, participants responded to two separate items measuring how often they intend to consume meat in the future. The first item asked participants to respond on a five-point scale ranging from 1 (*never*) to 5 (*regularly*) how often they intend to eat meat in the future. The ANCOVA results revealed that when controlling for participants' pre-message reports of how often they eat meat (on the same 1 to 5 scale), there were no significant differences between any of the conditions, $F(8, 286) = 1.83, p = .071$. The reported intended frequency of meat consumption did not significantly differ between any of the conditions (see Table 43 for the means and standard deviations for each condition).

For the second item that participants responded to that measured their intended frequency to consume meat in the future (ranging from 1 [*never*] to 8 [*daily*]), the ANCOVA results revealed that when controlling for participants' pre-message reports of how often they eat meat (on the same 1 to 8 scale), there were no significant differences between any of the conditions, $F(8, 286) = 0.80, p = .602$. Similar to the previous measure of intended frequency to eat meat, there were no differences between the conditions regarding participants' reports of how frequently they intend to consume meat in the future (see Table 44 for the means and standard deviations for each condition).

Participants' intended number of meals including meat to be consumed in the next three days

The ANCOVA testing whether participants' intended number of meals containing meat in the next three days differed depending on the study condition revealed that when controlling

for participants' reported number of meals containing meat consumed in the past three days, there was a significant main effect of condition, $F(8, 286) = 2.25, p = .024$ (see Table 45 and Figure 7). Participants in the control group reported the intention to eat the most meals including meat in the next three days ($M = 4.68, SD = 2.52$); however, Bonferroni multiple comparisons showed that control group participants' estimates only significantly differed from participants' estimates in the altruistic-oriented message tailored to values condition ($p < .05; M = 3.58, SD = 2.05$), the self-schema oriented message not tailored to values condition ($p < .05; M = 3.53, SD = 2.32$), and the egoistic-oriented message not tailored to values condition ($p < .05; M = 3.18, SD = 1.56$). The results of this analysis partially support the hypothesis that participants in the control (no feedback) condition would report the highest intended future meat consumption.

Participants' number of intended daily meat serving consumption

The ANCOVA testing whether participants' intended number of daily servings of meat differed depending on the study condition revealed that when controlling for participants' current/past daily servings of meat, there were no significant differences between conditions, $F(8, 286) = 0.98, p = .451$ (see Table 46 for the means and standard deviations for each condition).

Participants' intended daily percentage of food consumed that is meat

The ANCOVA testing whether participants' intended daily percentage of food consumed that is meat differed depending on the study condition revealed that when controlling for participants' current/past daily percentage of food consumed that is meat, there were no significant differences between conditions, $F(8, 286) = 1.33, p = .228$ (see Table 47 for the means and standard deviations for each condition).

Participants' attitude toward eating meat

The ANCOVA testing whether participants' post-message attitudes toward meat (on a 1 [*eating meat is bad*] to 7 [*eating meat is good*]) differed depending on the study condition revealed that when controlling for participants' pre-message reported attitude toward meat, there were no significant differences between conditions, $F(8, 286) = 1.48, p = .163$. Though participants in the control (no feedback) condition did report the most favorable attitudes toward meat ($M = 5.90, SD = 1.43$), their attitudes were not significantly greater than the attitudes reported by participants in any of the feedback conditions (see Table 48 for the means and standard deviations for each condition).

Participants' liking of eating meat

The ANCOVA testing whether participants' post-message liking of eating meat (on a 1 [*I very much dislike eating meat*] to 7 [*I very much like eating meat*]) differed depending on the study condition revealed that when controlling for participants' pre-message reported liking of eating meat, there were no significant differences between conditions, $F(8, 286) = 0.85, p = .564$ (see Table 49 for the means and standard deviations for each condition).

Participants' willingness to reduce their meat consumption

Because participants only reported how willing they would be to reduce their meat consumption (on a 1 [*not at all willing to reduce the amount of meat I eat even a little*] to 5 [*very willing to stop eating meat entirely*] scale) after reading the message, a one-way ANOVA was conducted to compare participants' willingness to reduce their meat consumption. In accordance with the majority of the previous analyses, there were no significant differences between participants' willingness to reduce their meat consumption, $F(8, 287) = 0.80, p = .600$ (see Table 50 for the means and standard deviations for each condition).

Effects of feedback personalization and tailoring to values summary

It was hypothesized that messages with a specific orientation (self-schema orientation, altruistic orientation, or egoistic orientation) would be more effective than messages with no orientation at reducing individuals' intended future meat consumption and attitudes toward meat. It was further hypothesized that messages tailored to individuals' values would be more effective than messages not tailored to individuals' values at reducing individuals' intended future meat consumption and attitudes toward meat. Accordingly, it was hypothesized that self-schema oriented messages tailored to individuals' values, altruistic-oriented messages tailored to individuals' values, and egoistic-oriented messages tailored to individuals' values would be most effective at influencing individuals' willingness to reduce their meat consumption and attitudes toward meat and that a message not tailored to individuals' values that also has no specific orientation would be the least effective. Contrary to the hypotheses, the results of most of the analyses from Study 2 revealed that participants' intentions to reduce their meat consumption and participants' attitudes toward meat did not significantly differ depending on what condition they were randomly assigned to.

Of all of the analyses investigating the main effects of message orientation and tailoring to values, there were no significant differences between self-schema oriented messages, altruistic-oriented messages, egoistic messages, and no-orientation messages, nor any significant differences between messages tailored to values and messages not tailored to values. Furthermore, none of the analyses revealed a significant message orientation x tailoring to values interaction.

Of all of the analyses comparing the control (no feedback) condition responses to the feedback condition responses, only one analysis (how many meals in the next three days)

showed significant differences between the nine conditions. Participants in the control group reported intending to eat significantly more meals including meat in the next three days than did participants in some (but not all) of the other feedback conditions. The results of this analysis partially support the hypothesis that participants in the control (no feedback) condition would report the highest intended future meat consumption.

Demographic analyses

Though not the main purpose of the present study, it was of interest to determine whether there were demographic differences in meat consumption reduction and if certain individuals are more willing to reduce their meat consumption, have more negative attitudes toward meat, and/or are more affected by certain meat-reduction feedback messages. As noted in Study 1, it is important to note here that the following demographic analyses were not initially planned and are purely exploratory. Accordingly, any and all results from the demographic analyses reported below should be interpreted with caution and awareness that the number of analyses conducted could very well have resulted in Type I errors.

Gender

Because previous literature shows that males and females differ in their attitudes toward meat as well as their meat-eating behaviors (e.g., Barr & Chapman, 2002; Beardsworth & Bryman, 1999; Beardsworth & Keil, 1992; Gale et al., 2007; Hamilton, 1993; Heleski, Mertig, & Zanella, 2006; White & Frank, 1994; Worsley & Skrzypiec, 1998), it was of interest in the present study to compare males' and females' attitudes toward meat and meat-eating behaviors.

Descriptive statistics

For all but two of the pre-message reports, males reported eating more meat and liking meat more than females reported. For the two items that that this was not the case, males' and

females' mean reports of how often they eat meat and their attitudes toward meat were nearly identical (< .1 difference between means on a 5-point and 7-point scale, respectively). For all of the post-message reports, males reported intentions to eat more meat and intentions to eat meat more often than females reported, and males' post-message reports of their attitude toward and liking of meat were more favorable than females' post-message reports. For a comprehensive display of means and standard deviations for males' and females' pre-message reports on each of the dependent measures, see Table 51. For a comprehensive display of means and standard deviations for males' and females' post-message reports on each of the dependent measures, see Table 52.

Gender differences

To determine whether males' and females' meat-consumption habits and attitudes toward meat significantly differed and to also examine whether males and females differently changed their attitudes toward meat and their meat-consumption habits, multiple repeated-measures Analysis of Variances (ANOVAs) were conducted on each of the dependent measures. For all of the analyses (except for the ANOVA on participants' reported number of daily servings of meat), there were significant main effects of time (all $ps < .05$; see Table 53) such that participants' pre-message reports of their meat-consumption habits and attitudes toward meat were higher than their post-message intentions to eat meat and attitudes toward meat. For all but two of the analyses (frequency of meat consumption (*never – regularly*), and attitudes toward meat), there were significant main effects of gender (see Table 54) such that males reported eating/intending to eat meat more often, eating/intending to eat more meat, and having more positive attitudes toward meat than did females.

In addition to males generally reporting that they eat more meat and have more positive attitudes toward meat than females reported, for all but two of the dependent measures (number of daily servings of meat and liking of meat) there were significant time x gender interactions (see Table 55). Both males and females decreased how often they intend to eat meat, the number of meals they intend to consume meat, their daily percentage of meat, and their attitudes toward meat as compared to their pre-message reports; however, females decreased their reports more than males did. For a comprehensive display of means and standard deviations for males' and females' pre- and post-message reports on the dependent measures, see Table 40.

In addition to the repeated-measures ANOVAs conducted to determine whether there were any gender differences on each of the dependent measures, a t-test was conducted to compare males' and females' reported willingness to decrease their meat consumption, since this question was only asked after the meat-reduction message. In line with previous research findings, the *t*-test revealed that females were significantly more willing ($M = 2.60, SD = 1.03$) than males ($M = 2.27, SD = 1.05$) to reduce their meat consumption, $t(289) = -2.63, p = .009$.

Gender x condition effects

Though the previous analyses found no evidence that participants' meat-consumption behaviors or attitudes toward meat were differentially influenced by the messages, it was of interest to explore whether gender served as a moderator. Thus, exploratory analyses were conducted to determine whether males' and females' post-message reports differed for the different message conditions. Multiple ANCOVAs (similar to the previously detailed ANCOVAs) were used to test the gender x condition (comparing all eight message conditions and the control condition) interaction on each of the dependent measures while controlling for the respective pre-message meat consumption/attitude item. For all of the analyses, there were no

significant gender x condition interactions (all $ps > .05$; see Table 56). For a comprehensive display of means and standard deviations for males' and females' post-message reports for each condition, see Tables 57-63.

A gender x condition ANOVA on participants' reports of how willing they would be to reduce their meat consumption (which was only asked post-message) similarly resulted in a non-significant gender x condition interaction, $F(8, 273) = 0.51, p = .847$. Though females seem to be more willing to reduce the amount of meat that they consume and more willing to reduce their attitudes toward meat (as demonstrated in the analyses described previously), this effect does not differ by condition. For a comprehensive display of means and standard deviations, see Table 64.

Education and age

As with Study 1, it was of interest in Study 2 to investigate whether individuals' highest level of education completed and age would relate to their willingness and intention to reduce their meat consumption as well as their attitudes toward meat given that previous research has demonstrated that current vegetarians and meat reducers differ from the overall population in regard to their education level (Beardsworth & Keil, 1992; Gale et al., 2007; Ruby, 2012), and it seems logical that age might also be related to individuals' meat consumption and attitudes toward meat.

Education

To determine whether individuals' highest level of education completed is related to their initial (pre-message) meat-consumption habits and attitudes toward meat, multiple bivariate correlations were conducted between participants' reported highest level of education completed and participants' responses on each of the pre-message questions. The results indicated that participants' highest level of education completed is somewhat related to how much meat

individuals eat and how often individuals eat meat. Each of the correlations are negative, indicating that older participants consume meat less often, consume less meat, have more negative attitudes toward meat, and like meat less than younger participants. Though all of the correlations were negative, only three correlations were significant: highest level of education completed was significantly negatively correlated with participants' reports of how often they eat meat (*never – regularly*; $r[292] = -.144, p = .014$), the number of meals containing meat participants ate in the last three days ($r[292] = -.144, p = .013$), and the percentage of food participants reported consuming on an average day ($r[292] = -.129, p = .027$). Table 65 displays the correlations between education level and each of the pre-message responses.

To determine whether individuals' highest level of education completed is related to their willingness to reduce their meat consumption, intention to reduce their meat consumption, and post-message attitudes toward meat, multiple bivariate correlations were conducted between participants' reported highest level of education completed and each of the post-message dependent measures. The results overall showed no significant correlations (except one) between participants' highest level of education completed and their willingness to reduce their meat consumption, intended meat-eating behaviors, or their post-message attitudes toward meat (all p s $> .05$; see Table 65). The only significant correlation was between participants' highest level of education completed and participants' reported number of intended daily servings of meat ($r[292] = -.120, p = .040$). This significant correlation suggests that more educated participants intend to eat fewer servings of meat than do less educated participants.

Age

To determine whether age is related to individuals' current/past (pre-message) meat-consumption habits and attitudes toward meat, multiple bivariate correlations were conducted

between participants' ages and participants' responses on each of the pre-message questions. The results indicated that participants' ages were only significantly related to the percentage of food that participants consume on an average day that is meat, $r(294) = -.290, p < .001$. This negative correlation suggests that older adults consume lower percentages of meat than younger adults do. Table 66 displays the correlations between age and each of the pre-message responses.

To determine whether individuals' age is related to their willingness to reduce their meat consumption, intention to reduce their meat consumption, and post-message attitudes toward meat, multiple bivariate correlations were conducted between participants' age and each of the post-message dependent measures. Similar to the correlations between age and each of the pre-message responses, only the correlation between age and percentage of meat was significant, $r(294) = -.172, p = .003$. Like the correlation with the pre-message responses, the negative direction of this correlation indicates that just as older adults consume lower percentages of meat than do younger adults, they also intend to consume lower percentages of meat than younger adults intend to in the future. Table 66 displays the correlations between age and each of the post-message responses.

Demographic analyses summary

Overall, the demographic analyses conducted supported previous findings that males generally eat more meat and have more positive attitudes toward meat than females. The analyses further confirmed previous findings that females are more receptive to reducing their meat consumption than are males. The exploratory analyses conducted partially supported previous research that education level is negatively correlated with meat consumption habits and attitudes toward meat. Similarly, the analyses in the present study suggest that age is significantly related to the percentage of food that one consumes that is meat.

Chapter 4 - No Pre-Feedback/Message Questions Control Group

Exploratory Follow-Up Study

The previously mentioned results for Study 1 and Study 2 overall show that participants' willingness to reduce their meat consumption and the decrease in participants' attitudes toward meat did not differ depending on what feedback (for Study 1) or message (for Study 2) an individual received. Furthermore, for many of the analyses, participants in the feedback and message conditions did not differ from individuals in the control (no feedback) condition in regard to their willingness to reduce their meat consumption, their intentions to eat meat, nor their attitudes toward meat. All participants (regardless of condition) seemed to reduce their attitudes toward meat and intention to consume meat in the future similarly. Though this finding was contrary to what was hypothesized, it is possible that individuals are already familiar with the content included in the feedback and messages. It is not uncommon knowledge that meat (especially red meat) should be eaten in moderation. If individuals are already aware of this, and are additionally already familiar with the negative effects the meat industry and meat consumption have on animal welfare, one's personal health/appearance/finances, and the environment, just having individuals reflect on their current meat eating habits may be enough to activate all these already-known consequences. This may then explain why individuals in the control groups for both studies did not differ in their future intentions to eat meat and attitudes toward meat from individuals who received a meat-reduction message. Though they were not explicitly given feedback or a message regarding the consequences of meat consumption, they may have spontaneously thought about such information upon assessing their current meat consumption habits. This may also then explain why individuals' post-feedback/message reports did not differ between the feedback/message conditions – individuals may have considered

information that they had previous knowledge of that was not included in the feedback/message that they received. Thus, there is no way to know exactly what information individuals thought about or considered that was activated by the content of the messages or the assessment of one's own current meat habits.

In an attempt to further pursue and investigate the possibility that asking participants to reflect on their own current meat eating behaviors is enough to persuade them to cut back on their meat consumption, an exploratory follow-up study was conducted in which participants were simply asked to report their willingness to reduce their meat consumption, their future intentions to eat meat, and their attitudes toward meat. The questions were identical to the post-feedback/message questions previously described. Participants in this follow-up study were identical to the original control (no feedback) group; however, they were not asked the initial meat consumption and attitude questions. This condition will henceforth be referred to as the *follow-up no pre-feedback/message questions control condition*.

Method

Participants

72 non-vegetarian/vegan participants in the United States were recruited through Amazon Mechanical Turk (MTurk: <http://www.mturk.com>; see Buhrmester, Kwang, & Gosling, 2011), a national workforce website run by Amazon, and were compensated \$0.05 for their participation in the online study. Of these 72 participants, 28 (38.9%) were male and 44 (61.1%) were female. Participants' ages ranged from 21 to 72, with an average age of 37 ($SD = 12$). All of the participants had completed high school, and about one-fifth of the participants ($N = 14$) reported that the highest level of education completed was some college, and around 45% of the participants ($N = 34$) reported that a 4-year degree was the highest level of education they had

completed. Additionally, 5 participants (6.9%) reported that the highest level of education they had completed was a 2-year degree, and 9 participants (12.5%) had earned a graduate or professional degree.

Materials and procedure

Participants completed the present study using an online survey created on Qualtrics which was distributed online through Amazon Mechanical Turk (MTurk; <http://www.mturk.com>). After reading and indicating agreement with the informed consent, participants proceeded to answer questions regarding their own meat consumption habits and attitudes toward meat.

Intended meat consumption

Identical to Study 1 and 2, participants were asked to report their willingness to reduce their meat consumption, and their future intentions to eat meat on six items. Participants were first asked to indicate how willing they would be to reduce their meat consumption on a scale ranging from 1 (*not at all willing to reduce the amount of meat I eat even a little*) to 5 (*very willing to stop eating meat entirely*). Participants were then asked about their *intended* meat consumption. They were first asked to identify how often they intend to eat meat in the future on a five-point scale ranging from *never* to *regularly*. As another measure of meat consumption habits, participants then select one of eight descriptions that they feel best describes how often they intend to eat meat in the future (*never, once a year, a few times a year, once a month, a few times a month, once a week, a few times a week, daily*). Participants then were asked to report at how many meals they intend to consume meat in the next three days (*0 meals* to *9+ meals*) and how many servings of meat they intend to eat in an average day. Finally, participants were asked to report what percentage of food that they intend to consume on an average day will be meat.

Meat attitudes

Following the six questions regarding participants' intended meat consumption, participants indicated their attitudes toward meat using two 7-point questions from Allen and Baines (2002). Participants first rated their attitude toward eating meat on a 1 (*eating meat is bad*) to 7 (*eating meat is good*) scale, and then rated their liking of meat on a 1 (*I very much dislike eating meat*) to 7 (*I very much like eating meat*) scale.

Demographic questions

Finally, participants were asked to report their age, the gender with which they identify, and the highest level of education that they completed (*less than high school, high school, some college, 2-year degree, 4-year degree, graduate or professional degree, other*).

Debriefing

Upon the completion of the study, participants were debriefed about the study and thanked for their participation.

Results

Dependent measures

Identical to Study 1 and 2, each mentioned analysis is conducted on each of the following dependent measures:

- 1) Participants' willingness to reduce their meat consumption (*not at all willing to reduce the amount of meat I eat even a little – very willing to stop eating meat entirely*).
- 2) Participants' intended frequency of meat consumption (*never – regularly*).
- 3) Participants' intended frequency of meat consumption (*never – daily*).

- 4) Participants' intended number of meals including meat to be consumed in the next three days (*0 meals – 9+ meals*).
- 5) Participants' number of intended daily meat serving consumption (*free response*).
- 6) Participants' intended daily percentage of food consumed that is meat (*0% - 100%*).
- 7) Participants' attitude toward eating meat (*eating meat is bad – eating meat is good*).
- 8) Participants' liking of eating meat (*I very much dislike eating meat – I very much like eating meat*).

Participants

Of the 72 participants, 36 participants' data were randomly assigned to serve as the follow-up no pre-feedback questions control condition for the previously detailed original Study 1 and 36 participants were randomly assigned to serve as the follow-up no pre-message questions control condition for the previously detailed original Study 2. Demographically, these participants were very similar to the participants for the original studies. The follow-up no pre-feedback/message questions control condition participants added to Study 1 and Study 2 had mean ages of 36 ($SD = 9$, range = 22-54) and 40 ($SD = 14$, range = 21-72), respectively. Of the 36 participants added to Study 1, 15 (41.7%) were male, and 21 (58.3%) were female; similarly, 13 (36.1%) of the 36 participants added to Study 2 were male and 23 (63.9%) were female. The majority of participants in both studies indicated that the highest level of education they had completed was a 4-year degree (Study 1: $N = 19$ (52.8%); Study 2: $N = 15$ (41.7%)).

Analyses

To test whether individuals who are not given any feedback or message who are also not asked to report their current/past meat consumption habits before reporting their willingness to reduce their meat consumption, their future intentions to consume meat, and their attitudes

toward meat differ from individuals who received feedback/a meat-reduction message and individuals in the original control (no feedback/message) group (who *did* receive the pre-feedback/message questions), multiple one-way ANOVAs were conducted separately for each study on each of the dependent measures. Each one-way ANOVA compared participants in each original condition (either from Study 1 or Study 2) to participants in the follow-up no pre-feedback/message questions control condition.

Not supporting the previously proposed explanation as to why the control (no feedback) groups originally included in both studies did not differ from the other feedback/message conditions, participants in the follow-up no pre-feedback/message questions control condition overall did not significantly differ from the other participants in the other conditions (see Tables 67-68). Specifically, none of the analyses conducted for Study 2 (with the schema, altruistic, egoistic, and no-orientation messages) showed any significant differences between the follow-up no pre-message questions control condition and any of the message conditions or control (no message) condition (all $ps > .05$). Similarly, half of the analyses conducted for Study 1 (with the personalized and generalized feedback) showed no significant differences between the follow-up no pre-feedback questions control condition and any of the message conditions or control (no feedback) condition (all $ps > .05$). Completely contrary to what was anticipated, however, participants in the follow-up no pre-feedback questions control condition in Study 1 reported that they intended to eat meat significantly *less* often than any of the other conditions, reported that they intended to eat *less* meals including meat in the next 3 days, and reported that their attitude toward meat was *more negative* than the other Study 1 conditions (all $ps < .05$). For a comprehensive display of means and standard deviations for each condition for each study, see Tables 69-76.

Discussion

Given that individuals who were not asked to report their previous/current meat consumption habits reported intention to eat *less* meat on some measures than participants who did report their previous/current meat consumption before reporting their future meat consumption intentions, it is possible that having individuals reflect on their current meat habits causes them to solidify their attitudes toward and liking of meat, and therefore they are less willing to reduce the amount of meat that they intend to eat in the future. It is possible that thinking about how much meat one consumes causes individuals to be more committed to eating meat and makes them realize how much they enjoy eating meat. In the present dissertation, this potential issue was not anticipated – participants were asked to report their current/past meat consumption habits in order to obtain a baseline meat consumption for each participant and, in Study 1, to personalize feedback based on individuals' amount of meat consumed.

Alternatively, it may be the case that participants who did not report their current/past meat consumption habits before reporting their intended future meat consumption underestimated the amount of meat that they will consume in the future. Perhaps asking participants to reflect on how much meat is a part of their everyday diet makes participants be more realistic in their estimates of how much they will actually be able to reduce their meat consumption. Having individuals report their current/past meat consumption habits may have provided them with an anchor from which they based their future reduction intentions on.

Chapter 5 - Taste/Texture of Meat as a Barrier Exploratory Follow-Up Studies

Previous studies have established that one's liking or disliking of the taste and/or texture of meat is an important factor in determining whether or not an individual becomes a vegetarian

(Beardsworth & Keil, 1992; Lea & Worsley, 2003; Rozin, Markwith, & Stoess, 1997; Ruby, 2012). Furthermore, liking or disliking the taste and/or texture of meat can be an important factor in determining whether individuals who are vegetarian maintain or abandon the lifestyle (Barr & Chapman, 2002). Thus, it makes sense that one's liking of the taste and/or texture of meat also influences one's willingness and intention to reduce his/her meat consumption. Given the overall lack of significant findings in Study 1 and Study 2, the influence of individuals' liking of the taste and/or texture of meat is potentially a more important factor in individuals' food choices. To determine how important taste and/or texture is/are to an individual's food choices, two additional exploratory follow-up studies were conducted.

Taste/Texture Exploratory Follow-Up Study 1

Participants

34 participants in the United States were recruited through Amazon Mechanical Turk (MTurk: <http://www.mturk.com>; see Buhrmester, Kwang, & Gosling, 2011), a national workforce website run by Amazon, and were compensated \$0.05 for their participation in the online study. The participants consisted of 15 (44%) males and 19 (56%) females ranging in age from 22 to 70 ($M = 38$, $SD = 14$).

Materials and procedure

Participants completed the study using an online survey created on Qualtrics which was distributed online through Amazon Mechanical Turk (MTurk; <http://www.mturk.com>). After reading and indicating agreement with the informed consent, participants were asked to rank six topics (animal welfare, personal medical health, personal appearance, environmental sustainability, personal finances, and taste and/or texture) in order of importance in regard to their food choices. Participants were then asked to report their age, the gender with which they

identify, and the highest level of education that they completed (*less than high school, high school, some college, 2-year degree, 4-year degree, graduate or professional degree, other*).

Upon the completion of the study, participants were be debriefed about the study and thanked for their participation.

Results

Over one-third ($N = 13$, 38%) of the participants ranked taste and/or texture as the most influential on their food choices. An additional 23% ($N = 8$) of the participants ranked taste and/or texture as second most important. Combined, this means that over half of the participants (21 participants out of 34) ranked taste and/or texture as either the most or the second most important factor in their decision of what food to eat.

Taste/Texture Exploratory Follow-Up Study 2

Participants

33 participants in the United States were recruited through Amazon Mechanical Turk (MTurk: <http://www.mturk.com>; see Buhrmester, Kwang, & Gosling, 2011), a national workforce website run by Amazon, and were compensated \$0.05 for their participation in the online study. The participants consisted of 15 (45%) males and 18 (55%) females ranging in age from 20 to 57 ($M = 36$, $SD = 10$).

Materials and procedure

Participants completed the study using an online survey created on Qualtrics which was distributed online through Amazon Mechanical Turk (MTurk; <http://www.mturk.com>). After reading and indicating agreement with the informed consent, participants were asked to rate how important each of the six previously mentioned topics (animal welfare, personal medical health, personal appearance, environmental sustainability, personal finances, and taste and/or texture) is

to their decisions regarding what food to eat on a 1 (*not at all important*) to 7 (*extremely important*) scale. Participants were then asked to report their age, the gender with which they identify, and the highest level of education that they completed (*less than high school, high school, some college, 2-year degree, 4-year degree, graduate or professional degree, other*). Upon the completion of the study, participants were be debriefed about the study and thanked for their participation.

Results

A one-way repeated-measures ANOVA revealed that participants did significantly differ in how important each value was rated in regard to their food decisions, $F(5, 160) = 30.20, p < .001$. Participants overall rated taste and/or texture with the highest importance, giving it an average rating of 6.39 on a 1 (*not at all important*) to 7 (*extremely important*) scale. Furthermore, there was very little variation among participants' ratings for the importance of taste/texture ($SD = 0.65$): the minimum importance reported for taste/texture was a 5 (all of the other values had a minimum rating of 1 (with the exception of personal medical health, which had a minimum rating of 3) and standard deviations greater than 1.10).

Tukey-corrected multiple comparisons revealed that individuals rated taste/texture as significantly more important than all the other values (all $ps < .05$). The second and third most important were personal finances ($M = 5.57, SD = 1.42$) and personal medical health ($M = 5.37, SD = 1.14$), respectively, which were both rated significantly more important than the three least importantly rated values – personal appearance ($M = 4.42, SD = 1.85$), environmental sustainability ($M = 3.68, SD = 1.79$), and animal welfare ($M = 3.37, SD = 1.69$) – which did not significantly differ from one another.

Discussion

The two exploratory follow-up studies seeking the importance of taste and/or texture on individuals' dietary choices provide support to the idea that taste and texture are both very important factors that participants value when making food choices. These findings suggest that the overall lack of findings from Study 1 and Study 2 may be due to the dominating importance of taste/texture of food on individuals' food decisions. Though previous research has found that a dislike of the taste and/or texture of meat is a reason that some vegetarians report as their motivation for becoming vegetarian (Beardsworth & Keil, 1992; Rozin, Markwith, & Stoess, 1997; Ruby, 2012), research acknowledges that this is rarely the primary motivation individuals provide (Beardsworth & Keil, 1992). Thus, though taste/texture is not a popular reason why individuals become vegetarian, research does suggest it is a common reason why individuals *do not* become vegetarian (Lea & Worsley, 2003). Researchers Lea and Worsley (2003) found that the most common barrier to becoming vegetarian is an enjoyment of meat, followed by an unwillingness to alter eating habits. Other researchers have found that a common reason why vegetarians abandon vegetarianism is due to missing the taste of meat (Barr & Chapman, 2002). It thus seems very reasonable that while the values targeted in the feedback in Study 1 and the messages in Study 2 are influential concerns of individuals who have adopted a vegetarian or meat-reduction lifestyle, these concerns may be less important than the importance of taste/texture for individuals who regularly consume meat and do not consciously reduce the amount of meat that they are eating.

Chapter 6 - General Discussion

Effectiveness of Feedback Personalization, Message Orientation, and

Tailoring to Values

The present dissertation sought to determine the effectiveness of various meat consumption reduction messages in influencing individuals' intentions to consume meat and attitudes toward meat consumption. Specifically, this dissertation aimed to investigate the effectiveness of feedback personalized to an individual's current meat consumption habits, messages oriented to an individual's self-schema, egoistic and altruistic oriented messages, and messages/feedback tailored to an individual's values and motivations. For Study 1, it was hypothesized that personalized feedback would be more effective than generalized feedback and feedback tailored to individuals' values would be more effective than feedback not tailored to individuals' values at reducing individuals' intended future meat consumption and attitudes toward meat. It was thus hypothesized that participants who received personalized feedback tailored to their chosen value would report the lowest intended future meat consumption and least positive attitudes toward meat as compared to all the other feedback conditions. For Study 2, it was hypothesized that messages oriented to individuals' chosen self-schema, altruistic oriented messages, and egoistic oriented messages would be more effective than non-specific orientation messages at reducing individuals' intended future meat consumption and attitudes toward meat. It was further hypothesized that messages tailored to individuals' values would be more effective than messages not tailored to individuals' values. Accordingly, it was anticipated that participants that received either a self-schema oriented message tailored to their chosen value, an altruistic oriented message tailored to their chosen value, or an egoistic oriented

message tailored to their chosen value would report the lowest intended future meat consumption and least positive attitudes toward meat.

Despite a multitude of research that supports the effectiveness of tailoring health messages and feedback to be more specific to the individual (e.g., Bull et al., 2001; Ryan & Lauver, 2002), the results of the present studies suggest that all messages and feedback – regardless of personalization, orientation, or tailoring – are equally effective at encouraging individuals to reduce their meat consumption. When comparing the feedback/message conditions, none of the analyses for Study 1 revealed any differences between the personalized feedback and the generalized feedback conditions, and none of the analyses for Study 2 revealed any differences between the differently oriented messages. Furthermore, in both Study 1 and Study 2, no differences of values tailoring were found. One analysis in Study 1 did, however, show a difference between the four feedback conditions. In line with the hypothesis that feedback tailored to individuals' values would be the most effective at getting participants to reduce the amount of meat they intend to eat, participants in the personalized feedback tailored to values condition (in Study 1) did report the least number of intended servings, which was significantly less than the reported intended daily servings of meat by participants in the generalized feedback tailored to values condition. Thus, when feedback is tailored to values, personalized feedback is more effective than generalized feedback. This did not hold true, however, for the feedback conditions not tailored to values.

Reduced participant meat consumption intentions

Participants' initial reports of their current/past meat consumption habits indicated that the majority of the participants in Study 1 and 2 eat meat multiple times a week and consume more meat than is recommended. The alarming finding that a quarter of the participants in both

studies reported that more than half of the food that they consume on an average day is meat demonstrates the importance of this research. Despite the overall lack of differences in Study 1 between each of the feedback conditions and in Study 2 between each of the message conditions, the present dissertation did find that participants overall reported lower intentions to eat meat as compared to their reports of their current/past meat consumption habits. Overall, participants indicated that they were somewhat willing to reduce their meat consumption and their reports of how often they intend to eat meat and how much meat they intend to eat in the future revealed that they intend to eat less meat and eat meat less often than they currently do. Mirroring participants' slight willingness to reduce their meat consumption, participants' attitudes toward meat and liking of meat slightly decreased in comparison to their initial attitudes toward meat and liking of meat. It is important to note that participants' meat attitudes and liking of meat remained quite positive; however, given that meat consumption has been associated with many health risks (see Baker, Thompson, & Palmer-Barnes, 2002 for a review of the literature) and research has found many medical benefits associated with abstaining from meat and meat-consumption reduction (e.g., White & Frank, 1994; White, Seymour & Frank, 1999), participants' slight decreases in attitude toward and liking of meat and their reported intentions to consume less meat – though only slight decreases in comparison to their current habits and still higher than recommendations – are nonetheless positive.

Though the results from Study 1 and Study 2 indicate that all of the feedback/messages were similarly effective at encouraging individuals to slightly reduce their meat consumption, this conclusion may only hold true if individuals are actually exposed to the meat reduction information. Because an individual has to be exposed to a persuasion in order for the persuasion to have any influence, individuals must *choose* to be exposed to meat reduction information in

order for it to be effective. Participants in the studies were not able to choose what message/feedback they wanted to attend to and were required in order to complete the study to read the message/feedback they were presented with. In everyday life, however, individuals may choose to ignore information that they consider uninteresting and irrelevant. Research on selective exposure indicates that individuals are more likely to attend to health behavior information that they find interesting and relevant to themselves (e.g., Brannon & McCabe, 2002; Pease, Brannon, & Pilling, 2003). Therefore, though the results of this study suggest that tailoring messages and feedback to individuals' meat consumption habits, self-schemas, and values may not be any more effective than messages and feedback that are generalized, not oriented to individuals' self-schemas, and not tailored to individuals' values, it may very well be the case that individuals are more likely to *attend* to a meat reduction message that is personalized to their own meat consumption habits, oriented to their self-schema, and/or tailored to the value of most importance to them, and thus such messages and feedback *would* be more effective.

Control group comparison

In addition to the hypotheses for Study 1 and 2 discussed above, it was also hypothesized for Study 1 that participants in the control condition who received no meat-consumption reduction feedback would report the highest intended future meat consumption and most positive attitudes toward meat as compared to all of the feedback conditions. Similarly, it was expected in Study 2 that participants in the control condition that received no meat-consumption reduction message would report the highest intended future meat consumption and most positive attitudes toward meat as compared to all of the message conditions. Largely contrary to these hypotheses, the analyses conducted for Study 1 and Study 2 including the control group mostly supported a

lack of differences between conditions. In both studies, however, the analyses on participants' intended number of meals containing meat showed some differences that somewhat support the hypothesis that participants who did not receive any type of meat-consumption reduction message or feedback would report the highest intended future meat consumption and most positive attitudes toward meat as compared to all of the other conditions. Participants in the control group did report intending to eat significantly more meals than participants in other conditions; however, only in Study 1 did the control group report intention to eat more meals than *all* of the other conditions.

As previously discussed, participants' responses on each of the dependent measures were purposefully not aggregated because it was of interest to determine whether one of the measures is a better measure of meat consumption habits/attitudes than the others. Because aggregating participants' responses on the measures may mask possible effects, numerous analyses were conducted separately on each of the dependent measures. It was acknowledged that conducting this many analyses increases Type I error rates and thus recognized that the analyses that yielded significant results may have simply been results of Type I errors. This surely is a plausible conclusion given that only three of the many analyses conducted showed any differences between conditions and the rest of the results of Study 1 and Study 2 unanimously suggest that meat-reduction feedback and messages, regardless of values tailoring, feedback personalization, and message orientation, are just as effective at reducing individuals' intentions to eat meat as no message/feedback conditions are. As previously mentioned, however, it is also plausible that the measure asking participants to report the number of meals including meat they consumed in the past three days/intend to consume in the next three days is a more sensitive measure than the other dependent measures. This is certainly likely given that two of the significant differences

that were found in the data from Study and Study 2 were analyses on this same dependent measure.

Regardless of whether or not the significant analyses are Type I errors or actual findings, the fact that the majority of the analyses did not support the hypotheses and revealed no significant differences between the control groups and the message/feedback groups undermines the idea that the meat-reduction messages were in some way effective at encouraging individuals to reduce their meat consumption habits. As previously suggested, this lack of differences could indicate that individuals are already familiar with the recommended portions of meat and the consequences for exceeding this recommendation and thus simply asking individuals to reflect on how much meat they consume and how often they consume meat encourages individuals to reassess their eating habits. However, when this explanation for the data was explored by including a control condition in which participants received neither a meat-reduction message/feedback nor any pre-message/feedback questions regarding their current and past meat consumption habits, the results showed that individuals in this “no pre-feedback/message questions control condition” had similar intentions to eat meat as participants who reported their current and past meat consumption habits prior to reporting their future intentions to eat meat. Perplexingly, for some of the dependent measures, individuals in the “no pre-feedback/message questions control condition” actually reported *less* intention to eat meat and *more negative* attitudes toward meat than did participants in the other conditions.

As previously discussed, these findings may be due to participants solidifying their attitudes toward meat and liking of meat as a result of being asked to report their current/past meat consumption. Past research has demonstrated that merely asking individuals to think about something can cause their attitudes toward that thing to become strengthened and more extreme

(Tesser, 1978). Given this theory, participants' already favorable attitudes toward meat may have become even more favorable as a result of reporting their current/past meat consumption habits and attitudes toward meat. As a consequence, participants may have been less willing to reduce their meat consumption. Essentially, by thinking about how much they like eating meat, participants may have unconsciously convinced themselves of the reasons why they enjoy eating meat and thus became more committed to continue eating meat in the future. In contrast, participants who were not asked any questions about their meat consumption habits before reporting how much and how often they intend to eat meat in the future did not experience this self-reflection polarization and consequently reported more willingness to reduce their meat consumption and less intention to eat meat in the future.

An alternative explanation for these results that was also previously presented is that participants who did not report their current/past meat consumption habits before reporting their intended future meat consumption underestimated the amount of meat that they will consume in the future. It may have been that reflecting on how much meat is a part of their everyday diet made participants more realistic in their estimates of how much meat they will continue to consume in the future. Participants who were not asked to report their current/past meat consumption therefore may not have fully considered how much meat they are in the habit of eating and thus lacked a point of reference when they estimated how much meat they intend to eat in the future. Consequently, participants in this "no pre-feedback/message questions control condition" may have underestimated how much of a reduction their reported intentions would actually result in.

Regardless of the explanation for why this result was observed, this potential issue was certainly not anticipated in the present dissertation; participants were asked to report their

current/past meat consumption habits in order to obtain a baseline meat consumption for each participant and, in Study 1, to personalize feedback based on individuals' amount of meat consumed. Future studies should take this into consideration, however, before conducting a study using similar methodology as the present studies. A possible solution to the issue that individuals' attitudes become stronger as a result of reflecting on their current meat consumption is to measure participants' current/past meat consumption habits well before presenting meat-reduction messages or feedback and measuring consequential intended meat consumption habits. Allowing time to pass between participants' initial reports of their current meat consumption habits and their intended meat consumption could eliminate the discrepancies between the "no pre-feedback/message questions control condition" reports and the participants' reports who had previously reported their current/past meat consumption habits.

Exploratory Demographic Analyses

Beyond the analyses to test the a priori hypotheses, several exploratory analyses were conducted on participants' data from Study 1 and Study 2 using the demographic factors measured. Overall, the present dissertation did support previous findings that males generally eat more meat and have more positive attitudes toward meat than females and that females are more receptive to reducing their meat consumption than are males (e.g., Barr & Chapman, 2002; Beardsworth & Bryman, 1999; Beardsworth & Keil, 1992; Gale et al., 2007; Hamilton, 1993; Heleski, Mertig, & Zanella, 2006; White & Frank, 1994; Worsley & Skrzypiec, 1998). The exploratory analyses also revealed that gender did not moderate the effects of the feedback/message conditions on participants' intentions to consume meat in the future.

In contrast to previous findings that current vegetarians and meat reducers differ from the overall population in regard to their education level (Beardsworth & Keil, 1992; Gale et al.,

2007; Ruby, 2012), the present dissertation found very few relationships between individuals' highest level of education completed and their current meat consumption habits or attitudes toward meat. Similarly, the analyses in the present study conclude that one's level of education is neither related to one's willingness to reduce one's meat consumption nor one's intended meat-consumption habits. It should be noted, however, that these conclusions should be treated with caution.

The present dissertation extended previous research with the exploratory analyses results that showed age is negatively related to one's meat consumption habits and attitudes toward meat. For many of the dependent measures, the negative relationships indicated that older participants consume meat less often, consume less meat daily, have more negative attitudes toward meat, and like meat less than younger participants. Similarly, correlations between participants' ages and their intentions to eat meat in the future revealed that older participants are more willing to reduce their meat consumption and intend to eat less meat than do younger participants. These findings suggest that participants who may be at the most risk from the negative health consequences of eating meat are younger individuals because they report eating more meat and eating meat more regularly than older adults. More efforts should be accordingly directed at encouraging younger adults, rather than older adults, to reduce their meat consumption and decrease their attitudes toward and liking of meat.

As previously acknowledged, because all of the demographic analyses were purely exploratory and not planned, the possibility of Type I errors among the significant results cannot be disregarded. Additionally, the exploratory demographic analyses investigating the relationships between level of education and meat consumption habits and intentions should be interpreted with caution due to the lack of participants who did not have any higher education.

Very few participants in both Study 1 and Study 2 reported having less than a high school education, and most of the participants reported that they had at least completed some college. Though there was still variation among the participants' highest level of education completed, less educated individuals were overall not well represented in this sample. This restricted range of the sample may be the reason that the present results did not corroborate previous research findings.

Importance of Taste/Texture as a Barrier to Meat Consumption Reduction

A number of researchers have investigated the reasons why current vegetarians became vegetarians in the first place (e.g., Beardsworth & Keil, 1992; Roth, 2005; Ruby, 2012; Stiles, 1998). As previously noted, the most popular motivation for people to convert to vegetarianism is the concern for animal welfare (e.g., Barr & Chapman, 2002; Beardsworth & Keil, 1992; Hussar & Harris, 2009), and research has repeatedly found that the second most common motivation for individuals to become vegetarian is a concern for personal medical health (e.g., Beardsworth & Keil, 1991a; Fox & Ward, 2008a; 2008b; Ruby, 2012; White, Seymour, & Frank, 1999). Less popular reasons that vegetarians report as the primary motivation for their dietary choices are concerns regarding environmental sustainability (e.g., Baker, Thompson, & Palmer-Barnes, 2002; Rozin, Markwith, & Stoess, 1997; Ruby et al., 2013) and concerns about the economic consequences of purchasing meat (Baker, Thompson, & Palmer-Barnes, 2002; Dwyer et al., 1974; Rozin, Markwith, & Stoess, 1997). Some vegetarians do report that they refrain from eating meat simply due to a dislike of the taste and/or texture of meat (Beardsworth & Keil, 1992; Rozin, Markwith, & Stoess, 1997; Ruby, 2012), though only few indicate that this is a primary motivation (Beardsworth & Keil, 1992).

When these previous research findings are compared to the findings of the present dissertation, distinct agreements and disagreements between the most popular values and concerns that vegetarians and non-vegetarians consider to be the most influential on their food choices emerge. Though previous research has found that the most popular reason why individuals become vegetarian is due to concerns about animal welfare and the second most popular reason regards concerns about personal health (e.g., Beardsworth & Keil, 1992; Roth, 2005; Ruby, 2012; Stiles, 1998), the non-vegetarian participants in Study 1 and Study 2 overwhelmingly reported personal medical health as the most important value to them in regard to the issues surrounding meat. Specifically, over half of the participants in each study ranked personal medical health as having the most importance. Curiously, this parallels Lea and Worsley's (2003) findings that though a concern for personal health is the second most popular reason vegetarians report for becoming vegetarian, *non-vegetarians* most frequently report that they believe most vegetarians abstain from eating meat for health reasons. Though previous research with current vegetarians has found that the concerns about the financial consequences of purchasing meat is infrequently the primary motivation vegetarians report for becoming a vegetarian (Baker, Thompson, & Palmer-Barnes, 2002; Dwyer et al., 1974; Rozin, Markwith, & Stoess, 1997), personal finances was chosen by about a quarter of the Study 1 and Study 2 participants as the most important value and was consequently the second most popular value.

When designing Study 1 and Study 2 for the present dissertation, taste/texture was initially discarded as a value that messages and feedback could be tailored to due to the difficulty persuading individuals to alter their taste and texture preferences would present. This decision to not tailor messages or feedback to taste and texture was also supported by the previous research findings that very few vegetarians indicate that a dislike for the taste and/or texture of meat is

their primary motivation for becoming vegetarian (Beardsworth & Keil, 1992). Though existing research on non-vegetarians and former-vegetarians has found that one's liking of the taste and texture of meat is an important factor in determining whether or not an individual becomes a vegetarian (Beardsworth & Keil, 1992; Lea & Worsley, 2003; Rozin, Markwith, & Stoess, 1997; Ruby, 2012) and whether or not current vegetarians will abandon their abstinence from meat consumption (Barr & Chapman, 2002), the extent of the importance that non-vegetarian individuals place on taste/texture was unknown. Given the revealed discrepancies between the values that vegetarians and non-vegetarians deem most important in regard to their food choices, it was necessary to conduct exploratory follow-up studies to examine the importance individuals place on taste/texture in comparison to the other values.

The first exploratory follow-up study conducted investigating the importance of taste and texture to individuals' food decisions found that over half of the participants ranked taste/texture as either the most important or the second most important factor in their decisions of what foods to eat. Confirming the findings from Studies 1 and 2, participants also ranked personal medical health and personal finances as more important than personal appearance, environmental sustainability, and animal welfare. The second taste/texture follow-up study further found that participants rated taste/texture as significantly more important than any of the other values (animal welfare, personal medical health, personal appearance, environmental sustainability, and personal finances). Informingly, there was much less variation among participants' ratings for the importance of taste/texture as compared to the variation for each of the other values. This indicates that not only do individuals consider taste and/or texture to be the most important aspects that influences their food decisions, but that individuals are all in high agreement about this importance. Though the importance of foods' taste and texture is intuitive and seemingly

obvious, the priority that individuals place on the taste and texture of food may explain the overall lack of significant results from Study 1 and Study 2.

Limitations

Exclusion of taste/texture

Perhaps the most prominent limitation in the studies conducted for the present dissertation is the limitation most recently mentioned – the exclusion of taste and texture in the feedback and messages. Though the difficulty of persuading individuals to change their food taste and texture preferences is a valid concern, the results of the exploratory follow-up studies illustrate that the importance of taste and texture to individuals' food choices cannot be ignored. The discrepancies between the concerns valued by vegetarians and the concerns of most importance to non-vegetarians in regard to making food choices suggest that vegetarians and non-vegetarians have very different priorities when making dietary choices.

It has already been found in research that the most common barrier that holds non-vegetarians back from becoming vegetarian is an enjoyment of meat, followed by an unwillingness to alter eating habits (Lea & Worsley, 2003). Lea and Worsley (2003) further discovered that the third most popular barrier is the belief that one should consume meat in one's diet, followed closely by family tradition (e.g., an individual has always eaten meat), and a lack of familiarity with vegetarian diets. Nearly all of these barriers have a commonality beyond liking the taste/texture of meat: stubbornness and unfamiliarity with alternatives. These commonalities highlight the difficulty of this research; individuals are incredibly resistant to changing their dietary habits and perhaps are hindered by their limited knowledge of meal alternatives. This is certainly corroborated by other research that has found that knowledge about vegetarian cooking, availability of vegetarian options, and the perception that vegetarian meals

take too much time to prepare are main reasons why vegetarians abandon being vegetarian (Barr & Chapman, 2002). It seems that in order to effectively encourage individuals to reduce the amount of meat they are consuming, it is necessary to introduce individuals to flavorful non-meat options and educate individuals how to prepare such dishes.

Considering this, future research studies should include information with meat-reduction messages to inform individuals about palatable non-meat options to assure individuals that reducing the amount of meat in one's diet does not necessarily require sacrificing taste or texture. As the taste and texture of food are clearly important factors that direct individuals' food decisions, messages that do not address taste or texture may be entirely disregarded by individuals. This may certainly explain the lack of findings in Study 1 and Study 2 of the present dissertation. Participants may have disregarded the information in the messages and feedback they received because – though they may have agreed with the information presented – their lack of knowledge about reasonable alternative food options outweighed the persuasion in the message/feedback.

Immediacy of intended meat consumption reports

As previously recognized, another potential limitation of the studies conducted for the present dissertation is the immediacy of the intended meat consumption reports following the reports of current meat consumption. Asking participants to reflect on their meat consumption habits and their attitudes toward meat so soon before reporting their intentions and willingness to *reduce* their meat consumption may have caused participants to strengthen their attitudes toward meat, which may have in turn resulted in participants being less willing to reduce their meat consumption. If this is in fact the reason why participants in all of the Study 1 and Study 2 conditions reported less willingness to reduce eating meat and more favorable attitudes toward

meat in comparison to individuals who were not asked to report their current/past meat consumption habits, future studies should avoid measuring participants' current meat consumption habits and attitudes. That being said, studies that need to measure current/past meat habits in order to personalize feedback to individuals' meat consumption habits should allow for time to pass between measuring participants' baseline meat consumption habits and presenting feedback.

On the contrary, it was speculated that having participants report their current/past meat consumption habits relatively close in time to having them report their future intentions to eat meat and their willingness to reduce eating meat may have caused participants to be more realistic and accurate in their reports of their future behaviors. Though past studies have shown that individuals' reported intentions are fairly good predictors of future behavior (e.g., Sheppard, Hartwick, & Warshaw, 1988; Randall & Wolff, 1994), asking individuals to first consider their current habits before reporting their future intentions may provide them with reference point to better estimate what their future behavior will actually be. If this is the case, asking participants to reflect on their current meat consumption habits soon before reporting their willingness to decrease their meat consumption and intentions to eat meat in the future may not be a limitation, but rather may result in more accurate reporting.

Number of analyses

For Studies 1 and 2, participants' responses on each of the dependent measures were intentionally not aggregated in order to assess each dependent measure separately. As has been repeatedly acknowledged throughout the present dissertation, the number of analyses conducted could have very well resulted in one or more Type I errors. Therefore, the results of both Study 1 and Study 2 as well as the results from all of the exploratory demographic analyses and the

follow-up studies should be interpreted with caution. It is plausible that the analyses that yielded significant results may have simply been Type I errors. However, given that two of the significant differences that were found in the data from Study 1 and Study 2 were analyses on the same dependent measure – the number of meals containing meat, it is also possible that asking individuals to report the number of meals including meat they intend to eat in the next three days is a superior measure of intended meat consumption than the other measures.

Quantifying servings of meat and percentages of total food consumed may be difficult for individuals to comprehend and/or estimate. It may have been easier for participants to quantify the amount of meat that they consume when the units are meals. It also may be the case that participants better realize how they can reduce their meat consumption without completely cutting out meat using this measure. For example, a participant may consider that he/she typically eats a turkey or ham sandwich for lunch and upon thinking about that, realizes how easy it would be – and not much of a sacrifice – to substitute peanut butter and jelly sandwiches instead. Future research studies may continue to include all of the meat consumption measures used in Studies 1 and 2, but special attention should be paid to the reported number of meals given the potentially informative findings of the present dissertation. However, because these results may not replicate in future studies, future research needs to be conducted to further examine the differences between each of the dependent measures. As an extension of this suggestion, more overall research needs to be conducted in order to develop a valid and reliable measure of meat consumption. Apart from the two measures of participants' pre- and post-message/feedback attitudes toward meat and liking of meat taken from Allen and Baines (2002), the rest of the dependent measures were developed by the current researcher. Consequently, the

validity and reliability of the dependent measures used have not been thoroughly investigated, which is a further limitation of the present dissertation.

Restricted range of education level

In addition to interpreting the results of the present studies with caution due to the number of analyses that were conducted, it is furthermore cautioned that the results of the exploratory demographic analyses investigating the relationship between level of education and meat consumption habits and intentions should be interpreted with caution. Because very few participants in both Study 1 and Study 2 reported having less than a high school education, and most of the participants reported that they had at least completed some college, the absence of participants who lacked a higher education may be a reason that the results of the exploratory analyses did not support previous research findings. Future research investigating the relationship between individuals' highest level of education completed and willingness to reduce their meat consumption should make an extra effort to include participants who have lower levels of education to form a better understanding of how education relates to reception of meat consumption reductions.

Amazon Mechanical Turk sample

Along with education level range restrictions, it is acknowledged that the use of Amazon Mechanical Turk (MTurk; <http://www.mturk.com>) participants may have contributed to results in the present dissertation. Despite previous research that has found that MTurk samples provide inexpensive, quick, and reliable data (Buhrmester, Kwang, & Gosling, 2011), it may be that the findings of the present dissertation would fail to replicate with a different sample. Previous research has found that MTurk participants are significantly more diverse than college student samples (Buhrmester, Kwang, & Gosling, 2011), but this does not necessarily mean that MTurk

samples are representative of a greater population. As was previously discussed, the MTurk samples collected for the present study had a restricted range of education level, with individuals with little education being severely underrepresented. Though income was not measured in the present studies, it may very well be that participants' range of income levels also does not adequately represent income levels of the population.

Intentions as a predictor of behavior

Though past studies have shown that individuals' reported intentions are fairly good at predicting future behavior (e.g., Sheppard, Hartwick, & Warshaw, 1988; Randall & Wolff, 1994), an additional limitation of this dissertation is that participants' future *intentions* to reduce their meat consumption was measured rather than their *actual* future meat consumption. It is very possible that participants did not fulfill their reported meat consumption intentions and may have consumed more meat following the study than he/she reported intending to eat. Because this seems more likely than the opposite scenario (an individual who reports the intention to eat more meat than he/she actually does consume), it can be assumed that any discrepancy between participants' reported intentions and their actual behavior would result in the messages and feedback actually being *less* effective than they currently seem. Future research attempting to encourage meat consumption reduction needs to be conducted using behavioral reports rather than participants' reported intentions.

Replication in real world environments

Yet another potential limitation of the studies conducted is the consideration of how realistic (or not) the message/feedback exposure was. As previously mentioned, participants in the studies were not able to choose what message/feedback they wanted to attend to and were required in order to complete the study to read the message/feedback they were presented with.

In everyday life, however, individuals may choose to ignore information that they consider uninteresting and irrelevant. Though it was previously discussed how this may actually indicate the importance of tailoring and personalizing messages and feedback despite the results of the studies suggesting otherwise, it is important to emphasize that because the present studies did not accurately simulate how individuals are actually exposed to meat reduction messages, the results of this study may not replicate in a real world environment.

Strength of messages/feedback

The lack of influence of the feedback/messages on participants' willingness to reduce their meat consumption could be due in part to participants' unwillingness to change their eating habits; however, it is acknowledged that the lack of findings could also be attributable to limitations of the present methodology. It is possible that the messages and feedback were not strong enough to influence participants' food attitudes. Including additional information or presenting the information in a different way may strengthen the feedback/messages.

Past research has found that common barriers that prevent non-vegetarians from becoming vegetarian and that cause vegetarians to abandon the vegetarian lifestyle include a lack of familiarity with vegetarian diets (Lea & Worsley, 2003) and limited knowledge about vegetarian cooking (Barr & Chapman, 2002). Thus, even if individuals are simply encouraged to reduce their meat consumption (not necessarily told to abstain from meat completely), individuals' lack of knowledge what to replace meat with in their diet may prevent them from being willing to alter their food habits. It is therefore not only important for future meat reduction messages/feedback to include information regarding flavorful meat alternatives but to also include practical ways to reduce one's meat consumption. One way to do this may be to provide individuals with numerical information informing them how much cutting down their

meat consumption by a certain amount each day will benefit animal welfare, their health/appearance, the environment, and/or their finances. For example, the personalized feedback from Study 1 uses the estimate that one serving of meat is equitable to approximately 55.86 milligrams of cholesterol and 325.86 milligrams of sodium. Rather than simply presenting individuals with how much cholesterol and sodium they are consuming as a result of their meat consumption habits, individuals could also be informed of how reducing their meat consumption by just one serving per day could consequently affect their daily cholesterol and sodium intake. If this information is presented in an accessible way (e.g., informing participants that eating a peanut butter and jelly sandwich for lunch rather than a ham or turkey sandwich can result in a certain cholesterol and sodium reduction), it may increase the overall strength of the meat reduction information presented.

The strength of the messages/feedback used in the present studies may also be limited due to discrepancies in the matching of the persuasion used in the message/feedback to the attitude basis. Research regarding the affective and cognitive basis of attitudes has found that persuasion appeals are generally more effective when the appeal matches the basis of the attitude (e.g., Edwards, 1990; Edwards & von Hippel, 1995; Fabrigar & Petty, 1999). Generally, this means that attitudes that are affectively-based are more persuaded by affective persuasions and cognitively-based attitudes are more persuaded by cognitive persuasions. Further research has demonstrated that when persuasion appeals *do not* match the basis of an attitude, the persuasion is not as effective (Fabrigar & Petty, 1999; Millar & Millar, 1990). Some of the first studies exploring the effectiveness of attitude basis-matching in persuasion used beverages as the object of the affectively- and cognitively-based attitudes (Edwards, 1990; Edwards & von Hippel, 1995; Millar & Millar, 1990). In these studies, attitudes toward the taste and smell of a beverage were

considered affectively-based attitudes. In contrast, attitudes toward the expense of the beverage and attitudes toward the health benefits/consequences of the beverage were considered cognitively-based attitudes. Using these classifications of affectively- and cognitively-based beverage attitudes, it seems reasonable to classify the feedback/messages used in the present dissertation as cognitive persuasions given that they heavily focus on the consequences of meat consumption on animal welfare, personal health and appearance, environmental sustainability, and personal finances. Because the exploratory follow-up studies in the present dissertation found that individuals highly value the taste and texture of food above most other aspects, it is probable that individuals' attitudes toward food are overwhelmingly affectively-based. Future studies are needed to investigate the effectiveness of affective persuasions on individuals' meat attitudes and compare the effectiveness of affective and cognitive persuasions on individuals' meat consumption intentions and meat attitudes.

Though it is likely that individuals' attitudes toward food are not exclusively affectively-based, having participants reflect on their liking of meat directly prior to receiving meat-reduction feedback or a meat-reduction message most likely activated their affective attitudes toward meat. As a result, the cognitively-based persuasion feedback/message individuals received was probably ineffective due to the mismatch between the activated attitude and the attitudes targeted in the feedback/message. This would satisfactorily explain the lack of differences between the feedback/message conditions and the control condition and would also parallel the previously explained theory that asking participants to report their current/previous meat consumption habits and attitudes toward meat strengthened their already favorable attitudes toward meat. This would then further support the recommendation for future research to allow for more time to pass between participants' initial reports of their current/previous meat

consumption habits and attitudes and the presentation of the persuasion feedback/message. At the very least, future research studies would benefit by matching the attitude persuasion used in the feedback/message with the attitude basis primed in the pre-feedback/message measures.

It is acknowledged that the aforementioned issues with message/feedback strength may have been avoided had the messages and feedback been pretested. Pretesting of the messages/feedback was not conducted due to the confound of participants' agreement with the message/feedback content. Had a pretest revealed that one message/feedback was stronger than the other messages/feedback, it would be difficult to determine whether the message/feedback actually *was* stronger than the other messages, or whether the content of the message/feedback was more agreeable to participants and thus was rated as more persuasive due to participants' agreement. The difficulty of trying to assess argument strength independent of raters' own attitudes is practically unavoidable in this type of study. Pretesting message/feedback strength would have been appropriate if differing versions of the same message/feedback were compared; however, because the messages/feedback used in the present dissertation were not variations of the same message/feedback and thus any pretesting would compare across different messages/feedback, participants' agreement with the content would confound any pretest conclusions.

Single exposure to feedback/messages

In addition to the potential limitation that the feedback and messages lacked in strength, it is also possible that the limited exposure that participants had to the feedback/messages resulted in the overall lack of effectiveness of the feedback/messages in encouraging meat consumption reduction. Even though previous research tailoring health behavior messages have found that tailored messages are more effective at changing individuals' health behaviors by only exposing

participants to a message once (e.g., Brannon & McCabe, 2002; Brannon & Pilling, 2008; Pilling & Brannon, 2007), research has certainly demonstrated that repetition of an argument increases the effectiveness of a persuasion (e.g., Cacioppo & Petty, 1979). Future research could thus investigate the effectiveness of repeated exposure of meat consumption reduction messages on individuals' willingness to eat less meat.

Future Research

Given the lack of research using persuasion messages to encourage individuals to reduce the amount of meat that they consume, more research of this kind desperately needs to be conducted. Future research studies are needed to gain a better understanding of how meat consumption reduction can be effectively encouraged. In addition to the need for studies to generally encourage reductions in meat consumption, more studies are needed to further explore the benefits of tailoring messages to be more personalized to an individual. Though the present study overall found few benefits of message and feedback tailoring and personalization, the many aforementioned limitations may account for the lack of findings. Thus, as has been consistently encouraged throughout the discussion of this dissertation, future research is needed to correct and further investigate the possible limitations of the present studies.

One of the more major limitations mentioned that needs to be further explored by future research is the content of the meat reduction messages and feedback. Incorporating practical application information in meat reduction feedback and messages may be necessary for the persuasions to be effective. One such way this has been proposed is to provide individuals with practical ways to reduce their meat consumption. This could be done by providing specific meat reduction recommendations that individuals could abide by. For example, research suggests that substituting just 1 serving of red meat per day with other protein foods could reduce individuals'

risk of death by 7-19% (National Institutes of Health, 2012). Other research suggests that substituting non-meat food for meat just 2-3 times a week can save an individual \$780 annually (New Jersey Agricultural Experiment Station, 2016). Such suggestions would not only be practical but would also illustrate to individuals that reducing one's meat consumption incrementally (as opposed to cutting out meat entirely) has significant benefits.

Another way practical information could be incorporated into feedback/messages is to educate individuals about palatable meat alternatives. Giving individuals alternative meal options that do not sacrifice taste or texture and are no more difficult to prepare would most likely encourage individuals to be more willing to reduce their meat consumption. Future research studies could even be conducted that go beyond simply *telling* participants about meat alternatives. Such studies could explore the effectiveness of having individuals sample meatless meals and/or having individuals prepare various meatless meals.

In addition to future studies developing more effective meat reduction messages, future studies are needed to develop and validate meat consumption measures. Despite the multitude of research that investigates vegetarianism and meat-reduction, the literature reviewed in this dissertation fail to converge on a measure of meat consumption and attitudes toward meat. Nutritionists and dietitians frequently utilize a Food Frequency Questionnaire (FFQ; Nutrition Quest, 2014), a measure of individuals' frequency of intake of a variety of nutrients and food items. One particular subscale of the FFQ is the meat intake scale (Nutrition Quest, 2014), which measures individuals' meat consumption. Despite this scale being frequently used in nutrition and dietary research, it has yet to be utilized in social science research. Thus, future social science research would benefit to use such an existing scale rather than developing novel measures and lacking consistency across research studies. To the knowledge of the researcher,

only two measures of meat attitudes (from Allen & Baines, 2002) exist, and were thus utilized for the present dissertation. This lack of meat attitudes measures reflects the problematic lack of research on American meat consumption with the intent to encourage reductions as well as the problematic lack of cohesion across the literature that exists.

Though previous data collected has suggested that individuals' red meat, white meat (poultry), and seafood/fish consumption habits are not differently affected by messages encouraging meat consumption reduction (Schnabelrauch Arndt, Brannon, & Haley, unpublished data), future research should continue to explore the effectiveness of different persuasions on different types of meat. Because the consequences of red meat and processed meat have been found to be more severe than the consequences of poultry and/or seafood (Micha, Wallace, & Mozaffarian, 2010), focusing efforts on encouraging individuals to specifically reduce their red meat and processed meat consumption may be a beneficial pursuit of future research. As previously mentioned, the meat intake subscale of the FFQ (Nutrition Quest, 2014) may particularly be useful in measuring individuals' specific types of meat consumption.

Future research could also benefit by investigating potential moderating factors and demographic factors to determine if certain feedback or messages are more effective at influencing certain individuals' meat consumption habits and attitudes toward meat. For example, it may be that individuals who rate taste and texture as less important in regard to food decisions are more receptive to messages encouraging meat consumption reduction. Future research should accordingly investigate whether this is the case.

Similarly, future research could investigate other individual difference variables to determine whether certain individuals are more willing to reduce their meat consumption, or are more influenced by certain types of feedback/messages. Given the discrepancies that the present

study found between the values that non-vegetarians' rate of being the most important to their food decisions and the motivations that vegetarians report as being the primary reason why they stopped eating meat, it is clear that non-vegetarians' eating habits are motivated by different priorities than are vegetarians' eating habits. Future research would benefit to investigate what motivates meat-reducers' food choices and whether the importance placed on each value more closely resembles the priorities of vegetarians or non-vegetarians. It would also be of interest to determine whether the different feedback and messages differ in effectiveness with a meat-reducer sample in comparison to a non-vegetarian sample at encouraging individuals to consume less meat than they currently consume (even though meat-reducers are already actively limiting their meat consumption). Though some participants were excluded from the analyses in the present dissertation due to reporting meat consumption habits and attitudes that may have indicated that they were meat-reducers, these individuals only made up 10% and 12% of the samples from Study 1 and Study 2, respectively. These small sample sizes were inadequate to use as a meat-reducer sample for comparison for the present study.

Income level also may be a variable of interest to investigate in relation to one's willingness to reduce meat consumption. Income level was not measured and thus not analyzed in the current studies due to the collinearity income has with education level; however, it is intuitive that individuals with higher income may be less persuaded by feedback and messages tailored to personal finances. Thus, it may not be the case that individuals of various income levels differ in their willingness to reduce their meat consumption, but some feedback and messages may reveal to be less effective (or not effective at all) for individuals with higher income.

Contributions and Importance

Though research studying vegetarianism and meat-reduction has exploded over the last few decades, this research has been limited to describing individuals who are currently vegetarian or actively reducing the amount of meat that they eat (Boyle, 2007; Ruby, 2012). As studies encouraging non-vegetarians to eat less meat are virtually non-existent, the present dissertation took a major step in exploring ways to effectively reduce individuals' meat consumption and attitudes. Despite the many limitations of the studies conducted, the present dissertation has made significant contributions to the meat consumption literature.

Firstly, this dissertation illustrated the importance of and need for research encouraging meat consumption reduction. This was apparent by participants' consistent reports that they consume more meat than is recommended. The studies conducted as part of this dissertation did find, however, that participants expressed a moderate willingness and intention to reduce their meat consumption. Though these decreases in intentions and attitudes toward meat were very slight, they are nonetheless a step in the right direction. Given the health risks associated with meat consumption (see Baker, Thompson, & Palmer-Barnes, 2002 and Johns Hopkins Bloomberg School of Public Health, 2016 for a review of the literature) and the medical benefits associated with meat-consumption reduction (e.g., White & Frank, 1994; White, Seymour, & Frank, 1999), even slight increases in individuals' willingness to reduce their meat consumption and slight decreases in individuals' intentions to consume meat are beneficial. These promising results – however small – demonstrate that despite individuals' general resistance to changing their meat consumption habits, providing individuals with information regarding the consequences of consuming meat may be an effective way to encourage healthier behaviors.

The current dissertation further contributed to the vegetarian and meat consumption literature by supporting the research that has found females consume less meat than males, have less favorable attitudes toward meat than males, and are more receptive to reducing their meat consumption than are males. The present study also investigated the relationship between age and meat consumption habits and attitudes, which has not been well documented in the literature. The findings of these demographic exploratory analyses suggested that efforts to encourage meat consumption reduction should be especially directed at young adult males due to younger adults reporting eating more meat than older adults and males reporting eating more meat than females.

The present dissertation has laid a foundation for future meat-consumption reduction research to build on. Despite the many limitations that may have hindered the results, these shortcomings have importantly demonstrated the need for more research and proposed numerous next-step research directions that are ready to be pursued. In addition to the contributions this dissertation has made to the field, the present dissertation has also exposed hundreds of participants to the negative consequences of the meat industry and meat consumption that they may not have previously known. Hopefully, participating in this research encouraged these Americans to consider the benefits that reducing their meat consumption could have on their personal health, appearance, and finances; animal welfare; and environmental sustainability.

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Table 1.

Overall means and standard deviations for Study 1 participants' pre- and post-feedback responses.

Dependent Measures	Pre-Feedback		Post-Feedback	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Willingness to reduce meat consumption 1 (<i>not at all willing to reduce the amount of meat I eat even a little</i>) - 5 (<i>very willing to stop eating meat entirely</i>)			2.55	1.06
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	4.35	0.70	3.94	0.94
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	7.49	0.57	7.11	0.93
Number of meals containing meat consumed/intended in past/next 3 days	4.44	2.06	3.86	2.31
Number of daily servings of meat consumed/intended	2.73	2.09	2.37	1.99
Percentage of food that is meat consumed/intended	36.70%	18.06%	31.14%	19.90%
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 7 (<i>eating meat is good</i>)	6.02	1.22	5.50	1.64
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	6.35	1.00	6.03	1.29

Table 2.

Means and standard deviations for the 2 (feedback personalization) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-feedback reports of how often they consume meat [scale from 1 to 5]) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 5 [regularly]).

Feedback Tailoring to Values						
Feedback Personalization	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Personalized feedback	3.84	0.96	3.86	0.98	3.85	0.96
Generalized feedback	4.00	1.10	3.86	0.92	3.94	1.01
Total	3.92	1.02	3.86	0.94		

Table 3.

Means and standard deviations for the 2 (feedback personalization) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-feedback reports of how often they consume meat [scale from 1 to 8]) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 8 [daily]) for Study 1.

Feedback Tailoring to Values						
Feedback Personalization	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Personalized feedback	7.00	0.82	6.92	0.89	6.96	0.85
Generalized feedback	7.11	1.30	7.07	0.84	7.09	0.84
Total	7.05	1.08	6.98	0.87		

Table 4.

Means and standard deviations for the 2 (feedback personalization) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-feedback reports of the number of meals they ate containing meat in the past 3 days) on participants' intended number of meals containing meat in the next 3 days for Study 1.

Feedback Tailoring to Values						
Feedback Personalization	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Personalized feedback	3.14	1.80	3.49	2.27	3.31	2.04
Generalized feedback	4.03	2.37	3.41	2.11	3.75	2.26
Total	3.58	2.13	3.45	2.19		

Table 5.

Means and standard deviations for the 2 (feedback personalization) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-feedback reports of the number of daily servings of meat consumed) on participants' intended number of daily servings of meat to consume for Study 1.

Feedback Tailoring to Values						
Feedback Personalization	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Personalized feedback	1.70	1.18	2.57	2.68	2.14	2.10
Generalized feedback	2.69	1.97	2.21	1.63	2.48	1.83
Total	2.19	1.68	2.41	2.27		

Table 6.

Means and standard deviations for the 2 (feedback personalization) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-feedback reports of the average percentage of food consumed that is meat) on participants' intended average percentage of food consumed that is meat for Study 1.

Feedback Tailoring to Values						
Feedback Personalization	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Personalized feedback	30.46%	20.36%	26.24%	18.43%	28.35%	19.40%
Generalized feedback	34.17%	21.22%	29.03%	18.46%	31.88%	20.05%
Total	32.29%	20.72%	27.47%	18.35%		

Table 7.

Means and standard deviations for the 2 (feedback personalization) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-feedback reports of their attitude toward meat [scale from 1 to 7]) on participants' post-feedback attitude toward meat (scale ranging from 1 [eating meat is bad] to 7 [eating meat is good]) for Study 1.

Feedback Tailoring to Values						
Feedback Personalization	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Personalized feedback	5.27	1.66	5.24	1.75	5.26	1.70
Generalized feedback	5.78	1.84	5.38	1.55	5.60	1.71
Total	5.52	1.76	5.30	1.66		

Table 8.

Means and standard deviations for the 2 (feedback personalization) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-feedback reports of their liking of meat [scale from 1 to 7]) on participants' post-feedback liking of meat (scale ranging from 1 [I very much dislike eating meat] to 7 [I very much like eating meat]) for Study 1.

Feedback Tailoring to Values						
Feedback Personalization	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Personalized feedback	5.78	1.38	6.03	1.17	5.91	1.27
Generalized feedback	6.11	1.53	6.00	1.20	6.06	1.38
Total	5.95	1.45	6.02	1.17		

Table 9.

Means and standard deviations for the 2 (feedback personalization) x 2 (values tailoring) Analysis of Variance on participants' post-feedback willingness to reduce their meat consumption (scale ranging from 1 [not at all willing to reduce the amount of meat I eat even a little] to 5 [very willing to stop eating meat entirely]) for Study 1.

Feedback Tailoring to Values						
Feedback Personalization	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Personalized feedback	2.57	1.09	2.65	1.06	2.61	1.07
Generalized feedback	2.42	1.16	2.45	1.06	2.43	1.10
Total	2.49	1.12	2.56	1.05		

Table 10.

Means and standard deviations for the one-way Analysis of Covariance (comparing all five conditions – including the control condition – and controlling for participants' pre-feedback reports of how often they consume meat [scale from 1 to 5]) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 5 [regularly]) for Study 1.

Condition	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>		
Personalized feedback tailored to values	3.84	0.96
Personalized feedback not tailored to values	3.86	0.98
<i>Generalized feedback</i>		
Generalized feedback tailored to values	4.00	1.10
Generalized feedback not tailored to values	3.86	0.92
Control (no feedback)	4.13	0.76

Table 11.

Means and standard deviations for the one-way Analysis of Covariance (comparing all five conditions – including the control condition – and controlling for participants' pre-feedback reports of how often they consume meat [scale from 1 to 8]) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 8 [daily]) for Study 1.

Condition	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>		
Personalized feedback tailored to values	7.00	0.82
Personalized feedback not tailored to values	6.92	0.89
<i>Generalized feedback</i>		
Generalized feedback tailored to values	7.11	1.30
Generalized feedback not tailored to values	7.07	0.84
Control (no feedback)	7.40	0.63

Table 12.

Means and standard deviations for the one-way Analysis of Covariance (comparing all five conditions – including the control condition – and controlling for participants' pre-feedback reports of the number of meals they ate containing meat in the past 3 days) on participants' intended number of meals containing meat in the next 3 days for Study 1.

Condition	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>		
Personalized feedback tailored to values	3.14	1.80
Personalized feedback not tailored to values	3.49	2.27
<i>Generalized feedback</i>		
Generalized feedback tailored to values	4.03	2.37
Generalized feedback not tailored to values	3.41	2.11
Control (no feedback)	5.05	2.47

Table 13.

Means and standard deviations for the one-way Analysis of Covariance (comparing all five conditions – including the control condition – and controlling for participants' pre-feedback reports of the number of daily servings of meat consumed) on participants' intended number of daily servings of meat to consume for Study 1.

Condition	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>		
Personalized feedback tailored to values	1.70	1.18
Personalized feedback not tailored to values	2.57	2.68
<i>Generalized feedback</i>		
Generalized feedback tailored to values	2.69	1.97
Generalized feedback not tailored to values	2.21	1.63
Control (no feedback)	2.63	2.02

Table 14.

Means and standard deviations for the one-way Analysis of Covariance (comparing all five conditions – including the control condition – and controlling for participants' pre-feedback reports of the average percentage of food consumed that is meat) on participants' intended average percentage of food consumed that is meat for Study 1.

Condition	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>		
Personalized feedback tailored to values	30.46%	20.36%
Personalized feedback not tailored to values	26.24%	18.43%
<i>Generalized feedback</i>		
Generalized feedback tailored to values	34.17%	21.22%
Generalized feedback not tailored to values	29.03%	18.46%
Control (no feedback)	35.10%	20.29%

Table 15.

Means and standard deviations for the one-way Analysis of Covariance (comparing all five conditions – including the control condition – and controlling for participants' pre-feedback reports of their attitude toward meat [scale from 1 to 7]) on participants' post-feedback attitude toward meat (scale ranging from 1 [eating meat is bad] to 7 [eating meat is good]) for Study 1.

Condition	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>		
Personalized feedback tailored to values	5.27	1.66
Personalized feedback not tailored to values	5.24	1.75
<i>Generalized feedback</i>		
Generalized feedback tailored to values	5.78	1.84
Generalized feedback not tailored to values	5.38	1.55
Control (no feedback)	5.80	1.36

Table 16.

Means and standard deviations for the one-way Analysis of Covariance (comparing all five conditions – including the control condition – and controlling for participants' pre-feedback reports of their liking of meat [scale from 1 to 7]) on participants' post-feedback liking of meat (scale ranging from 1 [I very much dislike eating meat] to 7 [I very much like eating meat]) for Study 1.

Condition	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>		
Personalized feedback tailored to values	5.78	1.38
Personalized feedback not tailored to values	6.03	1.17
<i>Generalized feedback</i>		
Generalized feedback tailored to values	6.11	1.53
Generalized feedback not tailored to values	6.00	1.20
Control (no feedback)	6.20	1.16

Table 17.

Means and standard deviations for the one-way Analysis of Variance (comparing all five conditions – including the control condition) on participants' post-feedback willingness to reduce their meat consumption (scale ranging from 1 [not at all willing to reduce the amount of meat I eat even a little] to 5 [very willing to stop eating meat entirely]) for Study 1.

Condition	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>		
Personalized feedback tailored to values	2.57	1.09
Personalized feedback not tailored to values	2.65	1.06
<i>Generalized feedback</i>		
Generalized feedback tailored to values	2.42	1.16
Generalized feedback not tailored to values	2.45	1.06
Control (no feedback)	2.63	0.98

Table 18.

Means and standard deviations for males' and females' pre-feedback responses for Study 1.

Pre-Feedback Responses	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	4.42	0.69	4.31	0.71
Frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	7.58	0.56	7.44	0.57
Number of meals containing meat consumed in past 3 days	4.63	2.22	4.32	1.98
Number of daily servings of meat consumed	3.27	2.44	2.43	1.82
Percentage of food that is meat consumed	41.70%	17.84%	34.04%	17.69%
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 5 (<i>eating meat is good</i>)	6.34	1.03	5.83	1.28
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	6.61	0.75	6.21	1.09

Table 19.

Means and standard deviations for males' and females' post-feedback responses for Study 1.

Post-Feedback Responses	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Willingness to reduce meat consumption 1 (<i>not at all willing to reduce the amount of meat I eat even a little</i>) - 5 (<i>very willing to stop eating meat entirely</i>)	2.25	1.05	2.70	1.03
Intended frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	4.16	1.00	3.82	0.90
Intended frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	7.36	0.80	6.96	0.96
Number of meals containing meat intended in next 3 days	4.41	2.56	3.55	2.12
Number of daily servings of meat intended	2.92	2.28	2.06	1.75
Percentage of food that is meat intended	37.09%	21.09%	27.89%	18.55%
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 5 (<i>eating meat is good</i>)	5.97	1.40	5.25	1.72
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	6.28	1.16	5.89	1.34

Table 20.

F-values for the main effects of time for each Study 1 gender x time repeated-measures Analysis of Variance.

Dependent Measures	Main effects of time
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$F(1, 176) = 40.80, p < .001$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$F(1, 176) = 44.67, p < .001$
Number of meals containing meat consumed/intended in past/next 3 days	$F(1, 176) = 16.06, p < .001$
Number of servings of meat consumed/intended	$F(1, 176) = 6.41, p = .012$
Percentage of food that is meat consumed/intended	$F(1, 176) = 43.25, p < .001$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 5 (<i>eating meat is good</i>)	$F(1, 176) = 36.61, p < .001$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$F(1, 176) = 24.18, p < .001$

Table 21.

F-values for the main effects of gender for each Study 1 gender x time repeated-measures Analysis of Variance.

Dependent Measures	Main effects of gender
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$F(1, 176) = 3.80, p = .053$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$F(1, 176) = 6.58, p = .011$
Number of meals containing meat consumed/intended in past/next 3 days	$F(1, 176) = 3.31, p = .071$
Number of servings of meat consumed/intended	$F(1, 176) = 9.14, p = .003$
Percentage of food that is meat consumed/intended	$F(1, 176) = 9.11, p = .003$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 5 (<i>eating meat is good</i>)	$F(1, 176) = 8.88, p = .003$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$F(1, 176) = 5.76, p = .017$

Table 22.

F-values for the time x gender interaction effects for each Study 1 gender x time repeated-measures Analysis of Variance.

Dependent Measures	Time x gender interactions
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$F(1, 176) = 3.43, p = .066$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$F(1, 176) = 6.32, p = .013$
Number of meals containing meat consumed/intended in past/next 3 days	$F(1, 176) = 5.01, p = .027$
Number of servings of meat consumed/intended	$F(1, 176) = 0.01, p = .930$
Percentage of food that is meat consumed/intended	$F(1, 176) = 0.90, p = .346$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 5 (<i>eating meat is good</i>)	$F(1, 176) = 1.79, p = .183$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$F(1, 176) < 0.01, p = .979$

Table 23.

F-values for the gender x condition interaction effects for each 2 (gender) x 5 (condition) Analysis of Covariance (controlling for participants' respective pre-feedback reports) and the 2 (gender) x 5 (condition) Analysis of Variance on participants' post-feedback willingness to reduce their meat consumption for Study 1.

Dependent Measures	Gender x condition interactions
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$F(4, 167) = 0.43, p = .784$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$F(4, 167) = 1.35, p = .256$
Number of meals containing meat consumed/intended in past/next 3 days	$F(4, 167) = 1.00, p = .408$
Number of servings of meat consumed/intended	$F(4, 167) = 2.70, p = .033$
Percentage of food that is meat consumed/intended	$F(4, 167) = 1.87, p = .118$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 5 (<i>eating meat is good</i>)	$F(4, 167) = 1.10, p = .358$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$F(4, 167) = 0.45, p = .775$
Willingness to reduce meat consumption 1 (<i>not at all willing to reduce the amount of meat I eat even a little</i>) - 5 (<i>very willing to stop eating meat entirely</i>)	$F(4, 168) = 0.78, p = .537$

Table 24.

Means and standard deviations for the 2 (gender) x 5 (condition) Analysis of Covariance (controlling for participants' pre-feedback reports of how often they consume meat [scale from 1 to 5]) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 5 [regularly]) for Study 1.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>				
Personalized feedback tailored to values	3.83	1.19	3.83	0.89
Personalized feedback not tailored to values	4.25	0.89	3.76	0.99
<i>Generalized feedback</i>				
Generalized feedback tailored to values	4.24	1.09	3.79	1.08
Generalized feedback not tailored to values	3.91	0.94	3.83	0.92
Control (no feedback)	4.44	0.81	3.92	0.65

Table 25.

Means and standard deviations for the 2 (gender) x 5 (condition) Analysis of Covariance (controlling for participants' pre-feedback reports of how often they consume meat [scale from 1 to 8]) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 8 [daily]) for Study 1.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>				
Personalized feedback tailored to values	7.08	0.90	6.92	0.78
Personalized feedback not tailored to values	7.25	0.71	6.83	0.93
<i>Generalized feedback</i>				
Generalized feedback tailored to values	7.71	0.59	6.58	1.54
Generalized feedback not tailored to values	6.91	0.83	7.17	0.86
Control (no feedback)	7.56	0.81	7.29	0.46

Table 26.

Means and standard deviations for the 2 (gender) x 5 (condition) Analysis of Covariance (controlling for participants' pre-feedback reports of the number of meals they ate containing meat in the past 3 days) on participants' intended number of meals containing meat in the next 3 days for Study 1.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>				
Personalized feedback tailored to values	3.08	2.28	3.13	1.60
Personalized feedback not tailored to values	4.50	2.82	3.21	2.06
<i>Generalized feedback</i>				
Generalized feedback tailored to values	4.59	2.15	3.53	2.50
Generalized feedback not tailored to values	3.45	2.12	3.39	2.17
Control (no feedback)	5.81	2.79	4.54	2.15

Table 27.

Means and standard deviations for the 2 (gender) x 5 (condition) Analysis of Covariance (controlling for participants' pre-feedback reports of the number of daily servings of meat consumed) on participants' intended number of daily servings of meat to consume for Study 1.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>				
Personalized feedback tailored to values	1.67	1.07	1.71	1.27
Personalized feedback not tailored to values	4.50	3.59	2.03	2.16
<i>Generalized feedback</i>				
Generalized feedback tailored to values	3.18	2.01	2.26	1.88
Generalized feedback not tailored to values	2.00	1.18	2.33	1.88
Control (no feedback)	3.44	2.50	2.08	1.44

Table 28.

Means and standard deviations for the 2 (gender) x 5 (condition) Analysis of Covariance (controlling for participants' pre-feedback reports of the average percentage of food consumed that is meat) on participants' intended average percentage of food consumed that is meat for Study 1.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>				
Personalized feedback tailored to values	33.50%	20.00%	29.33%	21.15%
Personalized feedback not tailored to values	39.63%	28.61%	22.55%	12.91%
<i>Generalized feedback</i>				
Generalized feedback tailored to values	38.24%	22.14%	30.53%	20.23%
Generalized feedback not tailored to values	32.00%	18.20%	27.22%	18.90%
Control (no feedback)	40.81%	20.01%	31.29%	19.98%

Table 29.

Means and standard deviations for the 2 (gender) x 5 (condition) Analysis of Covariance (controlling for participants' pre-feedback reports of their attitude toward meat [scale from 1 to 7]) on participants' post-feedback attitude toward meat (scale ranging from 1 [eating meat is bad] to 7 [eating meat is good]) for Study 1.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>				
Personalized feedback tailored to values	5.67	1.72	5.08	1.67
Personalized feedback not tailored to values	6.00	1.77	5.03	1.72
<i>Generalized feedback</i>				
Generalized feedback tailored to values	6.41	1.23	5.21	2.12
Generalized feedback not tailored to values	5.55	1.37	5.28	1.67
Control (no feedback)	6.00	1.16	5.67	1.49

Table 30.

Means and standard deviations for the 2 (gender) x 5 (condition) Analysis of Covariance (controlling for participants' pre-feedback reports of their liking of meat [scale from 1 to 7]) on participants' post-feedback liking of meat (scale ranging from 1 [I very much dislike eating meat] to 7 [I very much like eating meat]) for Study 1.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>				
Personalized feedback tailored to values	6.08	1.44	5.63	1.38
Personalized feedback not tailored to values	6.25	1.49	5.97	1.09
<i>Generalized feedback</i>				
Generalized feedback tailored to values	6.41	1.12	5.84	1.80
Generalized feedback not tailored to values	6.09	1.14	5.94	1.26
Control (no feedback)	6.44	0.89	6.04	1.30

Table 31.

Means and standard deviations for the 2 (gender) x 5 (condition) Analysis of Variance on participants' post-feedback willingness to reduce their meat consumption (scale ranging from 1 [not at all willing to reduce the amount of meat I eat even a little] to 5 [very willing to stop eating meat entirely]) for Study 1.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Personalized feedback</i>				
Personalized feedback tailored to values	2.5	1.24	2.54	1.02
Personalized feedback not tailored to values	1.88	1.13	2.86	0.95
<i>Generalized feedback</i>				
Generalized feedback tailored to values	2.12	1.05	2.68	1.20
Generalized feedback not tailored to values	2.27	1.01	2.56	1.10
Control (no feedback)	2.38	0.96	2.79	0.98

Table 32.

Correlations between participants' highest level of education completed and participants' responses on each of the pre- and post-feedback questions for Study 1.

Dependent Measures	Pre-Feedback	Post-Feedback
Willingness to reduce meat consumption 1 (<i>not at all willing to reduce the amount of meat I eat even a little</i>) - 5 (<i>very willing to stop eating meat entirely</i>)		$r(176) = 0.48, p = .528$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$r(176) = .073, p = .336$	$r(176) = .028, p = .714$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$r(176) = .129, p = .088$	$r(176) = .082, p = .275$
Number of meals containing meat consumed/intended in past/next 3 days	$r(176) = .070, p = .356$	$r(176) = .019, p = .801$
Number of daily servings of meat consumed/intended	$r(176) = .071, p = .350$	$r(176) = .044, p = .563$
Percentage of food that is meat consumed/intended	$r(176) = -.077, p = .311$	$r(176) = -.115, p = .126$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 7 (<i>eating meat is good</i>)	$r(176) = -.089, p = .241$	$r(176) = .022, p = .775$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$r(176) = -.032, p = .672$	$r(176) = .058, p = .447$

Table 33.

Correlations between participants' age and participants' responses on each of the pre- and post-feedback questions for Study 1.

Dependent Measures	Pre-Feedback	Post-Feedback
Willingness to reduce meat consumption 1 (<i>not at all willing to reduce the amount of meat I eat even a little</i>) - 5 (<i>very willing to stop eating meat entirely</i>)		$r(178) = .141, p = .060$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$r(178) = -.151, p = .043$	$r(178) = -.146, p = .052$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$r(178) = .098, p = .191$	$r(178) = -.100, p = .181$
Number of meals containing meat consumed/intended in past/next 3 days	$r(178) = -.069, p = .357$	$r(178) = -.097, p = .195$
Number of daily servings of meat consumed/intended	$r(178) = -.121, p = .107$	$r(178) = -.106, p = .158$
Percentage of food that is meat consumed/intended	$r(178) = -.166, p = .026$	$r(178) = -.153, p = .040$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 7 (<i>eating meat is good</i>)	$r(178) = -.195, p = .009$	$r(178) = -.128, p = .087$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$r(178) = -.149, p = .047$	$r(178) = -.125, p = .095$

Table 34.

Overall means and standard deviations for Study 2 participants' pre- and post-message responses.

Dependent Measures	Pre-Message		Post-Message	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Willingness to reduce meat consumption 1 (<i>not at all willing to reduce the amount of meat I eat even a little</i>) - 5 (<i>very willing to stop eating meat entirely</i>)			2.49	1.05
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	4.41	0.72	3.89	0.88
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	7.50	0.58	7.02	1.01
Number of meals containing meat consumed/intended in past/next 3 days	4.86	2.15	3.83	2.28
Number of servings of meat consumed/intended	2.46	1.57	2.30	1.93
Percentage of food that is meat consumed/intended	36.46%	17.37	30.37%	18.12%
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 7 (<i>eating meat is good</i>)	6.01	1.21	5.33	1.62
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	6.36	0.99	6.05	1.25

Table 35.

Means and standard deviations for the 4 (message orientation) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-message reports of how often they consume meat [scale from 1 to 5]) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 5 [regularly]) for Study 2.

Message Orientation	Feedback Tailoring to Values					
	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-schema oriented message	4.13	0.86	3.87	0.86	4.00	0.86
Altruistic oriented message	3.76	0.83	3.70	1.05	3.73	0.95
Egoistic oriented message	3.90	0.82	3.71	0.84	3.79	0.85
Non-specific orientation message	3.86	0.83	4.07	0.87	3.97	0.85
Total	3.91	0.84	3.82	0.91		

Table 36.

Means and standard deviations for the 4 (message orientation) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-message reports of how often they consume meat [scale from 1 to 8]) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 8 [daily]) for Study 2.

Message Orientation	Feedback Tailoring to Values					
	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-schema oriented message	7.13	1.04	6.90	0.96	7.02	1.00
Altruistic oriented message	6.79	1.14	6.81	1.00	6.80	1.06
Egoistic oriented message	6.86	1.16	7.05	1.04	6.97	1.09
Non-specific orientation message	7.21	0.77	7.23	0.97	7.22	0.87
Total	6.99	1.05	6.99	1.00		

Table 37.

Means and standard deviations for the 4 (message orientation) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-message reports of the number of meals they ate containing meat in the past 3 days) on participants' intended number of meals containing meat in the next 3 days for Study 2.

Message Orientation	Feedback Tailoring to Values					
	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-schema oriented message	4.03	2.14	3.53	2.32	3.78	2.23
Altruistic oriented message	3.58	2.05	3.57	2.59	3.57	2.33
Egoistic oriented message	3.93	2.20	3.18	1.56	3.51	1.89
Non-specific orientation message	4.17	2.45	3.80	2.47	3.98	2.45
Total	3.92	2.19	3.50	2.24		

Table 38.

Means and standard deviations for the 4 (message orientation) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-message reports of the number of daily servings of meat consumed) on participants' intended number of daily servings of meat to consume for Study 2.

Message Orientation	Feedback Tailoring to Values					
	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-schema oriented message	2.73	2.36	2.13	1.96	2.43	2.17
Altruistic oriented message	1.97	1.49	2.24	1.96	2.11	1.75
Egoistic oriented message	1.55	0.91	1.92	1.32	1.76	1.17
Non-specific orientation message	2.86	2.43	2.57	2.30	2.71	2.35
Total	2.27	1.95	2.20	1.88		

Table 39.

Means and standard deviations for the 4 (message orientation) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-message reports of the average percentage of food consumed that is meat) on participants' intended average percentage of food consumed that is meat for Study 2.

Feedback Tailoring to Values						
Message Orientation	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-schema oriented message	30.73%	15.83%	28.80%	20.82%	29.77%	18.36%
Altruistic oriented message	28.76%	16.65%	26.97%	17.27%	27.81%	16.88%
Egoistic oriented message	28.66%	13.66%	26.18%	16.37%	27.25%	15.19%
Non-specific orientation message	31.03%	18.29%	35.27%	19.87%	33.19%	19.07%
Total	29.77%	16.04%	29.00%	18.59%		

Table 40.

Means and standard deviations for the 4 (message orientation) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-message reports of their attitude toward meat [scale from 1 to 7]) on participants' post-message attitude toward meat (scale ranging from 1 [eating meat is bad] to 7 [eating meat is good]) for Study 2.

Message Orientation	Feedback Tailoring to Values					
	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-schema oriented message	5.47	1.48	5.10	1.79	5.28	1.64
Altruistic oriented message	5.18	1.67	4.97	1.62	5.07	1.64
Egoistic oriented message	5.34	1.90	5.16	1.73	5.24	1.79
Non-specific orientation message	5.62	1.27	5.20	1.54	5.41	1.42
Total	5.40	1.58	5.10	1.66		

Table 41.

Means and standard deviations for the 4 (message orientation) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-message reports of their liking of meat [scale from 1 to 7]) on participants' post-message liking of meat (scale ranging from 1 [I very much dislike eating meat] to 7 [I very much like eating meat]) for Study 2.

Message Orientation	Feedback Tailoring to Values					
	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-schema oriented message	6.07	1.36	5.90	1.30	5.98	1.32
Altruistic oriented message	6.00	1.23	5.73	1.48	5.86	1.37
Egoistic oriented message	6.03	1.40	6.00	1.32	6.01	1.34
Non-specific orientation message	6.45	0.91	6.00	1.23	6.22	1.10
Total	6.13	1.24	5.90	1.33		

Table 42.

Means and standard deviations for the 4 (message orientation) x 2 (values tailoring) Analysis of Variance on participants' post-message willingness to reduce their meat consumption (scale ranging from 1 [not at all willing to reduce the amount of meat I eat even a little] to 5 [very willing to stop eating meat entirely]) for Study 2.

Message Orientation	Feedback Tailoring to Values					
	Tailored to values		Not tailored to values		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-schema oriented message	2.20	0.93	2.37	1.03	2.28	0.98
Altruistic oriented message	2.76	1.03	2.51	1.07	2.63	1.05
Egoistic oriented message	2.62	1.12	2.47	1.01	2.54	1.05
Non-specific orientation message	2.31	0.89	2.50	1.25	2.41	1.09
Total	2.48	1.01	2.47	1.08		

Table 43.

Means and standard deviations for the one-way Analysis of Covariance (comparing all nine conditions – including the control condition – and controlling for participants' pre-message reports of how often they consume meat [scale from 1 to 5]) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 5 [regularly]) for Study 2.

Condition	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>		
Self-schema oriented messages tailored to values	4.13	0.86
Self-schema oriented messages not tailored to values	3.87	0.86
<i>Altruistic oriented messages</i>		
Altruistic oriented messages tailored to values	3.76	0.86
Altruistic oriented message not tailored to values	3.70	1.05
<i>Egoistic oriented messages</i>		
Egoistic oriented messages tailored to values	3.90	0.82
Egoistic oriented message not tailored to values	3.71	0.84
<i>Non-specific orientation messages</i>		
Non-specific orientation messages tailored to values	3.86	0.83
Non-specific orientation message not tailored to values	4.07	0.87
Control (no feedback)	4.05	0.90

Table 44.

Means and standard deviations for the one-way Analysis of Covariance (comparing all nine conditions – including the control condition – and controlling for participants' pre-message reports of how often they consume meat [scale from 1 to 8]) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 8 [daily]) for Study 2.

Condition	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>		
Self-schema oriented messages tailored to values	7.13	1.04
Self-schema oriented messages not tailored to values	6.90	0.96
<i>Altruistic oriented messages</i>		
Altruistic oriented messages tailored to values	6.79	1.14
Altruistic oriented message not tailored to values	6.81	1.00
<i>Egoistic oriented messages</i>		
Egoistic oriented messages tailored to values	6.86	1.16
Egoistic oriented message not tailored to values	7.05	1.04
<i>Non-specific orientation messages</i>		
Non-specific orientation messages tailored to values	7.21	0.77
Non-specific orientation message not tailored to values	7.23	0.97
Control (no feedback)	7.20	0.94

Table 45.

Means and standard deviations for the one-way Analysis of Covariance (comparing all nine conditions – including the control condition – and controlling for participants' pre-message reports of the number of meals they ate containing meat in the past 3 days) on participants' intended number of meals containing meat in the next 3 days for Study 2.

Condition	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>		
Self-schema oriented messages tailored to values	4.03	2.14
Self-schema oriented messages not tailored to values	3.53	2.32
<i>Altruistic oriented messages</i>		
Altruistic oriented messages tailored to values	3.58	2.05
Altruistic oriented message not tailored to values	3.57	2.59
<i>Egoistic oriented messages</i>		
Egoistic oriented messages tailored to values	3.93	2.05
Egoistic oriented message not tailored to values	3.18	1.56
<i>Non-specific orientation messages</i>		
Non-specific orientation messages tailored to values	4.17	2.45
Non-specific orientation message not tailored to values	3.80	2.47
Control (no feedback)	4.68	2.52

Table 46.

Means and standard deviations for the one-way Analysis of Covariance (comparing all nine conditions – including the control condition – and controlling for participants' pre-message reports of the number of daily servings of meat consumed) on participants' intended number of daily servings of meat to consume for Study 2.

Condition	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>		
Self-schema oriented messages tailored to values	2.73	2.36
Self-schema oriented messages not tailored to values	2.13	1.96
<i>Altruistic oriented messages</i>		
Altruistic oriented messages tailored to values	1.97	1.49
Altruistic oriented message not tailored to values	2.24	1.96
<i>Egoistic oriented messages</i>		
Egoistic oriented messages tailored to values	1.55	0.91
Egoistic oriented message not tailored to values	1.92	1.32
<i>Non-specific orientation messages</i>		
Non-specific orientation messages tailored to values	2.86	2.43
Non-specific orientation message not tailored to values	2.57	2.30
Control (no feedback)	2.75	2.00

Table 47.

Means and standard deviations for the one-way Analysis of Covariance (comparing all nine conditions – including the control condition – and controlling for participants' pre-message reports of the average percentage of food consumed that is meat) on participants' intended average percentage of food consumed that is meat for Study 2.

Condition	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>		
Self-schema oriented messages tailored to values	30.73	15.83
Self-schema oriented messages not tailored to values	28.80	20.82
<i>Altruistic oriented messages</i>		
Altruistic oriented messages tailored to values	28.76	16.65
Altruistic oriented message not tailored to values	26.97	17.27
<i>Egoistic oriented messages</i>		
Egoistic oriented messages tailored to values	28.66	13.66
Egoistic oriented message not tailored to values	26.18	16.37
<i>Non-specific orientation messages</i>		
Non-specific orientation messages tailored to values	31.03	18.29
Non-specific orientation message not tailored to values	35.27	19.87
Control (no feedback)	36.80	21.35

Table 48.

Means and standard deviations for the one-way Analysis of Covariance (comparing all nine conditions – including the control condition – and controlling for participants' pre-message reports of their attitude toward meat [scale from 1 to 7]) on participants' post-message attitude toward meat (scale ranging from 1 [eating meat is bad] to 7 [eating meat is good]) for Study 2.

Condition	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>		
Self-schema oriented messages tailored to values	5.47	1.48
Self-schema oriented messages not tailored to values	5.10	1.79
<i>Altruistic oriented messages</i>		
Altruistic oriented messages tailored to values	5.18	1.67
Altruistic oriented message not tailored to values	4.97	1.62
<i>Egoistic oriented messages</i>		
Egoistic oriented messages tailored to values	5.34	1.90
Egoistic oriented message not tailored to values	5.16	1.73
<i>Non-specific orientation messages</i>		
Non-specific orientation messages tailored to values	5.62	1.27
Non-specific orientation message not tailored to values	5.20	1.54
Control (no feedback)	5.90	1.43

Table 49.

Means and standard deviations for the one-way Analysis of Covariance (comparing all nine conditions – including the control condition – and controlling for participants' pre-message reports of their liking of meat [scale from 1 to 7]) on participants' post-message liking of meat (scale ranging from 1 [I very much dislike eating meat] to 7 [I very much like eating meat]) for Study 2.

Condition	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>		
Self-schema oriented messages tailored to values	6.07	1.36
Self-schema oriented messages not tailored to values	5.90	1.30
<i>Altruistic oriented messages</i>		
Altruistic oriented messages tailored to values	6.00	1.23
Altruistic oriented message not tailored to values	5.73	1.48
<i>Egoistic oriented messages</i>		
Egoistic oriented messages tailored to values	6.03	1.40
Egoistic oriented message not tailored to values	6.00	1.32
<i>Non-specific orientation messages</i>		
Non-specific orientation messages tailored to values	6.45	0.91
Non-specific orientation message not tailored to values	6.00	1.23
Control (no feedback)	6.30	0.97

Table 50.

Means and standard deviations for the one-way Analysis of Variance (comparing all nine conditions – including the control condition) on participants' post-message willingness to reduce their meat consumption (scale ranging from 1 [not at all willing to reduce the amount of meat I eat even a little] to 5 [very willing to stop eating meat entirely]) for Study 2.

Condition	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>		
Self-schema oriented messages tailored to values	2.20	0.93
Self-schema oriented messages not tailored to values	2.37	1.03
<i>Altruistic oriented messages</i>		
Altruistic oriented messages tailored to values	2.76	1.03
Altruistic oriented message not tailored to values	2.51	1.07
<i>Egoistic oriented messages</i>		
Egoistic oriented messages tailored to values	2.62	1.12
Egoistic oriented message not tailored to values	2.47	1.01
<i>Non-specific orientation messages</i>		
Non-specific orientation messages tailored to values	2.31	0.89
Non-specific orientation message not tailored to values	2.50	1.25
Control (no feedback)	2.58	1.08

Table 51.

Means and standard deviations for males' and females' pre-message responses for Study 2.

Pre-Message Responses	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	4.38	0.67	4.43	0.74
Frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	7.52	0.59	7.49	0.57
Number of meals containing meat consumed in past 3 days	5.28	2.17	4.64	2.12
Number of daily servings of meat consumed	2.91	1.91	2.22	1.29
Percentage of food that is meat consumed	39.20%	15.86%	34.87%	18.11%
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 5 (<i>eating meat is good</i>)	5.99	1.27	6.01	1.19
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	6.53	0.86	6.26	1.04

Table 52.

Means and standard deviations for males' and females' post-message responses for Study 2.

Post-Message Responses	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Willingness to reduce meat consumption 1 (<i>not at all willing to reduce the amount of meat I eat even a little</i>) - 5 (<i>very willing to stop eating meat entirely</i>)	2.27	1.05	2.60	1.03
Intended frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	4.02	0.85	3.82	0.9
Intended frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	7.23	0.90	6.90	1.05
Number of meals containing meat intended in next 3 days	4.50	2.35	4.47	2.17
Number of daily servings of meat intended	2.91	2.22	1.98	1.67
Percentage of food that is meat intended	35.13%	17.69%	27.91%	17.96%
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 5 (<i>eating meat is good</i>)	5.52	1.63	5.21	1.60
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	6.28	1.15	5.91	1.30

Table 53.

F-values for the main effects of time for each Study 2 gender x time repeated-measures Analysis of Variance.

Dependent Measures	Main effects of time
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$F(1, 289) = 133.19, p < .001$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$F(1, 289) = 89.42, p < .001$
Number of meals containing meat consumed/intended in past/next 3 days	$F(1, 289) = 112.23, p < .001$
Number of servings of meat consumed/intended	$F(1, 289) = 1.58, p = .210$
Percentage of food that is meat consumed/intended	$F(1, 289) = 70.18, p < .001$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 5 (<i>eating meat is good</i>)	$F(1, 289) = 82.02, p < .001$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$F(1, 289) = 30.93, p < .001$

Table 54.

F-values for the main effects of gender for each Study 2 gender x time repeated-measures Analysis of Variance.

Dependent Measures	Main effects of gender
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$F(1, 289) = 0.75, p = .388$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$F(1, 289) = 4.38, p = .037$
Number of meals containing meat consumed/intended in past/next 3 days	$F(1, 289) = 11.15, p = .001$
Number of servings of meat consumed/intended	$F(1, 289) = 18.73, p < .001$
Percentage of food that is meat consumed/intended	$F(1, 289) = 8.04, p = .005$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 5 (<i>eating meat is good</i>)	$F(1, 289) = 0.84, p = .361$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$F(1, 289) = 6.59, p = .011$

Table 55.

F-values for the time x gender interaction effects for each Study 2 gender x time repeated-measures Analysis of Variance.

Dependent Measures	Time x gender interactions
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$F(1, 289) = 8.95, p = .003$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$F(1, 289) = 10.78, p = .001$
Number of meals containing meat consumed/intended in past/next 3 days	$F(1, 289) = 4.23, p = .041$
Number of servings of meat consumed/intended	$F(1, 289) = 1.58, p = .210$
Percentage of food that is meat consumed/intended	$F(1, 289) = 4.84, p = .029$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 5 (<i>eating meat is good</i>)	$F(1, 289) = 5.63, p = .018$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$F(1, 289) = 0.71, p = .400$

Table 56.

F-values for the gender x condition interaction effects for each 2 (gender) x 9 (condition) Analysis of Covariance (controlling for participants' respective pre-message reports) and the 2 (gender) x 9 (condition) Analysis of Variance on participants' post-message willingness to reduce their meat consumption for Study 2.

Dependent Measures	Gender x condition interactions
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$F(8, 272) = 0.25, p = .980$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$F(8, 272) = 0.66, p = .723$
Number of meals containing meat consumed/intended in past/next 3 days	$F(8, 272) = 0.61, p = .766$
Number of servings of meat consumed/intended	$F(8, 272) = 0.66, p = .725$
Percentage of food that is meat consumed/intended	$F(8, 272) = 0.56, p = .811$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 5 (<i>eating meat is good</i>)	$F(8, 272) = 0.47, p = .876$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$F(8, 272) = 0.78, p = .621$

Table 57.

Means and standard deviations for the 2 (gender) x 9 (condition) Analysis of Covariance (controlling for participants' pre-message reports of how often they consume meat [scale from 1 to 5]) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 5 [regularly]) for Study 2.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>				
Self-schema oriented messages tailored to values	4.20	0.92	4.10	0.85
Self-schema oriented messages not tailored to values	4.10	0.88	3.78	0.88
<i>Altruistic oriented messages</i>				
Altruistic oriented messages tailored to values	4.08	0.86	3.47	0.70
Altruistic oriented message not tailored to values	4.00	0.85	3.56	1.12
<i>Egoistic oriented messages</i>				
Egoistic oriented messages tailored to values	4.17	0.72	3.75	0.86
Egoistic oriented message not tailored to values	3.69	0.79	3.73	0.88
<i>Non-specific orientation messages</i>				
Non-specific orientation messages tailored to values	3.64	1.03	4.00	0.69
Non-specific orientation message not tailored to values	4.10	0.88	4.05	0.89
Control (no feedback)	4.31	0.75	3.92	0.98

Table 58.

Means and standard deviations for the 2 (gender) x 9 (condition) Analysis of Covariance (controlling for participants' pre-message reports of how often they consume meat [scale from 1 to 8]) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 8 [daily]) for Study 2.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>				
Self-schema oriented messages tailored to values	7.40	0.97	7.00	1.08
Self-schema oriented messages not tailored to values	7.20	0.92	6.78	1.00
<i>Altruistic oriented messages</i>				
Altruistic oriented messages tailored to values	7.08	1.26	6.53	1.02
Altruistic oriented message not tailored to values	7.17	0.72	6.64	1.08
<i>Egoistic oriented messages</i>				
Egoistic oriented messages tailored to values	7.33	0.65	6.56	1.37
Egoistic oriented message not tailored to values	7.00	1.32	7.09	0.81
<i>Non-specific orientation messages</i>				
Non-specific orientation messages tailored to values	7.18	0.60	7.22	0.88
Non-specific orientation message not tailored to values	7.40	0.70	7.15	1.09
Control (no feedback)	7.46	0.52	7.04	1.08

Table 59.

Means and standard deviations for the 2 (gender) x 9 (condition) Analysis of Covariance (controlling for participants' pre-message reports of the number of meals they ate containing meat in the past 3 days) on participants' intended number of meals containing meat in the next 3 days for Study 2.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>				
Self-schema oriented messages tailored to values	4.80	3.01	3.65	1.50
Self-schema oriented messages not tailored to values	4.20	1.99	3.33	2.52
<i>Altruistic oriented messages</i>				
Altruistic oriented messages tailored to values	4.62	2.57	2.74	1.10
Altruistic oriented message not tailored to values	4.33	2.57	3.20	2.57
<i>Egoistic oriented messages</i>				
Egoistic oriented messages tailored to values	4.42	2.19	3.75	2.18
Egoistic oriented message not tailored to values	3.50	1.59	2.95	1.53
<i>Non-specific orientation messages</i>				
Non-specific orientation messages tailored to values	4.73	2.61	3.83	2.36
Non-specific orientation message not tailored to values	4.30	2.45	3.55	2.50
Control (no feedback)	5.77	2.24	4.19	2.55

Table 60.

Means and standard deviations for the 2 (gender) x 9 (condition) Analysis of Covariance (controlling for participants' pre-message reports of the number of daily servings of meat consumed) on participants' intended number of daily servings of meat to consume for Study 2.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>				
Self-schema oriented messages tailored to values	3.50	2.72	2.35	2.13
Self-schema oriented messages not tailored to values	2.80	2.78	1.89	1.41
<i>Altruistic oriented messages</i>				
Altruistic oriented messages tailored to values	3.00	1.78	1.32	0.75
Altruistic oriented message not tailored to values	2.92	1.88	1.92	1.96
<i>Egoistic oriented messages</i>				
Egoistic oriented messages tailored to values	1.67	1.07	1.50	0.82
Egoistic oriented message not tailored to values	2.44	1.71	1.55	0.80
<i>Non-specific orientation messages</i>				
Non-specific orientation messages tailored to values	3.82	3.34	2.28	1.49
Non-specific orientation message not tailored to values	3.30	2.83	2.20	1.96
Control (no feedback)	3.08	1.61	2.58	2.21

Table 61.

Means and standard deviations for the 2 (gender) x 9 (condition) Analysis of Covariance (controlling for participants' pre-message reports of the average percentage of food consumed that is meat) on participants' intended average percentage of food consumed that is meat for Study 2.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>				
Self-schema oriented messages tailored to values	36.50%	20.01%	27.85%	12.90%
Self-schema oriented messages not tailored to values	35.50%	19.17%	27.44%	21.51%
<i>Altruistic oriented messages</i>				
Altruistic oriented messages tailored to values	33.23%	17.31%	25.68%	16.38%
Altruistic oriented message not tailored to values	37.75%	16.67%	21.80%	15.29%
<i>Egoistic oriented messages</i>				
Egoistic oriented messages tailored to values	33.83%	13.52%	25.31%	13.26%
Egoistic oriented message not tailored to values	27.19%	14.60%	25.45%	17.84%
<i>Non-specific orientation messages</i>				
Non-specific orientation messages tailored to values	31.91%	18.71%	30.50%	18.56%
Non-specific orientation message not tailored to values	43.10%	18.88%	31.35%	19.63%
Control (no feedback)	40.85%	21.10%	35.04%	21.99%

Table 62.

Means and standard deviations for the 2 (gender) x 9 (condition) Analysis of Covariance (controlling for participants' pre-message reports of their attitude toward meat [scale from 1 to 7]) on participants' post-message attitude toward meat (scale ranging from 1 [eating meat is bad] to 7 [eating meat is good]) for Study 2.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>				
Self-schema oriented messages tailored to values	5.90	1.45	5.25	1.48
Self-schema oriented messages not tailored to values	5.10	2.03	5.17	1.72
<i>Altruistic oriented messages</i>				
Altruistic oriented messages tailored to values	5.15	1.77	5.11	1.63
Altruistic oriented message not tailored to values	5.67	1.37	4.64	1.66
<i>Egoistic oriented messages</i>				
Egoistic oriented messages tailored to values	5.67	1.72	5.13	2.09
Egoistic oriented message not tailored to values	5.25	1.95	5.09	1.60
<i>Non-specific orientation messages</i>				
Non-specific orientation messages tailored to values	5.27	1.56	5.83	1.04
Non-specific orientation message not tailored to values	5.60	1.58	5.00	1.52
Control (no feedback)	6.15	1.28	5.73	1.51

Table 63.

Means and standard deviations for the 2 (gender) x 9 (condition) Analysis of Covariance (controlling for participants' pre-message reports of their liking of meat [scale from 1 to 7]) on participants' post-message liking of meat (scale ranging from 1 [I very much dislike eating meat] to 7 [I very much like eating meat]) for Study 2.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>				
Self-schema oriented messages tailored to values	6.50	1.27	5.85	1.39
Self-schema oriented messages not tailored to values	5.80	1.48	5.94	1.26
<i>Altruistic oriented messages</i>				
Altruistic oriented messages tailored to values	6.08	1.26	5.89	1.24
Altruistic oriented message not tailored to values	6.50	0.91	5.36	1.58
<i>Egoistic oriented messages</i>				
Egoistic oriented messages tailored to values	6.33	1.23	5.88	1.54
Egoistic oriented message not tailored to values	6.19	1.47	5.86	1.21
<i>Non-specific orientation messages</i>				
Non-specific orientation messages tailored to values	6.09	1.04	6.67	0.77
Non-specific orientation message not tailored to values	6.40	0.84	5.80	1.36
Control (no feedback)	6.62	0.65	6.12	1.07

Table 64.

Means and standard deviations for the 2 (gender) x 9 (condition) Analysis of Variance on participants' post-message willingness to reduce their meat consumption (scale ranging from 1 [not at all willing to reduce the amount of meat I eat even a little] to 5 [very willing to stop eating meat entirely]) for Study 2.

Condition	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Self-schema oriented messages</i>				
Self-schema oriented messages tailored to values	2.10	0.88	2.25	0.97
Self-schema oriented messages not tailored to values	2.10	1.20	2.50	0.86
<i>Altruistic oriented messages</i>				
Altruistic oriented messages tailored to values	2.46	1.05	2.95	1.03
Altruistic oriented message not tailored to values	2.00	0.95	2.76	1.05
<i>Egoistic oriented messages</i>				
Egoistic oriented messages tailored to values	2.50	0.91	2.69	1.30
Egoistic oriented message not tailored to values	2.31	1.14	2.59	0.91
<i>Non-specific orientation messages</i>				
Non-specific orientation messages tailored to values	2.27	1.01	2.33	0.84
Non-specific orientation message not tailored to values	2.00	1.16	2.75	1.25
Control (no feedback)	2.54	1.27	2.58	1.03

Table 65.

Correlations between participants' highest level of education completed and participants' responses on each of the pre- and post-message questions for Study 2.

Dependent Measures	Pre-Message	Post-Message
Willingness to reduce meat consumption 1 (<i>not at all willing to reduce the amount of meat I eat even a little</i>) - 5 (<i>very willing to stop eating meat entirely</i>)		$r(292) = .003, p = .966$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$r(292) = -.144, p = .014$	$r(292) = .005, p = .937$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$r(292) = -.105, p = .074$	$r(292) = -.030, p = .610$
Number of meals containing meat consumed/intended in past/next 3 days	$r(292) = -.144, p = .013$	$r(292) = -.056, p = .340$
Number of daily servings of meat consumed/intended	$r(292) = -.097, p = .099$	$r(292) = -.120, p = .040$
Percentage of food that is meat consumed/intended	$r(292) = -.129, p = .027$	$r(292) = -.038, p = .513$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 7 (<i>eating meat is good</i>)	$r(292) = -.112, p = .056$	$r(292) = .019, p = .751$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$r(292) = -.060, p = .303$	$r(292) = -.026, p = .655$

Table 66.

Correlations between participants' age and participants' responses on each of the pre- and post-message questions for Study 2.

Dependent Measures	Pre-Message	Post-Message
Willingness to reduce meat consumption 1 (<i>not at all willing to reduce the amount of meat I eat even a little</i>) - 5 (<i>very willing to stop eating meat entirely</i>)		$r(294) = -.064, p = .271$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$r(294) = .091, p = .118$	$r(294) = .051, p = .379$
[Intended] frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$r(294) = .040, p = .494$	$r(294) = .069, p = .236$
Number of meals containing meat consumed/intended in past/next 3 days	$r(294) = -.021, p = .716$	$r(294) = -.003, p = .956$
Number of daily servings of meat consumed/intended	$r(294) = -.021, p = .720$	$r(294) = -.105, p = .071$
Percentage of food that is meat consumed/intended	$r(294) = -.290, p < .001$	$r(294) = -.172, p = .003$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 7 (<i>eating meat is good</i>)	$r(294) = -.007, p = .902$	$r(294) = .006, p = .915$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$r(294) = .012, p = .842$	$r(294) = .023, p = .694$

Table 67.

F-values for the follow-up study ANOVAs comparing each condition in Study 1 (personalized feedback tailored to values, personalized feedback not tailored to values, generalized feedback tailored to values, generalized feedback not tailored to values, control (no feedback) condition) to the follow-up no pre-feedback question control condition.

Dependent Measures	Effect of condition
Willingness to reduce meat consumption 1 (not at all willing to reduce the amount of meat I eat even a little) - 5 (very willing to stop eating meat entirely)	$F(5, 209) = 1.56, p = .173$
Intended frequency of meat consumption 1 (never) - 5 (regularly)	$F(5, 209) = 3.24, p = .008$
Intended frequency of meat consumption 1 (never) - 8 (daily)	$F(5, 209) = 3.59, p = .004$
Number of meals containing meat intended in next 3 days	$F(5, 209) = 4.87, p < .001$
Number of daily servings of meat intended	$F(5, 209) = 1.23, p = .295$
Percentage of food that is meat intended	$F(5, 209) = 1.65, p = .149$
Attitude toward eating meat 1 (eating meat is bad) - 7 (eating meat is good)	$F(5, 209) = 2.69, p = .022$
Liking of meat 1 (I very much dislike eating meat) - 7 (I very much like eating meat)	$F(5, 209) = 1.21, p = .307$

Table 68.

F-values for the follow-up study ANOVAs comparing each condition in Study 2 (self-schema oriented message tailored to values, self-schema oriented message not tailored to values, altruistic oriented message tailored to values, altruistic oriented message not tailored to values, egoistic oriented message tailored to values, egoistic oriented message not tailored to values, non-specific orientation message tailored to values, non-specific orientation message not tailored to values, control (no message) condition) to the follow-up no pre-message question control condition.

Dependent Measures	Effect of condition
Willingness to reduce meat consumption 1 (<i>not at all willing to reduce the amount of meat I eat even a little</i>) - 5 (<i>very willing to stop eating meat entirely</i>)	$F(9, 322) = 1.67, p = .096$
Intended frequency of meat consumption 1 (<i>never</i>) - 5 (<i>regularly</i>)	$F(9, 322) = 1.31, p = .230$
Intended frequency of meat consumption 1 (<i>never</i>) - 8 (<i>daily</i>)	$F(9, 322) = 1.56, p = .127$
Number of meals containing meat intended in next 3 days	$F(9, 322) = 1.53, p = .136$
Number of daily servings of meat intended	$F(9, 322) = 1.59, p = .117$
Percentage of food that is meat intended	$F(9, 322) = 1.21, p = .291$
Attitude toward eating meat 1 (<i>eating meat is bad</i>) - 7 (<i>eating meat is good</i>)	$F(9, 322) = 1.19, p = .302$
Liking of meat 1 (<i>I very much dislike eating meat</i>) - 7 (<i>I very much like eating meat</i>)	$F(9, 322) = 1.12, p = .246$

Table 69.

Means and standard deviations for the one-way Analysis of Variance (comparing all conditions – including the follow-up no pre-feedback/message question control condition) on participants' willingness to reduce their meat consumption (scale ranging from 1 [not at all willing to reduce the amount of meat I eat even a little] to 5 [very willing to stop eating meat entirely]) for both Study 1 and Study 2.

Study condition	<i>M</i>	<i>SD</i>
<i>Study 1</i>		
Personalized feedback tailored to values	2.57	1.09
Personalized feedback not tailored to values	2.65	1.06
Generalized feedback tailored to values	2.42	1.16
Generalized feedback not tailored to values	2.45	1.06
Control (no feedback)	2.63	0.98
Follow-up no pre-feedback question control	3.06	1.10
<i>Study 2</i>		
Self-schema oriented messages tailored to values	2.20	0.93
Self-schema oriented messages not tailored to values	2.37	1.03
Altruistic oriented messages tailored to values	2.76	1.03
Altruistic oriented message not tailored to values	2.51	1.07
Egoistic oriented messages tailored to values	2.62	1.12
Egoistic oriented message not tailored to values	2.47	1.01
Non-specific orientation messages tailored to values	2.31	0.89
Non-specific orientation message not tailored to values	2.50	1.25
Control (no message)	2.58	1.08
Follow-up no pre-feedback question control	3.03	1.03

Table 70.

Means and standard deviations for the one-way Analysis of Variance (comparing all conditions – including the follow-up no pre-feedback/message question control condition) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 5 [regularly]) for both Study 1 and Study 2.

Study condition	<i>M</i>	<i>SD</i>
<i>Study 1</i>		
Personalized feedback tailored to values	3.84	0.96
Personalized feedback not tailored to values	3.86	0.98
Generalized feedback tailored to values	4.00	1.10
Generalized feedback not tailored to values	3.86	0.92
Control (no feedback)	4.13	0.76
Follow-up no pre-feedback question control	3.31	0.95
<i>Study 2</i>		
Self-schema oriented messages tailored to values	4.13	0.86
Self-schema oriented messages not tailored to values	3.87	0.86
Altruistic oriented messages tailored to values	3.76	0.83
Altruistic oriented message not tailored to values	3.70	1.05
Egoistic oriented messages tailored to values	3.90	0.82
Egoistic oriented message not tailored to values	3.71	0.84
Non-specific orientation messages tailored to values	3.86	0.83
Non-specific orientation message not tailored to values	4.07	0.87
Control (no message)	4.05	0.90
Follow-up no pre-feedback question control	3.61	0.96

Table 71.

Means and standard deviations for the one-way Analysis of Variance (comparing all conditions – including the follow-up no pre-feedback/message question control condition) on participants' intended frequency of consuming meat (scale ranging from 1 [never] to 8 [daily]) for both Study 1 and Study 2.

Study condition	<i>M</i>	<i>SD</i>
<i>Study 1</i>		
Personalized feedback tailored to values	7.00	0.82
Personalized feedback not tailored to values	6.92	0.89
Generalized feedback tailored to values	7.11	1.30
Generalized feedback not tailored to values	7.07	0.84
Control (no feedback)	7.40	0.63
Follow-up no pre-feedback question control	6.47	1.23
<i>Study 2</i>		
Self-schema oriented messages tailored to values	7.13	1.04
Self-schema oriented messages not tailored to values	6.90	0.96
Altruistic oriented messages tailored to values	6.79	1.14
Altruistic oriented message not tailored to values	6.81	1.00
Egoistic oriented messages tailored to values	6.86	1.16
Egoistic oriented message not tailored to values	7.05	1.04
Non-specific orientation messages tailored to values	7.21	0.77
Non-specific orientation message not tailored to values	7.23	0.97
Control (no message)	7.20	0.94
Follow-up no pre-feedback question control	6.56	1.38

Table 72.

Means and standard deviations for the one-way Analysis of Variance (comparing all conditions – including the follow-up no pre-feedback/message question control condition) on participants' intended number of meals containing meat in the next 3 days for both Study 1 and Study 2.

Study condition	<i>M</i>	<i>SD</i>
<i>Study 1</i>		
Personalized feedback tailored to values	3.14	1.80
Personalized feedback not tailored to values	3.49	2.27
Generalized feedback tailored to values	4.03	2.37
Generalized feedback not tailored to values	3.41	2.11
Control (no feedback)	5.05	2.47
Follow-up no pre-feedback question control	2.83	2.17
<i>Study 2</i>		
Self-schema oriented messages tailored to values	4.03	2.14
Self-schema oriented messages not tailored to values	3.53	2.32
Altruistic oriented messages tailored to values	3.58	2.05
Altruistic oriented message not tailored to values	3.57	2.59
Egoistic oriented messages tailored to values	3.93	2.20
Egoistic oriented message not tailored to values	3.18	1.56
Non-specific orientation messages tailored to values	4.17	2.45
Non-specific orientation message not tailored to values	3.80	2.47
Control (no message)	4.68	2.52
Follow-up no pre-feedback question control	3.22	1.88

Table 73.

Means and standard deviations for the one-way Analysis of Variance (comparing all conditions – including the follow-up no pre-feedback/message question control condition) on participants' intended number of daily servings of meat to consume for both Study 1 and Study 2.

Study condition	<i>M</i>	<i>SD</i>
<i>Study 1</i>		
Personalized feedback tailored to values	1.70	1.18
Personalized feedback not tailored to values	2.57	2.68
Generalized feedback tailored to values	2.69	1.97
Generalized feedback not tailored to values	2.21	1.63
Control (no feedback)	2.63	2.02
Follow-up no pre-feedback question control	2.22	2.36
<i>Study 2</i>		
Self-schema oriented messages tailored to values	2.73	2.36
Self-schema oriented messages not tailored to values	2.13	1.96
Altruistic oriented messages tailored to values	1.97	1.49
Altruistic oriented message not tailored to values	2.24	1.96
Egoistic oriented messages tailored to values	1.55	0.91
Egoistic oriented message not tailored to values	1.92	1.32
Non-specific orientation messages tailored to values	2.86	2.43
Non-specific orientation message not tailored to values	2.57	2.30
Control (no message)	2.75	2.00
Follow-up no pre-feedback question control	2.14	1.92

Table 74.

Means and standard deviations for the one-way Analysis of Variance (comparing all conditions – including the follow-up no pre-feedback/message question control condition) on participants' intended average percentage of food consumed that is meat for both Study 1 and Study 2.

Study condition	<i>M</i>	<i>SD</i>
<i>Study 1</i>		
Personalized feedback tailored to values	30.46%	20.36%
Personalized feedback not tailored to values	26.24%	18.43%
Generalized feedback tailored to values	34.17%	21.22%
Generalized feedback not tailored to values	29.03%	18.46%
Control (no feedback)	35.10%	20.29%
Follow-up no pre-feedback question control	25.19%	15.97%
<i>Study 2</i>		
Self-schema oriented messages tailored to values	30.73%	15.83%
Self-schema oriented messages not tailored to values	28.80%	20.82%
Altruistic oriented messages tailored to values	28.76%	16.65%
Altruistic oriented message not tailored to values	26.97%	17.27%
Egoistic oriented messages tailored to values	28.66%	13.66%
Egoistic oriented message not tailored to values	26.18%	16.36%
Non-specific orientation messages tailored to values	31.03%	18.29%
Non-specific orientation message not tailored to values	35.27%	19.87%
Control (no message)	36.80%	21.35%
Follow-up no pre-feedback question control	32.83%	25.83%

Table 75.

Means and standard deviations for the one-way Analysis of Variance (comparing all conditions – including the follow-up no pre-feedback/message question control condition) on participants' post-feedback attitude toward meat (scale ranging from 1 [eating meat is bad] to 7 [eating meat is good]) for both Study 1 and Study 2.

Study condition	<i>M</i>	<i>SD</i>
<i>Study 1</i>		
Personalized feedback tailored to values	5.27	1.66
Personalized feedback not tailored to values	5.24	1.75
Generalized feedback tailored to values	5.78	1.84
Generalized feedback not tailored to values	5.38	1.55
Control (no feedback)	5.80	1.37
Follow-up no pre-feedback question control	4.58	1.70
<i>Study 2</i>		
Self-schema oriented messages tailored to values	5.47	1.48
Self-schema oriented messages not tailored to values	5.10	1.79
Altruistic oriented messages tailored to values	5.18	1.67
Altruistic oriented message not tailored to values	4.97	1.62
Egoistic oriented messages tailored to values	5.34	1.90
Egoistic oriented message not tailored to values	5.16	1.73
Non-specific orientation messages tailored to values	5.62	1.27
Non-specific orientation message not tailored to values	5.20	1.54
Control (no message)	5.90	1.43
Follow-up no pre-feedback question control	5.00	1.72

Table 76.

Means and standard deviations for the one-way Analysis of Variance (comparing all conditions – including the follow-up no pre-feedback/message question control condition) on participants' post-feedback liking of meat (scale ranging from 1 [I very much dislike eating meat] to 7 [I very much like eating meat]) for both Study 1 and Study 2.

Study condition	<i>M</i>	<i>SD</i>
<i>Study 1</i>		
Personalized feedback tailored to values	5.78	1.38
Personalized feedback not tailored to values	6.03	1.17
Generalized feedback tailored to values	6.11	1.53
Generalized feedback not tailored to values	6.00	1.2
Control (no feedback)	6.20	1.16
Follow-up no pre-feedback question control	5.53	1.65
<i>Study 2</i>		
Self-schema oriented messages tailored to values	6.07	1.36
Self-schema oriented messages not tailored to values	5.90	1.30
Altruistic oriented messages tailored to values	6.00	1.23
Altruistic oriented message not tailored to values	5.73	1.48
Egoistic oriented messages tailored to values	6.03	1.40
Egoistic oriented message not tailored to values	6.00	1.32
Non-specific orientation messages tailored to values	6.45	0.91
Non-specific orientation message not tailored to values	6.00	1.23
Control (no message)	6.30	0.97
Follow-up no pre-feedback question control	5.67	1.47

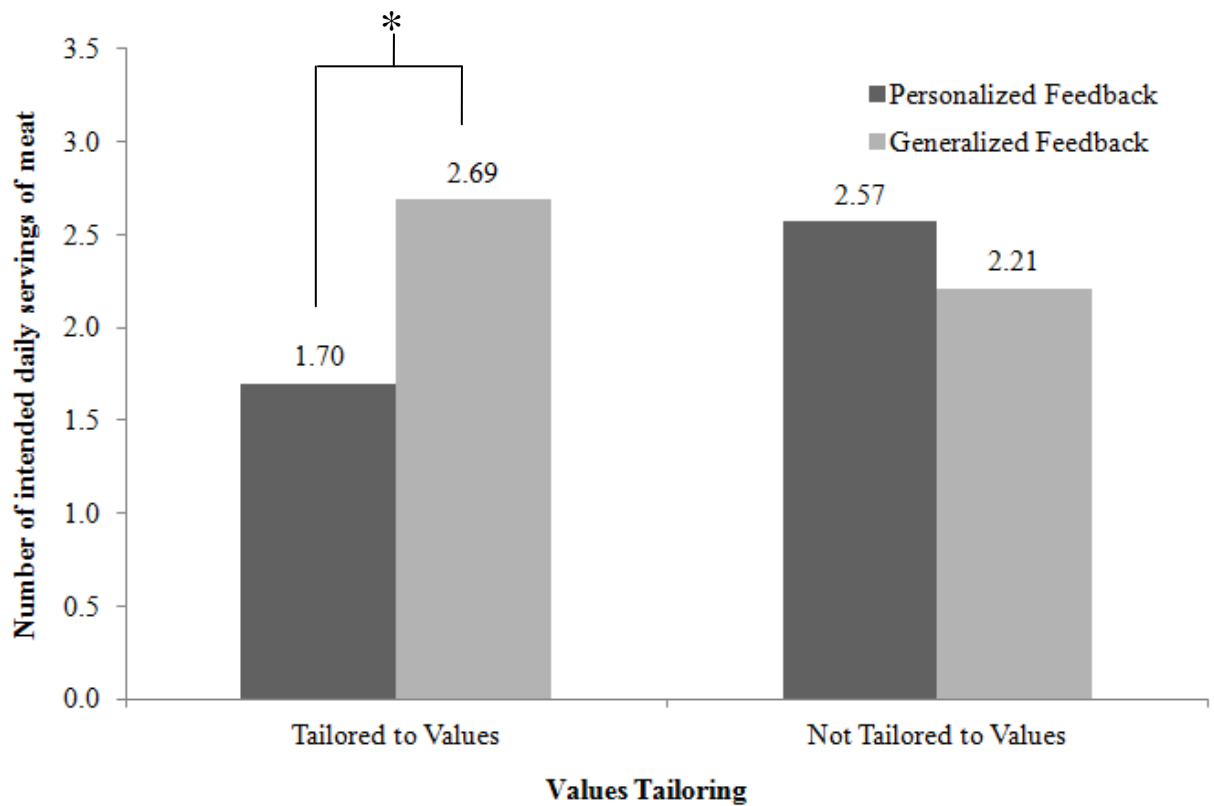


Figure 5. Display of means for the 2 (feedback personalization) x 2 (values tailoring) Analysis of Covariance (controlling for participants' pre-feedback reports of the number of daily servings of meat consumed) on participants' intended number of daily servings of meat to consume for Study 1. The feedback personalization x values tailoring interaction was significant when controlling for participants' current daily servings of meat, $F(1, 134) = 5.12, p = .025$. Simple effects analyses revealed that when feedback was tailored to participants' chosen value, participants that received personalized feedback reported intention to consume significantly less servings of meat daily ($M = 1.70, SD = 1.17$) than participants that received generalized feedback reported ($M = 2.69, SD = 1.97; F(1, 134) = 4.38, p < .05$). However, when feedback was not tailored to participants' chosen value, participants' intended number of daily servings of meat did not significantly differ depending on whether the participants' received personalized feedback ($M = 2.57, SD = 2.68$) or generalized feedback ($M = 2.21, SD = 1.63; F(1, 134) = 1.33, p > .05$). In the above figure, the asterisk denotes the significant difference between the personalized feedback tailored to values condition and the generalized feedback tailored to values condition.

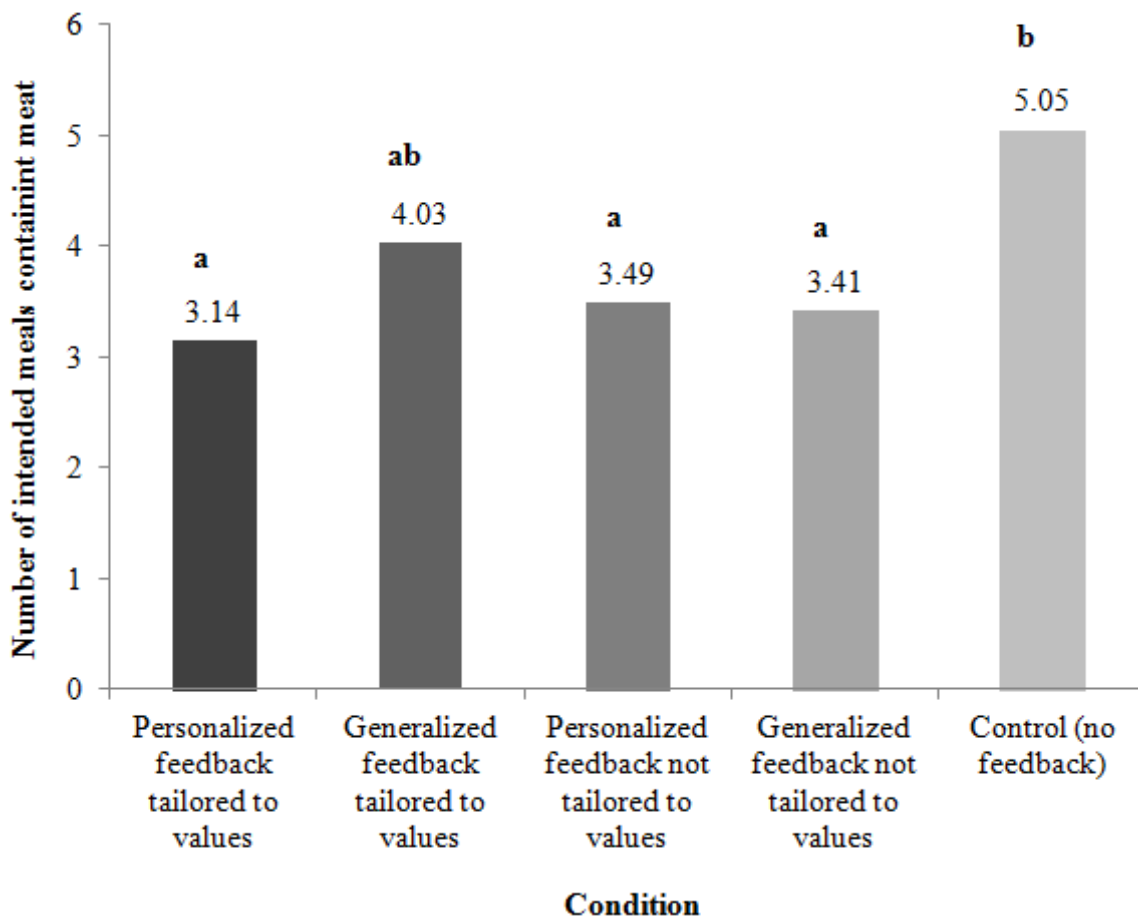


Figure 6. Display of means for the one-way Analysis of Covariance (comparing all five conditions – including the control [no feedback] condition – and controlling for participants’ pre-feedback reports of the number of meals they ate containing meat in the past three days) on participants’ intended number of meals containing meat to consume in the next three days for Study 1. When controlling for participants’ reported number of meals containing meat consumed in the past three days, there was a significant main effect of condition, $F(4, 173) = 3.80, p = .006$. Tukey multiple comparisons showed that participants in the control group intended to eat significantly more meals including meat in the next three days ($M = 5.05, SD = 2.47$) than did participants in all of the other feedback conditions (all $ps < .05$; all $Ms < 4.05$) except the generalized feedback tailored to values condition, which did not significantly differ from any of the other conditions (all $ps > .05$). In the above figure, differing letters denote significant differences between conditions.

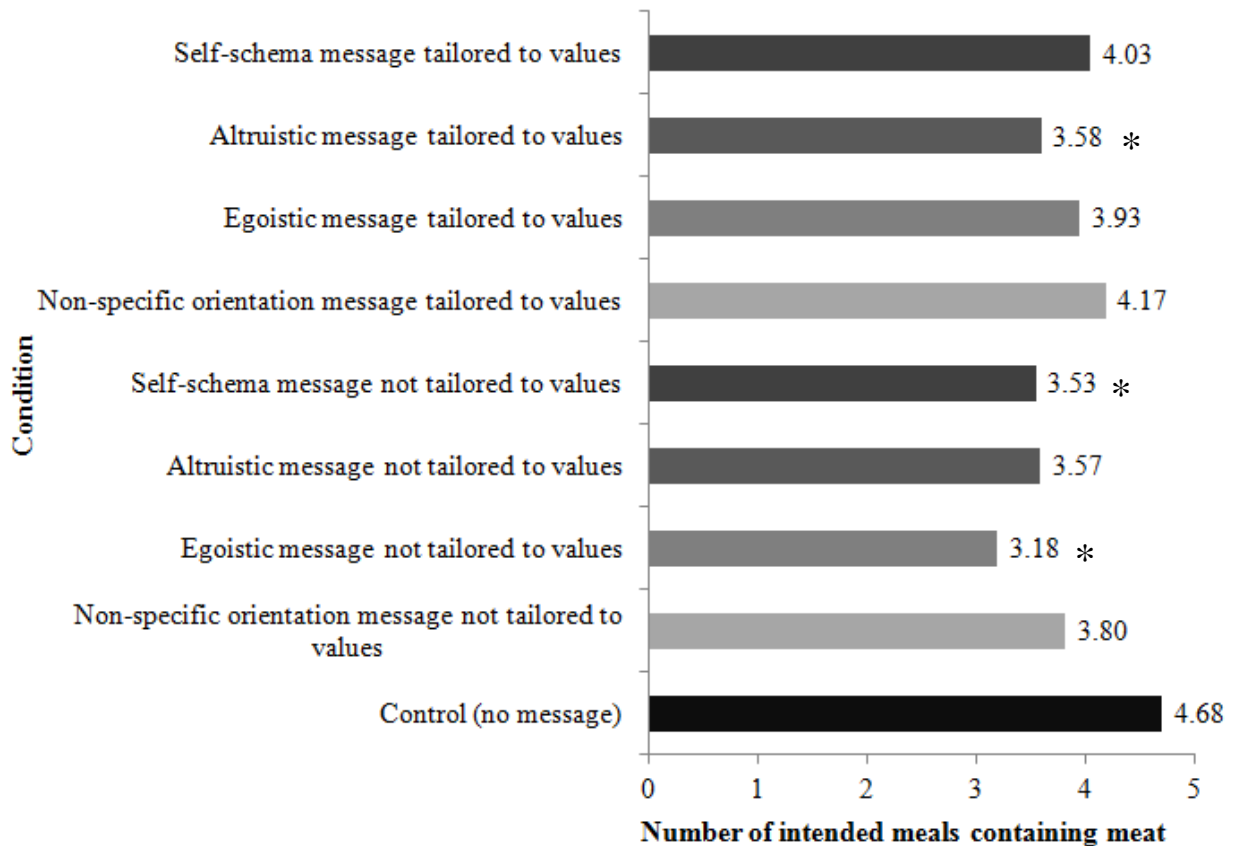


Figure 7. Display of means for the one-way Analysis of Variance (comparing all nine conditions – including the control condition – and controlling for participants’ pre-message reports of the number of meals they ate containing meat in the past three days) on participants’ intended number of meals containing meat in the next three days for Study 2. When controlling for participants’ reported number of meals containing meat consumed in the past three days, there was a significant main effect of condition, $F(8, 286) = 2.25, p = .024$. Bonferroni multiple comparisons showed that control group participants’ estimates ($M = 4.68, SD = 2.52$) only significantly differed from participants’ estimates in the altruistic-oriented message tailored to values condition ($p < .05; M = 3.58, SD = 2.05$), the self-schema oriented message not tailored to values condition ($p < .05; M = 3.53, SD = 2.32$), and the egoistic-oriented message not tailored to values condition ($p < .05; M = 3.18, SD = 1.56$). In the above figure, asterisks denote the three message conditions that significantly differ from the control (no message) condition.

Appendix A - Study 1: Initial Meat Consumption

How often do you eat meat?

Never Seldom Sometimes Frequently Regularly

Please select the option that *best* describes how often you eat meat.

Never
Once a year
A few times a year
Once a month
A few times a month
Once a week
A few times a week
Daily

In the past 3 days, at how many meals did you consume meat?

0 meals ← → 9+ meals

How many servings of meat do you consume in an average day? One serving of meat is defined as 3 ounces. One serving of meat is about the size of a bar of soap, a computer mouse, or a deck of cards. A quarter-pound hamburger patty is approximately 1 serving of meat.

(free response)

On an average day, what percentage of the food that you consume is meat?

0% ← → 100%

Appendix B - Study 1: Initial Meat Attitudes

Using the scale below, please rate your attitude toward eating meat.

1	2	3	4	5	6	7
eating meat is bad						eating meat is good

Using the scale below, please indicate your liking of meat.

1	2	3	4	5	6	7
I very much dislike eating meat						I very much like eating meat

Appendix C - Study 1: Values Ranking

When it comes to the issues surrounding meat, which of the following topics is the most important to you? Please rank each of the following five topics in order of importance to you with 1 being the most important and 5 being the least important.

- Animal welfare
- Personal medical health
- Personal appearance
- Environmental sustainability
- Personal finances

Appendix D - Study 1: Personalized Feedback Tailored to Values

Note: For each personalized feedback tailored to values, the numbers that will be substituted for the bolded and underlined equations will be determined based on each participant's response to the previously asked question "How many servings of meat do you consume in an average day?". For example, for a participant who reports that he/she consumes 2 servings of meat on an average day, the first highlighted equation in the personalized feedback tailored to the animal welfare value would read that he/she is responsible for the death of approximately 101 animals. The number 101 would be substituted for the equation **<50.75 x #servings>**, since 50.75 multiplied by 2 is approximately 101.

Personalized Feedback Tailored to Animal Well-Being

Based on how much meat you reported eating, you are personally responsible for the death of approximately **<50.75 x #servings>** animals every year just as a result of your meat consumption. Specifically, you are annually responsible for the death of approximately **<7 x #servings>** land animals and **<43.75 x #servings>** aquatic animals. These estimates do not include animal deaths that occur as an indirect consequence of your meat consumption. For example, about **<54.5 x #servings>** wild sea animals are killed in order to feed the **<43.75 x #servings>** fish and other aquatic animals that you consume each year. Additionally, you are responsible each year for the deaths of about **<18.75 x #servings>** wild sea animals, including dolphins, that are unintentionally captured in fishing nets and die as a result. Including these animals actually makes you responsible for nearly **<125 x #servings>** animal deaths each year. This means that over a 75-year lifespan, you will be single-handedly responsible for the deaths of over **<9,375 x #servings>** animals as a consequence of eating meat.

Personalized Feedback Tailored to Personal Health

Based on how much meat you reported eating, you consume approximately **<55.86 x #servings>** milligrams of cholesterol and **<325.86 x #servings>** milligrams of sodium each day just from eating meat. This means that you consume **<19 x #servings>**% of your recommended daily cholesterol intake and **<13 x #servings>**% of your recommended daily sodium just from the meat that you eat. Consuming higher amounts of cholesterol and sodium increases your risk of developing high blood pressure, heart disease, heart attacks, and even heart failure. In addition to the high amounts of cholesterol and sodium that you consume from meat each day, you also consume approximately **<4.48 x #servings>** grams of saturated fat each day from consumed meat. Healthy individuals are recommended to limit their amount of daily consumed saturated fats as much as possible, and are advised to consume no more than 16 grams per day. Because saturated fats can increase your unhealthy cholesterol levels, consuming saturated fat can also increase your risk of developing high blood pressure and heart problems.

Personalized Feedback Tailored to Personal Appearance

Based on how much meat you reported eating, you consume approximately <191.77 x #servings> calories every day just from meat. Of those <191.77 x #servings> calories, approximately <117.26 x #servings> calories are from fat. That means that 61% of the calories that you consume from eating meat are fat calories. You also consume approximately <13.02 x #servings> grams of fat per day just from the meat that you eat, which is about <19.8 x #servings>% of the amount of fat that you should consume for an entire day. You also consume approximately <4.48 x #servings> grams of saturated fat every day just from meat, which is <22.5 x #servings>% of the amount of saturated fat that you should consume over the course of an entire day. Essentially, you gain about <0.055 x #servings> pounds just from the meat that you eat. To put this in perspective, you would have to run for approximately <20.40 x #servings> minutes per day in order to burn off all of the meat calories you consume and keep off the weight from just one day's meat consumption.

Personalized Feedback Tailored to Environmental Sustainability

Based on how much meat you reported eating, you are responsible each day for the consumption of approximately <830 x #servings> gallons of water, <3.1 x #servings> pounds of crops, <89.5 x #servings> square feet of land, and <0.25 x #servings> gallons of gasoline solely as a consequence of your meat consumption. Additionally, the amount of meat that you eat results in approximately <4 x #servings> pounds of carbon dioxide gasses being emitted into the environment each day. Over the course of a year, you are responsible for approximately <1,460 x #servings> pounds of carbon dioxide gas emissions, as well as the consumption of approximately <302,950 x #servings> gallons of water, <1,131.5 x #servings> pounds of crops, <0.000735 x #servings> acres of land, and <91.25 x #servings> gallons of gasoline. This means that over a 75-year lifespan, you will be responsible for approximately <23.72 x #servings> million gallons of water and <109,500 x #servings> pounds of carbon dioxide gasses as a consequence of eating meat.

Personalized Feedback Tailored to Personal Finances

Based on how much meat you reported eating, you spend approximately \$<0.96 x #servings> on just meat each day. That means that in one week, you spend approximately \$<6.72 x #servings> on just meat. This amount adds up to approximately \$<29.76 x #servings> each month, which is over \$<350.4 x #servings> over the course of a year that is just spent on meat products. All of these estimates, however, do not take into account more expensive types of meats, such as steak or shrimp. Buying more expensive meats twice a week increases the amount of money you spend per year by at least \$268. Assuming that you do in fact spend at least \$268 every year on more expensive meats, the total amount of money that you spend on meat per year increases to a total of \$<(350.4 x #servings) + 268>. This amount of money is enough to buy a brand new <43 (if #servings=1); 50 (if #servings=2); 55 (if #servings=3); 60 (if #servings=4); 65 (if #servings=5); 70 (if #servings=6); 75 (if #servings=7+)>-inch ultra high-definition flat-screen

television <with money left over (if #servings=8); with a couple hundred dollars left over (if #servings=9); with at least \$500 left over (if #servings=10+)>. Not only that, but over a 75-year lifespan, you will most likely spend over \$<(26,280 x #servings) + 20,100> as a consequence of eating meat.

Appendix E - Study 1: Personalized Feedback Not Tailored to Values

Note: For the personalized feedback not tailored to values, the numbers that will be substituted for the bolded and underlined equations will be determined based on each participant's response to the previously asked question "*How many servings of meat do you consume in an average day?*". For example, for a participant who reports that he/she consumes 2 servings of meat on an average day, the first highlighted equation would read that he/she is responsible for the death of approximately 101 animals. The number 101 would be substituted for the equation **<50.75 x #servings>**, since 50.75 multiplied by 2 is approximately 101.

Personalized Feedback Not Tailored to Values

Based on how much meat you reported eating, you are personally responsible for the death of approximately **<50.75 x #servings>** animals, approximately **<1,460 x #servings>** pounds of carbon dioxide gas emissions, as well as the consumption of approximately **<302,950 x #servings>** gallons of water, **<1,131.5 x #servings>** pounds of crops, **<0.000735 x #servings>** acres of land, and **<91.25 x #servings>** gallons of gasoline every year just as a result of your meat consumption. Also based on the amount of meat that you reported eating, you consume approximately **<55.86 x #servings>** milligrams of cholesterol and **<325.86 x #servings>** milligrams of sodium each day just from eating meat. This means that you consume **<19 x #servings>**% of your recommended daily cholesterol intake and **<13 x #servings>**% of your recommended daily sodium just from the meat that you eat. Furthermore, you consume approximately **<191.77 x #servings>** calories (**<117.26 x #servings>** of which are fat calories) and **<13.02 x #servings>** grams of fat (**<19.8 x #servings>**% of the recommended daily value) every day just from meat. On top of all of that, you spend approximately \$**<350.4 x #servings>** over the course of a year just on meat products.

Appendix F - Study 1: Generalized Feedback Tailored to Values

Generalized Feedback Tailored to Animal Well-Being

The average American is personally responsible for the death of approximately 203 animals every year just as a result of personal meat consumption. Specifically, the average American is annually responsible for the death of 28 land animals and 175 aquatic animals. These estimates do not include animal deaths that occur as an indirect consequence of an individual's meat consumption. For example, about 218 wild sea animals are killed in order to feed the 175 fish and other aquatic animals that an average American consumes each year. Additionally, the average American is responsible each year for the deaths of about 75 wild sea animals, including dolphins, that are unintentionally captured in fishing nets and die as a result. Including these animals actually makes the average American responsible for nearly 500 animal deaths each year. This means that over a 75-year lifespan, the average American is single-handedly responsible for the deaths of over 37,500 animals as a consequence of eating meat.

Generalized Feedback Tailored to Personal Health

The average American consumes approximately 223 milligrams of cholesterol and 1,303 milligrams of sodium each day just from eating meat. This means that the average American consumes 76% of his/her recommended daily cholesterol intake and 52% of his/her recommended daily sodium just from the meat that he/she eats. Consuming higher amounts of cholesterol and sodium increase a person's risk of developing high blood pressure, heart disease, heart attacks, and even heart failure. In addition to the high amounts of cholesterol and sodium that the average American consumes from meat each day, the average American also consumes approximately 17.9 grams of saturated fat each day from consumed meat. Healthy individuals are recommended to limit their amount of daily consumed saturated fats as much as possible, and are advised to consume no more than 16 grams per day. Because saturated fats can increase an individual's unhealthy cholesterol levels, consuming saturated fat can also increase a person's risk of developing high blood pressure and heart problems.

Generalized Feedback Tailored to Personal Appearance

The average American consumes approximately 767 calories every day just from meat. Of those 767 calories, approximately 470 calories are from fat. That means that 61% of the calories that the average American consumes from eating meat are fat calories. The average American also consumes approximately 52.1 grams of fat per day just from the meat that he/she eats, which is approximately 80% of the amount of fat that a person should consume for an entire day. The average American also consumes approximately 17.9 grams of saturated fat every day just from meat, which is 90% of the amount of saturated fat that a person should consume over the course of an entire day. Essentially, the average American gains about ¼ pound just from the meat that he/she eats. To put this in perspective, the average American would have to run for

approximately 81 minutes per day in order to burn off all the calories consumed and keep off the weight from just one day's meat consumption.

Generalized Feedback Tailored to Environmental Sustainability

The average American is personally responsible each day for the consumption of approximately 2,490 gallons of water, 9 pounds of crops, 358 square feet of land, and $\frac{3}{4}$ gallons of gasoline solely as a consequence of individual meat consumption. Additionally, the amount of meat that the average American eats results in approximately 12 pounds of carbon dioxide gasses being emitted into the environment each day. Over the course of a year, the average American is responsible for approximately 4,380 pounds of carbon dioxide gas emissions, as well as the consumption of approximately 908,850 gallons of water, 3,394 pounds of crops, 3 acres of land, and 273 gallons of gasoline. This means that over a 75-year lifespan, the average American is responsible for approximately 68 million gallons of water and 328,500 pounds of carbon dioxide gasses as a consequence of eating meat.

Generalized Feedback Tailored to Personal Finances

The average American spends approximately \$3.84 on just meat each day. That means that in one week, the average American spends approximately \$26.88 on just meat. This amount adds up to approximately \$120 each month, which is over \$1,400 over the course of a year that is just spent on meat products. All of these estimates, however, do not take into account more expensive types of meats, such as steak or shrimp. Buying more expensive meats twice a week increases the amount of money an individual spends per year by at least \$268. Assuming that the average American is in fact spending at least \$268 every year on more expensive meats, the total amount of money the average American spends on meat per year increases to a total of \$1,668. This amount of money is enough to buy a brand new 60-inch ultra high-definition flat-screen television with money left over. Not only that, but over a 75-year lifespan, the average American spends over \$125,000 as a consequence of eating meat.

Appendix G - Study 1: Generalized Feedback Not Tailored to Values

The average American is personally responsible for the death of approximately 203 animals, approximately 4,380 pounds of carbon dioxide gas emissions, as well as the consumption of approximately 908,850 gallons of water, 3,394 pounds of crops, 3 acres of land, and 273 gallons of gasoline every year just as a result of eating meat. Also, the average American consumes approximately 223 milligrams of cholesterol and 1,303 milligrams of sodium each day just from eating meat. This means that the average American consumes 76% of his/her recommended daily cholesterol intake and 52% of his/her recommended daily sodium just from the meat that he/she eats. Furthermore, the average American consumes approximately 767 calories (470 of which are fat calories) and 52.1 grams of fat (80% of the recommended daily value) every day just from meat. On top of all of that, the average American spends approximately \$1,400 over the course of a year just on meat products.

Appendix H - Study 1: Post-Message Intended Meat Consumption

After reading the message, how willing would you be to reduce your meat consumption?

1	2	3	4	5
Not at all willing to reduce the amount of meat I eat even a little				Very willing to stop eating meat entirely

In the future, how often do you *intend* to eat meat?

Never Seldom Sometimes Frequently Regularly

Please select the option that *best* describes how often you *intend* to eat meat in the future.

Never
Once a year
A few times a year
Once a month
A few times a month
Once a week
A few times a week
Daily

In the next 3 days, at how many meals do you intend to consume meat?

0 meals ← → 9+ meals

In the future, how many servings of meat do you intend to consume in an average day?

One serving of meat is defined as 3 ounces. One serving of meat is about the size of a bar of soap, a computer mouse, or a deck of cards. A quarter-pound hamburger patty is approximately 1 serving of meat.

(free response)

In the future on an average day, what do you intend the percentage of the food that you consume will be meat?

0% ← → 100%

Appendix I - Study 1: Post-Message Meat Attitudes

Using the scale below, please rate your attitude toward eating meat.

1	2	3	4	5	6	7
eating meat is bad						eating meat is good

Using the scale below, please indicate your liking of meat.

1	2	3	4	5	6	7
I very much dislike eating meat						I very much like eating meat

Appendix J - Study 2: Initial Meat Consumption

How often do you eat meat?

Never Seldom Sometimes Frequently Regularly

Please select the option that *best* describes how often you eat meat.

Never
Once a year
A few times a year
Once a month
A few times a month
Once a week
A few times a week
Daily

In the past 3 days, at how many meals did you consume meat?

0 meals ← → 9+ meals

How many servings of meat do you consume in an average day? One serving of meat is defined as 3 ounces. One serving of meat is about the size of a bar of soap, a computer mouse, or a deck of cards. A quarter-pound hamburger patty is approximately 1 serving of meat.

(free response)

On an average day, what percentage of the food that you consume is meat?

0% ← → 100%

Appendix K - Study 2: Initial Meat Attitudes

Using the scale below, please rate your attitude toward eating meat.

1	2	3	4	5	6	7
eating meat is bad						eating meat is good

Using the scale below, please indicate your liking of meat.

1	2	3	4	5	6	7
I very much dislike eating meat						I very much like eating meat

Appendix L - Study 2: Values Ranking

When it comes to the issues surrounding meat, which of the following topics is the most important to you? Please rank each of the following four topics in order of importance to you with 1 being the most important and 4 being the least important.

- Animal welfare
- Personal health
- Environmental sustainability
- Personal finances

Appendix M - Study 2: Self-Schema Identification

Please read each of the four different personality descriptions below. After reading through each personality type, please select the personality description that best describes you or is the most similar to your own personality. It may be the case that more than one of these personality descriptions describes you, but please choose the one that you feel best indicates your own personality type.

Responsible Self-Schema

I am responsible, dependable, helpful, and sensible.

“I need to be responsible. I want to fulfill my duties and obligations, to organize and structure my life as I see fit. I am practical, sensible and punctual and believe that people should earn their way through work and service to others.”

Adventurous Self-Schema

I am adventuresome, skillful, competitive, and spontaneous.

“I need to be free to act on a moment’s notice, impulsively and spontaneously. I believe that life is to enjoy, so I thrive on fun, variety and excitement. Living in the moment, I act on every opportunity.”

Compassionate Self-Schema

I am warm, communicative, compassionate, and feeling.

“I need to search for the meaning and significance of life. I want to find ways to make my life count and matter, to become my own authentic self. Integrity, harmony, and honesty are very important to me. I feel that I am highly idealistic and spirited by nature.”

Logical Self-Schema

I am versatile, wise, conceptual, and curious.

“I need freedom to pursue knowledge and wisdom and to develop competency by acquiring skills and capabilities. I think life is something to make sense of, to be understood and explained.”

Appendix N - Study 2: Responsible Self-Schema Oriented Messages

Tailored to Values

Responsible Self-Schema Oriented Message Tailored to Animal Well-Being

You are a responsible person. You pride yourself on being dependable, and others know they can always rely on you for help. It is an undeniable fact that animals give their lives to provide meat for humans to consume. The average American is responsible for the death of 90 animals each year. That means that over the average American's adult lifespan, the average American adult will be responsible for the death of more than 6,750 animals. To feed 300+ million meat-eaters in America, more than 27 billion animals are slaughtered each year. These billions of animals are bred, raised, and eventually die for the sole purpose of human consumption. Not only are all these animals killed for food, but while they are alive, they typically live in less than ideal conditions. They are often kept in overcrowded, cramped quarters with other animals. These animals experience fear, pain, and other emotions, just as other animals such as dogs and cats do; yet, they are bred, raised, and slain by the billions each year just to satisfy humans' dietary desires. You have a responsibility, duty, and obligation to reduce the number of animals that give their lives for human consumption. You can do this by reducing the amount of meat that you purchase and consume.

Responsible Self-Schema Oriented Message Tailored to Personal Health

You are a responsible person. You pride yourself on being dependable, and others know they can always rely on you for help. Meat consumption has been linked with a number of health problems. Eating meat has been shown to increase individuals' risks of developing high blood pressure, high cholesterol, cardiovascular disease, heart disease, type II diabetes, hypertension, heart disease, osteoporosis, gallstones, and a number of other hazardous health issues. The fats and proteins from meat have also been linked to various types of cancer. In addition to increasing a person's risk of developing a number of serious long-term health problems, eating meat also increases a person's chance of getting sick due to the toxins, additives, and potential diseases such as E. coli (that can be deadly). Furthermore, due to the fats and calories in meat, individuals who eat less meat tend to weigh less and be more physically fit than individuals who eat more meat. Individuals who eat less meat also tend to live longer than those who consume more meat. You have a responsibility, duty, and obligation to take care of your body and maintain your health. You can do this by reducing the amount of meat that you purchase and consume.

Responsible Self-Schema Oriented Message Tailored to Environmental Sustainability

You are a responsible person. You pride yourself on being dependable, and others know they can always rely on you for help. The meat industry has a severe, negative impact on the environment. A large amount of natural resources – specifically water and gasoline – are used in the production of meat. Furthermore, millions of rainforests and forests are destroyed in order to

make room to grow crops to feed the meat industry animals and the land for the animals themselves. This massive deforestation has diminished the number of native, wild animals in many parts of the United States. Additionally, because rainforests and forests play a key role in converting carbon dioxide in the air back into oxygen, the meat industry's deforestation is the leading cause of air pollution – more than the air pollution caused by cars, trucks, and other sources of transportation combined. The meat industry is also largely responsible for fresh-water pollution and contamination. The herbicides and pesticides used on crops grown to feed the animals are absorbed into the ground and find their way into nearby water supplies. You have a responsibility, duty, and obligation to conserve natural resources, reduce deforestation as well as water and air pollution. You can do this by reducing the amount of meat that you purchase and consume.

Responsible Self-Schema Oriented Message Tailored to Personal Finances

You are a responsible person. You pride yourself on being dependable, and others know they can always rely on you for help. Meat is expensive. Pound for pound, meat on average costs more than vegetables, grains, and wheat-based products. Many of these foods have similar amounts of protein and/or fiber that meat does, but costs a fraction of the price. For example, a five-and-a-half ounce steak contains the same amount of protein as approximately six-and-a-half slices of whole-wheat bread, but can cost more than five times the price. Meals at restaurants that contain meat are also more expensive than meals that do not. Plant foods cost less than meat products because the contained nutrients can be consumed first-hand – eating foods higher up the food-chain (i.e., animal products) has an associated cost. There are many more steps that go into producing meat than go into many other foods, and each of these steps adds to the overall price tag. People can thus get more food for their money without sacrificing the nutrients that they need by buying non-meat items. You have a responsibility, duty, and obligation to manage your finances and spend your money wisely. You can do this by reducing the amount of meat that you purchase and consume.

Appendix O - Study 2: Adventurous Self-Schema Oriented Messages

Tailored to Values

Adventurous Self-Schema Oriented Message Tailored to Animal Well-Being

You are an adventurous person. You pride yourself on being spontaneous, and others know that you live life to the fullest. It is an undeniable fact that animals give their lives to provide meat for humans to consume. The average American is responsible for the death of 90 animals each year. That means that over the average American's adult lifespan, the average American adult will be responsible for the death of more than 6,750 animals. To feed 300+ million meat-eaters in America, more than 27 billion animals are slaughtered each year. These billions of animals are bred, raised, and eventually die for the sole purpose of human consumption. Not only are all these animals killed for food, but while they are alive, they typically live in less than ideal conditions. They are often kept in overcrowded, cramped quarters with other animals. These animals experience fear, pain, and other emotions, just as other animals such as dogs and cats do; yet, they are bred, raised, and slain by the billions each year just to satisfy humans' dietary desires. In order for you to fully enjoy life's adventures, you need to know that other people and animals are unrestrained and free to enjoy life, like you. You can ensure this by reducing the amount of meat that you purchase and consume.

Adventurous Self-Schema Oriented Message Tailored to Personal Health

You are an adventurous person. You pride yourself on being spontaneous, and others know that you live life to the fullest. Meat consumption has been linked with a number of health problems. Eating meat has been shown to increase individuals' risks of developing high blood pressure, high cholesterol, cardiovascular disease, heart disease, type II diabetes, hypertension, heart disease, osteoporosis, gallstones, and a number of other hazardous health issues. The fats and proteins from meat have also been linked to various types of cancer. In addition to increasing a person's risk of developing a number of serious long-term health problems, eating meat also increases a person's chance of getting sick due to the toxins, additives, and potential diseases such as E. coli (that can be deadly). Furthermore, due to the fats and calories in meat, individuals who eat less meat tend to weigh less and be more physically fit than individuals who eat more meat. Individuals who eat less meat also tend to live longer than those who consume more meat. In order for you to fully enjoy life's adventures, you need to be in good physical health. You can ensure this by reducing the amount of meat that you purchase and consume.

Adventurous Self-Schema Oriented Message Tailored to Environmental Sustainability

You are an adventurous person. You pride yourself on being spontaneous, and others know that you live life to the fullest. The meat industry has a severe, negative impact on the environment. A large amount of natural resources – specifically water and gasoline – are used in the production of meat. Furthermore, millions of rainforests and forests are destroyed in order to

make room to grow crops to feed the meat industry animals and the land for the animals themselves. This massive deforestation has diminished the number of native, wild animals in many parts of the United States. Additionally, because rainforests and forests play a key role in converting carbon dioxide in the air back into oxygen, the meat industry's deforestation is the leading cause of air pollution – more than the air pollution caused by cars, trucks, and other sources of transportation combined. The meat industry is also largely responsible for fresh-water pollution and contamination. The herbicides and pesticides used on crops grown to feed the animals are absorbed into the ground and find their way into nearby water supplies. In order for you to fully enjoy life's adventures, you need to have places to explore that are not suffering from resource depletion or pollution. You can ensure this by reducing the amount of meat that you purchase and consume.

Adventurous Self-Schema Oriented Message Tailored to Personal Finances

You are an adventurous person. You pride yourself on being spontaneous, and others know that you live life to the fullest. Meat is expensive. Pound for pound, meat on average costs more than vegetables, grains, and wheat-based products. Many of these foods have similar amounts of protein and/or fiber that meat does, but costs a fraction of the price. For example, a five-and-a-half ounce steak contains the same amount of protein as approximately six-and-a-half slices of whole-wheat bread, but can cost more than five times the price. Meals at restaurants that contain meat are also more expensive than meals that do not. Plant foods cost less than meat products because the contained nutrients can be consumed first-hand – eating foods higher up the food-chain (i.e., animal products) has an associated cost. There are many more steps that go into producing meat than go into many other foods, and each of these steps adds to the overall price tag. People can thus get more food for their money without sacrificing the nutrients that they need by buying non-meat items. In order for you to fully enjoy life's adventures, you need to have the financial resources to fund your spontaneous trips and adventures. You can ensure this by reducing the amount of meat that you purchase and consume.

Appendix P - Study 2: Compassionate Self-Schema Oriented

Messages Tailored to Values

Compassionate Self-Schema Oriented Message Tailored to Animal Well-Being

You are a compassionate person. You pride yourself on being warm and communicative, and others know that you are always honest and strive for harmony. It is an undeniable fact that animals give their lives to provide meat for humans to consume. The average American is responsible for the death of 90 animals each year. That means that over the average American's adult lifespan, the average American adult will be responsible for the death of more than 6,750 animals. To feed 300+ million meat-eaters in America, more than 27 billion animals are slaughtered each year. These billions of animals are bred, raised, and eventually die for the sole purpose of human consumption. Not only are all these animals killed for food, but while they are alive, they typically live in less than ideal conditions. They are often kept in overcrowded, cramped quarters with other animals. These animals experience fear, pain, and other emotions, just as other animals such as dogs and cats do; yet, they are bred, raised, and slain by the billions each year just to satisfy humans' dietary desires. To be true to yourself and make your life count, it is important that you help save the lives of animals. You can do this by reducing the amount of meat that you purchase and consume.

Compassionate Self-Schema Oriented Message Tailored to Personal Health

You are a compassionate person. You pride yourself on being warm and communicative, and others know that you are always honest and strive for harmony. Meat consumption has been linked with a number of health problems. Eating meat has been shown to increase individuals' risks of developing high blood pressure, high cholesterol, cardiovascular disease, heart disease, type II diabetes, hypertension, heart disease, osteoporosis, gallstones, and a number of other hazardous health issues. The fats and proteins from meat have also been linked to various types of cancer. In addition to increasing a person's risk of developing a number of serious long-term health problems, eating meat also increases a person's chance of getting sick due to the toxins, additives, and potential diseases such as E. coli (that can be deadly). Furthermore, due to the fats and calories in meat, individuals who eat less meat tend to weigh less and be more physically fit than individuals who eat more meat. Individuals who eat less meat also tend to live longer than those who consume more meat. To be true to yourself and make your life count, it is important that you maintain your personal health so that you can continue to invest your time and energy into things that are important. You can do this by reducing the amount of meat that you purchase and consume.

Compassionate Self-Schema Oriented Message Tailored to Environmental Sustainability

You are a compassionate person. You pride yourself on being warm and communicative, and others know that you are always honest and strive for harmony. The meat industry has a severe,

negative impact on the environment. A large amount of natural resources – specifically water and gasoline – are used in the production of meat. Furthermore, millions of rainforests and forests are destroyed in order to make room to grow crops to feed the meat industry animals and the land for the animals themselves. This massive deforestation has diminished the number of native, wild animals in many parts of the United States. Additionally, because rainforests and forests play a key role in converting carbon dioxide in the air back into oxygen, the meat industry’s deforestation is the leading cause of air pollution – more than the air pollution caused by cars, trucks, and other sources of transportation combined. The meat industry is also largely responsible for fresh-water pollution and contamination. The herbicides and pesticides used on crops grown to feed the animals are absorbed into the ground and find their way into nearby water supplies. To be true to yourself and make your life count, it is important that you take care of the environment and maintain the harmony of nature. You can do this by reducing the amount of meat that you purchase and consume.

Compassionate Self-Schema Oriented Message Tailored to Personal Finances

You are a compassionate person. You pride yourself on being warm and communicative, and others know that you are always honest and strive for harmony. Meat is expensive. Pound for pound, meat on average costs more than vegetables, grains, and wheat-based products. Many of these foods have similar amounts of protein and/or fiber that meat does, but costs a fraction of the price. For example, a five-and-a-half ounce steak contains the same amount of protein as approximately six-and-a-half slices of whole-wheat bread, but can cost more than five times the price. Meals at restaurants that contain meat are also more expensive than meals that do not. Plant foods cost less than meat products because the contained nutrients can be consumed first-hand – eating foods higher up the food-chain (i.e., animal products) has an associated cost. There are many more steps that go into producing meat than go into many other foods, and each of these steps adds to the overall price tag. People can thus get more food for their money without sacrificing the nutrients that they need by buying non-meat items. To be true to yourself and make your life count, it is important that you adequately manage your personal finances so that you have money to invest in things that are important to you. You can do this by reducing the amount of meat that you purchase and consume.

Appendix Q - Study 2: Logical Self-Schema Oriented Messages

Tailored to Values

Logical Self-Schema Oriented Message Tailored to Animal Well-Being

You are a logical person. You pride yourself on your ability to make sense of and understand things, and others know that you are knowledgeable and competent. It is an undeniable fact that animals give their lives to provide meat for humans to consume. The average American is responsible for the death of 90 animals each year. That means that over the average American's adult lifespan, the average American adult will be responsible for the death of more than 6,750 animals. To feed 300+ million meat-eaters in America, more than 27 billion animals are slaughtered each year. These billions of animals are bred, raised, and eventually die for the sole purpose of human consumption. Not only are all these animals killed for food, but while they are alive, they typically live in less than ideal conditions. They are often kept in overcrowded, cramped quarters with other animals. These animals experience fear, pain, and other emotions, just as other animals such as dogs and cats do; yet, they are bred, raised, and slain by the billions each year just to satisfy humans' dietary desires. You understand the consequences of consuming meat on the lives of numerous animals. You can apply your knowledge by reducing the amount of meat that you purchase and consume.

Logical Self-Schema Oriented Message Tailored to Personal Health

You are a logical person. You pride yourself on your ability to make sense of and understand things, and others know that you are knowledgeable and competent. Meat consumption has been linked with a number of health problems. Eating meat has been shown to increase individuals' risks of developing high blood pressure, high cholesterol, cardiovascular disease, heart disease, type II diabetes, hypertension, heart disease, osteoporosis, gallstones, and a number of other hazardous health issues. The fats and proteins from meat have also been linked to various types of cancer. In addition to increasing a person's risk of developing a number of serious long-term health problems, eating meat also increases a person's chance of getting sick due to the toxins, additives, and potential diseases such as E. coli (that can be deadly). Furthermore, due to the fats and calories in meat, individuals who eat less meat tend to weigh less and be more physically fit than individuals who eat more meat. Individuals who eat less meat also tend to live longer than those who consume more meat. You understand the consequences of consuming meat on your personal health and well-being. You can apply your knowledge by reducing the amount of meat that you purchase and consume.

Logical Self-Schema Oriented Message Tailored to Environmental Sustainability

You are a logical person. You pride yourself on your ability to make sense of and understand things, and others know that you are knowledgeable and competent. The meat industry has a severe, negative impact on the environment. A large amount of natural resources – specifically

water and gasoline – are used in the production of meat. Furthermore, millions of rainforests and forests are destroyed in order to make room to grow crops to feed the meat industry animals and the land for the animals themselves. This massive deforestation has diminished the number of native, wild animals in many parts of the United States. Additionally, because rainforests and forests play a key role in converting carbon dioxide in the air back into oxygen, the meat industry's deforestation is the leading cause of air pollution – more than the air pollution caused by cars, trucks, and other sources of transportation combined. The meat industry is also largely responsible for fresh-water pollution and contamination. The herbicides and pesticides used on crops grown to feed the animals are absorbed into the ground and find their way into nearby water supplies. You understand the consequences of consuming meat on the sustainability of the environment and natural resources. You can apply your knowledge by reducing the amount of meat that you purchase and consume.

Logical Self-Schema Oriented Message Tailored to Personal Finances

You are a logical person. You pride yourself on your ability to make sense of and understand things, and others know that you are knowledgeable and competent. Meat is expensive. Pound for pound, meat on average costs more than vegetables, grains, and wheat-based products. Many of these foods have similar amounts of protein and/or fiber that meat does, but costs a fraction of the price. For example, a five-and-a-half ounce steak contains the same amount of protein as approximately six-and-a-half slices of whole-wheat bread, but can cost more than five times the price. Meals at restaurants that contain meat are also more expensive than meals that do not. Plant foods cost less than meat products because the contained nutrients can be consumed first-hand – eating foods higher up the food-chain (i.e., animal products) has an associated cost. There are many more steps that go into producing meat than go into many other foods, and each of these steps adds to the overall price tag. People can thus get more food for their money without sacrificing the nutrients that they need by buying non-meat items. You understand the consequences of consuming meat on your personal finances and budget. You can apply your knowledge by reducing the amount of meat that you purchase and consume.

Appendix R - Study 2: Altruistic Oriented Messages Tailored to Values

Altruistic Oriented Message Tailored to Animal Well-Being

It is of the utmost importance in life that you make a difference in others' lives and change the world around you for the better. It is crucial that you help others and do things that don't just benefit yourself. It is an undeniable fact that animals give their lives to provide meat for humans to consume. The average American is responsible for the death of 90 animals each year. That means that over the average American's adult lifespan, the average American adult will be responsible for the death of more than 6,750 animals. To feed 300+ million meat-eaters in America, more than 27 billion animals are slaughtered each year. These billions of animals are bred, raised, and eventually die for the sole purpose of human consumption. Not only are all these animals killed for food, but while they are alive, they typically live in less than ideal conditions. They are often kept in overcrowded, cramped quarters with other animals. These animals experience fear, pain, and other emotions, just as other animals such as dogs and cats do; yet, they are bred, raised, and slain by the billions each year just to satisfy humans' dietary desires. You can decrease the number of animals that die by reducing the amount of meat that you purchase and consume.

Altruistic Oriented Message Tailored to Personal Health

It is of the utmost importance in life that you make a difference in others' lives and change the world around you for the better. It is crucial that you help others and do things that don't just benefit yourself. Meat consumption has been linked with a number of health problems. Eating meat has been shown to increase individuals' risks of developing high blood pressure, high cholesterol, cardiovascular disease, heart disease, type II diabetes, hypertension, heart disease, osteoporosis, gallstones, and a number of other hazardous health issues. The fats and proteins from meat have also been linked to various types of cancer. In addition to increasing a person's risk of developing a number of serious long-term health problems, eating meat also increases a person's chance of getting sick due to the toxins, additives, and potential diseases such as E. coli (that can be deadly). Furthermore, due to the fats and calories in meat, individuals who eat less meat tend to weigh less and be more physically fit than individuals who eat more meat. Individuals who eat less meat also tend to live longer than those who consume more meat. You can example to others how to be healthier while maintaining your own personal health so that you can continue to invest your time and energy into helping others by reducing the amount of meat that you purchase and consume.

Altruistic Oriented Message Tailored to Environmental Sustainability

It is of the utmost importance in life that you make a difference in others' lives and change the world around you for the better. It is crucial that you help others and do things that don't just

benefit yourself. The meat industry has a severe, negative impact on the environment. A large amount of natural resources – specifically water and gasoline – are used in the production of meat. Furthermore, millions of rainforests and forests are destroyed in order to make room to grow crops to feed the meat industry animals and the land for the animals themselves. This massive deforestation has diminished the number of native, wild animals in many parts of the United States. Additionally, because rainforests and forests play a key role in converting carbon dioxide in the air back into oxygen, the meat industry's deforestation is the leading cause of air pollution – more than the air pollution caused by cars, trucks, and other sources of transportation combined. The meat industry is also largely responsible for fresh-water pollution and contamination. The herbicides and pesticides used on crops grown to feed the animals are absorbed into the ground and find their way into nearby water supplies. You can better the environment and make the Earth a better place for others to live in by reducing the amount of meat that you purchase and consume.

Altruistic Oriented Message Tailored to Personal Finances

It is of the utmost importance in life that you make a difference in others' lives and change the world around you for the better. It is crucial that you help others and do things that don't just benefit yourself. Meat is expensive. Pound for pound, meat on average costs more than vegetables, grains, and wheat-based products. Many of these foods have similar amounts of protein and/or fiber that meat does, but costs a fraction of the price. For example, a five-and-a-half ounce steak contains the same amount of protein as approximately six-and-a-half slices of whole-wheat bread, but can cost more than five times the price. Meals at restaurants that contain meat are also more expensive than meals that do not. Plant foods cost less than meat products because the contained nutrients can be consumed first-hand – eating foods higher up the food-chain (i.e., animal products) has an associated cost. There are many more steps that go into producing meat than go into many other foods, and each of these steps adds to the overall price tag. People can thus get more food for their money without sacrificing the nutrients that they need by buying non-meat items. You can better manage your personal finances to have more money to help others in need by reducing the amount of meat that you purchase and consume.

Appendix S - Study 2: Egoistic Oriented Messages Tailored to

Values

Egoistic Oriented Message Tailored to Animal Well-Being

It is of the utmost importance in life that you look out for yourself and do things that improve your own life and increase your well-being. It is an undeniable fact that animals give their lives to provide meat for humans to consume. The average American is responsible for the death of 90 animals each year. That means that over the average American's adult lifespan, the average American adult will be responsible for the death of more than 6,750 animals. To feed 300+ million meat-eaters in America, more than 27 billion animals are slaughtered each year. These billions of animals are bred, raised, and eventually die for the sole purpose of human consumption. Not only are all these animals killed for food, but while they are alive, they typically live in less than ideal conditions. They are often kept in overcrowded, cramped quarters with other animals. These animals experience fear, pain, and other emotions, just as other animals such as dogs and cats do; yet, they are bred, raised, and slain by the billions each year just to satisfy humans' dietary desires. You can feel good about saving animal lives and avoid the guilt of contributing to their deaths by reducing the amount of meat that you purchase and consume.

Egoistic Oriented Message Tailored to Personal Health

It is of the utmost importance in life that you look out for yourself and do things that improve your own life and increase your well-being. Meat consumption has been linked with a number of health problems. Eating meat has been shown to increase individuals' risks of developing high blood pressure, high cholesterol, cardiovascular disease, heart disease, type II diabetes, hypertension, heart disease, osteoporosis, gallstones, and a number of other hazardous health issues. The fats and proteins from meat have also been linked to various types of cancer. In addition to increasing a person's risk of developing a number of serious long-term health problems, eating meat also increases a person's chance of getting sick due to the toxins, additives, and potential diseases such as E. coli (that can be deadly). Furthermore, due to the fats and calories in meat, individuals who eat less meat tend to weigh less and be more physically fit than individuals who eat more meat. Individuals who eat less meat also tend to live longer than those who consume more meat. You can improve your own personal health and well-being by reducing the amount of meat that you purchase and consume.

Egoistic Oriented Message Tailored to Environmental Sustainability

It is of the utmost importance in life that you look out for yourself and do things that improve your own life and increase your well-being. The meat industry has a severe, negative impact on the environment. A large amount of natural resources – specifically water and gasoline – are used in the production of meat. Furthermore, millions of rainforests and forests are destroyed in

order to make room to grow crops to feed the meat industry animals and the land for the animals themselves. This massive deforestation has diminished the number of native, wild animals in many parts of the United States. Additionally, because rainforests and forests play a key role in converting carbon dioxide in the air back into oxygen, the meat industry's deforestation is the leading cause of air pollution – more than the air pollution caused by cars, trucks, and other sources of transportation combined. The meat industry is also largely responsible for fresh-water pollution and contamination. The herbicides and pesticides used on crops grown to feed the animals are absorbed into the ground and find their way into nearby water supplies. You can better the conditions in your own environment and feel good about conserving natural resources by reducing the amount of meat that you purchase and consume.

Egoistic Oriented Message Tailored to Personal Finances

It is of the utmost importance in life that you look out for yourself and do things that improve your own life and increase your well-being. Meat is expensive. Pound for pound, meat on average costs more than vegetables, grains, and wheat-based products. Many of these foods have similar amounts of protein and/or fiber that meat does, but costs a fraction of the price. For example, a five-and-a-half ounce steak contains the same amount of protein as approximately six-and-a-half slices of whole-wheat bread, but can cost more than five times the price. Meals at restaurants that contain meat are also more expensive than meals that do not. Plant foods cost less than meat products because the contained nutrients can be consumed first-hand – eating foods higher up the food-chain (i.e., animal products) has an associated cost. There are many more steps that go into producing meat than go into many other foods, and each of these steps adds to the overall price tag. People can thus get more food for their money without sacrificing the nutrients that they need by buying non-meat items. You can save money by reducing the amount of meat that you purchase and consume.

Appendix T - Study 2: No-Specific Orientation Messages Tailored to Values

No-Specific Orientation Message Tailored to Animal Well-Being

It is an undeniable fact that animals give their lives to provide meat for humans to consume. The average American is responsible for the death of 90 animals each year. That means that over the average American's adult lifespan, the average American adult will be responsible for the death of more than 6,750 animals. To feed 300+ million meat-eaters in America, more than 27 billion animals are slaughtered each year. These billions of animals are bred, raised, and eventually die for the sole purpose of human consumption. Not only are all these animals killed for food, but while they are alive, they typically live in less than ideal conditions. They are often kept in overcrowded, cramped quarters with other animals. These animals experience fear, pain, and other emotions, just as other animals such as dogs and cats do; yet, they are bred, raised, and slain by the billions each year just to satisfy humans' dietary desires. You can reduce the consequences of meat by reducing the amount of meat that you purchase and consume.

No-Specific Orientation Message Tailored to Personal Health

Meat consumption has been linked with a number of health problems. Eating meat has been shown to increase individuals' risks of developing high blood pressure, high cholesterol, cardiovascular disease, heart disease, type II diabetes, hypertension, heart disease, osteoporosis, gallstones, and a number of other hazardous health issues. The fats and proteins from meat have also been linked to various types of cancer. In addition to increasing a person's risk of developing a number of serious long-term health problems, eating meat also increases a person's chance of getting sick due to the toxins, additives, and potential diseases such as E. coli (that can be deadly). Furthermore, due to the fats and calories in meat, individuals who eat less meat tend to weigh less and be more physically fit than individuals who eat more meat. Individuals who eat less meat also tend to live longer than those who consume more meat. You can reduce the consequences of meat by reducing the amount of meat that you purchase and consume.

No-Specific Orientation Message Tailored to Environmental Sustainability

The meat industry has a severe, negative impact on the environment. A large amount of natural resources – specifically water and gasoline – are used in the production of meat. Furthermore, millions of rainforests and forests are destroyed in order to make room to grow crops to feed the meat industry animals and the land for the animals themselves. This massive deforestation has diminished the number of native, wild animals in many parts of the United States. Additionally, because rainforests and forests play a key role in converting carbon dioxide in the air back into oxygen, the meat industry's deforestation is the leading cause of air pollution – more than the air pollution caused by cars, trucks, and other sources of transportation combined. The meat industry is also largely responsible for fresh-water pollution and contamination. The herbicides and

pesticides used on crops grown to feed the animals are absorbed into the ground and find their way into nearby water supplies. You can reduce the consequences of meat by reducing the amount of meat that you purchase and consume.

No-Specific Orientation Message Tailored to Personal Finances

Meat is expensive. Pound for pound, meat on average costs more than vegetables, grains, and wheat-based products. Many of these foods have similar amounts of protein and/or fiber that meat does, but costs a fraction of the price. For example, a five-and-a-half ounce steak contains the same amount of protein as approximately six-and-a-half slices of whole-wheat bread, but can cost more than five times the price. Meals at restaurants that contain meat are also more expensive than meals that do not. Plant foods cost less than meat products because the contained nutrients can be consumed first-hand – eating foods higher up the food-chain (i.e., animal products) has an associated cost. There are many more steps that go into producing meat than go into many other foods, and each of these steps adds to the overall price tag. People can thus get more food for their money without sacrificing the nutrients that they need by buying non-meat items. You can reduce the consequences of meat by reducing the amount of meat that you purchase and consume.

Appendix U - Study 2: Self-Schema Oriented Messages Not Tailored to Values

Responsible Self-Schema Oriented Message Not Tailored to Values

You are a responsible person. You pride yourself on being dependable, and others know they can always rely on you for help. Based on the average American's meat consumption, the average American is responsible for the death and maltreatment of 90 animals raised for food each year. On top of that, meat consumption has been linked with a number of health problems, including high blood pressure, cholesterol, diabetes, hypertension, heart disease, cardiovascular disease, cancer, and even death. The meat industry also has a severe impact on the environment. The production of meat uses a large amount of natural resources such as water and gasoline, and a large percentage of the Earth's land is devoted to the meat industry – large portions of rainforests are destroyed as a consequence. To top it all off, meat is expensive. Pound for pound, meat on average costs far more than foods that have similar nutritional value such as vegetables, grains, and wheat-based products. You have a responsibility, duty, and obligation to reduce the number of animals that die, maintain your health, conserve natural resources and take care of the environment, and manage your finances. You can do this by reducing the amount of meat that you purchase and consume.

Adventurous Self-Schema Oriented Message Not Tailored to Values

You are an adventurous person. You pride yourself on being spontaneous, and others know that you live life to the fullest. Based on the average American's meat consumption, the average American is responsible for the death and maltreatment of 90 animals raised for food each year. On top of that, meat consumption has been linked with a number of health problems, including high blood pressure, cholesterol, diabetes, hypertension, heart disease, cardiovascular disease, cancer, and even death. The meat industry also has a severe impact on the environment. The production of meat uses a large amount of natural resources such as water and gasoline, and a large percentage of the Earth's land is devoted to the meat industry – large portions of rainforests are destroyed as a consequence. To top it all off, meat is expensive. Pound for pound, meat on average costs far more than foods that have similar nutritional value such as vegetables, grains, and wheat-based products. In order for you to fully enjoy life's adventures, you need to be in good physical health, have adequate financial resources, have places to explore that are not suffering from resource depletion or pollution, and know that other people and animals are similarly unrestrained and free to enjoy life. You can ensure this by reducing the amount of meat that you purchase and consume.

Compassionate Self-Schema Oriented Message Not Tailored to Values

You are a compassionate person. You pride yourself on being warm and communicative, and others know that you are always honest and strive for harmony. Based on the average

American's meat consumption, the average American is responsible for the death and maltreatment of 90 animals raised for food each year. On top of that, meat consumption has been linked with a number of health problems, including high blood pressure, cholesterol, diabetes, hypertension, heart disease, cardiovascular disease, cancer, and even death. The meat industry also has a severe impact on the environment. The production of meat uses a large amount of natural resources such as water and gasoline, and a large percentage of the Earth's land is devoted to the meat industry – large portions of rainforests are destroyed as a consequence. To top it all off, meat is expensive. Pound for pound, meat on average costs far more than foods that have similar nutritional value such as vegetables, grains, and wheat-based products. To be true to yourself and to make your life count, it is important that you help save the lives of animals, take care of the environment, and manage and maintain your personal health and finances so that you can continue to invest your time, energy, and money into things that are important. You can do this by reducing the amount of meat that you purchase and consume.

Logical Self-Schema Oriented Message Not Tailored to Values

You are a logical person. You pride yourself on your ability to make sense of and understand things, and others know that you are knowledgeable and competent. Based on the average American's meat consumption, the average American is responsible for the death and maltreatment of 90 animals raised for food each year. On top of that, meat consumption has been linked with a number of health problems, including high blood pressure, cholesterol, diabetes, hypertension, heart disease, cardiovascular disease, cancer, and even death. The meat industry also has a severe impact on the environment. The production of meat uses a large amount of natural resources such as water and gasoline, and a large percentage of the Earth's land is devoted to the meat industry – large portions of rainforests are destroyed as a consequence. To top it all off, meat is expensive. Pound for pound, meat on average costs far more than foods that have similar nutritional value such as vegetables, grains, and wheat-based products. You understand the consequences of consuming meat on the lives of numerous animals, your personal health, the environment, and your personal finances. You can apply your knowledge by reducing the amount of meat that you purchase and consume.

Appendix V - Study 2: Altruistic Oriented Message Not Tailored to Values

It is of the utmost importance in life that you make a difference in others' lives and change the world around you for the better. It is crucial that you help others and do things that don't just benefit yourself. Based on the average American's meat consumption, the average American is responsible for the death and maltreatment of 90 animals raised for food each year. On top of that, meat consumption has been linked with a number of health problems, including high blood pressure, cholesterol, diabetes, hypertension, heart disease, cardiovascular disease, cancer, and even death. The meat industry also has a severe impact on the environment. The production of meat uses a large amount of natural resources such as water and gasoline, and a large percentage of the Earth's land is devoted to the meat industry – large portions of rainforests are destroyed as a consequence. To top it all off, meat is expensive. Pound for pound, meat on average costs far more than foods that have similar nutritional value such as vegetables, grains, and wheat-based products. You can make a difference in the lives of others by reducing the amount of meat that you purchase and consume. You can decrease the number of animals that die, better the environment, example to others how to be healthier, and have more money to help others in need.

Appendix W - Study 2: Egoistic Oriented Message Not Tailored to Values

It is of the utmost importance in life that you look out for yourself and do things that improve your own life and increase your well-being. Based on the average American's meat consumption, the average American is responsible for the death and maltreatment of 90 animals raised for food each year. On top of that, meat consumption has been linked with a number of health problems, including high blood pressure, cholesterol, diabetes, hypertension, heart disease, cardiovascular disease, cancer, and even death. The meat industry also has a severe impact on the environment. The production of meat uses a large amount of natural resources such as water and gasoline, and a large percentage of the Earth's land is devoted to the meat industry – large portions of rainforests are destroyed as a consequence. To top it all off, meat is expensive. Pound for pound, meat on average costs far more than foods that have similar nutritional value such as vegetables, grains, and wheat-based products. It is in your best interest to look out for yourself. You can decrease the impact meat has on you personally by reducing the amount of meat that you purchase and consume. You can feel good about saving animal lives, improve your own personal health, better your own environment, and save money.

Appendix X - Study 2: No-Specific Orientation Message Not

Tailored to Values

Based on the average American's meat consumption, the average American is responsible for the death and maltreatment of 90 animals raised for food each year. On top of that, meat consumption has been linked with a number of health problems, including high blood pressure, cholesterol, diabetes, hypertension, heart disease, cardiovascular disease, cancer, and even death. The meat industry also has a severe impact on the environment. The production of meat uses a large amount of natural resources such as water and gasoline, and a large percentage of the Earth's land is devoted to the meat industry – large portions of rainforests are destroyed as a consequence. To top it all off, meat is expensive. Pound for pound, meat on average costs far more than foods that have similar nutritional value such as vegetables, grains, and wheat-based products. You can reduce the consequences of meat by reducing the amount of meat that you purchase and consume.

Appendix Y - Study 2: Post-Message Intended Meat Consumption

After reading the message, how willing would you be to reduce your meat consumption?

1	2	3	4	5
Not at all willing to reduce the amount of meat I eat even a little				Very willing to stop eating meat entirely

In the future, how often do you *intend* to eat meat?

Never Seldom Sometimes Frequently Regularly

Please select the option that *best* describes how often you *intend* to eat meat in the future.

Never
Once a year
A few times a year
Once a month
A few times a month
Once a week
A few times a week
Daily

In the next 3 days, at how many meals do you intend to consume meat?

0 meals ← → 9+ meals

In the future, how many servings of meat do you intend to consume in an average day?

One serving of meat is defined as 3 ounces. One serving of meat is about the size of a bar of soap, a computer mouse, or a deck of cards. A quarter-pound hamburger patty is approximately 1 serving of meat.

(free response)

In the future on an average day, what do you intend the percentage of the food that you consume will be meat?

0% ← → 100%

Appendix Z - Study 2: Post-Message Meat Attitudes

Using the scale below, please rate your attitude toward eating meat.

1	2	3	4	5	6	7
eating meat is bad						eating meat is good

Using the scale below, please indicate your liking of meat.

1	2	3	4	5	6	7
I very much dislike eating meat						I very much like eating meat