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Are You What You Eat? The Complexities of Food Choice, Normative Influence, and Identity.

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Are You What You Eat? The Complexities of Food Choice, Normative Influence, and Identity.

By

Melanie del Rosario

Accepted in Partial Completion
of the Requirements for the Degree
Master of Arts.

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Master's Thesis

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Melanie del Rosario

May 21, 2019

Are You What You Eat? The Complexities of Food Choice, Normative Influence, and Identity.

A Thesis
Presented to
The Faculty of
Western Washington University

In Partial Fulfillment
Of the Requirements for the Degree
Master of Arts

by
Melanie del Rosario
May 2019

Abstract

Prior research has investigated the effectiveness of social normative and environmental impact messages to encourage pro-environmental behaviors. One goal of this thesis was to investigate how these messaging strategies can be used to influence the sustainable behavior of making a plant-based food choice. Recent studies have also suggested that both social and self-identity resulting from various cultures, backgrounds, social roles and individual experiences have a strong influence on food choice. Study 1 presented in this thesis produced quantitative results from a field experiment on a university campus that investigated the influence of three different messaging techniques on plant-based food choice. Participants also completed a survey that collected information regarding age, gender, dietary habits, and environmental identity. The effects of the social normative messages and the environmental impact message were compared to each other as well as to the control message. These results showed no significant difference in plant-based food choice across treatment groups (N=401), however there was an increase in plant-based food choice for those who viewed the environmental impact message, and both social normative messages. Descriptive statistics from a survey (N=214) suggest that both environmental identity and gender influence plant-based food choice.

Study 2 of this thesis documented different aspects of social and self-identity that influence food choice in freshman undergraduate students through focus group interviews. These conversations revealed the complexity of food choice for individuals, their perceived lack of self-efficacy for solving environmental challenges through their food choice, and a negative response to either receiving or providing unsolicited information meant to guide food choices. The results from these complimentary studies suggest that messaging strategies alone may not be effective for altering students' discrete food choice due to the link between food choice and identity.

Keywords: social normative message, environmental impact message, food choice, field-experiment, plant-based food, vegetarian, focus groups, social identity, self-identity

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Introduction

Study 1: Messaging & Food Choice

Arguably, the most universal and constant consumer behavior that humans engage in is the selection and purchase of food. Food production has associated environmental effects, and due to its ubiquity and regularity, food choice has the potential to greatly alter an individual's environmental impact. Meat consumption in particular leads to substantial environmental degradation in terms of land-use, water use, and green-house gas emissions (Aleksandrowicz, Green, Joy, Smith, & Haines, 2016; Stehfest et al., 2009; Steinfeld et al., 2006; Tilman & Clark, 2014). Despite the negative environmental impacts of meat production on the environment, meat consumption in the United States in 2017 reached 98.4 kg/capita, the fifth largest in the world, and is projected to increase over the next decade (OECD, 2019). This suggests that a shift to a plant-based diet, defined by replacing animal products (meat, eggs, dairy) with plant-based foods, could have a profound impact on environmental conditions.

One potential strategy for encouraging alternative food choices, such as a plant-based diet, is through messaging to consumers. Many efforts to encourage sustainable behaviors focus on information-based messages, which attempt to increase awareness of the environmental impacts of certain behaviors. However, studies demonstrate that individual knowledge of the environmental impact of a behavior may not lead to a change in that behavior (Abrahamse, Steg, Vlek, & Rothengatter, 2005; Bakker & Dagevos 2012; de Boer, Schösler, & Boersema, 2013; de Boer, de Witt, & Aiking 2016; Stok 2014) and efforts to impart knowledge to encourage behavior change can even lead to the opposite of their desired effect (de Boer, Schösler, &

Boersema, 2013; Heath and Gifford 2006). Therefore, it is important to investigate which alternative messaging techniques may be more effective to encourage sustainable behaviors.

Scholars have investigated the effectiveness of social normative messaging techniques to encourage behavior change. This approach is rooted in the theory that to encourage behavior change, it may not be necessary to convince individuals a particular behavior is good, but rather to convince them that others believe it is. Social pressure appears to have a strong influence on many behaviors, including food choice (Bisogni, Connors, Devine, & Sobal, 2002; Higgs, 2015; Stok, 2014). Social pressures include beliefs about social norms, defined as what is commonly done, what is normal for a particular group, and what is sanctioned or approved of by a particular group (Cialdini, Kallgren, & Reno, 1991). According to the focus theory of normative conduct (Cialdini, Kallgren, & Reno, 1991), the difference between knowledge of what is commonly done (e.g. most people recycle) and what others commonly approve of (e.g. most people believe recycling is a good thing to do) is significant enough to yield different effects on individual choice. According to Cialdini, Kallgren, & Reno (1991), descriptive norms provide information about what others in a particular group actually do, whereas injunctive norms provide information about what others approve of, or what one ought to do. The focus theory of normative conduct has been applied to sustainable behaviors, such as recycling (Cialdini, Reno, & Kallgren, 1990), towel reuse in hotels (Goldstein, Cialdini, & Griskevicius, 2008), and food choice (Burger et al., 2010; Croker, Whitaker, Cooke, & Wardle, 2009; Mollen, Rimal, Ruiter, & Kok, 2013).

To date, much of the research comparing normative messaging and informational messaging on food choice has compared social normative influence to health-based messaging (Mollen, Rimal, Ruiters, & Kok, 2013; Robinson, Fleming, & Higgs, 2014; Sharps & Robinson, 2016), has measured intention rather than actual behavior (Croker, Whitaker, Cooke, & Wardle, 2009), and has been conducted in a laboratory setting (Burger et al., 2010; Robinson, Fleming, & Higgs, 2014; Sharps & Robinson, 2016). Sharps and Robinson (2016) conducted two laboratory experiments to measure the influence of descriptive social normative messages and health-based messages on fruit and vegetable intake on young children. Children in both experiments were exposed to messages while playing a board game, and then were put in a room with snack options after concluding the game. In the first study, the descriptive normative messages read: “*other children eat lots of fruit and vegetables every day and like them*”, “*other children eat fruit and vegetables every day as snacks*”, and “*other children eat fruit and vegetables at break time.*” The health messages read “*fruit and vegetables are really good for you*”, “*fruit and vegetables have lots of vitamins*”, and “*fruit and vegetables make you strong and healthy.*” The results from their first study suggest that the descriptive normative messages may not have had a long lasting influence on children's beliefs, and there was no statistically significant effect from the descriptive norm message on fruit and vegetable intake. Therefore, the descriptive normative message was altered in their second study to include a visual scale of the amount of fruit and vegetables other children eat in addition to the printed message on the card. The study participants were not informed that food choice was the subject of investigation in their study. A combined analysis of their first and second study showed that both the descriptive norm and health based message increased fruit and vegetable intake compared with the control message.

Croker, Whitaker, Cooke, and Wardle (2009) conducted interviews (N=1083) with adults (age>16) to compare the perceived importance of normative influences with cost and health influences on dietary choices. Following the interviews, the authors conducted an experiment to test the hypothesis that information on social norms related to fruit and vegetable consumption will increase consumption of fruits and vegetables. Through the interviews, they found that perception of social norm importance was lower than perceived importance of cost or health, however the results from the experimental study demonstrated a positive influence from normative information on fruit and vegetable consumption, for men only.

Study 1 of this thesis builds on previous research by comparing the influence of social normative messages and information based messages. Additionally, this study seeks to address some of the gaps in our current understanding of social normative influence on food choice by comparing the influence of social normative messages and environmental-impact messages, rather than health messages, on plant-based food choice in a field setting. To the best of my knowledge, there has been no research that experimentally measures the influence of social normative messages on plant-based food choice. Additionally, many studies investigating the influence of social norms rely on laboratory settings. Field studies are valuable because real-life choices are measured rather than intentions or hypothetical choices, however, there are limitations as well. One drawback is that it is difficult to gain insight into the reasons behind these behaviors. The desire to understand the complexities of individual decision making related to food choice motivated me to pursue a second, qualitative study (study 2). Through focus group interviews, I examined identities as factors influencing food choice.

Study 2: Identity & Food Choice

Research in psychology and sociology has recognized identity as an important factor contributing to individual behavior. For the purposes of this thesis, identity refers to “a set of meanings attached to the self that serves as a standard or reference that guides behaviors in situations” (Stets & Biga, 2003). Identity theory has evolved over time to include both self-identity and social identity theory. In social psychology, individual self-concept or self-perception is comprised of attitudes, memories, behaviors, and emotions that define someone as a unique individual (Jhangiani, Tarry, & Stangor, 2014; Oyserman, Elmore, & Smith, 2012). Self-identity refers to these salient and enduring aspects of one’s self-perception (Sparks, 2000). A crucial, less intuitive consideration is although identity is an individual’s subjective perspective, individual identities are formed through social interactions. Another contributor to one’s self-concept is their social identity, defined as “aspects of an individual’s self-image that derive from the social categories to which he/she belongs, as well as the emotional and evaluative consequences of this group membership” (Hornsey, 2008). Understanding how and why we form our social and self-identities can explain why individuals engage in certain behaviors (Fielding & Hornsey, 2016).

Identities are particularly valuable in the examination of food choices, because people associate their choices about what to eat with both their personal identity, such as morals, and social identity, such as occupation and family role (Bisogni, Connors, Devine, & Sobal, 2002). Past research has examined multiple identity factors as they relate to food choice, including gender, personality traits, ethnicity, vegetarianism, and health (see Bisogni, Connors, Devine, & Sobal, 2002). The role of environmental identity as an influence on food choice is less studied, but has

been found to influence meat consumption (Abrahamse, Gatersleben, & Uzzell, 2009) and organic food choice (Bartels & Onwezen, 2014).

Scholars have created various metrics for environmental identity. For the purposes of this thesis, environmental identity reflects the extent to which people indicate environmentalism is a central part of who they are (Gatersleben, Murtagh, & Abrahamse, 2014). Those who identify with environmentalists or have a “green” identity will often act pro-environmentally (Whitmarsh & O’Neill, 2010). Whitmarsh and O’Neill (2010) examined the correlation between pro-environmental self-identity and pro-environmental behaviors and introduced the idea of spill-over effects in influencing one’s behavior. The authors posit that if an individual engages in one pro-environmental behavior, they are more likely to engage in other behaviors that benefit the environment, referred to by the authors as *consistency*. Their overall findings support the idea that environmental self-identity is an important predictor of engagement in pro-environmental behaviors.

Although environmental identity is significantly related to the intention to act pro-environmentally, Gatersleben, Murtagh, & Abrahamse, (2014) found this did not hold true for all pro-environmental behaviors. They found the likelihood of someone with a green identity adopting a pro-environmental behavior largely depended on the nature of the behavior. For example, a barrier to reducing car use, not flying to a holiday destination, or recycling, was how easy the participants felt adopting or avoiding these behaviors was. Additionally, individuals have many different identities and the associated groups’ values may not always align with an environmental identity. This can cause those who identify as “green” to fail to adopt certain pro-environmental behaviors. Whereas some behaviors that are appealing for a health-conscious

individual, such as walking or biking, may also appeal to an environmentally conscious individual (Gatersleben, Murtagh, & Abrahamse, 2014), an individual who values travelling may struggle with the carbon footprint associated with flying. The goal for the second study within this thesis was to investigate the role of multiple identities as it pertains to food choice, and to offer a potential explanation for the mixed results of messaging to encourage sustainable behaviors.

Background

Environmental Based Messaging and the Knowledge Deficit Model of Behavior Change

Many efforts to change environmentally detrimental behaviors utilize messaging strategies which fall under the category of information campaigns. These are messages aimed at increasing the public's knowledge of the environmental harms or benefits associated with certain behaviors (Kollmuss & Agyeman, 2002). This approach is an attempt to remedy what is known as a knowledge deficit, which assumes individuals want to help (the environment), but lack information about what to do or how to do it (Nolan, 2010). As it pertains to the environment, the three main types of knowledge that can be lacking are *ecological or declarative knowledge*, which typically describes how ecological systems function and often leads to environmental awareness, *procedural knowledge*, what to do in order to change or adopt a new behavior, and *impact knowledge*, which refers to the consequences of a behavior, or how effective a behavior is for achieving the goal of helping the environment (Kaiser & Fuhrer, 2003; Redman & Redman, 2014; Schultz, 2002). In this thesis, informational messages designed specifically to convey

information about the environmental impact of a behavior are referred to as *environmental impact messages*.

Despite the prevalence of information campaigns, there is little evidence that this knowledge deficit approach can encourage certain pro-environmental behaviors, and the evidence that does exist is dubious. Schultz (2002) found that for recycling specifically, procedural knowledge was increased by information campaigns, but that increase in knowledge only led to small, short term changes in behavior. Studies of food choice show that providing individuals information about the climate impacts of meat-based diets lead to lower *intentions* to eat meat (Graham & Abrahamse, 2017). However, Graham and Abrahamse, (2017) did not investigate a relationship between that impact knowledge and the actual behavior of eating meat. This is problematic because there is evidence that intention does not necessarily lead to performance of the actual behavior (Carrington, Neville, & Whitwell, 2010; Mullan, Allom, Brogan, Kothe, & Todd, 2014), with one recent study estimating that intention only leads to behavior approximately 50% of the time (Sheeran & Webb, 2016). In a meta-analysis examining the relationship between behavioral intention and actual behavior from 47 experiments, Webb and Sheeran, (2006) found a medium-to-large sized change in intention only resulted in a small-to-medium change in behavior.

Other studies demonstrate that individual knowledge of the environmental impact of a behavior may not lead to a change in that behavior for the behaviors of household energy consumption (Abrahamse, Steg, Vlek, & Rothengatter, 2005), dietary choices (de Boer, de Witt, & Aiking 2016; Stok 2014), or meat consumption (Bakker & Dagevos 2012; de Boer, Schösler, &

Boersema, 2013). Some studies have even found boomerang effects, where the provision of information leads to the opposite of its desired effect (de Boer, Schösler, & Boersema, 2013; Heath & Gifford 2006). In an analysis of survey results from a sample of Americans, Kellstedt, Zahran & Vedlitz (2008) found that the more highly informed individuals were about global warming, the less responsible they felt for global warming. Kollmuss & Agyeman (2002) deduce that only a small percentage of environmental behaviors are a result of environmental knowledge alone, and other factors, including social norms, may better explain behavior change.

Social Norms and Pro-Environmental Behaviors

This mismatch between environmental knowledge and pro-environmental action has led researchers to investigate other messaging techniques for encouraging environmental behaviors (Kollmuss & Agyeman, 2002). One approach researchers have considered is social normative messaging. According to this approach, individuals base their behaviors on the actions of others, or the approval of actions by others (Cialdini, Kallgren, & Reno, 1991). Social normative messaging appears to have a strong positive influence on sustainable behaviors (Botetzagias, Dima, & Malesios, 2015; Fielding & Hornsey, 2016; Harland, Staats, & Wilke, 1999) including energy conservation (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007), eco-friendly consumer behavior (Kim, Lee, & Hur, 2012) and sustainable food choices (Vermeir & Verbeke 2006; Onwezen, Bartels, & Antonides, 2014). People are influenced by social norms not only because of a desire for social approval, but because these norms provide a guide for acceptable behavior within a group. In a world of decision fatigue and seemingly endless choices, observation of others can provide a convenient shortcut for identifying what one is expected to do in a particular situation.

Social psychologist Robert Cialdini and his colleagues have developed the *focus theory of normative behavior* to explain the influence of social norms on behavior. This theory postulates that when considering messaging techniques to encourage certain behaviors, it may not be necessary to convince individuals that a particular behavior is the proper behavior, but rather that others believe it is the proper behavior (Cialdini, Kallgren, & Reno, 1991). As briefly described above, people are motivated differently by their perception of what people do and what people approve of (Cialdini, Kallgren, & Reno, 1991). Further, the focus theory of normative behavior distinguishes between injunctive and descriptive norms (Cialdini, Kallgren, & Reno, 1991; Stok, 2014). Cialdini et al.'s original paper tested the influence from both types of norms in a series of nine studies and found strong evidence in support of the theory that social norms significantly influence human behavior. Further studies by Cialdini, his colleagues, and other social scientists, have validated this finding and provide support for the influence of both injunctive (Cialdini et al., 2006; de Groot, Abrahamse, & Jones, 2013) and descriptive norms (Elgaaied-Gambier, Monnot, & Reniou, 2018; Goldstein, Cialdini, & Griskevicius 2008; Robinson, Fleming & Higgs 2014; Stok, 2014; Thomas et al. 2016). A meta-analysis looking specifically at the influence of norms on behavior suggests that while descriptive norms overall have a greater impact on behavior than injunctive norms, injunctive norms have a greater impact on attitudes, which often lead to behavior change (Melnyk, Herpen, & Trijp, 2010).

Studies examining injunctive and descriptive normative influence on food choice have also led to different conclusions. Robinson, Fleming, and Higgs (2014) found an influence of descriptive norms on food choice in two laboratory studies examining the effects of a descriptive norm

message, injunctive norm message, and a health message on undergraduate students. Their first study (N=77) measured influence through the percent of participants' lunch food selection that consisted of fruit and vegetables, and the second study (N=75) applied the same measurement to snack food selection. The authors found that the descriptive norm message encouraged more vegetable consumption than the health message in both studies for individuals who were low consumers of vegetables. In a field experiment testing the influence of messages showing a liking norm, descriptive norm, health message, vegetable variety condition, and neutral control message, Thomas et al. (2016) found no effect of descriptive norms on vegetable consumption. The evidence for the influence of both injunctive and descriptive normative messages justifies an examination of both norm types in this thesis.

When compared directly with information-based messaging, descriptive social normative messages may be more effective to encourage behavior change (Seyranian, Sinatra, & Polikoff 2015). Goldstein, Cialdini, & Griskevicius (2008) also found descriptive normative messages were more powerful than information-based ones when examining different messaging strategies to encourage towel reuse in hotels. Further research is warranted in order to determine if this finding can be replicated for other sustainable behaviors. The goal of study 1 of this thesis was to compare the effects of social normative messages, both descriptive and injunctive, with an environmental-impact message. Based on the findings from recent studies on the impacts of messaging on pro-environmental behaviors, study 1 employed quantitative methods to answer the following research questions:

RQ1: Do social normative messages lead to plant-based food choice more often than an environmental impact message?

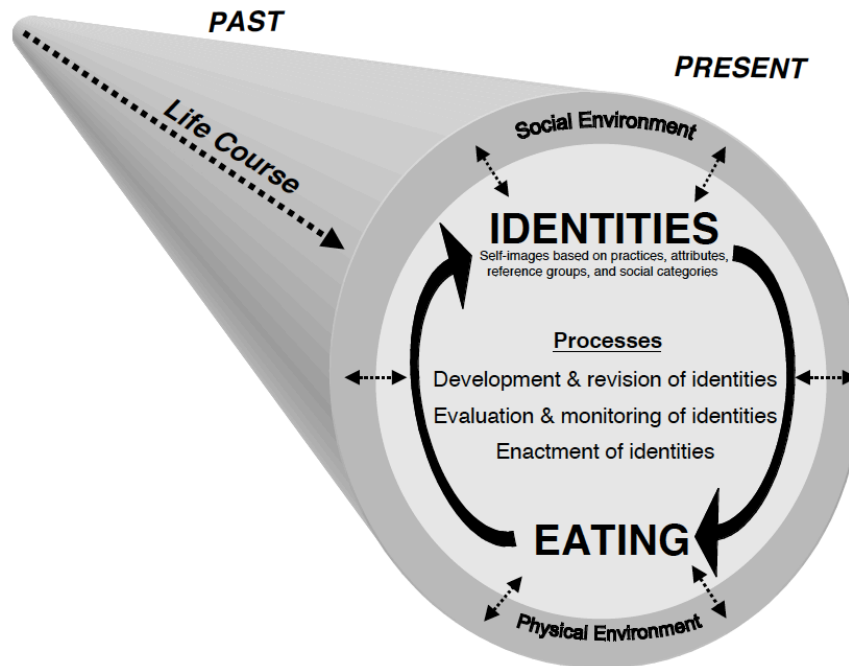
RQ2: Does a descriptive normative message lead to plant-based food choice more often than an injunctive normative message?

Goldstein, Cialdini, & Griskevicius (2008) also found that the way social normative messages are framed in relation to individual identity, (gender, citizen, hotel guest), influenced participant behavior. They framed the beginning of the descriptive normative messages to read either “Join the men and women...”, “Join your fellow guests...” or “Join your fellow citizens...” and found significant differences in towel reuse between the message treatment groups. This suggests that individual response to social normative messaging may also depend on the identity of the individual.

Conflicting Identities and Food Choice

The idea that individual’s food choices are largely influenced and associated with identity was first introduced in 1988 by the social scientist, Claude Fischler (Fischler, 1988). His theory that biological, psychological, and social self-identity is constructed in part by diet is a powerful explanation for the complexities surrounding food choices. People draw upon multiple identities throughout their lives, prioritizing some over others depending on the situation (Bisogni, Connors, Devine, & Sobal, 2002). Multiple identities interact to create one’s diet-based identity, and are influenced by factors such as region, social class, and family (Bisogni, Connors, Devine, & Sobal, 2002).

Figure 1: Conceptual model of the relationship of identities to eating (Bisogni, Connors, Devine, & Sobal, 2002, pg. 132).



Studies investigating the relationship between identities and food choice have focused on demographic factors, such as gender and age. For example, gender may influence sustainable food choice, as masculinity and meat consumption are linked (Rogers, 2008; Sobal, 2005), and it appears that a greater percentage of vegetarians are female (Ruby, 2012). A meta-analysis examining factors which influence sustainable food choices found that although there were variations in choices based on socio-demographic factors, such as age and gender, the results are ambiguous and suggest that these demographic factors do not alone explain sustainable food choice (Verain et al., 2012).

Dietary identity and environmental identity also appear to have an effect specifically on plant-based food choice to varying degrees. Not surprisingly, self-proclaimed vegetarians tend towards eating less meat, however the quantity of meat consumption is not consistent across self-described vegetarians (de Boer, Schösler, & Aiking, 2017). Environmental identity also appears to have an effect on sustainable food choices (Bissonnette & Contento, 2001; de Barcellos, Krystallis, de Melo Saab, Kügler, & Grunert, 2011), but it is less clear how it impacts plant-based food choices directly, as studies do not typically isolate plant-based food from other sustainable food choices (organic, local).

Individuals may attribute greater importance to various aspects of their identity throughout their lives. Furthermore, the influence from identity in relation to diet varies from person to person. Whereas intrapersonal factors may be influential for one individual, group association may emerge as the dominant factor for another. For example, one individual may identify as a “picky eater who hates vegetables”, whereas another person may identify as an “Italian who loves pasta.” Eating as a behavior requires a person to draw upon many different aspects of their life and thus, individual identities related to eating are constructed very differently from multiple factors (Bisogni, Connors, Devine, & Sobal, 2002). For example, one study conducting interviews with vegetarians found; “a vegetarian diet encompassed more than simply ingestive behaviors”, as a shift to vegetarianism marked a distinct adoption of the vegetarian identity (Jabs, Sobal, & Devine, 2000). This serves as a possible explanation for the potential barriers to adopting a change in dietary identity. Realigning one’s self-identity means leaving aspects of their other identity behind, and individuals can face not only a lack of support or guidance from loved ones when they make the decision to change their diet, but even hostility (Jabs, Sobal, &

Devine, 2000). Another potential barrier can result from instances when self-identity is not compatible with biological factors, such as taste. For example, someone who identifies as health conscious may avoid certain high fat foods like french fries, yet also praise unhealthy foods such as cookies because of their taste (Sparks & Shepherd, 1992).

Additionally, various ascribed meanings to the same identity can lead to inconsistent behaviors by individuals who share the same dietary label. A qualitative study using interviews revealed that individuals varied significantly in their interpretation of the term ‘vegetarian.’ A vegetarian diet is defined as “one that does include meat (including fowl) or seafood, or products containing these foods”, and a vegan diet follows the same requirements in addition to excluding “eggs, dairy, and other animal products” (American Dietetic Association, 2009). Despite this public definition, in one study, 66% of the self-defined vegetarians incorporated meat into their diet (Willets, 1997). It appears individuals can ascribe to the same identity and yet engage in very different behaviors, reinforcing the idea that the way dietary choices influence, and are influenced by, one’s identity is a highly complex process. These individual interviews also revealed plant-based eaters and meat eaters share many of the same views on environmental issues (Willets, 1997). This difference in behavior could be a result of attributing the presence or absence of meat in the diet as a fundamental component of someone’s dietary identity, when this may not necessarily be the case.

Based on the findings from recent studies on multiple identities and food choice, this thesis employed qualitative methods through focus group interviews to investigate the following

research question:

RQ3: How do multiple and conflicting identities influence an individual's food choices?

The first two research questions of this thesis were addressed in study 1, a field experiment that isolated the impact of three types of messaging on food choice coupled with a descriptive survey.

Study 1

Research Framework

The literature suggests that based on the focus theory of normative behavior, both descriptive normative and injunctive normative messages may influence plant-based food choice. Although there is reason to doubt the knowledge-deficit approach to encourage behavior change (Abrahamse, Steg, Vlek, & Rothengatter, 2005; Bakker & Dagevos 2012; de Boer, Schösler, & Boersema, 2013; de Boer, de Witt, & Aiking 2016; Heath & Gifford 2006; and Stok 2014), informational based messages were tested herein as validating previous findings may add to the growing body of support for alternative messaging strategies, including social normative messages.

I empirically tested three different forms of messaging to evaluate the following hypotheses:

H1a: Both social normative (descriptive and injunctive) messages will lead to plant-based food choice more often than a control message.

H1b: Both social normative messages will lead to plant-based food choice more often than the environmental impact message.

H2: A descriptive normative message will lead to plant-based food choice more often than an injunctive normative message.

I also distributed a survey to willing participants to collect information on age, gender, WWU affiliation, college major (if student), environmental identity (adapted from Dono, Webb, & Richardson, 2010; van der Werff, Steg, & Keizer, 2013), dietary identity (adapted from Graça, Calheiros, & Oliveira, 2015), and ordering habits at an outdoor campus food vendor. The survey was exploratory and implemented in order to obtain descriptive information on the participants and to learn more about motivations surrounding food choice. There were no set hypotheses related to the survey.

Methods



The WWU Office of Research and Sponsored Program's Institutional Review Board deemed this an exempt category #2 project, with an assigned protocol number of EX18-108.

Field Setting

This field experiment occurred on Western Washington University's (WWU) campus to test the influence of social normative and environmental based message on plant-based food choice over the period of eight days in May and June of 2018 (May 21st - May 24th and May 29th - June 1st). WWU has an outdoor food court known as "Vendor's Row", open on weekdays from 11am - 3pm. This experiment took place at one specific vendor on Vendor's Row: *Brotha Dudes*, a

vendor which, according to their website¹, offered “vegetarian, vegan, and meaty carnivore options.” *Brotha Dudes* was chosen because it offered plant-based and meat-based food options with the same additional plant-based ingredients; the protein source was the only difference. The price was also the same for the meat-based and plant-based options. It is important to note that a no-protein option was offered at a reduced cost. Using one vendor in the same location over the course of the study reduced the impact of confounding variables by providing a consistent setting.

Figure 2: *Brotha Dudes* menu at Vendor’s Row

DUDES BLUNT –\$7 MINI BLUNT – \$4.20		DUDES BOWL – \$7	
	Jasmine Rice, Grilled Onions & Bell Peppers, Dudes Slaw, Cilantro, Jalapeños and our Spicy Chili Sauce wrapped in a Spinach Tortilla and Toasted on our Grill		Jasmine Rice, Pinto Beans, Cabbage, Avocado, Jalapeños, Cilantro with Homemade Spicy Chili Sauce and *Asian Sauce (Contains Wheat)
<input type="checkbox"/> Dudes Blunt <input type="checkbox"/> Mini Blunt Choice of: <input type="checkbox"/> Chicken <input type="checkbox"/> Falafel <input type="checkbox"/> Tofu	<input type="checkbox"/> Falafel Nuggs 1 for 2\$ 3 for \$3.25 Two nuggs, dressed in homemade cilantro yogurt sauce	<input type="checkbox"/> Dude's Bowl Choice of: <input type="checkbox"/> Chicken <input type="checkbox"/> Falafel <input type="checkbox"/> Tofu <input type="checkbox"/> Plain (5\$)	
Any special requests? (I.e. Gluten free (no Asian Sauce), no jalapeños, vegan (hold the chili sauce))			

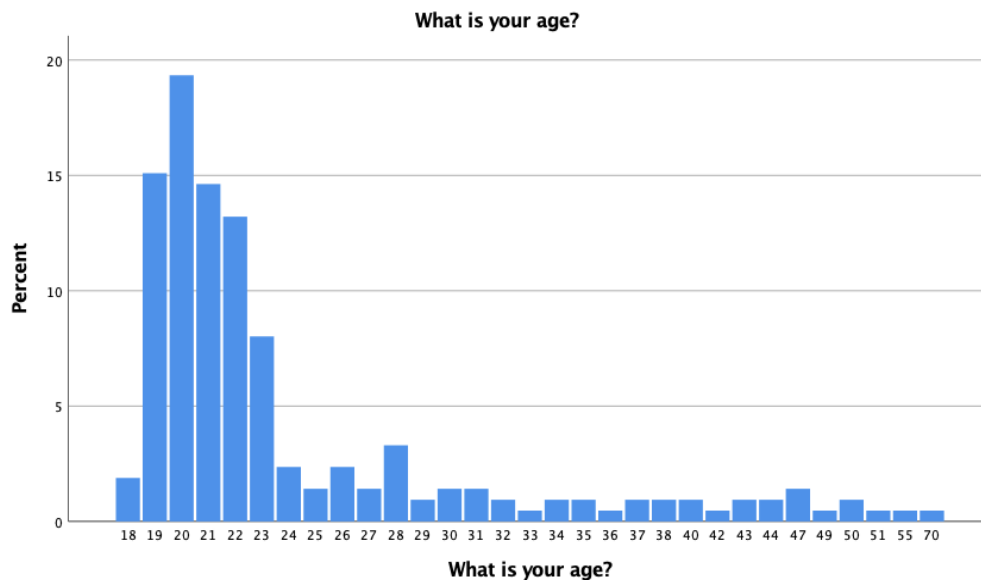
Participants & Procedure

A total of 407 patrons of *Brotha Dudes* participated in the field study over the course of eight days. Seven participants were not included in the final data set because they either viewed multiple treatment messages or their order was not legible. The final data set consisted of 401 participants. In order to maximize participation, field study participants were not required to

¹ *Brotha Dudes* is no longer in operation and thus, the website is no longer functional. The specific menu options available to participants can be seen in Figure 2.

complete the survey. Therefore, the following information is only applicable for the 214 (52.3%) field study participants who also completed the survey. Within this group of participants, 110 (51.4%) identified as female, 96 (44.9%) identified as male, three (1.4%) as non-binary, one (0.4%) as other and four (1.9%) preferred not to answer. Although this sample is not designed to be representative of the WWU community at large, this closely represents the 2018 WWU student gender distribution of 42.9% male and 57.1% female (“Diversity: Diversity Statistics,” n.d.). Most participants (79%) were undergraduate students, 22 (10.3%) were staff, 10 (4.7%) were faculty, eight (3.7%) were graduate students, and five did not fit into one of those categories. Ages ranged from 18 – 70 years old, with a majority (69.7%) of participants’ ages falling between 19 and 23 (Figure 3). The average age of students on campus at the time of this study was 21.6 (“Diversity: Diversity Statistics,” n.d.).

Figure 3: Age distribution of survey participants



Participants were asked two qualifying questions to ensure they were choosing their own meals, and to prevent repeat customer data:



- 1) *Have you ordered using these paper order forms before?* Participants who said yes did not fill out an order form.
- 2) *Are you ordering for yourself or for a friend?* Participants who were not ordering for themselves did not fill out an order form.

Set-up & Materials

Using a random number generator (www.random.org), I generated 1 set of 600 numbers in random order. Then, I followed that randomized order and manually wrote down a number on each order form for each treatment group. After each order form had a number, I then put them in numerical order and followed the numerical order when distributing order forms. The order forms were 8.5” by 5.5”, with the header in size 36, red font to ensure visibility. Participants were randomly assigned an order form with one of four treatment messages printed at the top of the form above a list of the food options available. Each order form included a carbon copy, which was given to the cook, and the top form was collected by the researchers (Figure 4).

Figure 4: Order form with the *environmental impact message* (Treatment 3)

Did you know?
A global shift to a plant-based diet could cut food related green-house gas emissions by 70%.
Supported by (Aleksandrowicz, Green, Joy, Smith, & Haines, 2016; Springmann, Godfray, Rayner, & Scarborough, 2016)

DUDES BLUNT –\$7 MINI BLUNT – \$4.20	DUDES BOWL – \$7
 <p style="font-size: small;">Jasmine Rice, Grilled Onions & Bell Peppers, Dudes Slaw, Cilantro, Jalapeños and our Spicy Chili Sauce wrapped in a Spinach Tortilla and Toasted on our Grill</p>	 <p style="font-size: small;">Jasmine Rice, Pinto Beans, Cabbage, Avocado, Jalapeños, Cilantro with Homemade Spicy Chili Sauce and *Asian Sauce (Contains Wheat)</p>
<input type="checkbox"/> Dudes Blunt <input type="checkbox"/> Mini Blunt Choice of: <input type="checkbox"/> Chicken <input type="checkbox"/> Falafel <input type="checkbox"/> Tofu	<input type="checkbox"/> Dude's Bowl <input type="checkbox"/> Falafel Nuggs 1 for 2\$ 3 for \$3.25 Two nuggs, dressed in homemade cilantro yogurt sauce Choice of: <input type="checkbox"/> Chicken <input type="checkbox"/> Falafel <input type="checkbox"/> Tofu <input type="checkbox"/> Plain (\$5)

Any special requests? (I.e. Gluten free (no Asian Sauce), no jalapeños, vegan (hold the chili sauce))

Based on the literature testing the influence of normative messaging strategies on pro-environmental behavior (Cialdini, 2003; Cialdini et al., 2006; de Groot, Abrahamse, & Jones, 2013; Goldstein, Cialdini, & Griskevicius, 2008; Mollen, Rimal, Ruiter, & Kok, 2013; Robinson, Fleming, & Higgs, 2014; Schultz, M. Khazian, & Zaleski, 2008) the four treatment messages read:

Treatment 0: Control Message: *Did you know? WWU has over 200 clubs on campus!*

Treatment 1: Environmental Impact Message: *Did you know? A global shift to a plant-based diet could cut food related green-house gas emissions by 70%. Supported by the following studies: (Aleksandrowicz, Green, Joy, Smith, & Haines, 2016; Springmann, Godfray, Rayner, & Scarborough, 2016)*

Treatment 2: Descriptive Normative Message: *Did you know? A majority of Brotha Dude's WWU customers choose plant-based food options.*

Treatment 3: Injunctive Normative Message: *Did you know? A majority of the WWU community think others should eat less meat.*

I collected preliminary data that supported the descriptive normative message (Table 1). The injunctive normative message was not supported by data.

Table 1: Number of meat and plant-based orders made by customers on four different days at Brotha Dudes' location at Vendor's Row

Date	Meat Orders	Plant-based Orders
20-Feb	97	63
21-Feb	46	59
26-Feb	53	95
27-Feb	54	46
Total	250	263
Percent	49%	51%

Procedure

The research assistants and I approached patrons waiting in line and asked them the above listed qualifying questions. If we determined that individuals were eligible to participate, they were provided with a clipboard, pen, and an order form. Researchers asked participants if they would read the message at the top of the order, and then make an order selection. After they filled out the order form, we asked participants if they were willing to complete a brief survey while they wait for their food. The survey asked participants questions regarding their age, gender, environmental identity, affiliation with WWU, and eating habits. The research assistants and I informed participants that completion of the questionnaire would automatically enter them into a raffle for one of three \$50 Amazon gift cards, and that participation was voluntary. If they agreed, customers were instructed to remember the number written on the top of their order form. This ensured the survey information would be linked to the field study data. While waiting, participants went to the research table where research assistants were seated with laptops and tablets available in order to take the web-based survey. Participants clicked through the survey questions at their own pace. Following the conclusion of the study, I used a random number generator (www.random.org) to select the three gift card recipients. The mean number of

participants per day was 50, with a minimum of 24 and a maximum of 79. The number of participants each day decreased as the study went on due to repeat customers.

Measures

Field Experiment

After participants filled out the order form, a researcher collected the top copy and coded it based on the message at the top and the food choice of the participants. Order forms on which participants chose the meat-based option (chicken) were coded as a 0, while those who chose the tofu, falafel, or no protein option were coded with a 1 to identify participants who chose a plant-based option. Testing the relationship between two categorical variables can be achieved using a Pearson's Chi Square test, which has been used in similar studies examining the influence of normative messaging on food choice (Burger et al., 2010; Collins et al., 2019). I used SPSS to conduct Pearson's Chi Square Tests. For all tests, the results were analyzed for significance using $\alpha < .05$.

Survey

The first section of the survey collected demographic variables such as age, gender, college of study and major of study. To determine participants' typical food choices, one survey question asked participants how often they eat meat and seafood (1-2x per month, once a week, 2-3x per week, 4-6x per week or daily). To determine the participant's level of familiarity with *Brotha Dudes'* food stand, the survey asked how often they ate there (first time, 1-2x per month, once a week, 2-3x per week, 4-6x per week or daily). I adapted a measure of environmental identity from previous research (Whitmarsh & O'Neill, 2010). Participants were asked to rank their level

of agreement (1 = strongly disagree, 5 = strongly agree) with the following statements: ‘I feel strong ties with environmentalists’, ‘I see myself as an environmentally friendly person’, ‘I do NOT want my family or friends to think of me as someone who is concerned about environmental issues’ (reverse scoring), and ‘I do NOT think of myself as an environmentally friendly consumer’ (reverse scoring). The survey included an item that asked participants to rank the following factors in terms of influence on their food choice: price, environmental impact, quantity/density, craving, & nutrition. Due to a lack of fully complete responses, this question was not included in any analysis. See Appendix A for the complete survey.

Results

Field Experiment

Of the 401 participants, 47.4% (190) chose a meat option while 52.6% (211) chose a plant-based option (Table 2).

Table 2: Food choice of field study participants

		Frequency	Percent
Valid	Meat	190	46.6
	Plant-based	211	51.7
	Total	401	98.3
Total		408	100.0

25.7% (103) of participants viewed the control message (T0), 22.7% (91) viewed the environmental impact message (T1), 25.7% (103) viewed the descriptive normative message

(T2), and 25.9% (104) viewed the injunctive normative message (T3). Food choice (meat or plant-based) by treatment group is summarized in Table 3.

Table 3: Food choice by treatment group

			Treatment				
			Treatment 0:	Treatment 1:	Treatment 2:	Treatment 3:	Total
			Control	Environmental Impact Message	Descriptive Normative Message	Injunctive Normative Message	
Code	Meat	Count	54	42	50	44	190
		Expected Count	48.8	43.1	48.8	49.3	190.0
		% within Treatment Group	52.4%	46.2%	48.5%	42.3%	47.4%
		Plant-based					
	Plant-based	Count	49	49	53	60	211
		Expected Count	54.2	47.9	54.2	54.7	211.0
		% within Treatment Group	47.6%	53.8%	51.5%	57.7%	52.6%
		Total					
		Count	103	91	103	104	401

To analyze the effects of the messages on food choice, I conducted four chi-square measures of independence to test each hypothesis. To test the hypotheses that both social normative (descriptive and injunctive) messages would lead to plant-based food choice more often than the control message (H1a), I performed a chi-square test of independence for differences among the percentage of individuals who made a plant-based food choice compared to those who selected a

meat-based food choice in the control treatment (0), the descriptive normative treatment (2) and the injunctive normative treatment (3). Table 4 shows that there were no significant differences in food choice for the descriptive social-norm treatment, the injunctive social-norm treatment, and the control treatment ($N=310$, $\chi^2=2.164$, $\alpha < .05$).

Table 4: Chi-Square test for H1a

Chi-Square Test: H1a

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.164 ^a	2	.339
Likelihood Ratio	2.169	2	.338
Linear-by-Linear Association	1.939	1	.164
N of Valid Cases	310		

To test the hypothesis that a descriptive normative message will lead to plant-based food choice more often than an injunctive normative message (H1b), I performed a chi-square test of independence for differences among the percentage of individuals who made a plant-based food choice compared to those who selected a meat-based food choice in the descriptive normative treatment (2) and the injunctive normative treatment (3). Table 5 shows that there were no significant differences in food choice for the descriptive normative treatment and the injunctive normative treatment ($N=207$, $\chi^2=.812$, $\alpha < .05$).

Table 5: Chi-Square test for H1b

Chi-Square Test: H1b

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.812 ^a	1	.368
Likelihood Ratio	.812	1	.367
Linear-by-Linear Association	.808	1	.369
N of Valid Cases	207		

To test the hypothesis that both social normative messages will lead to plant-based food choice more often than the environmental message (H2), I performed a chi-square test for differences among the percentage of individuals who made a plant-based food choice compared to those who selected a meat-based food choice in the environmental impact treatment (1), the descriptive social-norm treatment (2), and the injunctive normative treatment (3). Table 6 shows that there were no significant differences in food choice for the environmental impact message treatment and the injunctive social-norm treatment ($N= 298, \chi^2=.825, \alpha < .05$). Thus, I failed to reject the null hypothesis for all three hypotheses.

Table 6: Chi-Square test for H2

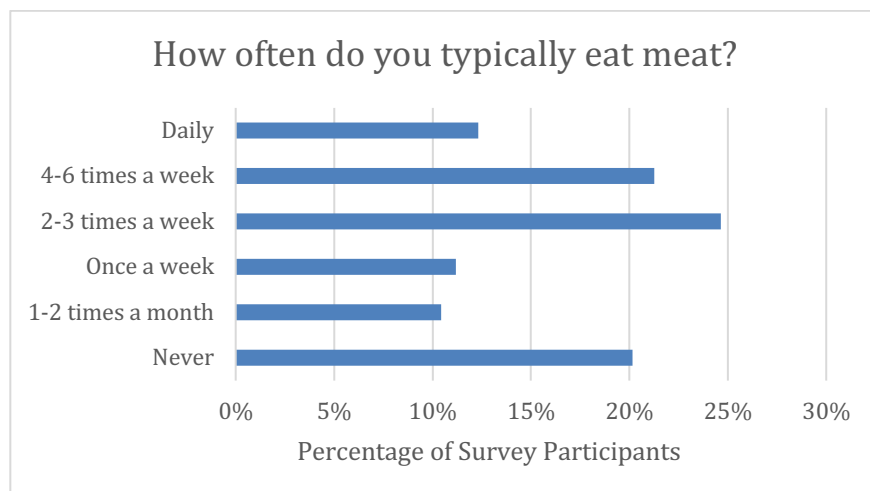
Chi-Square Test: H2

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.825 ^a	2	.662
Likelihood Ratio	.826	2	.662
Linear-by-Linear Association	.320	1	.572
N of Valid Cases	298		

Survey

In addition to demographics (reported above), the survey asked participants to share information regarding their dietary habits, environmental identity, and how often they eat at *Brotha Dudes*. 20% of respondents indicated that they never eat meat, while the remaining 80% ranged from eating meat once or twice per month, to daily. A majority (57%) of respondents marked that they ate meat at least two times a week (Figure 5).

Figure 5: Frequency of meat consumption reported by survey participants



Participants indicated how often they ate at Brotha Dudes on a scale of never to daily. A small percentage (9.8%) of participants had never eaten at Brotha Dudes before. A majority (56.1%) estimated that they ate at Brotha Dudes 1-2 times per month, while the remaining 34.1% ate there between once a week and three times a week.

In response to the statements measuring environmental identity, a majority of the participants somewhat agreed or disagreed, with an exception for the statement, ‘I do NOT want my family or friends to think of me as someone who is concerned about environmental issues’, with which 72% of participants strongly disagreed. These results can be seen in Table 4.

Table 7: Environmental identity reported by survey participants

Please indicate how strongly you agree with the following statements

**1 = strongly disagree, 2 = somewhat disagree
3 = neither agree nor disagree 4 = somewhat agree
5 = strongly agree**

	N	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)
I do NOT think of myself as an environmentally friendly consumer.	214	37.4	39.3	13.6	9.8	0
I do NOT want my family or friends to think of me as someone who is concerned about environmental issues.	214	72	17.3	19.3	.9	.5
I see myself as an environmentally friendly person.	213	0	1.9	3.3	50	44.4
I feel strong ties with environmentalists.	214	0	2.8	14.5	46.7	36

Exploratory Analysis

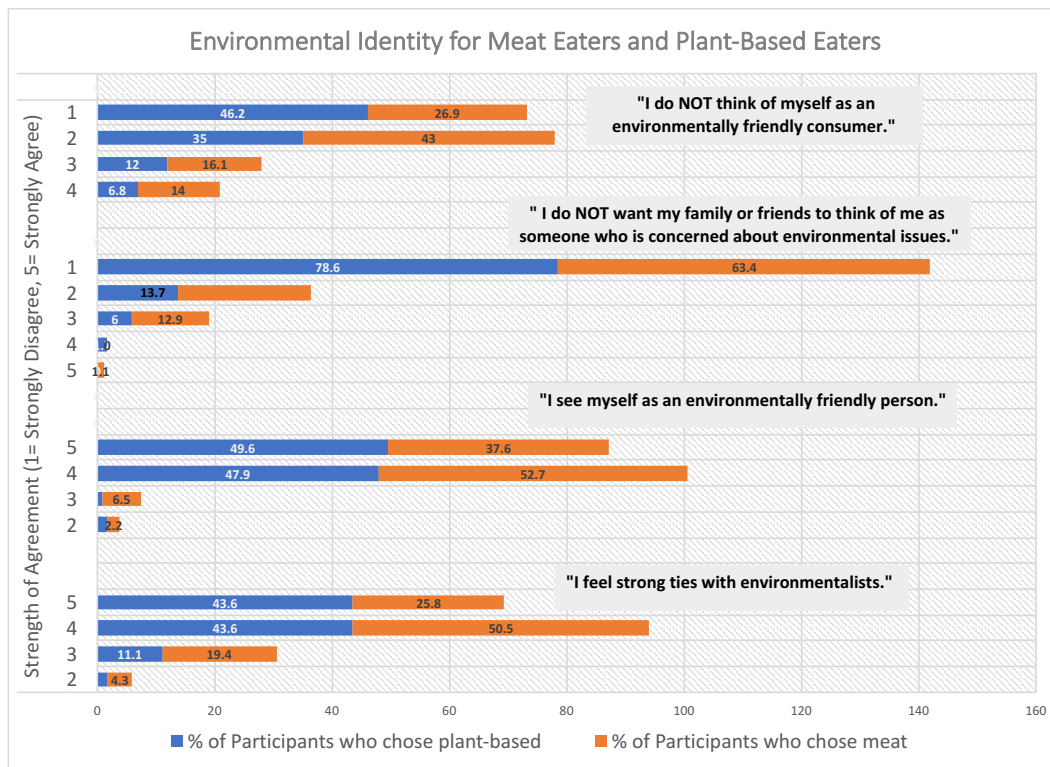
One of the goals of this thesis was to understand the role of messaging to encourage plant-based food choice. A shift in current trends of meat consumption would require those that eat meat to change their habits, and those that eat a predominantly plant-based diet to continue to do so. Therefore, understanding the influence of messaging on those individuals that eat meat may be more relevant to understanding messaging as a tool for dietary change. I performed a chi-square test for overall differences among the percentage of individuals who made a plant-based food choice compared to those who selected a meat-based food choice, and excluded those who indicated that they never eat meat (vegetarians) on the survey (N=168). These results were similar to the chi-square test results for the entire sample, however there was a very minor difference (0.7%) in the percentage of plant-based food choice for those in the control and those viewing the environmental impact message. Additionally, the difference in percentage of plant-based food choice for those in the control and those viewing the injunctive normative message was larger (14.6%) than the percentage difference between those two treatment groups for the entire sample. Table 8 shows that there were no significant differences in food choice across all treatments for only those participants who eat meat (N= 168, $\chi^2=.494$, $\alpha < .05$). The lack of difference between the environmental impact message and control message supports previous findings that messages providing information may not have an influence on meat consumption (Bakker & Dagevos 2012; de Boer, Schösler, & Boersema, 2013).

Table 8: Exploratory chi-square test excluding vegetarians

Chi-Square Test: Excluding Vegetarians			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.398 ^a	3	.494
Likelihood Ratio	2.399	3	.494
Linear-by-Linear Association	1.847	1	.174
N of Valid Cases	168		

To explore a possible relationship between environmental identity and meat consumption, I compared the responses to each statement measuring environmental identity between those who chose meat and those who chose plant-based food. For all four environmental statements, a greater percentage of those who made a plant-based food choice said they strongly agreed or disagreed with each statement, compared to those that chose meat. These results are graphed in Figure 6.

Figure 6: Environmental identity for participants who chose plant-based and meat



To explore a possible relationship between gender and meat consumption, I compared participants' gender to their self-described frequency of meat consumption for the full survey set (N= 263). 74% of males marked that they eat meat at least twice a week compared to 47% of females. These differences appear to be significant (N=266, $\chi^2=44.69$, $\alpha < .05$), indicating that gender may have an influence on meat consumption (Figure 7).

Figure 7: Frequency of meat consumption reported by gender

		What is your gender?				Total
		Male	Female	Other	Prefer not to answer	
How often do you typically eat meat (beef, pork, poultry, sheep, goat, rabbit, deer)?	Never	16 13.68%	38 27.54%	0 0.00%	0 0.00%	54 20.53%
	1-2 times a month	6 5.13%	19 13.77%	2 50.00%	1 25.00%	28 10.65%
	Once a week	11 9.40%	19 13.77%	0 0.00%	0 0.00%	30 11.41%
	2-3 times a week	27 23.08%	38 27.54%	1 25.00%	0 0.00%	66 25.10%
	4-6 times a week	35 29.91%	20 14.49%	0 0.00%	2 50.00%	57 21.67%
	Daily	24 20.51%	7 5.07%	1 25.00%	1 25.00%	33 12.55%
	Total	117 100.00%	138 100.00%	4 100.00%	4 100.00%	263 100.00%

		What is your gender?	
		Chi Square	44.69*
How often do you typically eat meat (beef, pork, poultry, sheep, goat, rabbit, deer)?	Degrees of Freedom	15	
	p-value	0.00	

**Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.*

Discussion

The goal of study 1 was to investigate the influence of social normative and environmental impact messaging on individual food choice. With regard to social norms, I hypothesized that both a descriptive and injunctive normative message would positively influence plant-based food choice. I also hypothesized the social normative messages would have a stronger influence on

food choice than the environmental impact message. The findings were insufficient to reject the null hypothesis for all hypotheses as the difference in plant-based food choice was insignificant across treatment groups.

There are potential limitations related to the methodological design of the study that could explain the lack of significant results in study 1. Field experiments can be a desirable alternative or supplement to laboratory studies, particularly in studies of human behavior, as they measure real choices in actual exchange settings. However, field settings present a suite of challenges that can complicate the interpretation of research results. Because participants were instructed to read the message at the top of their order form, we did not include a manipulation check, a method of evaluating whether each participant was effectively exposed to one of the treatment messages in this study. Therefore, it is possible that some participants did not read the treatment message in its entirety and participated without manipulation. Further limitations could be related to the specific food vendor, the individuals participating, the days of the studies, and a host of other possibilities.

The more theoretical explanation for the insignificant result could be the mechanism in which social norms influence individual choice; social norms provide a model for how to behave when an individual is unsure about the socially acceptable behavior (Cialdini, Kallgren, & Reno, 1991; Rimal & Real, 2005). In study 1, 90.2% of survey participants said they went to *Brotha Dudes* at least once a week. Therefore, it is possible that these individuals were not looking for a model of what is acceptable behavior from a social standpoint because they were familiar with this setting. It is also possible that the familiarity of the setting in prior studies demonstrating a significant

influence from social normative messaging, such as Goldstein, Cialdini, & Griskevicius (2008), had a role to play in the observed significant effect. Further, food choices may not present uncertainty in the norms due to the visibility of the behavior and frequency of food choices, as well as the role of habits and preferences.

The results from this experiment in itself should not discount the results of prior research studying the influence of social norms, as they have been seen to have an effect on certain behaviors. However, it is entirely possible that normative messaging does not have an effect on the behavior of *plant-based food choice*. Prior research demonstrating an effect of normative messaging on environmental behaviors have seen results with less complex behaviors such as littering or reusing a towel. Also, studies demonstrating the influence of normative messaging on food choice have predominately examined healthy food choice, and often measure fruit and vegetable intake (Collins et al., 2019; Sharps & Robinson, 2016; Thomas et al., 2016). Fruit and vegetable intake may be less difficult to change than meat consumption. Meat consumption is a staple for many diets, and for many people it goes beyond that, it is a key part of who people are.

Food choice in general is a part of our identity. For many of us it is much more than just an ingestive behavior, it's a reflection of our values. Therefore, a single messaging intervention may be insufficient to alter a behavior that is reflective of our broader selves. This idea of identity was the source of inspiration and the main focus of my second study, which used qualitative methods through focus group interviews to understand the link between who we are and what we eat.

Study 2

Research Framework

Qualitative research methods illuminate human behavior in ways quantitative research cannot. Because food choice is multifaceted, contextual, dynamic, multilevel, integrated and diverse (Sobal, Bisogni, & Jastran, 2014), qualitative methods can provide a greater understanding of the social and behavior aspects of food and eating. Focus groups are one qualitative method particularly beneficial to understanding social groups or interactions as a factor of interest. In focus groups, participants exchange ideas with each other and comment on each other's responses, which is particularly useful for "exploring people's knowledge and experiences and can be used to examine not only what people think, but how they think and why they think that way" (Kitzinger, 1995). To investigate social influence in study 2, I used semi-structured focus group interviews to allow for an exploration of how different groups characterize their experiences surrounding food. I used a semi-structured focus group interview guide to answer the following broader research question: How do multiple and conflicting identities contribute to an individual's food choice?

Methods

The WWU Office of Research and Sponsored Program's Institutional Review Board deemed this an exempt category #2 project, with an assigned protocol number of EX19-032.

During November and December of 2018, two research assistants and I conducted a total of nine focus groups with freshman undergraduate students living on campus. The requirements for

participation were that individuals were freshman (first year) students at WWU living on campus. I recruited individuals from two dining halls (Fairhaven and Ridgeway) on campus by approaching groups of individuals to request an hour of their time for a discussion on how they make choices about what to eat. All potential participants were informed that their participation would enter them into a raffle for one of twenty, \$20 Amazon gift cards. Following the conclusion of the focus group interviews, I used a random number generator (www.random.org) to select the gift card recipients.

The focus groups were comprised of the same individuals eating together during recruitment. This was intentional in order to foster an environment conducive to learning about how the participants' peer group contributes to their food choice. We conducted the focus groups either in a quiet section of the dining hall, or a separate room within the same building as the dining hall in the evenings between 6 and 8pm. The interviews lasted between 46 and 105 minutes and were recorded while an undergraduate research assistant took detailed notes on non-verbal cues as well as highlights of conversations to aid in the transcription process. The number of participants per focus group ranged from three to six individuals. In total, 39 individuals participated in the focus groups. Of these participants, 49% were female and 51% were male. Demographic information for participants can be found in Appendix B.

We followed a semi-structured interview protocol in order to capture information of interest while being open to follow different group conversations in varying directions. To obtain the most accurate and unbiased picture of what influenced food choice, the initial questions were purposefully non-specific. Interview questions were adapted from similar qualitative research on

food choice (Bisogni, Connors, Devine, & Sobal, 2002; Campbell-Arvai, 2015). All of the conversations began with a discussion about what each participant ate for dinner and what they felt motivated their choices. From there, participants were asked about changes they have made in their diet over the course of their life. When participants discussed shifts in their diet, they were asked specifically what prompted those changes. All participants were asked how social settings and relationships influenced their food choice, in addition to any perceived connections between their identity and their food choices. Following Campbell-Arvai (2015), we purposefully did not include questions pertaining to the environment until the end of the focus group. This broad approach allowed us to assess the motivations and conflicts most important to participants, in absence of leading questions pertaining to specific motivators, such as the environment. At the end of the focus group, I asked participants to describe their general stance on environmental issues, and whether their concern for the environment influences their food choice in any way. For those who did not make any food choices based on the environment, I asked, “why not?” In addition to the open-ended questions, probing questions such as “tell me more” or “can you explain” helped to obtain sufficient detail about participant’s identity and deduce conflicts. The interview guide can be found on Appendix C.

Analysis

We transcribed all of the interviews using the Temi voice-to-text program, with additional transcription and review to ensure accuracy. We conducted collaborative, qualitative data analysis using the online application, Dedoose (Dedoose Version 8.0.35, 2018). The research assistant also participated in the transcription and coding process to ensure multiple viewpoints and consensus of dominant themes. After reading the transcripts, we collectively made a base list of codes that applied to most focus groups. At the onset, we each coded two of the same

transcripts so that there was overlap in the coding, then had a discussion to resolve any differences to ensure consistency in the coding moving forward. Questions and potential areas of confusion were documented using memos in Dedoose. For example, one memo read “Comes up often in focus groups, not just the taste of the dining hall food, but also the ‘health and safety’ factor - avoiding meat because it may not be up to health codes - how to code”. Through this iterative process, we adapted the codes, and themes emerged.

Results

All sections of the transcript relevant to influence on food choice were coded based on the category of influence. The three broad categories of influence that emerged were *individual influence*, *social influence*, and *accessibility*. Individual influence was divided into four sub-categories: *cognitive*, *emotive*, *morals*, and *agency*. Social influence was divided into four more specific sub-categories: *culture*, *media*, *relationships*, and *social environment*. After realizing its importance as an emerging theme, the code *conflict* was used to identify instances where participants discussed multiple incompatible influences on their food choice. Most often in these scenarios, participants’ need to make a sacrifice in aspects of their self-identity, due to a more influential factor, resulted in an imperfect choice. Due to its relevance to study 1, all discussion surrounding the idea of plant-based eating was coded as *vegetarian/vegan*. The complete initial coding tree can be seen on Appendix D.

The literature describes four main categories of food choice determinants: *biological*, *personal experience*, *person-related* and *social/environmental* (Contento, 2007). Bisogni, Connors, Devine, and Sobal, (2002) also developed a conceptual model for the role of identities as an influence on food choice (Figure 1) and found three main types of identities related to food

choice: *eating practices, other personal characteristics, and reference groups/social categories.*

Based on the literature distinguishing social and self-identities, (Hornsey, 2008; Jhangiani, Tarry, & Stangor, 2014; Oyserman, Elmore, & Smith, 2012; Sparks, 2000; Stets & Biga, 2003) I reclassified the categories of influence into the following four themes: *social identity/interpersonal, self-identity/intrapersonal, external factors, and biological factors.* From the focus group discussions, two themes emerged under the category of self-identity: *personal-choice* and *self-efficacy.* Another theme that spanned across all of the categories, was the idea of *conflicting identities.*

Conflicting Identities

As individuals enact a variety of identities while eating, there can be instances when those identities' values come into conflict. For example, Bisogni, Connors, Devine, and Sobal, (2002) found through focus group interviews that individuals may describe themselves as “impulsive, nonrestrictive food lovers who also valued health and fit body images”, and therefore experience a source of conflict between their desire to be healthy and the low palatability and restrictions from healthy eating. In this thesis, when participants discussed biological factors, taste and health emerged as the two most discussed factors influencing food choice. These factors often came into conflict with each other, as well as with self-identity factors, such as *convenience,* and social identity factors, such as *culture.*

Taste

Taste was mentioned more than any other factor overall and was discussed in every focus group.

Taste came into conflict with health, morals, and social pressure. In regard to health, participants expressed the desire to eat things that taste good, but acknowledged that often those food items are not healthy. Specific unhealthy foods identified by participants were soda, fried food, carbs, sugar, burgers, and bread. Two participants in different focus groups specifically identified sugar and bread as unhealthy food items. Two different participants acknowledged that the taste of unhealthy foods made it difficult not to eat them:

If I really wanted to, I'd be eating waffles every single day for all my meals because they're really good... but I need to eat actual food and be healthy and attempt to not eat bread and sugar all the time.

In my heart I really would like to eat ice cream, you know, just go here, eat ice cream all the time. Lots of ice cream, lots of cookies, but I just feel like that's not age appropriate for me. I should kind of, you know, actually eat a proper meal and eat my veggies and all that.

Some participants whose morals led them to view eating meat as a harmful behavior attributed the taste of meat as a major factor preventing them from giving it up, demonstrating a conflict between self-identity and the biological factor, taste. When participants were more specific, bacon and steak were identified as delicious meat options. Moral reasons for avoiding meat were both animal welfare and environment related. One participant said, “*I care about the treatment of animals that I eat. I would be a vegetarian if I didn't like meat so much,*” while another said, “*I was talking about how bad beef is for the environment, but I definitely get blinded by my hunger and I see it, and I'm like, that tastes good. I'm going to eat that. I don't think about it until after where I'm full and I'm sitting there and I realized the crime to humanity I have committed.*” In a different focus group, a participant expressed a similar sentiment; that they think about the impact meat production has on the planet, but that they enjoy meat. So, ultimately, they are going to continue eating meat because they want to. While the taste of meat was the most common

example of taste and morals coming into conflict, one participant felt unable to eat most vegetarian food due to the spice level, despite a moral desire to eat a vegetarian diet. An interesting, but singular, example of taste and social identity coming into conflict was one individual's account of stereotypical diets; *"here at Western and then in Portland I feel really pressured to drink Kombucha or eat kale, but I hate both of those [foods]."*

Health

Following taste, health was the next most discussed factor influencing food choice. Healthy foods were described differently depending on the participant. While some identified protein-rich foods, and meat specifically, as a crucial component of a healthy diet, others identified vegan food as the healthiest. Vegetables, salads, and water were also included in most descriptions of a healthy diet. Health often conflicted with the external factors convenience and price. Participants identified healthier or more "natural" foods as being more expensive and outside their budget. One participant stated, *"Convenience for sure... you go to McDonald's because it's right there and it's close and convenient. It's good at the time. It's not good for you, but you're like, the burger looks good."* Aside from participant determined healthy food, health was also a factor for those with allergy related dietary restrictions. One lactose and gluten intolerant participant noted that, *"the options for me at the dining hall are so limited that I'm constantly like making myself sick just so I can eat."* Health also referenced the perceived quality of food. Participants in four of the focus groups acknowledged making choices based on quality, ranging from feeling uncomfortable with *"meat cooked in mass quantities"*, not trusting fish, not wanting to eat processed food, to dissatisfaction with produce that *"seems frozen or soggy."*

Health also conflicted with social identity for multiple individuals. One participant described a period of time when they were trying to eat healthy and wanted to stop eating a parent's cooking because the cuisine was "*high in oil and high in fat.*" Another participant discussed the emphasis of carbohydrates on their culture's diet and a desire to avoid that when eating with family members.

Health often came into conflict with the self-identity factor, morals, for participants who felt that adopting a vegetarian or vegan diet prevented them from obtaining the nutrition they need. One participant felt that it wasn't right for their body because they felt fatigued. Even after trying alternative non-animal sources of protein, one participant felt they needed to eat meat despite a conflict in morals, stating:

I've been raised eating meat and having some sort of protein for dinner every night and we would alternate and have tofu sometimes... but we always had fish or chicken or sometimes beef, and it's hard to change that habit because I feel a difference when I eat meat versus when I eat other sources of protein... and so meat is just my source of protein and, if I was a stronger person I think that I would say no to it, but I'm also someone who exercises a lot and have just found that's the way to make my body feel the best and the most strong.

Another said that they stopped eating a vegetarian diet when they hiked the Appalachian Trail because they "*didn't want to get protein deficient.*"

Social Identity

Influence from social identities manifested in both explicit and implicit ways from peers, cultural norms, or family members. Two participants stated that they adopted a vegetarian diet because

their friends were vegetarians. One of those participants appeared to be heavily influenced by the actions of others, stating that *“I’ll usually just get in line with whoever I’m with and have whatever option is there, even if I won’t eat it, I’ll just get it because I don’t know what else to do. I can’t think for myself.”* Similarly, another participant described different patterns of eating depending on which group of friends they were with. Another participant stated that they would eat plant-based foods when they were with the vegan individual they were dating, whereas another participant ate a vegan diet on a group camping trip with vegans. Similarly, participants in two difference focus groups discussed an increased likelihood to eat dessert when others they are with get dessert, and one of those participants reasoned that they didn’t want *“to be a stick in the mud”* or a *“sore sport.”* Other participants acknowledged that they were more likely to try new things with groups of friends.

More explicit pressure from friends also had an effect on participants’ food choice. One group in particular likened their dining situation to a *“shark tank”* because *“we’re all critically analyzing what we all bring to the table.”* Within that group, one participant recalled a specific incident:

I don't know what I had for dinner but all I know is that it was devoid of vegetables because it was, it was one of you two, [who said] ‘Oh nice vegetables dude.’ That stuck with me for like a week, where if I was eating around you guys, I was like, ‘I have to put at least something in there that's like a little bit green’.

A different group expressed a similar dynamic of discussing the group’s food choice. When asked what effect that had on individual choice one participant said that *“if everybody is like, ‘oh, that looks awful,, Even if I’m like, ‘oh, it doesn't look that bad,’ like I would still just shy away from getting it.”*

Participants described instances when social influence came into conflict with the biological factor, health, and the self-identity factor, morals. One participant stated that their social environment detrimentally influenced their health because they did not have many friends so they often would forget to eat. Another participant discussed negative interactions with family members in response to their vegetarian diet. They recalled being called horrible names by family members and being ridiculed in public. They described feeling exasperated and said, *“everything was a fight and there were so many times I was like, I literally don't care at this point. I will eat anything that you people want, like this is ridiculous... I don't even care anymore, I will compromise my morals.”* Another participant indicated that their father was disappointed in them when they first cut meat from their diet, which created a *“disincentive to go to his house for dinner.”* Another participant felt a disincentive to adopt a vegan diet because they felt that people *“look down on vegans,”* while another indicated that one of the reasons they wouldn't adopt a vegan diet is because they *“find the idea of being vegan kind of very exclusive... All the vegan people were like really rich sort of thing.”* One participant who was a former vegetarian said that the reason they no longer felt the need to be a strict vegetarian was because in certain social settings, they felt it was inappropriate *not* to eat meat, for example when trying foods from different cultures.

Culture

Culture was a specific aspect of social identity that had a strong influence on individual food choice. Participants described influence from their heritage, (often while eating with family), and from time spent in another country, state, or city. A few participants described growing up in the

south and how their diet consisted of more traditional southern foods such as barbecue or ribs. Participants who weren't born in the United States, or parents weren't born in the United States, discussed eating food that is traditional for their culture.

Culture also came into conflict with individual morals related to vegetarian eating. One participant described a visit to Romania, where their mother was born: *the diet consists of so much meat. Every single meal of the day has meat in it...when I was there and I was still thinking about being a pescatarian, I couldn't even flirt with the idea of it because...if I didn't eat meat, I wouldn't be getting enough food.*” Another participant explained that when they decided to adopt a vegetarian diet, it was difficult for their parent to cook for them because their culture relied on meat for many traditional dishes.

Self-Identity

Personal Choice

The first of the two emergent themes related to self-identity was *personal choice*. Participant response to receiving or instigating more explicit pressure was generally negative because food choice was seen as a reflection of an individual's own attitudes and morals related to food. Participants expressed a distaste for being told what to do when it comes to food, because they felt that the choice about what to eat was their own, as one participant stated *“I just don't really look at someone or something for like my ideal sort of diet because I think that's just bullshit. Like my diet is my diet.”* For one participant, the pressure to eat a certain way appeared to have the opposite effect as was intended:

My mom has always been on me about eating fruit [and] vegetables, like every day, but I haven't and I don't, probably because she has been on me about it. I know I should but her nagging me about it doesn't help I guess.

Participants clearly expressed their distaste for being on the receiving end of unsolicited advice and voiced even greater reluctance to place this same pressure upon others. Several participants' reaction appeared to stem from their own experience with explicit pressure:

I had an interesting scenario with direct pressure, and that's with my environmental science teacher in high school [who] was sort of an extreme guy. He was saying the right things, but also harshly judging people for the things that they were doing... I mean he had a good intention but the way that he was doing it could have been negative and seen as wrong. Because if you'd come back...from lunch and have a soda cup or something like that... he would make you take care of it or say you couldn't bring it to class, but not just because it was having a drink in class, but because you went out and bought something and used a cup once... and I think it was good because it made me think about it, but I can see how that could be a really negative experience for someone else. So, I've tried to back off sometimes when I'm trying to influence people and make sure that it's not being judgmental, but just giving them information that they might not know, that something's not benefiting the planet.

I never try to stop any of my friends from eating what they want to eat, because I always feel a little shitty about it because I get mad when my Stepdad does it at home. because he's 'ultra vegan' and I'll eat a piece of meat, and he'll be like, 'oh that's trash,' and I'm like, 'whoa.' I always feel like a little bit of a hypocrite when I say it or talk about it. It's never like 'don't do it' because you know, that's your choice. I don't care if you eat what you eat.

But I definitely don't do it [pressure people] consciously. Most I'll ever say about something is like, "oh yeah, it's not bad. It's, it's alright. It's pretty good." I'm not like, "Oh you need to try this, this is great. This is good for the environment."

This topic was often raised when participants were discussing the best food choice individuals can make to better the environment. For many participants, this led to a discussion about eating meat and the problems they perceived with directing people not to eat meat.

I also don't go around screaming like meat is murder because that doesn't get anyone anywhere, because ... if you like tell someone what to do, like in a

negative sense, like tell them to like fix something about themselves, I feel like it's very unlikely that they're going to accept that positively and make those changes. They're just going to be like, 'you're actually kind of a dick and you yelled at me for my eating choices. So, I'm going to keep being me and also not be your friend.' So yeah, I think you have to let people get there on their own because otherwise no one's going to get there.

I kind of think that not eating meat would have a really big impact, but at the same time, I would never force that. I would never want to tell anyone to stop eating meat. It's not an ideology that I'd ever want to force on anyone I guess.

Just because I don't think it's inherently wrong and I think that it's an important protein source for people and there are many people who really wouldn't be surviving very well without meat in their diet. And it's not always just a simple choice for people for many reasons. I think that I would encourage those with privilege to not eat meat just because I think it would have a big impact, or to eat local meat or something like that, or to hunt their own meat.

If you eat meat, I don't really care, and I won't say anything because it's like whatever. But just me personally, I feel like it was important to me...but I just want to clarify that I was never one of those people that was like, 'you shouldn't eat meat'... I don't want to be one of those crazy people that tells other people how to live their life and what they should do about it...I'm just kind of like, 'meh, do whatever you want in your life.' That's pretty much with, like all things. Like I'm not going to be like, 'well I believe that this is the right way to do things, so you should also believe that and if you don't then like you should die'...I feel like I'm just one of those people that is like, we can all make choices for ourselves...I don't tell people how to live their life because it makes me uncomfortable.

Participants also expressed varying levels of comfort in regard to influencing other people's food choice based on their relationship with those people, and the motivation behind the influence.

Two participants felt that passing on information to friends or family was more acceptable, as opposed to a stranger.

I feel like it's definitely okay. Like if you see your friend eating super unhealthy all the time to be like, 'hey, you should give these foods a try.' I don't know, I told [a friend] before, 'you'll feel so much better if you just eat these certain meals throughout the day or just load yourself up with these things instead of this snack, like that's why you're feeling a certain way'. But that's not me judging her and she knows it because it's targeted in a different sense versus being like, 'why did you eat that?' ... But yeah, I also think it's a big thing, the

way you say it to people, and also just keeping an open mind because what somebody else eats, it doesn't really affect you... But I think a big thing is your relationship with the person and also how you phrase it. Like if I didn't know somebody, I wouldn't be able to [say] 'why are you eating that burger?'

I don't necessarily push opinions on people when I see them making a choice [about] what they eat, if it's maybe not aligning with my environmental views, but if I see someone eating veal, I feel like if it's a family member or friend... and someone orders veal, I'll be like, 'hey, you know how veal is made?' And if they say 'yeah', then I'm like, 'well cool, enjoy your calf torture', But if they're like, 'no, I don't know how it's made', I usually just tell them and I just leave it at that and not say 'hey, you should not eat that meal that's already in front of you.' That was way too expensive and yeah, it's kind of like, if they're not informed, like you kind of inform them but you don't say, 'hey, you're a horrible garbage human being for eating your bad food.'

For the most part, participants felt that ultimately, choices about what to eat are a personal choice. Some participants acknowledged that this choice should include a consideration of others and the planet. Participants showed varying degrees of environmental consideration related to food choice, and this often related to how effective they perceived their own individual actions to be for solving large scale challenges.

Self-Efficacy

Participants in seven out of the nine focus groups discussed self-efficacy, or their belief in their innate ability to achieve goals. Mostly, this conversation arose in the final part of each focus group discussion during the segment about environmental concerns. The two focus groups in which this theme did not arise were two (out of three) all female focus groups. For this topic, male identifying participants most often expressed a lack of self-efficacy. Three female participants expressed these sentiments as well. When asked why participants did not personally follow possible courses of action they identified as effective to alleviate their environmental

impact, many participants felt that their individual action would be insufficient to solve environmental challenges. The reasoning behind this broad sentiment varied across participants. Some participants felt that the planet was in such peril that there was nothing to be done about it. Other participants talked more specifically about the supply of environmentally harmful products. One participant commented that “*the damage is done. Someone’s going to buy it so I’m going to buy it. You know, on a personal level, I don’t think it makes much of a difference.*” Some felt the production process was not dependent on their purchasing choices. This was mentioned in specific regards to meat consumption by multiple participants:

I can't think of any choices that would make a different environmental impact because the same amount of food is going to be cooked, whether I eat it or not, I feel like if I could convince everybody to not eat the burgers, they probably wouldn't make any burgers that night, but... I don't think that we can make a change like that because some people only eat the burgers, so I mean like the foods gonna be cooked regardless, so I don't think that there's too much of a difference I can make.

I don't believe in meatless Mondays and stuff like that. I don't believe that could really help us. I mean it could, but I feel like it doesn't help as much as they try to portray it does, because if you think about it, just because it's like meatless Mondays, the animals are still getting slaughtered, like, they're still dying. You know what I mean? Like there's still, it's still going through that process. Like the process doesn't stop just because you stopped eating it on one day.

The obvious answer is for you to go vegetarian or go vegan, but it doesn't make sense... unless everybody else is, and there's a law that's like, 'we're executing all carnivores' because it's not going to make a difference for one person...as a country, we love meat so much that I doubt that there's going to be a movement like that ever.

Another participant expressed a similar lack of personal agency, however in their case, they felt that the stress of thinking about the environment constantly was another pressure on an already difficult decision:

If it's stressful to be thinking about like the environment constantly, I'm not going to do that just because there's so many other things in my life. I have thought about like 'well maybe I'll go vegan or vegetarian or something', and with food allergies and dietary restrictions, it's so hard to do something like that. And so, if it's just another pressure on top of everything else, it's like yes it's worth it, but at the same time is it really worth it?

Some female participants responded to these types of comments and offered a different viewpoint. Female participants acknowledged the severity of the state of our planet, however they did not feel that this severity warranted a lack of action. One participant acknowledged that they were slightly cynical, but it didn't stop them from making choices they identified as best for the environment. Another participant expressed a similar mindset:

I think a lot of people are just very cynical where they're like, 'it doesn't really matter what I do anyway', but it does because... if your thought process was like, 'well everyone has to change for it to make a difference', then no one's going to change because you really just got to be like the tiniest little bit, like those like tiny little carbon molecules you keep from going into the air by not drinking your tall, glass of milk is helping. So you gotta just like, you know, do it for you, do it for your buddies, do it for Mother Nature.

Discussion

As study 2 revealed, food choice is complex. Biological, external, social and self-identity factors all influence food choice, and thus there can be instances when individuals experience internal conflict when making a decision about what to eat. Participants in study 2 discussed biological, social identity, and self-identity factors as major determinants of food choice. Areas of conflict occurred for some participants who identified as healthy and struggled to make the healthiest choice in order to appease their desire for something delicious. Often, individuals who had a strong environmental ethic were not able to make the most environmentally conscious decision due to conflicts with taste and/or health. Social environments lead to eating situationally, based

on geographic location, culture, or the people they are dining with. A participant from study 2 summed up this complexity well:

So say there's ten things, ten options and then we take into consideration what our parents had us growing up eating... now there's seven options and then take... into consideration what our friends are eating and so now there are six, and we think... what is good for the environment now there's four and it's down to like those four choices.

What is missing from this quote is the reality that choice is often limited by structures outside of individual control, such as factors related to accessibility (e.g. availability, price). As the participants in study 2 were college freshman, they primarily ate at the dining halls on campus. For many participants, their ability to make the best choices for themselves based on their values was not easy. The expense of a dining hall meal plan often means that many students cannot afford to eat elsewhere outside of the dining halls, and therefore their options are limited to the food the dining halls serve. Although there are student organizations dedicated to bringing “real food” to WWU’s campus (Students for Sustainable Food), the decision about what food to serve in the dining halls is ultimately made by campus administrators and dining hall managers employed by Aramark.

Self-efficacy

Study 2 revealed an unexpected and dominant theme related to food choice, self-efficacy. There were no leading questions about self-efficacy as a major factor in food choice, yet this topic was discussed in seven out of nine focus group discussions. Participant experiences ranged from frustration due to a perceived limited impact at the personal level, to complete apathy towards food and what it means at a dietary, environmental, and humanitarian level. The more powerful

responses were not representative of all participants, but still aligned with a common theme in a majority of discussions; disassociation. Participants often reported feeling their decisions were unimportant and not impactful. Instead of taking the environmental burden personally and changing behaviors, they chose consciously to disconnect from the impact of food choice. Participants would rather forget where food came from and the processes it took to get there than make it a topic of guilt. Male identifying participants expressed this sentiment more often than female identifying participants. Previous findings have shown that females are more concerned with environmental issues (Fielding & Head, 2012; Milfont & Sibley, 2016) and tend to be more willing to change (Kollmuss & Agyeman, 2002).

Normative Influence

Combined, study 1 and study 2 took an in-depth look at the influence of social norms and identity on our food choice. While the normative messaging did not appear to influence plant-based food choice in study one, gender and environmental identity did appear to have an effect. Study 2 looked at how social norms work for real groups of people who make choices about what to eat in the presence of one another. It is possible that the results of study 1 do not mean the effects of social norms on food choice should be discounted, but rather that an understanding of the circumstances in which social normative messages are effective requires a deeper look into exactly how social norms work.

Prior research on social normative influence suggests social pressures are most impactful when exerted from peers within one's social circle, or a member of their in-group (Fielding & Hornsey, 2016; Rabinovich, Morton, Postmes, & Verplanken, 2012). Fielding & Hornsey (2016)

suggest using in-group messengers to encourage behavior change because other members of their social group will perceive them as more trustworthy and credible. The response to in-group messengers provides a possible explanation for the lack of significant influence from social normative messaging in study 1. The messages were printed on pieces of paper, and thus were not relayed through individuals whom participants had relationships with. The anecdotes in study 2 demonstrate that pressure or influence within friend groups or in-groups is perceived as more positive and more likely to result in change, whereas influence from strangers is seen as nagging or inappropriate. Compared to other behaviors, food choice may be considered more personal and individuals did not seem to welcome outside direction for something they perceive as a personal choice.

The power of social identities as an influence can be seen in anecdotes from study 2, with participants altering their eating habits or adopting new diets altogether to fit in with those in their social groups. However, the power of self-identity as an influencer is also demonstrated by the two emergent themes of personal agency and self-efficacy. Participants in study 2 resoundingly felt that food was a personal choice and did not like the idea of other's telling them what to eat. This idea of *identity threat* has been seen in research related to plant-based food, and has found that as more people adopt plant-based diets, the perceived threat to those who value eating meat increased and their likelihood to change their behavior decreases (Abrahamse, Gatersleben, & Uzzell, 2009).

Day to day food choice is mediated by a broader adoption of a particular diet (ie. vegetarian, pescatarian). This implies that a choice falling outside of that categorization conflicts directly

with one's identity. For this reason, someone who identifies as a meat-eater will likely deliberate before making the choice to eat something other than meat. Taking this time to deviate from a regular choice may require more time and influence than was provided in study 1. Additionally, one single message, as opposed to a lengthy argument provided in something such as a documentary, may have less of an effect on a decision embedded in one's identity.

Conclusion & Future Directions

A shift in food choice away from meat-based eating has the potential to greatly reduce GHG emissions. Therefore, it is important to obtain a greater understanding about how individuals are influenced to make sustainable food choices. Current efforts to make our food choice more environmentally friendly rely on statistics related to the impact of less sustainable choices. For example, an infographic at www.cowspiracy.com, the webpage associated with the popular documentary, states "a person who follows a vegan diet produces 50% less CO₂, uses 1/11th oil, 1/13th water, and 1/18th land compared to a meat eater" (cowspiracy.com/facts). These information campaigns may not have the effect they intend and could even lead to the opposite of the intended effect, resulting in an increase in meat consumption for some individuals. Other types of messaging to encourage behavior change are therefore worth studying.

Social normative messaging has demonstrated its effectiveness for certain sustainable behaviors, such as reducing littering and towel reuse. This thesis sought to investigate the influence of social normative messaging on plant-based food choice. The results of this thesis reveal that environmental impact messaging and social normative messaging may not have a significant

influence on plant-based food choice of college students. This thesis provides a possible explanation for the null results through a qualitative analysis demonstrating the complexities of food choice for college students. These complexities include conflicting identities resulting in incompatible influencers as well as varying senses of self-efficacy as it relates to a positive impact of food choice.

Future studies may include emphasis on an individual's self and social identity as they pertain to influencing more sustainable food choice. This thesis revealed that people are more inclined to listen to suggestions made by individuals who are close to them. Therefore, printed messages promoting dietary shifts, such as adopting a plant-based or vegan diet, may not influence people due to the lack of personal relationship with the source of the information. Encouraging positive dialogue between friends and family could encourage more sustainable food choice by ensuring the transfer of information happens in a non-threatening manner.

Future research may also investigate solutions to students' perceived lack of influence through individual action. Large scale environmental change is not possible without individual efforts, however many participants expressed a belief that their food choice did not ultimately have an influence on the environment. Based on the evidence that a shift in diet is not only better for the planet, but also a benefit to human health, strategies to encourage more sustainable food choice are certainly warranted.

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Appendix A: Study 1 Survey

4/9/2019

Qualtrics Survey Software

Default Question Block

Western Washington University Consent Form/Information Statement *Acting on Knowledge or Norms*

Primary Researcher:

Melanie del Rosario, M.A Candidate Western Washington University
Contact Information: 607-227-8411 delrosm@wwu.edu

Research Assistants: Spencer Elwell, Leah Noble, Claudia Wagener

We are asking you to be in a research study. Participation is voluntary. The purpose of this form is to give you the information you will need to help you decide whether to participate. Please read the form carefully. You may ask questions about anything that is not clear. When we have answered all of your questions, you can decide if you want to be in the study or not. This process is called “informed consent.” If you would like, we will give you a copy of this form for your records.

Purpose of the Study

We are conducting a survey to understand how different identities and habits influence food choice of individuals across campus. The results of this study will help us to better understand how individuals make dietary choices that impact individual health as well as the environment.

Study Procedure

Participation in this survey is entirely voluntary. If you choose to participate, you will be asked a series of questions about your own identity in relation to the environment, Western Washington University, and your food choice. We anticipate that the survey will take approximately 5-7 minutes to complete.

Risks and Privacy

The survey is confidential. Your individual answers will not be linked with any identifying information in any reports of the data. Your participation is voluntary and if you come to any questions you prefer to not answer, you are welcome to skip it and go on to the next.

Risks of Participation

There are no anticipated risks for participation in this survey. We take every precaution to protect your information, though no guarantee of security can be absolute. We believe the chances of you being identified are low due to the protections in place for your privacy.

Benefits & Compensation

Completion of this survey will automatically enter you into a raffle for a \$50 Amazon gift card

Data Security & Protections

You will be given an ID number for this study, which will be used to label your data. The link between this ID number and your name and other identifying information will be stored separately. The link between your ID number and contact information will be kept by the researchers through the end of the study.

There are times where studies are reviewed by Western Washington University to make sure that they are being conducted safely. In the event that this occurs, the reviewers will be responsible for protecting your privacy.

Withdrawal

You are free to withdraw from this study at any time, without penalty or loss of benefits to which you are otherwise entitled.

If you withdraw the study will keep your data, however, it will be removed from any identifier. You can submit a request to delrosm@wwu.edu to withdraw your data up until the study ends. After the study ends will no longer be able to link you with your data.

Research Participant Rights

If you have concerns or questions about this research study, please contact Melanie del Rosario (607)-227-8411, delrosm@wwu.edu . If you have questions about your rights as a research participant, contact the Western Washington University Office of Research and Sponsored Programs (RSP) at compliance@wwu.edu or (360) 650-2146.

Q21 Are you willing to participate?

Yes (1)

No (2)



Q6 Have you already completed this survey?

Yes (1)

No (2)

Page Break

Q23 What number was on the right hand corner of your menu?

Q4 What is your gender?

Male (1)

Female (2)

Other (3) _____

Prefer not to answer (4)

Q1 What is your age?

Q5 Which of the following best describes your affiliation with Western Washington University (WWU)?

- Undergraduate Student (1)
- Graduate Student (2)
- Staff (3)
- Faculty (4)
- Administration (5)
- Not Affiliated (6)

Display This Question:

If Which of the following best describes your affiliation with Western Washington University (WWU)? = Graduate Student

Or Which of the following best describes your affiliation with Western Washington University (WWU)? = Undergraduate Student

Q2 Select your major

College (1)

Major (2)

▼ I have not yet declared. (1) ... Woodring College of Education ~ TESOL Certificate (216)

Display This Question:

If Which of the following best describes your affiliation with Western Washington University (WWU)? = Undergraduate Student

Or Which of the following best describes your affiliation with Western Washington University (WWU)? = Graduate Student

Q3 Select your minor

College (1)

Minor (2)

▼ I don't have a second minor (1) ... Woodring College of Education ~ Teaching English to Speakers of Other Languages Minor (105)

Q7 Please indicate how strongly you agree with the following statements

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I feel strong ties with environmentalists. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I see myself as an environmentally friendly person. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do NOT want my family or friends to think of me as someone who is concerned about environmental issues. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do NOT think of myself as an environmentally friendly consumer. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q8 Please indicate how strongly you agree with the following statements

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I feel strong ties with other members of the WWU community. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do NOT want my family or friends to think of me as a member of the WWU community. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am proud to be associated with WWU. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

Q12 How often do you typically eat meat (beef, pork, poultry, sheep, goat, rabbit, deer)?

- Never (1)
- 1-2 times a month (2)
- Once a week (3)
- 2-3 times a week (4)
- 4-6 times a week (5)
- Daily (6)

Display This Question:

If How often do you typically eat meat (beef, pork, poultry, sheep, goat, rabbit, deer)? = Daily

Q10 How often do you eat meat in a single day?

- One meal per day (1)
 - Two meals per day (2)
 - Every meal (3)
-

Q11 How often do you typically eat seafood (fish, shellfish)?

- Never (1)
- 1-2 times a month (2)
- Once a week (3)
- 2-3 times a week (4)
- 4-6 times a week (5)
- Daily (6)

Display This Question:

If How often do you typically eat seafood (fish, shellfish)? = Daily

Q14 How often do you eat seafood (fish, shellfish) in a single day?

- One meal per day (1)
- Two meals per day (2)
- Every meal (3)

Q15 Please rank the following in order of influence on your own personal food choice (1 = most influential, 7 = least) **Please only select one influencer for each numerical value.**

- _____ Taste (1)
- _____ Price (2)
- _____ Nutrition (3)
- _____ Environmental Impact (4)
- _____ Quantity/Density (how filling) (5)
- _____ Craving (6)
- _____ Habit (this is what I always get) (7)

Q16 What do you typically order at Brotha Dudes?

- Bowl/Blunt (regular or mini) with falafel (1)
 - Bowl/Blunt (regular or mini) with tofu (2)
 - Bowl/Blunt (regular or mini) with chicken (3)
 - Plain Bowl (4)
 - Falafel Nuggs (5)
-

Q19 What did you order from Brotha Dudes today?

- Bowl/Blunt (regular or mini) with falafel (1)
 - Bowl/Blunt (regular or mini) with tofu (2)
 - Bowl/Blunt (regular or mini) with chicken (3)
 - Plain Bowl (4)
 - Falafel Nuggs (5)
-

Q17 How often do you eat at Brotha Dudes?

- Daily (1)
 - 4-6 times a week (2)
 - 2-3 times a week (3)
 - Once a week (4)
 - 1-2 times a month (5)
 - This is my first time (6)
-

Q18 What is your email address (this will only be used to contact you if your name is drawn in the raffle)

End of Block: Default Question Block

Appendix B: Table of Focus Group Participants

	Dietary Restrictions	Dietary Preferences/notes	Gender	Race
Focus Group 1	No peanuts or pecans	Currently trying to gain weight for athletics	Male	White
Focus Group 1	N/A	Self-described picky eater, meat-lover	Male	White
Focus Group 1	vegetarian	Health conscious, prefers fresh, local, sustainable foods	Female	White
Focus Group 2	Pineapple allergy	Avoids fish	Female	White
Focus Group 2	N/A	Has been exposed to vegan diet	Male	Black
Focus Group 2	N/A	Healthy not picky, adventurous	Male	White
Focus Group 2	lactose & gluten intolerant	N/A	Female	White
Focus Group 3	No	Eats anything	Male	White
Focus Group 3	No	Tries to be aware of eating protein	Male	Japanese-American
Focus Group 3	No	Tried to go vegetarian	Female	White
Focus Group 3	Allergies	Avoids most meat, except chicken	Female	Chinese-American
Focus Group 3	No	Eats by sight	Male	White
Focus Group 4	NA	protein	Male	White
Focus Group 4	pesctarian	NA, "healthy," not too restrictive	Female	White
Focus Group 4	pesctarian	Health based	Female	White
Focus Group 5	none	Trying to be healthy	Female	White
Focus Group 5	none	Healthy	Female	White
Focus Group 5	pesctarian	Healthy	Female	White
Focus Group 5	none	Healthy	Female	White
Focus Group 6	vegetarian	N/A	Female	White
Focus Group 6	N/A	N/A	Female	White
Focus Group 6	N/A	N/A	Female	White
Focus Group 7	N/A	N/A	Male	White
Focus Group 7	N/A	cheese doesn't taste good	Male	White
Focus Group 7	N/A	N/A	Male	White
Focus Group 7	N/A	N/A	Male	White
Focus Group 7	N/A	no vegetables, or licorice	Male	White
Focus Group 7	allergic to nuts	N/A	Female	White
Focus Group 8	nut allergy	N/A	Male	White
Focus Group 8	nuts, all	N/A	Female	Italian

Focus Group 8	fructose intolerant	Past vegetarian, would like to be vegan	Female	White
Focus Group 8	lactose intolerant	N/A	Female	Filipino
Focus Group 9	lactose intolerant	N/A	Female	White
Focus Group 9	N/A	N/A	Male	White
Focus Group 9	N/A	N/A	Male	White
Focus Group 9	N/A	N/A	Male	White
Focus Group 9	N/A	N/A	Male	Black
Focus Group 9	N/A	N/A	Male	Chilean
Focus Group 9	N/A	N/A	Male	Ethiopian

Appendix C: Study 2 Interview Guide

Interview Guide Conflicting Identities & Sustainable Food Choice

Primary Researcher:

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Pt. 1: Individual Dietary Identity

What did you eat for dinner tonight?

What factors are most important for choosing your meals? Why?

How would you characterize yourself in terms of diet (ie. carnivore/omnivore/vegan/pescatarian/locavore) PLEASE don't feel limited to a single term

Have you ever attempted any kind of change in your diet?

What prompted that?

Do you still eat by those same "standards"?

Did your social groups play any role in that?

Can you talk to me about a time where your decision about what to eat was difficult/stressful, and why that was?

Does your diet differ from the way you ate growing up? If so, how? What prompted this change or lack of change?

Do you feel limited by other factors that prevent you from eating the way you would like to?

Do you feel that your dietary choices (dietary identity) are linked to other aspects of your identity?

Pt. 2: Social Dietary Identity

How often and in what context do you eat with this group of people?

Do you eat differently with other groups of people, including your family?

If so, why do you think that is?

In a typical week, what differences do you see in your eating habits? This could be based on who you're eating with, if you're eating alone, day of the week or if you're eating out versus cooking.

Have you ever felt that social pressure from friends/family influences your food choice?

Have you ever felt that social pressure from less direct sources (ie. City you live in, university messaging, advertising in particular grocery stores, menu options) influences your food choice?

Have you ever felt that social pressure based on your gender identity influences your food choice?

Pt. 3: Environmental Identity

How would you characterize your stance on environmental issues?

Do you consider environmental issues when making choices about what to eat?

What food-related choices and behaviors do you identify as being the most effective for mitigating negative environmental outcomes?

Where did you receive information on this strategy?

Why do you think you've adopted this dietary strategy?

Have you felt any pressure from friends/family to make a different food choice in order to benefit the environment?

Added in after second focus group – Do you feel that food is a personal choice?

Appendix D: Study 2 Coding Tree

Dedoose Codes Export for Project: Identity & Food Choice

Individual Influence

Cognitive

Health

Quality

Intentional Influence

Physical Appearance

Quantity - Filling

Emotive

Comfort

Curiosity

Habit

Taste

Morals

Animal welfare

Environmental

Identity

Age

Athlete

Gender

Race

Personal Agency

Self Description: "to see if I could," "I have a choice;" illusion of choice, or subjective use of agency;

Society Description: concept of "freeriding," "it'll only work unless everyone does it," "supply and demand"

Other

Accessibility

Availability

Convenience

Price

Variability

Social Influence

Cultural

Environment

City/town/state

College Campus

Country

Media

Documentaries

Other (articles, radio, ect)

Posters

Relationships

Family

Childhood Description: "growing up" "The way I was raised"

Explicit

Friends/Peers

Explicit Description: Direct influence: hazing, "shark tank,"
outward group influence, directly stated by speaker

Implicit Description: Less direct influence; generally following
what others are eating, looking to see what others are eating in order to make
decisions, choices not made as a result of direct "hazing" or direct group
discussion around food.

Social Environment

being polite

New situation

Conflict

Vegetarian/vegan