Associations Between Moral Foundations and Healthy Eating Identity and Self-Efficacy

by

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ABSTRACT

Background: Previous research suggests a healthy eater schema (i.e., identifying yourself as a healthy eater) may be a useful concept to target in interventions. A "stealth" intervention that discussed the moral issues related to food worked better at promoting healthful eating than an intervention focused on the health benefits. No research has explored the relationship between moral foundations, a theoretical model focused on delineating core "foundations" for making a moral decision, and healthy eater self-identity or self-efficacy.

Purpose: We explored the relationship between moral foundations (i.e., harm/care, fairness/reciprocity, in-group/loyalty, authority/respect, & purity/sanctity) and health eater self-identity and fruit and vegetable self-efficacy (FVSE).

Methods: 542 participants completed an online cross-sectional survey, which included moral foundations (i.e., MFQ), political views, healthy eater self-identity (i.e., HESS), and FVSE measures. Logistic regression was used to assess the relationship between moral foundations between healthy eater self-identity after controlling for age, gender, major, BMI, and political beliefs. OLS regression was used to explore the relationship between self-efficacy and the moral foundations after controlling for the covariates.

Results: 75.6% of the sample were college students, with a mean age of 25.27 (SD=8.61). 25.1% of students were nutrition majors. Harm/care, authority/respect, and ingroup/loyalty were significantly associated with healthy eater schema, (i.e., *OR*=1.7,

$p<.001$, $OR=1.5$, $p=.009$, and $OR=1.4$, $p=.027$, respectively). Ingroup/loyalty,

authority/respect, and purity/sanctity were related to FVSE ($p=.006$, $p=.002$, $p=.04$,

respectively).

Conclusion: Among college students, harm/care and authority/respect were associated

with a healthy eater schema. Future research should explore possible uses of these moral

foundations in interventions (e.g., a plant-based diet based on reduced harm to animals or

eating fewer processed views based on "traditional" values).

I thank my wonderful family for their continual support in all of my endeavors. I am so blessed to have parents who have always gone the extra mile to help me succeed. Without my amazing friends, I surely would not have remained sane during the past several months, and for their support, I thank them.

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INTRODUCTION

It is well established that good nutrition is essential for promoting health and reducing the risk of mortality from chronic disease. However, 70% of deaths in the United States are from chronic diseases, and 50% are from heart disease, cancer, and stroke, which are both costly and preventable.[1] According to data from 2008, roughly 34% of Americans over the age of 20 were overweight, and another 34% were obese, as compared to a rate of 23% obesity in the 1988-1994 National Health Examination Survey III.[2]

Public health campaigns attempt to address the unhealthy lifestyle behaviors that many Americans lead. However, population-based approaches may only be effective for promoting change in people with high levels of self-efficacy for self-management, and beliefs that recommended changes would actually benefit them.[3] There is substantial evidence that information-based and educational health interventions alone do not have any effects on reducing obesity.[4-6] Even when interventions are successful, the positive outcomes often last for just a short amount of time.[7]

Behavior change is a more complicated process than simply increasing someone's knowledge and expecting change as a result. While there are many theories concerning behavior change, this paper will primarily focus on exploring possible linkages between morality, self-identity, and social cognitive theory[8] with particular emphasis on self-efficacy. The traditional behavior change theories, the health belief model and transtheoretical model, will be discussed in comparison to the constructs used in this paper. Self-identity and identity shifts in behavior change are also discussed.

Understanding self-identity is important in designing a behavior change intervention because self-identity determines how an individual thinks, feels, and behaves.[9] Healthy eater schematics have stronger intentions to eat healthfully[10,11] and actually participate in healthier eating behaviors than non-schematics.[12-15] Creating identity shifts is also important in behavior change.[16,17] An identity shift may occur when a person has a goal or desired self-identity, and they change their behavior to achieve the possible self.[17,18]

Values, virtues, and morals are naturally influential in self-views, and vice versa. People typically engage in behaviors that are in line with values and fulfill a sense of self-worth.[3] When goal setting, it is important that goals are based on values, because it provides more incentive for people to reach their goals. Additionally, morality has been associated with eating.[19] Current issues in food ethics like fair trade, local foods, sustainability, genetically modified foods, organic food production, and animal welfare all suggest that, to some extent, food choices are driven by moral values. Robinson points out that marked change in eating behaviors may come from ideological and social ideas,[7] implying that a moral approach to eating may sustain behavior change where knowledge alone cannot, even in the face of adversity.

This paper explores moral eating in terms of the Moral Foundations Theory, developed by Jonathan Haidt and colleagues.[20-22] The Moral Foundations Theory combines a nativist and empiricist approach to morality, suggesting that five moral foundations exist. These foundations are intuitive and innate, but societal and cultural norms can determine how groups of people differ in values. The five foundations include harm/care, fairness/reciprocity, ingroup/loyalty, authority/respect, and purity/sanctity.

Based on the growing need for effective behavior change methods, the purpose of this study is to explore associations between constructs from Moral Foundations Theory, Self-Identity Theory, and Social Cognitive Theory to better delineate possible alternative intervention strategies that could be utilized to promote healthful eating. Specifically, the relationship between a healthy eater identity and the moral construct purity/sanctity will be examined. The foundation purity/sanctity is associated with valuing cleanliness and purity, and being disgusted with diseased people or products, taboo ideas, and unnatural ideas.[21] Disgust for contaminated or unclean food can be seen in religious dietary practices. Thus, it is hypothesized that participants who have a stronger sense of purity/sanctity will be more likely to have a healthy eater self-identity than those who score lower on purity/sanctity. Secondly, self-efficacy related to the consumption of fruits and vegetables will be measured. It is hypothesized that as purity/sanctity value increases, self-efficacy of eating fruits and vegetables will also increase.

Definition of Terms

- Five moral foundations:
    - Authority/respect: foundation that underlies virtues of leadership and followership; includes respect to authority and respect for traditions [20]
    - Fairness/reciprocity: foundation that underlies ideas of justice, rights, and autonomy [20]
    - Harm/care: foundation that underlies virtues of kindness, gentleness, and nurturance [20]

- Ingroup/loyalty: foundation that underlies virtues of patriotism and self-sacrifice for the greater good of a group [20]

- Purity/sanctity: underlies religious ideas of trying to live in an honorable and principled way, avoiding immoral and carnal ways of living; related to disgust and contamination [20]

- Moral foundations theory: theory by Haidt and colleagues that proposes that five universal moral foundations exist, and that cultures and individuals build themselves according to the value they place on each of the five foundations [20]

Limitations

- The population of this study included a majority of female, health major college students, so results are not applicable to other populations.

- This study used a cross-sectional survey design, and therefore no causal conclusions can be made.

Delimitations

- Subjects will be above 18 years of age, primarily at Arizona State University, but also other universities and individuals who may be contacted via social media.

Chapter 2

REVIEW OF LITERATURE

Behavior Change

Behavior change is a complicated process, with a number of different theories proposing how change occurs. Health professionals apply behavioral theories to the decision making and actions underlying diet, physical activity, and other health habits.[23] Behavioral theories help to understand the underlying motivation for certain behaviors. Often, a combination of theories is used to help design an individualized intervention.[24] Health interventions should be based on theory in order to understand mechanisms for change.

Behavior is a complex decision making process, and interventions may be geared differently towards each step of decision-making.[23] Mediating variables are factors that influence behavior, and interventions are often targeted at changing these mediating variables.[23] Mediators explain how one variable may influence another variable.[25] Moderators should be taken into account when designing and implementing behavior change interventions. Moderators are variables help to delineate for whom or under which conditions an intervention might or might not work.[24] As such, moderators may influence the strength of the relationship between variables.[25] Gender, ethnicity, and social economic status are examples of moderating variables.

Common behavioral theories used by health professionals include the health belief model (HBM), the social cognitive theory (SCT), and the transtheoretical model.[24] Each will be briefly reviewed in turn, followed by a discussion about alternative conceptual frameworks that might be used to promote healthful eating.

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Health Belief Model.

The HBM was developed in the 1950's as a tool to understand why people often fail to take preventative measures against disease, such as a healthy lifestyle and screening tests.[26] It was also used to understand the widespread noncompliance with treatments and regimens. The HBM is based on the supposition that behavior depends on both the value an individual places on a goal, and the individual's belief that a specific action or behavior will help to achieve the goal. In terms of disease, the goal is avoiding or recovering from illness, and the action is the measures taken to reduce risk and enhance recovery. The HBM consists of four concepts that determine health behaviors: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers (Figure 1).[26] Cues to action and modifying factors also influence health behaviors based on the HBM.[27]

Figure 1. Health Belief Model [a]
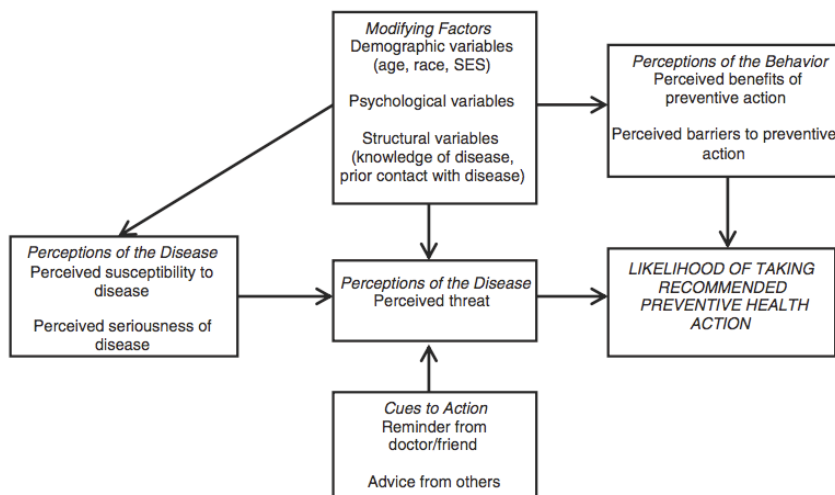
[a] Figure from Tanner-Smith and Brown [27]
(If this paper were submitted for publication, copyright permission for reproduction of this figure would have to be obtained.)

Perceived susceptibility is the most powerful perception in the health belief model. Susceptibility is how vulnerable an individual feels to a particular disease.[26] The HBM holds that as an individual's perceived susceptibility to a condition increases, so does the likelihood that the individual will behave in a way that prevents the condition. Conversely, if there is no perceived threat, it is likely that no protective measures will be taken. Targeting interventions to perceived susceptibility includes defining the at-risk population and heightening the sense of threat in those populations.[28]

Perceived severity is the evaluation of both medical and social consequences.[26] Medical consequences include death and pain, while social consequences include social relationships and family life. The more severe an individual regards the consequences as, the more likely it is that the individual will participate in preventative actions. Health professionals may help a client recognize the severity by explaining the consequences of a condition and giving recommendations for action.[28]

Perceived benefits refer to the effectiveness and feasibility of recommended actions to reduce disease risk.[26]Even if an individual recognized that he or she was susceptible and that the consequences of the condition would be severe, preventive action would not be taken if those actions were unrealistic. Health professionals can increase perceived benefit of health behaviors by explaining how, where, and when to take action, and any positive outcomes that will occur as a result.[28]

Perceived barriers are any potential negative consequences of partaking in recommended health behaviors.[26] Examples may include actual side effects of a drug, embarrassment at participating in screenings, or inconvenience in incorporating behaviors into daily life. If perceived barriers outweigh benefits, susceptibility, and severity, it is

very likely that no action will be taken to reduce disease risk. In order to reduce barriers, the health professional should give reassurance and assistance and correct any misinformation the client may have.[28] Boosting self-efficacy is very important in reducing perception of barriers. Recommendations for this include providing training and guidance until the individual feels ready to perform a given action.

In order to trigger a decision-making process, cues to action must occur, based on the HBM.[26] A cue to action is any type of factor that helps an individual become ready to change.[28] Cues can include symptoms of disease, reminder postcards from clinics, or media campaigns. Also affecting the likelihood of participating in health behaviors are modifying factors, like age, race, socio-economic status, education, and other environmental variables.[27] These variables directly influence perceived threat.

There is conflicting evidence as to how well the HBM describes health behaviors. It has been described as a "catalogue of variables more than a model" and is often inconsistent in definition of constructs.[29] There has been little attempt to quantify the relationship between the variables in the HBM and potential additive or multiplicative effects.[30] For example, perceived susceptibility and perceived severity both influence threat, but they are separate constructs without precise definition of how they interact.[31] The HBM has also been criticized for not applying to repeat behaviors.[27] The HBM was designed to assess participation in preventive behaviors like screenings.[30] Single vs. repeated behaviors (e.g., daily consumption of healthful foods) are different forms of preventive health behaviors, and the HBM does not specify that predictors may change.[27] Self-efficacy was added as a component to account for behaviors that require long-term change, such as eating, exercising, and smoking.[30]

The HBM assumes that all health behavior is rational and fails to recognize that social norms within a culture can influence behavior, regardless of health beliefs. [30] The model itself also fails to sufficiently address various social and economic environmental factors, which impact how information is perceived and applied. [27] For instance, low-income women without health insurance may perceive costs and benefits of health behaviors differently than women with health insurance, but studies on the role of the HBM in women's health have overlooked insurance coverage as a variable. The HBM is not universally relevant to all ethnic and racial groups, such as African American and Hispanic women. It has been found that while significant relationships between the HBM and health behaviors exist, the correlations are very weak. [31] In particular, the weakest predictors of behavior are perceived susceptibility and perceived severity. [27] Sheeran and Abraham suggest that the HBM has weak predictive power because it lacks clear definition of constructs and rules on how constructs may interplay. [32]

Transtheoretical Model

The Transtheoretical model (TTM) was developed during an investigation of the processes that are used during change. [33] The TTM, for which the most commonly used component is the stages of change, has been extensively studied in smoking cessation. [33,34] Since its development, the TTM has been applied to many health behaviors, including exercise [35,36] and diet. [37] The idea of TTM is that successful behavior change is more likely when strategies connected with the appropriate processes of change are used that are appropriate for their readiness to make the change. [37] Marcus and Simkin describe stages as constructs that are between traits and states. [35] Traits are stable and not open to

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change; states are instable and readily changed. Stages, however, are both stable and dynamic. This is a strength of the stages of change, rather than treating behavior as "all or nothing."[36]

The TTM is composed of five stages: precontemplation, contemplation, preparation, action, and maintenance.[35] Precontemplation is when an individual has no intention to change or does not recognize the need to change. Contemplation means that the individual is considering change.[36] While individuals in contemplation are aware that a problem exists, they are not committed to making changes.[31] Preparation is when an individual has taken small steps towards making change. It is typical of those in the preparation stage to have unsuccessfully attempted to make changes in behavior in the past. Action is when the individual is actively changing behavior. This stage is when individuals modifying their environment, experiences, and behaviors. Finally, maintenance is when there is a continuation of successful change. This stage includes attempting to stabilize behavior and avoid relapse. Relapse to lower stages can occur throughout the behavior change process.[38]

Factors that are thought to mediate the change processes include self-efficacy for change, decisional balance, strategies and techniques used to change thoughts, feelings, and behaviors, and temptation.[36,37] Exercise self-efficacy and stage of change have been positively correlated, and higher efficacy is associated with later stages.[36] Decisional balance, or the evaluation of pros and cons of new behavior, is relevant for health behavior change in weight loss, physical activity, and smoking cessation.[36] Decisional balance is based on the idea that people identify reasons to change and not change, and behavior change is influenced by pros versus cons. Perceived advantages typically

increase as individuals move through the stages, with a peak in the action stage. Perceived disadvantages decrease as individuals advance in stages. Pros and cons are usually in balance during the preparation stage. These factors have been shown to predict the transition between precontemplation, contemplation, and preparation, but do not as effectively predict the transition between action and maintenance.[36] This is important to recognize, as the ultimate goal is to promote behavioral maintenance.

Strategies used during change have been classified into experiential techniques and behavioral techniques.[36] These processes of change are activities that individuals engage in to modify their feelings and environments in order to modify behavior.[35] Experiential processes include consciousness raising, dramatic relief, environmental reevaluation, self-reevaluation, and social liberation. Behavioral processes include counterconditioning, helping relationships, reinforcement management, self-liberation, and stimulus control.

Measures used to classify individuals into stages often vary,[36] and many have not been validated.[39] Of 64 studies on TTM and diet reviewed by Spencer et al., a total of 24 different staging algorithms were used, and four studies did not specify which algorithm was used.[37] Specific algorithms have been developed for fruit and vegetable consumption and dietary fat reduction, but some have been adapted from smoking cessation to be used in dietary behaviors. Knowing an individual's current stage is important in individualizing interventions. Overall, the evidence for application of TTM to complex areas of behavior change, such as diet and exercise, is unclear and mixed.

Social Cognitive Theory

The social cognitive theory (SCT) was developed by Albert Bandura and built on the social learning theory.[8] SCT describes core determinants of behavior, which include knowledge of health risks and benefits of various health behaviors, perceived self-efficacy of control over health behavior, outcome expectations of costs and benefits of health behaviors, health goals that people set and plan for achieving those goals, and facilitators and impediments to behavior change (Figure 2).[3] Bandura has applied social cognitive theory directly to health behaviors.[3]

Figure 2. Social Cognitive Theory [a]
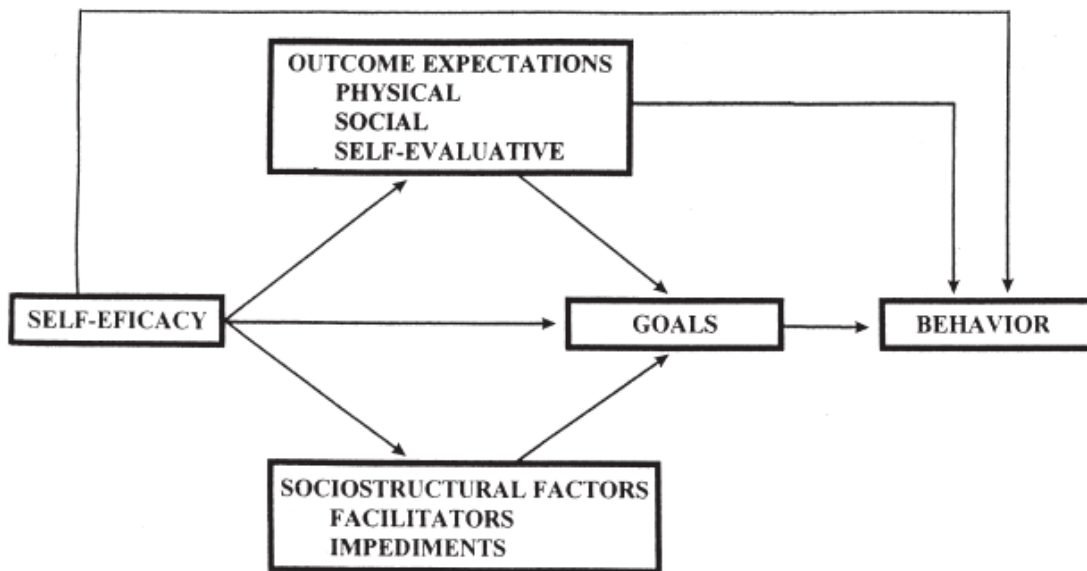
[a] Figure from Bandura[3]
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Knowledge of health risks and benefits of health behaviors precedes change.[3] Lack of knowledge about how current lifestyle factors affect health provides no reason for implementation of change. However, even if an individual recognizes that they need to make a behavior change, self-influences must be recruited to overcome barriers to instigating and maintaining change. One factor that influences change is personal self-efficacy. Bandura holds that self-efficacy is the basis for motivation and action. An individual must believe that they can perform a behavior and achieve their goal by performing that behavior in order to be motivated to attempt change. Outcome expectancies also affect behavior. Physical outcomes include pleasure or discomfort as a result of an action, and social outcomes include approval or disapproval of peers in response to a behavior or action. Self-evaluative reactions help individuals monitor and regulate behavior in alignment with personal standards. People tend to gravitate towards behaviors that fulfill self-worth and avoid behaviors that cause self-dissatisfaction.

Goal setting is important in the regulation of health behavior.[3] Short-term goals that are attained help increase self-efficacy, while long-term goals are a catalyst for personal change. It is important the goals are based on values, as they will provide more incentive for an individual to achieve the goals and arrive at self-fulfillment.

It is clear that goal setting alone does not cause behavior change. An important component of social cognitive theory is the facilitators and impediments that influence health habits.[3] Perceived obstacles and facilitators influence self-efficacy. Self-efficacy is not just one's belief in their ability to perform a behavior, but to perform it in the face of barriers. While many health campaigns aim to spread awareness and information about risky behaviors, change does not occur as a result of exposure to the information alone,[16]

and social cognitive theory recognizes that. Judgments, decisions, and behaviors often are a function of self-identity, [40] and self-knowledge, which is the awareness of one's own thoughts and behaviors, is influential in the regulation of behavior. [15] Views of the self are important in health outcomes, [18] and self-identity may be a useful tool in creating healthy eating interventions. Additionally, self-efficacy is a component of all three behavior change models reviewed, and it has been positively correlated with both motivation and performance. [41]

Beyond traditionally used theories of behavior change, there are new theories that may provide additional value in promoting change. For example, creating shift in self-identity may facilitate change. [16,17] Additionally, self-efficacy may be used to predict future health behaviors. [42]

Self-Efficacy

As described earlier within social cognitive theory, 'self-efficacy' is a ubiquitous term in the field of health psychology. Self-efficacy theory concerns the beliefs that individuals hold regarding personal control in executing particular behaviors. [43] Self-efficacy beliefs are assessments of how an individual can perform behaviors and accomplish goals under certain conditions. When people consider setting goals, they also think about the behaviors and strategies required in meeting that goal; self-efficacy is the extent to which they believe they can perform those behaviors and strategies. Self-efficacy beliefs are developed over a lifetime, and are shaped from various life experiences, including performance experience, vicarious experience, imaginal experience, verbal persuasion, and emotional and physiological states.

Performance experience is the most important factor in developing self-efficacy beliefs.[43] Performance experiences come from past attempts at executing a particular task. When an individual succeeds, self-efficacy strengthens. It is important that the individual feels like his or her own efforts, and not external factors, led to success for self-efficacy to become higher. Failure in performing the task leads to lower self-efficacy beliefs.

While performance experience is the most powerful contributor to self-efficacy beliefs, vicarious experiences also influence beliefs.[43] Vicarious experience includes observing others' behavior and what consequences result from that behavior. If the observed individual (the model) is similar to the observer, the observer can then use the observations to form expectations about their own behavior.

Imagery can help an individual to picture succeeding or failing in a hypothetical situation; both performance and vicarious experiences can facilitate imagery.[43] This imaginal experience in turn influences self-efficacy beliefs; although, imagining succeeding is not as effective as actually experiencing success. Also less effective than performance experiences is verbal persuasion. Verbal persuasion is another's statement about an individual's ability and likelihood of success. In order for verbal persuasion to increase self-efficacy, the source of persuasion should be trusted, viewed as an expert, or be a model.

Finally, physiological and affective states can influence self-efficacy.[43] Failure is typically associated with negative emotions and success with positive emotions, so when an individual feels negative emotions, they are likely to have decreased self-efficacy in a given situation. Conversely, when an individual experiences a positive state, they can

focus on the activity and improve self-efficacy. For example, if an individual giving a presentation experiences anxiety, a rapid heartbeat and sweating, self-efficacy for giving the presentation is expected to decrease. Another example of physiological triggers includes experiencing fatigue or pain during exercise, possibly decreasing self-efficacy for performing physical activity.

Self-efficacy influences perception of confidence. [43] When individuals with high self-efficacy in a particular area succeed in that domain, they attribute it to their abilities, and self-efficacy increases. Similarly, when an individual with a particular self-identity acts in a way that is concordant with that identity, self-efficacy is maintained or enhanced. [44] However, when people with low self-efficacy in that same domain succeed, they are more likely to attribute their success to external factors. Similarly, when people with high self-efficacy fail, they attribute failure to a lack of effort, while those with low self-efficacy relate failure to lack of ability. Meta-analyses show that self-efficacy beliefs significantly contribute to motivation and performance in various domains, such as academic achievement, health behaviors, and athletic performance. [41]

According to the SCT, self-efficacy helps to contribute to performance through its role in self-regulation. [43,45] Self-regulation is the way in which people control feelings, thoughts, and behaviors. Self-efficacy beliefs can enable movement through a self-regulatory cycle to reach goals. The self-regulatory cycle includes initiating behaviors and overcoming barriers to sustain behavior change. Self-efficacy beliefs may be phase-specific within the cycle; while an individual may feel confident in his ability to begin a healthy eating plan, he may not believe that he can sustain behaviors over a period of time. Therefore, self-efficacy is different in its functionality and applicability at each

stage of the cycle. Action self-efficacy is the belief that one can take action to change, while coping self-efficacy is the optimistic belief that one can handle and overcome barriers. [46]

Because discrepancies are created during goal setting, between where the individual is currently and where they would like to be, self-regulation is important in utilizing resources and skills to attain goals. [43] Striving to attain goals requires self-control of thoughts, emotions, and actions. Self-regulation involves four stages of goal setting and attaining. First, the setting of the goal occurs, followed by goal-directed behaviors. After action is taken, people self-evaluate and finally, develop self-efficacy beliefs based on behaviors. Self-efficacy influences what types of goals people choose to set; those with higher self-efficacy will typically set more difficult goals. Self-efficacy also determines which strategies are employed to meet goals. It is indicated that self-regulation is a limited resource that can be exhausted, especially during difficult decisions. However, making decisions with high confidence is less straining than making decisions with low confidence; those with higher self-efficacy may be less susceptible to depletion of self-regulation. Self-regulation is the underlying link between intention and behavior in schematics, [15,44,45] so it is important to understand how to strengthen and preserve this resource.

Self-efficacy is important in health behavior change, as it helps influence implementation and maintenance of healthy behaviors. [43] Self-efficacy and other related constructs (e.g., perceived behavioral control) are included as a component in many health behavior theories (e.g., TTM, SCT, self-efficacy theory, theory of planned behavior), and it is positively associated with healthy eating patterns. [45] Self-efficacy

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works by increasing self-regulation, which in turn influences how well people set goals and plan and monitor what they choose to eat. Self-regulatory behavior is associated with healthier eating, namely increased fiber, fruit, and vegetable intake, and lowered fat intake. In order to set nutrition related goals and use strategies to achieve those goals, one must have high self-efficacy. [46]

Self-efficacy is perhaps the most well established social cognitive predictor of constant healthy eating, and SCT holds that it is the most important determinant of diet behavior. [45] This may be because those with higher self-efficacy and positive outcome expectancies are more likely to implement strategies that enable them to begin and maintain more optimal nutrition patterns. For example, one study found that self-efficacy was significantly and positively correlated with implementation of diet strategies, especially portion control. [42] Additionally, higher self-efficacy helps create more positive and fewer negative expectations about healthy eating. [45] Self-efficacy both predicts future health behaviors and is influenced by past behavioral performance. [42] It is also an indicator for behavior change over time. It has been found that self-efficacy predicts behavioral intention to engage in better nutrition behaviors. [46]

Typically, those who hold a particular self-identity also have a higher self-efficacy in that domain. [44,47] Both the Identity Theory and Self-Efficacy Theory assume that individuals set goals, engage in behaviors to meet those goals, and actively reflect upon behaviors. [14] Together, social cognitions such as self-efficacy and health identities are helpful in predicting health behaviors. [42]

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Self-Identity

Self-identity, or self-schema, is a cognitive organization and summary of one's behavior. [40] Based on past experience, a self-schema helps direct the processing of all self-related information. Self-identity influences how an individual attends to and organizes incoming self-relevant information. In other words, self-identity describes how an individual views and classifies him or herself, and what behaviors the individual partakes in based on the self-view. [9] Schemas describe how a person thinks, feels, and experiences the self. [18] Self-schemas can be related to any part of a person, including personality characteristics, social roles, special interests or skills, or physical attributes. [18] There are two components to self-identity: self-description in a specific domain, and the importance of that domain. [40] For example, a healthy eater schematic would be someone who both views healthy eating to be self-descriptive and believes that healthy eating is important to his or her self-image.

Individuals are motivated to participate in behaviors that align with a particular identity. [44] Research suggests that those who view themselves as exercisers or healthy eaters actually exercise and eat healthfully more often than non-schematics. [11-14] University students who indicated that healthy eating was self-descriptive and important to his or her self-identity had stronger intentions to consume fruits and vegetables and actually consumed more fruits and vegetables. [15] In another study, healthy eater self-schematics consumed less fat and more fiber than students without the self-schema. [10] Healthy eater schematics also tend to think less negatively about food and believe that setbacks in healthy eating behaviors are temporary and can be overcome. [48] Targeting an individual's belief about him or herself in relation to eating is more effective than

instructive interventions alone. [16] It is indicated that there is no evident relationship between self-schema and nutrition knowledge. [13] This finding further demonstrates the need for the development of health behavior interventions providing more than just education.

In order to use self-identity to structure healthy eating interventions, it is important to understand why schematics participate in behaviors related to their identities. One proposed process is that people will typically pay more attention to and recall more efficiently information that is in alignment with a particular identity versus non-schema related information. [10,40] Another proposed reason is that schematics may have stronger intentions to perform schema-related behaviors. [10] Healthy eater schematics exhibit stronger intentions to eat healthfully than do non-schematics. [49] Similarly, having an exercise self-schema is related to intention to exercise. [50] However, intention alone does not result in behavior, and often, there is inconsistency between intention and behaviors. [10] In fact, intentions usually only explain 40% of the variance in behavior. [10]

However, the link between intention and behavior may be self-identity. There is a strong relationship between intention to perform a particular behavior, actually engaging in that behavior, and being a schematic. [15] Female college students with a dieter self-schema displayed stronger correlations between intention and behavior than non-schematics. [11] It may be that there is such a strong link between intention, behavior, and self-schema because schematics take part in schema-relevant intentions and behaviors to verify self-image [18,51] and to avoid cognitive dissonance. [52]

The self-verification theory holds that people crave stability, and that coherence between self-view and behavior provides a way to define existence, guide social

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interaction, and predict future experiences.[51] Cognitive dissonance describes the negative

feeling that occurs when simultaneous cognitions do not align.[53] It is assumed that when

dissonance occurs, the individual will take action to reduce it. For example, those who

consider themselves exercisers should feel negatively about not exercising for a period of

time, and should want to return to exercising to realign with their self-identity.[54] When

behavior is perceived as being in alignment with identity, more positive feelings occur

than when behavior is not consistent with identity.[44,55] The Identity Theory states that

these responses, both positive and negative, may motivate individuals to sustain identity-

consistent behaviors in the future.[56] Because of the strong desire to affirm self-

description and avoid negative feelings that occur with cognitive dissonance, highlighting

any inconsistencies between self-schema and actual behavior may be a beneficial method

to help with behavior change.[15]

An individual may have multiple self-schemas;[9] for example, a woman may view

herself as a mother, an artist, and a charitable person. While the categorizations are

seemingly unrelated, they are all self-definitions that the woman identifies with. Because

self-identity is multi-faceted, the term 'salience' refers to how important a particular

identity is.[54] It is not only important to know that someone identifies himself or herself as

a healthy eater, but that it is one of the most important identities to the individual.

Additionally, self-schemas constantly change over time.[57] An individual can have

memories of past and current, identities, as well as images of future identities.[18] It is

suggested that possible selves are even more important than current self-schemas,

because they serve as motivation for goal-directed behavior.[9,18] When there is discord

between a current self-view and the desired self, behavior may change to achieve the possible self. [17,18] Therefore, identity shift is a key concept in behavior change. [16,17]

Because people strive for self-verification by conforming behaviors to self-identity, and not the other way around, [51] it is crucial that effective behavior change interventions acknowledge self-identity and elicit appropriate identity shifts. [13,16] Major life experiences that precede re-evaluation of life values and goals can cause commitment to new behaviors. As relationships, roles, and responsibilities change, people also tend to change values associated with eating behaviors and patterns. [57] Adjustment of identities can happen throughout life. For example, Bisogni et al. describe one woman whose eating patterns changed towards more healthful eating when she had children, but reverted back to inconsistent meals when the children left the house. [57] It has been found that changes in health behavior lasting for six months or longer were as a result of reassessment of standards and self. [17] Interestingly, it is not necessarily awareness of the health behavior that causes change, but ideas of the self. An example is an instance of an individual feeling out of control of her life, which led to a redefinition of self and as a result, health behavior change. [17] Self-concept can determine the ease and success with which an individual makes change; difficulty changing may be a result of acting in accordance with previously established self-constructs. [9] If a behavior change intervention can cause an individual to evaluate a possible self, motivation may enable the individual to make a successful change.

Kendzierski has outlined steps to take when using self-identity in healthy eating interventions. [10] She suggests reinforcing a healthy eater schematic's self-view by giving suggestions to maintain healthy eating. Because non-schematics are less attentive to

information in a particular schema they do not identify with, Kendzierski suggests providing information slowly and not focusing on smaller, unnecessary details. It has been found that habit is a moderator between intention and behavior in non-schematics (as opposed to internal self-regulation in schematics) [15], and Kendzierski recommends that when counseling individuals who lack a healthy eater self-schema, it is important to implement routines. [10] As Allom and Mullan suggested, pointing out that an individual has chosen to act in a way that is incongruent with his or her self-definition may prompt the individual to take steps to realign with his or her schema.

Self-verification of identity can enhance self-efficacy of relevant behaviors. [44,55] Self-efficacy indicates the confidence the individual has in his or her own ability to actually perform the behavior in question. [14] Those who have strong identities typically also have high self-efficacy in identity-relevant domains. [44] A healthy eater self-schema can be used to predict the manifestation of healthy eating behaviors in an individual's actions, [11-14,58] and strong self-efficacy can help facilitate this through the increased likelihood of goal setting, persistence, and reaction reactions to lapses in behavior. [43]

Existing research has not studied healthy eater self-identity and self-efficacy in the context of morality. However, ethical self-identity has been shown to predict both attitudes and intentions to purchase organic produce. [59] Also, Makiniemi et al. suggest that the moral foundation purity/sanctity is associated with food, and that naturalness of food is a motivator of food choice. [19] It may be that ethics and self-identity affect each other and then have an effect on behaviors related to that identity.

Moral Foundations Theory

The Moral Foundations Theory was developed by Jonathan Haidt and colleagues as an attempt to argue that morality is neither innate (nativist approach to morality) nor learned (empiricist approach to morality), but both. [20,21] The nativist approach to morality states that comprehension of fairness, harm, and respect for authority is innate in the human mind. [21] The empiricist approach holds that moral knowledge, beliefs, and action are learned throughout childhood. Haidt and Joseph suggest that humans possess intuitive ethics, or moral intuitions. Moral intuitions are feelings of approval or disapproval that arise in response to an action someone performs. Though much of human social cognition occurs automatically, or intuitively, we are also able to consciously rationalize through thoughts and decisions. The Moral Foundations Theory proposes that people universally experience common moral intuitions, and culture then shapes to what extent the members of a certain group value or honor specific moral foundations.

According to Haidt and Joseph, all human cultures experience a common reaction to witnessing the suffering of others. [21] We also experience morally intuitive reactions when we observe others cheating or being disrespectful. The authors describe third-party concern as being a basis of human morality; people can become angry with people who engage in morally reprehensible behavior, even if they are not directly affected.

Having a reaction in response to observing suffering and pain, especially among youth, is one of the most fundamental moral values in human nature. Morality has been viewed as primarily protecting individuals. [60] Most morality research has narrowed the moral domain to issues of harm, care, fairness, and justice. [61] However, Haidt and colleagues have found that most cultures have values that encompass more than just

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protecting others and posit that morality extends past these views typically associated with political liberals. [20,60,61] The five moral foundations included in the theory are harm/care, fairness/reciprocity, ingroup/loyalty, authority/respect, and purity/sanctity.

Harm/care is thought to have evolved from the maternal intuition to be sensitive to the pain and distress of children. [20,21,61] It has since extended beyond the mother-child relationship and is related to the ability to empathize with and feel compassion for others. When television commercials show starving children or suffering animals, a moral reaction, namely compassion, is triggered. Kindness and compassion are two virtues associated with the moral domain harm/care. [21] Cruelty and aggression are corresponding characteristics that are associated with harm/care, labeled vices. [20] The value that is placed on these virtues and vices varies by culture. Individuals who place great value on harm/care tend to revere those who stop or alleviate harm.

In addition to harm and care, fairness and justice have typically made up the majority of morality research. [21,61] Haidt and colleagues describe the moral foundation fairness/reciprocity as evolving from humankind's history of collaboration in order to survive. Humans recognized the benefits of cooperating with others, for example, sharing food. [21] People feel bad when they cheat and are angered when they are cheated. Anger, guilt, and gratitude are emotions under this domain. Together, harm/care and fairness/reciprocity motivate the ethic of autonomy. [20]

Due to the history of living in family groups, humans evolved to have the ability to trust, recognize, and cooperate with members of their own groups and to be wary of other groups. [20] This underlies the moral foundation ingroup/loyalty. Sacrifice for the greater

good is valued, while betrayal is looked down upon. Cultures have constructed the virtues loyalty, patriotism, and heroism based on the foundation ingroup/loyalty.

Humans have historically lived in hierarchies where roles and expectations are clearly defined.[20] The moral foundation authority/respect arose from the ability of humans to live in hierarchical communities. Authorities are respected, honored, admired, and awed. Cultures have developed virtues of good leadership, wisdom, and altruism. Additionally, people are expected to be obedient, deferent, and loyal to authority.[21] Authority/respect and ingroup/loyalty underlie the ethic of community.[20] The ethic of community includes obedience, duty, and cohesiveness of groups.[60]

As human beings transitioned to a meat-based diet, disgust evolved as a way to distinguish contaminated food from food that was safe.[20] Disgust is historically related to that which causes disease, but it has evolved to become a social sentiment. For example, some view obesity as being disgusting, though it is not a direct threat to others. Disgust is connected to the moral foundation purity/sanctity. Virtues related to purity and sanctity are the basis for religious law. Those who are pious and chaste are viewed as being pure. However, those who succumb to greed, lust, gluttony, and anger are frequently viewed as impure. Purity/sanctity is more highly valued in non-Westernized cultures in which issues related to food, sex, clothing, prayer, and gender are treated as moral issues.[60] This moral foundation is the foundation for the ethic of divinity.[20] The ethic of divinity includes virtues of purity, sanctity, and the suppression of carnal instincts.[60]

Differences in values between conservatives and liberals have been observed; American political conservatives tend to value kindness, respect for authority, fairness, and spiritual purity, while American liberals have values rooted in preventing suffering

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and in equality, rights, and fairness. [21] Liberals view virtues of hierarchy to be related to oppression, and purity to be related to exclusion of groups as seen in racism. Haidt and colleagues suggest that the difference in values between political parties is partly what drives the culture war in the United States. [20] Liberals rated harm/care and fairness/reciprocity as being more pertinent to their moral judgment, while conservatives rated ingroup/loyalty, authority/respect, and purity/sanctity as more relevant to moral judgment than liberals. While harm/care makes up half of a liberal's moral world, the foundation only makes up one fifth of a conservative's moral views.

Personal values and self-views are naturally influenced by moral constructs. If values can cause a shift in identity that leads to lasting behavior change, it seems that individuals who are conscious of their moral constructs may be more aware of incongruences in personal goals and current behaviors. Because different groups of people have differing values, it may be prudent to target eating interventions towards political persuasion or the specific moral foundation most valued.

Moral Eating

When sustained health behavior change in young African-American women was examined, one woman stated, "When I was about 16 or 17, I think that I started realizing that my body is a temple of God and that I shouldn't put unnecessary things into my body because if I do, I will be harming my body." [62] This statement falls into the moral construct purity/sanctity. Those who highly value purity/sanctity believe that allowing the soul to reign over the body is right, and that giving into pleasure simply because it feels good, but may be gluttonous or greedy, is immoral. [20] Similar results have been found

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related to smoking cessation. [63] In one study, a participant stated, "Here was this huge ashtray. And it is overflowing with cigarettes. But it just made me sick to look at that…I said how sickening this whole smoking thing was. I realized that's a change in the way I looked at it…" In this instance, disgust is a key emotion that caused an identity shift and behavior change. Disgust motivates maintenance of purity in actions related to the body. [20] Again, the construct purity/sanctity may have the potential to cause correction of cognitive dissonance.

Vegetarians and vegans often attach morals to their eating; meat and animal products may be viewed as impure and disgusting. Purity/sanctity evolved from being protective against microbes to a set of rules regarding both hygiene and diet. [21] Many religions, including Judaism, Hinduism, and Islam have dietary restrictions to keep the body pure. Additionally, it has been suggested that purity/sanctity and food should be related, since a factor in food choice is naturalness of food. [19]

Self-identity and moral foundations may work together to drive healthy eating by affecting beliefs on the morality of food consumption and self-efficacy to eat in alignment with those beliefs (Figure 3).

Figure 3.

Relationship Between Moral Foundations, Self-Identity, Self-Efficacy, and Eating Behavior
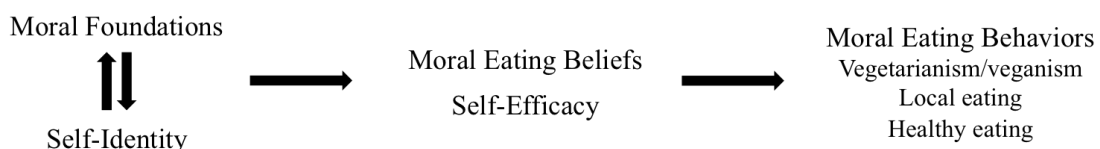
Because the moral foundation purity/sanctity lends itself so well to eating, it will be the primary construct used in this study. Because individuals who view themselves as healthy eaters should actually eat more healthfully than those who do not view themselves as being healthy eaters, [12,14,49,54] it is of great interest to examine whether there is a relationship between healthy eater identity and subjects who place high value on purity/sanctity. As self-efficacy may be the link between intention and behavior, the relationship between purity/sanctity and self-efficacy will also be tested.

Primary Hypotheses

1. Participants who have a stronger sense of purity/sanctity will be more likely to have a healthy eater self-identity than those who score lower on purity/sanctity.
2. As rating of purity/sanctity value increases, self-efficacy of eating fruits and vegetables will also increase.

Chapter 3

METHODS

Qualitative Research

 Subjects & Study Design. Fourteen college students aged 18 and above were

recruited to participate in a semi-structured interview through flyer distribution at the

Memorial Union on Arizona State University's Tempe campus and Taylor Place on

Arizona State University's downtown Phoenix campus. After providing written informed

consent (Appendix A), subjects were asked a series of questions (Appendix B) regarding

their views on morality and sustainability. Participants were compensated with a five-

dollar gift card to Starbucks.

 Exclusion criteria for subjects included individuals who were not students at

Arizona State University and those who were not 18 years of age or above. The goal of

this phase was to explore issues related to and perceptions of morality and eating to

ensure our final survey design would capture both constructs of value from previous

theory and ideas based on our own semi-structured interviews.

Survey Research

 Subjects & Study Design. Following the semi-structured interviews, responses were

compiled. Based on common beliefs and views of the subjects, an online survey was

created and composed of various existing questionnaires measuring life values, moral

foundations, local food consumption, religiosity, political views, fast food consumption,

food frequency, healthy eater self-schemas, and self-efficacy related to healthy eating

(Appendix C). Subjects were recruited through college department listservs at both

Arizona State University and Brigham Young University and postings on social networking websites, such as Facebook. Participants provided informed consent electronically and proceeded with an approximate 30-minute survey, hosted by the website SurveyMonkey (SurveyMonkey.com). By completing the survey, subjects were entered in a raffle to win $100. This study was approved by the Arizona State University Institutional Review Board.

Exclusion criteria for subjects will include individuals who are not 18 years of age or above.

Statistical Analysis

Statistical analyses were run using the Statistical Package for the Social Sciences (SPSS) Version 19. Primary analyses included a student's t-test comparing the moral foundation purity/sanctity between healthy eater schematics and non-schematics, and a Pearson's correlation relating self-efficacy for eating fruits and vegetables and moral foundations. Multiple regression was then run for purity/sanctity and fruit and vegetable self-efficacy after controlling for gender, age, major, race, and political persuasion.

Additional analyses were conducted to explore further relationships between moral foundations, self-identity, and self-efficacy. Student's t-test comparing self-identity and the moral foundations harm/care, authority/respect, ingroup/loyalty, and fairness/reciprocity were conducted. Logistic regression was then run for each moral foundation to explore these relationships after controlling for gender, age, major, race, and political persuasion. Multiple regression was also conducted for each moral foundation to determine their association with fruit and vegetable self-efficacy.

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Differences were considered significant at $\alpha = 0.05$, as this is standard convention. Using the power analysis software G*Power [64] with $f^2 = 0.07$ (a small effect size in line with associations found between self-identity and self-efficacy [14]) and $\beta = 0.8$, it was determined that the sample size should be a minimum of 141 to detect the proposed effects.

Chapter 4

RESULTS

Sample Characteristics

Of 742 surveyed, 542 participants completed the relevant measures and were above the age of 18. The majority of the sample was female (n = 391) and non-Hispanic White (n = 398) (Table 1). The mean age of participants was 25.27 ± 8.61. The mean body mass index (BMI) of the entire sample was 24.07 ± 4.63 kg/m^2. The majority of the sample was students (75.6%), and 70.5% of the sample was single.

The major religious views of the sample included Mormon (28.4%), Nondenominational Christian (19.9%), and Catholic (14.6%). 172 participants (31.7%) classified themselves as being "deeply religious."

Political views were measured using the terms: very liberal, liberal, slightly liberal, moderate, slightly conservative, conservative, very conservative, and libertarian. When combining all self-classified liberals, they comprised 29.6% of the sample, while conservatives comprised 35.2% of the sample. Participants in the middle of the political spectrum, at "moderate," accounted for 14.9% of the sample, whereas libertarians accounted for 3.5% of the sample.

Of the students in the sample, the majority indicated nutrition as their plan of study (n = 136). Together, nutrition, exercise, health and medical majors made up 48.9% of the student sample.

Table 1. Total Sample Characteristics

Characteristic	n = 542
Gender, *n (%)*	
Male	147 (27.1)
Female	391 (72.1)
Age, *M (SD)* [a]	25.27 (8.6)
BMI, *M (SD)*	24.07 (4.6)
Race/Ethnicity, *n (%)*	
Non-Hispanic White	398 (73.4)
Non-Hispanic Black	12 (2.2)
Hispanic	75 (13.8)
Non-Hispanic Asian	57 (10.6)
Religion, *n (%)*	
Mormon	154 (28.4)
Nondenominational Christian	93 (17.2)
Catholic	66 (12.2)
No particular beliefs	53 (9.8)
Other[b]	176 (32.4)
Religiosity, *n (%)*	
Not at all religious	122 (22.5)
Only slightly religious	120 (22.1)
Fairly religious	117 (21.6)
Deeply religious	172 (31.7)
Political Views, *n (%)*	
Very liberal	27 (5)
Liberal	87 (16.1)
Slightly liberal	46 (8.5)
Moderate	81 (14.9)
Slightly conservative	75 (13.8)
Conservative	96 (17.7)
Very conservative	20 (3.7)
Libertarian	19 (3.5)
Student Status, *n (%)*	
Student	410 (75.6)
Non-student	130 (24.0)
Major, *n (%)*	
All health/medical[c]	265 (48.9)
Nutrition	136 (25.1)

STEM	82 (15.1)
Other	59 (10.8)
Healthy Eater Schematic, *n (%)*	
Yes	232 (42.8)
No	310 (57.2)
Fruit and vegetable self-efficacy, *M (SD)*	39.96 (8.8)

a Age in years

b Includes agnostic, atheist, Buddhist, Greek Orthodox, Hindu, Humanist, Jewish, Jehovah's Witness, Muslim, Orthodox - other, Pagan, Protestant, Traditional Navajo, and Unitarian Universalist

c Includes nutrition, exercise and wellness, nursing, medical degree, pre-medical, and other health sciences

Primary Hypotheses Analyses

Healthy Eater Schematics

Of the entire sample, 42.8% were classified as healthy eater schematics, and 57.2% were non-schematics. As shown in Table 2, 81.4% of healthy eater schematics were female. Females made up 66.1% of non-schematics. Healthy eater schematics consisted of 139 (59.9%) health and medical majors. Of these, 86 were nutrition majors. Non-schematics included 126 (40.6%) health and medical majors, 50 of which were nutrition majors. Differences in plan of study between healthy eater schematics and non-schematics were significant ($p < .001$). The religious make-up of healthy eater schematics and non-schematics resembled the entire sample, with the majority coming from Mormon, nondenominational Christian, and Catholic. There was no difference in religion between groups ($p = .785$). Political beliefs also did not differ between groups ($p = .352$).

Healthy eater schematics scored significantly higher on the fruit and vegetable self-efficacy measure than non-schematics ($p < .001$). Mean BMI of healthy eater schematics was 22.87 ± 3.08, while non-schematics averaged 25.01 ± 5.38. This difference in BMI

was significant ($p < .001$).

Table 2. Healthy Eater Schematic and Non-Schematic Characteristics

	HES (n = 232)	NS (n = 310)	*p*
Gender, *n (%)*			0.000
Male	43 (18.6)	104 (33.9)	
Female	188 (81.4)	203 (66.1)	
Age, *M (SD)* [a]	25.47 (9.08)	25.12 (8.24)	0.635
BMI, *M (SD)*	22.87 (3.08)	25.01 (5.38)	0.000
Major, *n (%)*			0.000
All health/medical[b]	139 (59.9)	126 (40.6)	
Nutrition	86 (37.1)	50 (16.1)	
STEM	19 (8.2)	63 (20.3)	
Other	25 (10.8)	34 (11.0)	
Religion, *n (%)*			0.785
Mormon	65 (28.0)	89 (28.7)	
Nondenominational Christian	46 (19.8)	47 (15.2)	
Catholic	28 (12.1)	38 (12.3)	
No particular beliefs	26 (11.2)	27 (8.7)	
Political Beliefs, *n (%)*			0.352
Very liberal	8 (4.3)	19 (7.7)	
Liberal	34 (18.5)	53 (21.4)	
Slightly liberal	23 (12.5)	23 (9.3)	
Moderate	36 (19.6)	45 (18.1)	
Slightly conservative	35 (19.0)	4 (16.1)	
Conservative	43 (23.4)	53 (21.4)	
Very conservative	5 (2.7)	15 (6.0)	
Fruit and vegetable self-efficacy, *M (SD)*	44.01 (6.49)	36.93 (9.04)	0.000

HES - Healthy Eater Schematic; NS - Non-Schematic
a Age in years
b Includes nutrition, exercise and wellness, nursing, medical degree, pre-medical, and other health sciences

Scores for purity/sanctity did not differ significantly between healthy eater schematics and non-schematics; thus, Hypothesis 1 was not supported (Table 3.)

Table 3. Mean Purity/Sanctity Score for Healthy Eater Schematics and Non-Schematics

Moral Foundation	HES (n = 232)		NS (n = 310)		Mean Difference	t	p	Levene's Test for Equality of Variances
	M	SD	M	SD				p
Purity/Sanctity	3.95	1.10	3.78	1.20	0.167	-1.66	0.098	0.263

HES - Healthy Eater Schematic; NS - Non-Schematic

Note: Independent samples t-test

Fruit and Vegetable Self-Efficacy

The mean score of fruit and vegetable self-efficacy in the entire sample was 39.96 ± 8.8, out of a total possible score of 50. The mean fruit and vegetable self-efficacy score of nutrition majors was 43.02 ± 6.53, which was significantly higher than the overall mean of 39.96 ($p < .001$). Health/medical majors combined had a self-efficacy score of 41.93 ± 7.69, which was also significantly higher than the overall mean ($p < .001$).

A Pearson's correlation was run to determine the association between fruit and vegetable self-efficacy and the moral foundation purity/sanctity. As seen in Table 4, fruit and vegetable self-efficacy was significantly correlated with harm/care, ingroup/loyalty, authority/respect, and purity/sanctity; however, these correlations were extremely weak.

Hierarchical multiple regression was used to determine the degree to which the purity/sanctity construct was associated with self-efficacy scores, after controlling for gender, age, major, race, and political beliefs. Gender, age, race, and major were entered at Step 1, and explained 10.4% of the variance in self-efficacy. Block 2 consisted of the

moral foundation purity/sanctity, which contributed an additional 0.9% to the variance in

fruit and vegetable self-efficacy. Block 3 included political beliefs. As a whole, the model

explained 11.3% of the variance in self-efficacy; Block 3 did not contribute any

additional explanation of variance. Gender, age, major, and purity/sanctity made a

statistically significant contribution (Table 5).

Table 4. Correlation Between Self-Efficacy and Moral Foundations

Variable	FVSE
Harm/care	0.172*
Fairness/reciprocity	0.064
Ingroup/loyalty	0.171*
Authority/respect	0.176*
Purity/sanctity	0.147**

FVSE - Fruit and vegetable self-
efficacy
Note: All correlations are Pearson's r
values.
* $p < .001$; ** $p = .001$

Table 5. Association Between Purity/Sanctity and Fruit and Vegetable Self-Efficacy

	Adjusted R^2	B	p	Partial Correlation
Block 1	0.104			
Gender (Female)		0.23	0.000	0.227
Age		0.10	0.045	0.097
Major (Nutrition)		0.15	0.003	0.146
Race (White)		0.03	0.530	0.031
Block 2	0.113			
Purity/Sanctity		0.12	0.040	0.100
Block 3	0.113			
Political Beliefs[a]		-0.04	0.516	-0.032

a Political Beliefs are on a scale of 1 (very liberal) to 7
(very conservative)

Healthy Eater Schematics

Though schematics did not differ from non-schematics in ratings of purity/sanctity, healthy eater schematics had significantly higher scores on harm/care, fairness/reciprocity, ingroup/loyalty, and authority/respect (Table 6, Figure 4). Logistic regression analyses were conducted to test possible associations of a number of variables on the relationship between healthy-eater self-schema and moral foundations. Each of the four significant moral foundations was run in its own model, each consisting of three blocks. Block 1 included age, gender, major, and race. Block 2 consisted of the moral foundation variables: harm/care, fairness/reciprocity, ingroup/loyalty, and authority/respect, respectfully. Finally, the third block included political beliefs.

Table 6. Mean Moral Foundations Scores for Healthy Eater Schematics and Non-Schematics

Moral Foundation	HES (n = 232)		NS (n = 310)		Mean Difference	t	p	Levene's Test for Equality of Variances p
	M	SD	M	SD				
Harm/Care	4.81	0.733	4.49	0.808	0.316	-4.68	0.000	0.224
Fairness/Reciprocity	4.50	0.711	4.36	0.749	0.146	-2.29	0.022	0.678
Ingroup/Loyalty	4.04	0.802	3.86	0.831	0.181	-2.55	0.011	0.977
Authority/Respect	4.14	0.716	3.96	0.861	0.178	-2.63	0.011	0.050

HES - Healthy Eater Schematic; NS - Non-Schematic

Note: Independent samples t-test

Figure 4. Mean Moral Foundations Scores for Healthy Eater Schematics and Non-Schematics
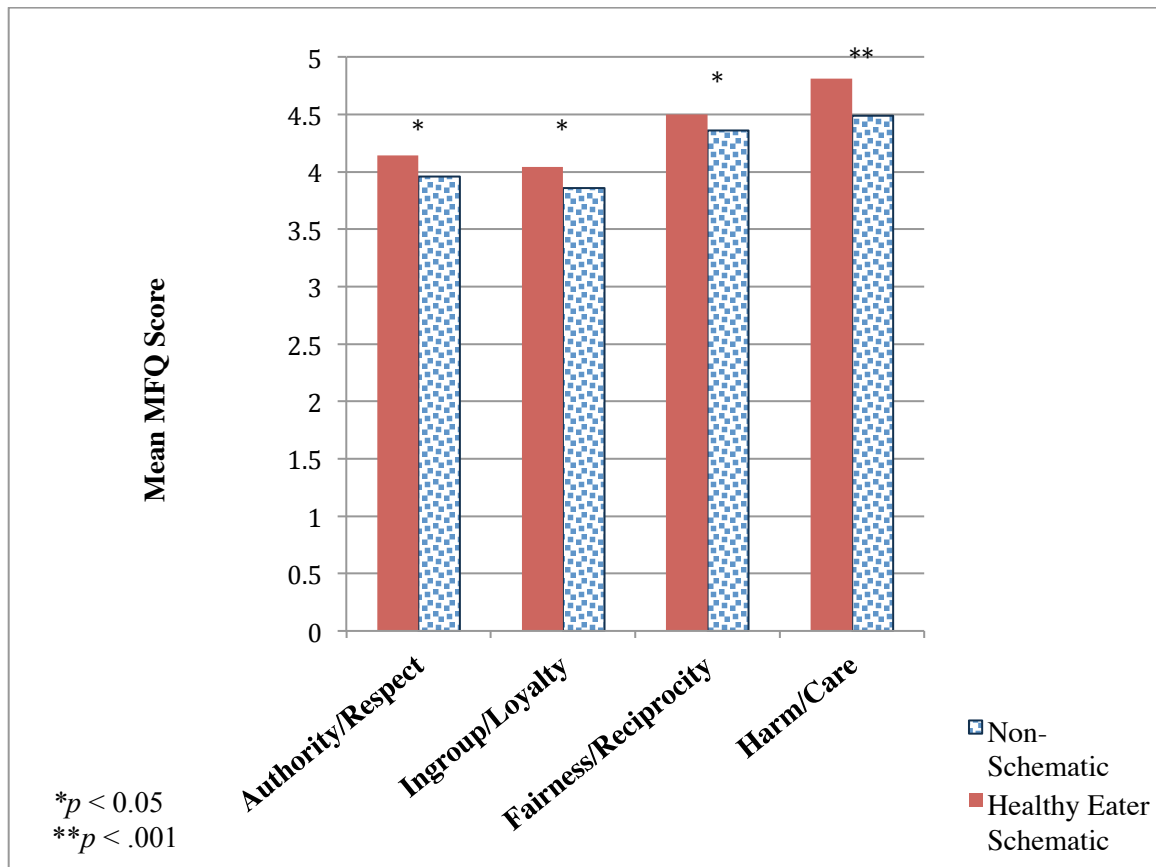
Harm/Care and Healthy Eater Self-Schema

In the regression model including harm/care, gender, major, and harm/care were significantly associated with healthy eater self-schema (Table 7). Major was most strongly associated with self-schema, with an odds ratio of 2.66 ($p < 0.001$). This indicates that nutrition majors were 2.66 times more likely to be healthy eater schematics than non-nutrition majors. Females were 1.66 times more likely to identify with healthy eating than males ($p < 0.048$). Harm/care had an odds ratio of 1.74 ($p < 0.001$). Age, race, and political beliefs did not explain any additional variance of healthy eater self-schema.

Table 7. Association Between Harm/Care and Healthy Eater Self-Schema

	B	*p*	Odds Ratio	95% C.I.	
				Lower	Upper
Block 1					
Age	0.02	0.129	1.02	0.99	1.05
Gender (Female)	0.50	0.048	1.66	1.01	2.73
Major (Nutrition)	0.98	0.000	2.66	1.64	4.31
Race (White)	0.07	0.788	1.07	0.65	1.76
Block 2					
Harm/Care	0.56	0.000	1.74	1.28	2.38
Block 3					
Political Beliefs[a]	0.02	0.751	1.02	0.90	1.16

a. Political Beliefs are on a scale of 1 (very liberal) to 7 (very conservative)
Note: Logistic regression

Ingroup/Loyalty and Healthy Eater Self-Schema

In the regression model including ingroup/loyalty, gender and major were also significantly associated with healthy eater self-schema (Table 8). Additionally, ingroup/loyalty was found to be significantly associated, after controlling for these factors. Major was again most strongly associated with self-schema and had an odds ratio of 2.69 ($p < 0.001$). Gender had an odds ratio of 1.98 ($p = 0.006$), indicating that in this model, females were more likely to be healthy eater schematics than males. Ingroup/loyalty had an odds ratio of 1.37 ($p = 0.027$). Age, race, and political beliefs were not significantly associated with healthy eater self-schema.

Authority/Respect and Healthy Eater Self-Schema

This regression model showed that gender and major were again significantly associated with schema (Table 9). Authority/respect was also significantly correlated

with schema, with an odds ratio of 1.48 (p = 0.009). Major had an odds ratio of 2.78 (p < 0.001). Gender had an odds ratio of 2.01 (p = 0.005). Age, race, and political beliefs did not contribute to healthy eater self-schema.

Table 8. Association Between Ingroup/Loyalty and Healthy Eater Self-Schema

	B	p	Odds Ratio	95% C.I.	
				Lower	Upper
Block 1					
Age	0.02	0.065	1.02	1.00	1.05
Gender (Female)	0.68	0.006	1.98	1.22	3.22
Major (Nutrition)	0.99	0.000	2.69	1.67	4.34
Race (White)	0.05	0.831	1.06	0.65	1.73
Block 2					
Ingroup/Loyalty	0.32	0.027	1.37	1.04	1.81
Block 3					
Political Beliefs[a]	-0.07	0.336	0.94	0.82	1.07

a. Political Beliefs are on a scale of 1 (very liberal) to 7 (very conservative)
Note: Logistic regression

Table 9. Association Between Authority/Respect and Healthy Eater Self-Schema

	B	p	Odds Ratio	95% C.I.	
				Lower	Upper
Block 1					
Age	0.02	0.082	1.02	1.00	1.05
Gender (Female)	0.70	0.005	2.01	1.23	3.27
Major (Nutrition)	1.02	0.000	2.78	1.73	4.47
Race (White)	0.06	0.802	1.07	0.65	1.75
Block 2					
Authority/Respect	0.39	0.009	1.48	1.10	1.99
Block 3					
Political Beliefs[a]	-0.10	0.177	0.91	0.79	1.04

a. Political Beliefs are on a scale of 1 (very liberal) to 7 (very conservative)
Note: Logistic regression

Fairness/Reciprocity and Healthy Eater Self-Schema

Table 10 shows that gender and major were again significantly associated with healthy eater self-schema. The odds ratios for major and gender were 2.72 ($p < 0.0001$) and 1.91 ($p = 0.009$), respectively. While fairness/reciprocity was not significantly associated with self-schema, there was a trend towards significance ($p = 0.064$). Age, race, and political beliefs were not significantly associated with healthy eater self-schema.

Table 10. Association Between Fairness/Reciprocity and Healthy Eater Self-Schema

	B	p	Odds Ratio	95% C.I.	
				Lower	Upper
Block 1					
Age	0.02	0.070	1.02	1.00	1.05
Gender (Female)	0.65	0.009	1.91	1.17	3.11
Major (Nutrition)	1.00	0.000	2.72	1.69	4.39
Race (White)	0.10	0.683	1.11	0.68	1.82
Block 2					
Fairness/Reciprocity	0.31	0.064	1.36	0.98	1.88
Block 3					
Political Beliefs[a]	0.02	0.789	1.02	0.90	1.16

a. Political Beliefs are on a scale of 1 (very liberal) to 7 (very conservative)
Note: Logistic regression

Fruit and Vegetable Self-Efficacy

All moral foundations except fairness/reciprocity were weakly correlated with fruit and vegetable self-efficacy. Purity/sanctity was also found to be significantly associated with self-efficacy and explained an additional 0.9% of the variance in self-efficacy ($p = 0.040$), after age, gender, major, and race. Harm/care, ingroup/loyalty, and

authority/respect were tested for correlation with self-efficacy in individual multiple regression models.

Harm/Care and Fruit and Vegetable Self-Efficacy

In the regression model including harm/care, gender and major were significantly associated with fruit and vegetable self-efficacy ($p < 0.001$; $p = 0.003$, respectively) (Table 11). Block 1, which included gender, age, major, and race explained 9.5% of the variance in self-efficacy. Harm/care was almost significantly correlated with fruit and vegetable self-efficacy ($p = 0.051$). Harm/care also explained an additional 1.5% of the variance in self-efficacy. Political beliefs were not correlated with self-efficacy ($p = 0.310$) and only explained an additional 0.3% of the variance in self-efficacy.

Ingroup/Loyalty and Fruit and Vegetable Self-Efficacy

A multiple regression was run to determine if ingroup/loyalty is significantly correlated with fruit and vegetable self-efficacy (Table 12). Block 1 of the model included gender, age, major, and race, and explained 9% of the variance in self-efficacy. Block 2 consisted of the moral foundation ingroup/loyalty, and explained an additional 2% of the variance. Block 3 included political beliefs. Gender, age, major, and ingroup/loyalty were significantly associated with self-efficacy. Neither race nor political beliefs were associated with self-efficacy ($p = 0.607$; $p = 0.765$, respectively).

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Table 11. Association Between Harm/Care and Fruit and Vegetable Self-Efficacy

	Adjusted R^2	B	p	Partial Correlation
Block 1	0.095			
Gender (Female)		0.22	0.000	0.211
Age		0.10	0.042	0.099
Major (Nutrition)		0.15	0.003	0.146
Race (White)		0.02	0.741	0.016
Block 2	0.110			
Harm/Care		0.10	0.051	0.095
Block 3	0.113			
Political Beliefs[a]		0.05	0.310	0.050

a Political Beliefs are on a scale of 1 (very liberal) to 7
(very conservative)

Table 12. Association Between Ingroup/Loyalty and Fruit and Vegetable Self-Efficacy

	Adjusted R^2	B	p	Partial Correlation
Block 1	0.09			
Gender (Female)		0.23	0.000	0.231
Age		0.10	0.030	0.106
Major (Nutrition)		0.15	0.003	0.145
Race (White)		0.03	0.607	0.025
Block 2	0.110			
Ingroup/Loyalty		0.14	0.006	0.133
Block 3	0.108			
Political Beliefs[a]		-0.02	0.765	-.015

a Political Beliefs are on a scale of 1 (very liberal) to 7
(very conservative)

Authority/Respect and Fruit and Vegetable Self-Efficacy

A multiple regression was run to determine an association between the moral

foundation authority/respect and fruit and vegetable self-efficacy (Table 13). Block 1 of

the model included gender, age, major, and race. Block 1 explained 9.5% of the variance

in fruit and vegetable self-efficacy, and gender, age, and major were all significantly

associated with self-efficacy. Authority/respect was run in block 2, and was a

significantly associated with self-efficacy ($p = 0.002$). Authority/respect explained an

additional 1.8% of the variance in self-efficacy. Finally, Block 3 included political

beliefs, which was not correlated with fruit and vegetable self-efficacy ($p = 0.420$).

Table 13. Association Between Authority/Respect and Fruit and Vegetable Self-Efficacy

	Adjusted R^2	B	p	Partial Correlation
Block 1	0.095			
Gender (Female)		0.23	0.000	0.229
Age		0.09	0.046	0.097
Major (Nutrition)		0.15	0.002	0.150
Race (White)		0.03	0.497	0.033
Block 2	0.113			
Authority/Respect		0.16	0.002	0.149
Block 3	0.112			
Political Beliefs[a]		-0.04	0.420	-0.039

a Political Beliefs are on a scale of 1 (very liberal) to 7
(very conservative)

Chapter 5

DISCUSSION

The purpose of this study was to determine how moral foundations differ between

healthy eater schematics and non-schematics, and how moral foundations correlate with

fruit and vegetable self-efficacy. It was hypothesized that the moral foundation

purity/sanctity would be associated with both healthy eater schematics and high fruit and

vegetable self-efficacy. The results of this study show that healthy eater schematics and

non-schematics do not differ in the moral foundation purity/sanctity.

Hypothesis 2 was that the moral foundation purity/sanctity would be positively

associated with fruit and vegetable self-efficacy. The results show that fruit and vegetable

self-efficacy was weakly significantly correlated with purity/sanctity.

While the results of the present study did not show that purity/sanctity was related

to healthy eater schematics, it was shown that healthy eater schematics and non-

schematics differ in harm/care, authority/respect, ingroup/loyalty, and

fairness/reciprocity. Hypothesis 1 was not supported, but the results gave grounds for

further exploration.

Major was consistently found to be associated with healthy eater self-schema.

Nutrition majors were more than twice as likely to be healthy eater schematics as other

majors in all four regression models, which was not surprising. Gender was also a

consistently correlated with healthy eater self-schema. Females were about twice as likely

to be healthy eater schematics.

Our results show that harm/care was also significantly correlated with healthy

eater self-schema. With an odds ratio of 1.74, it was indicated that as scores on the moral

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foundation harm/care increase, the likelihood of being a healthy eater schematic also increases by almost two times.

The moral foundation ingroup/loyalty was also significantly correlated with healthy eater self-schema. The odds ratio was 1.37, which is not as high as that for harm/care. Those who value ingroup/loyalty more highly are more likely to be healthy eater schematics; however, harm/care seems to be more highly correlated with schema status.

Authority/respect was also associated with healthy eater self-schema, with an odds ratio of 1.48. As scores for authority/respect increase, so does the likelihood of being a healthy eater schematic. Again, harm/care seems to be more strongly correlated with healthy eater schema. Race, political beliefs, and the moral foundation fairness/reciprocity were not associated with self-schema. The findings for political beliefs are contrary to what was expected, since it is well established that liberals and conservatives differ in moral foundations. [19,20,60] In addition to purity/sanctity, the moral foundations harm/care, ingroup/loyalty, and authority/respect were significantly associated with fruit and vegetable self-efficacy. Authority/respect was the most strongly related of these three foundations.

While Hypothesis 1 was not supported, it is interesting to note that Makiniemi et al. found a high prevalence of purity/sanctity in their data and suggest that it was because they studied the foundations in the context of food. [19] They state that food and purity/sanctity should be related, since naturalness of food is a motive behind food choice. The authors also found that Italians, who have higher religiousness than other countries that were studied, also scored higher on purity/sanctity. Since over half of the

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population of the present study rated themselves as fairly or deeply religious, it may be that there were no differences in purity/sanctity between healthy eater schematics and non-schematics because the majority of the population was similar in that value.

Political beliefs were associated with neither self-identity nor self-efficacy. However, it has been shown that political views may be associated with food purchasing practices, [65] so it is surprising that neither construct was associated with politics. Future studies are required to determine the reliability of this result before any conclusions can be drawn.

Chapter 6

CONCLUSIONS AND APPLICATIONS

To our knowledge, there have not been studies examining healthy eater self-identity and self-efficacy in the context of morality. It has been shown that ethical self-identity predicts both attitudes and intentions to purchase organic produce.[59] Additionally, vegetarian/vegan self-identity has been associated with purchasing of organic foods.[65] Based on evidence connecting self-identity shifts and behavior change, creating an identity shift based on moral foundations may promote healthy eating in a way that focuses on ethics as opposed to improving health knowledge.

The results of this study show that harm/care is associated with a healthy eater self-identity. This may be most evident in vegetarians and vegans. One view of vegetarianism is that, "If a being suffers, there can be no moral justification for refusing to take that suffering into consideration," and that "speciests" are in the same moral category as racists and sexists.[66] In this way, vegetarianism is viewed as morally right because causing pain is avoided, and because moral equality is considered. Our preliminary interviews revealed that college students tend to think of vegetarianism/veganism as being admirable. Vegetarians/vegans believe that eating in such a way is a more healthful diet, often converting to a plant-based eating pattern in order to enhance health and reduce the risk of disease.[67] Furthermore, extensive evidence shows that a plant-based diet has beneficial effects on a variety of health markers. A potential dietary intervention may be able to use harm/care and fairness/reciprocity as a way to shift views of a plant-based diet as being morally right. This may then cause a

shift in identity, followed by a change in dietary behavior. This proposition requires additional empirical exploration.

Ingroup/loyalty was associated with both healthy eater self-schema and self-efficacy. Ingroup/loyalty in terms of dietary practices may best be illustrated by local eating. Reasons for local eating include ethical arguments such as supporting "endangered" family farms, strengthening the local economy, and reducing environmental impact. [68] Strengthening the local economy follows the idea of ingroup/loyalty in that protecting the greater good of one's own group is valued. Additionally, it has been shown that eating locally is associated with meeting dietary recommendations. [69]Encouraging local eating in those who place a high value on ingroup/loyalty may prove more beneficial than those who do not. In fact, Singer makes an ethical argument against local eating, using a fairness/reciprocity argument. [68]He believes that considering others is important, no matter where they live. For example, is buying from a local San Francisco farmer who is likely wealthier than a Mexican farmer morally right? Singer argues that money should be distributed to those who need it most, regardless of location. In this case, promoting healthy eating, particularly from a perspective of fairness/equality or justice for which Singer is arguing from, would likely be most successful coming from a different angle than local eating. Ingroup/loyalty helps to provide an underlying moral process to understanding the arguments for local food consumption.

Authority/respect, which was associated with both self-identity and self-efficacy, is related to respect for tradition. One study found that participants conceptualized healthy eating in a cultural/traditional way. [70]One example of traditional healthy eating is

the unavailability of junk or convenience foods. For those who value authority/respect highly, an intervention based on eliminating processed or "quick" foods may be beneficial; however, for those who do not value the foundation highly, a healthy eating approach incorporating convenience foods may be prudent.

Purity/sanctity was a significantly associated with self-efficacy. Purity and disgust are highly related to food choice, including in vegetarians/vegans. Beardsworth and Keil found that vegetarians express disgust at dead animal flesh, and this is a reason for choosing to avoid it.[67] Eating may also be viewed as a way to keep the body pure, as a temple.[62] For those who value purity/sanctity highly, a dietary intervention focusing on nutrition as a way to keep the body pure and free of disgust may be effective.

Though the results of this study do not reveal political beliefs to be associated with self-identity or self-efficacy, Haidt and colleagues describe the differences in moral foundations between liberals and conservatives.[20,60,61] Liberals value harm/care and fairness/reciprocity most highly, while conservatives tend to value all five foundations more equally. Individualizing dietary interventions based on political values is a novel approach that may prove useful, especially in terms of valued moral foundations.

Recent books and documentaries have connected food choices, ethics, and politics, including Forks Over Knives,[71] Food, Inc,[72] Food Politics: How the Food Industry Shapes Nutrition and Health,[73] and The Omnivore's Dilemma: A Natural History of Four Meals.[74] Indeed, books like these were used as a part of an intervention to promote healthful eating via discussing the broader ethical and sociocultural implications of food choice.[75] Taken collectively, the increasing prevalence of discussions related to ethics of food choice, previous research suggesting focusing on those issues may impact food

choice among college students, and our own results from this study suggesting links

between moral foundations and healthy eater self-identity and self-efficacy collectively

point to the potential promise for continuing to explore individualizing dietary behavior

change approaches based on ethical values.

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APPENDIX A

CONSENT FORM

CONSENT FORM
FOOD AND MORALITY STUDY - Development

INTRODUCTION
The purposes of this form are to provide you (as a prospective research study participant) information that may affect your decision as to whether or not to participate in this research and to record the consent of those who agree to be involved in the study.

RESEARCHERS
Dr. Eric Hekler, Assistant Professor in the School of Nutrition and Health Promotion, and his colleagues (i.e., Punam Ohri-Vachaspathi, Christopher Wharton, Gary Sherman, Sarah Kiser, Sarah Martinelli, and LeeAnn Springer) have invited your participation in a research study.

STUDY PURPOSE
The purpose of the research is to explore how morality and food are related.

DESCRIPTION OF RESEARCH STUDY
If you decide to participate, then you will join a study involving research of current eating behaviors and actions along with your beliefs about food, food production and eating. As part of this process you will have the opportunity to participate in several tasks including being interviewed one-on-one by trained research personnel, allowing research personnel to join you for a meal to discuss eating and to observe your food preparation and eating habits, participate in focus groups (i.e., several individuals are brought together to discuss a given topic such as healthful eating), provide feedback about preliminary concepts and prototypes of the potential intervention applications. As a participant, you will have the right to drop out of the study at any time or to skip questions asked of you during any of the above tasks.

If you say YES, then your participation will last for a minimum of 1 hour and up to 8 hours depending on your level of interest in participating in the aforementioned tasks. These tasks will take place either on the ASU downtown campus in the Arizona Biomedical Collaborative 1 building or at a pre-established mutually agreed upon location such as your home or common place of eating (e.g., dining hall). You will be asked to answer questions about food, eating, and morality. In addition, if you are willing, you will be observed preparing food and partaking in a meal with the researchers. During all tasks, the researchers reserve the right to ask your permission to create audio and/or video recordings of interactions for later review and reflection by the research staff only. Audio and video recordings will not be shared with others. Further, you can refuse to be recorded and will have the option of opting out of being recorded at any time. Approximately 50 of subjects will be participating in this study.

RISKS

Due to the nature of the focus group part of the study, the research team cannot guarantee complete confidentiality of your data. It may be possible that others will know what you have reported in this section. There are no known risks from taking part in this study, but in any research, there is some possibility that you may be subject to risks that have not yet been identified.

BENEFITS
Although there may be no direct benefits to you, the possible benefits of your participation in the research are others may benefit by identifying new strategies for promoting healthful eating.

CONFIDENTIALITY
All information obtained in this study is strictly confidential. The results of this research study may be used in reports, presentations, and publications, but the researchers will not identify you. In order to maintain confidentiality of your records, Dr. Hekler will utilize a "subject code" (i.e., codes used to identify a person but only with the use of a master file linking an individual's identifying information with other information gathered during the course of the study). All paper documents will be stored in a locked office, in a locked building (ABC1) on the downtown ASU campus. All electronic information will be stored on password-protected, firewalled computers. Only research personnel who require access to personal health information (e.g., personnel working with you or scheduling a follow-up visit with you) will have access to your identifying information. Due to the nature of the focus group part of the study, the research team cannot guarantee complete confidentiality of your data. It may be possible that others will know what you have reported in this section. All audio and/or video recordings will be stored electronically on a secure, password-protected computer at ABC1 and will be destroyed 5 years after the final paper from this work is published.

WITHDRAWAL PRIVILEGE
Participation in this study is completely voluntary. It is ok for you to say no. Even if you
    say yes
now, you are free to say no later, and withdraw from the study at any time. Your decision will not affect your relationship with Arizona State University or otherwise cause a loss of benefits to which you might otherwise be entitled. As participation is voluntary and nonparticipation or withdrawal from the study will not affect your grade in any class. If you choose to withdraw, your audio/video tapes will be retained unless you request that they be deleted. At that time, any audio/video recordings will be destroyed.

COSTS AND PAYMENTS
There is no payment for your participation in the study.

VOLUNTARY CONSENT
Any questions you have concerning the research study or your participation the study, before or after your consent, will be answered by Dr. Eric Hekler, School of Nutrition

and Health Promotion, ABC1 room 121, mailing address, 500 N 3rd st Phoenix, AZ 85004, 602-827-2271.

If you have questions about your rights as a participant in this research, or if you feel you have been placed at risk; you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at 480-965 6788.

This form explains the nature, demands, benefits and any risk of the project. By signing this form you agree knowingly to assume any risks involved. Remember, your participation is voluntary. You may choose not to participate or to withdraw your consent and discontinue participation at any time without penalty or loss of benefit. In signing this consent form, you are not waiving any legal claims, rights, or remedies. A copy of this consent form will be offered to you.

Your signature below indicates that you consent to participate in the above study.

_____   _____   _____
Subject's Signature   Printed Name   Date

By signing below, you are granting to the researchers the right to use your likeness, image, appearance and performance - whether recorded on or transferred to audio, videotape, film, slides, and photographs - for presenting or publishing this research.

_____   _____   _____
Subject's Signature   Printed Name   Date

INVESTIGATOR'S STATEMENT
"I certify that I have explained to the above individual the nature and purpose, the potential
benefits and possible risks associated with participation in this research study, have answered any questions that have been raised, and have witnessed the above signature. These elements of Informed Consent conform to the Assurance given by Arizona State University to the Office for Human Research Protections to protect the rights of human subjects. I have provided (offered) the subject/participant a copy of this signed consent document."

Signature of Investigator_____ Date_____

APPENDIX B

SEMI-STRUCTURED INTERVIEW QUESTIONS

1. What is your major?

2. Do you have any religious affiliation, if any?

3. Are you, or have you ever been, any type of vegetarian?

4. If you were to participate in a study that required you to provide your opinion about a topic, how would you prefer to provide your response? Written, spoken, survey or interview?

5. As part of a study, would you be willing to write a one to two paragraph essay?

6. How comfortable do you feel with public speaking on a scale of one to five, one being very comfortable and five being very uncomfortable?

7. How comfortable do you feel with debate on a scale of one to five, one being very comfortable and five being very uncomfortable?

8. What does morality mean to you?

9. What comes to mind when I say "moral eating"?

10. How do you feel about people who are extremely obese?

11. What about individuals who are extremely thin?

12. How do you feel about people who are vegan?

13. What do you think about junk food taxes, requirements to post calorie information, or the government putting restrictions on food consumption or purchasing?

14. If all vending machines were removed in an effort to discourage unhealthy eating, what would be your opinion/feelings about that?

15. Do you think it is the government's responsibility to control food in the market?

16. Do you think we should all pay the same for health care regardless of lifestyle choices? Why or why not?

17. When you are eating, how much do you think about where your food comes from or what it is made of?

18. How many times per day or week do you eat meat?

19. What does sustainable eating mean to you?

20. Do you find sustainability important in your food choices?

21. How influential do you think your food choices are on your friends' choices and vice versa?

22. How important is it to you to support your community by buying local?

APPENDIX C

ONLINE QUESTIONNAIRES

Screening Questions

Are you affiliated with Arizona State University or another University?
o Yes, I am affiliated with Arizona State University
o No, I am not affiliated with Arizona State University

Your Major: _____

Your Class:
     o Freshman   o Sophomore o Junior   o Senior   oOther

Your Gender:
     o Female   o Male

Your Ethnicity (mark all that apply):

o White
o Latino/Hispanic
o African-American/Black
o Asian/Asian-American
o Pacific Islander
o Other (Please Specify)

Your Weight (in pounds): _____

Your Height:
Feet:

☐ 4 feet   ☐ 5 feet   ☐ 6 feet   ☐ 7 feet

Inches:
☐ 0   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5
☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10 ☐ 11

How many days per week do you perform any regular physical activity, like brisk walking, jogging, bicycling, etc., long enough and hard enough to make you breathe hard and work up a sweat?

☐ 0   ☐ 1 day   ☐ 2 days ☐ 3 days
☐ 4 days ☐ 5 days ☐ 6 days ☐ 7 days
On average, how many minutes per day do you perform regular physical activity, like brisk walking, jogging, bicycling, etc., long enough and hard enough to make you breathe hard and work up a sweat?

o   I am not physically active once per week
o   less than 15 minutes
o   15-29 minutes
o   30-44 minutes
o   45-59 minutes
o   60-74 minutes
o   75-89 minutes
o   90 or more minutes

Do you consider yourself to be a vegetarian?
o Yes   o No

Do you consider yourself to be a vegan?
o Yes   o No

Do you alter your food choice based on your religious practices?
o Yes   o No   o I'm not religious.

In the past year, have you been a member of: (mark ALL that apply.)

o   An environmental organization
o   A garden organization
o   A vegetarian organization
o   An animal rights organization
o   A human rights or social justice organization
o   None of the above

Moral Foundations Questionnaire

Part 1. When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking? Please rate each statement using this scale:

[0] = not at all relevant (This consideration has nothing to do with my judgments of right and wrong)
[1] = not very relevant
[2] = slightly relevant
[3] = somewhat relevant
[4] = very relevant
[5] = extremely relevant (This is one of the most important factors when I judge right and wrong)

_____Whether or not someone suffered emotionally
_____Whether or not some people were treated differently than others
_____Whether or not someone's action showed love for his or her country
_____Whether or not someone showed a lack of respect for authority
_____Whether or not someone violated standards of purity and decency
_____Whether or not someone was good at math
_____Whether or not someone cared for someone weak or vulnerable
_____Whether or not someone acted unfairly
_____Whether or not someone did something to betray his or her group
_____Whether or not someone conformed to the traditions of society
_____Whether or not someone did something disgusting
_____Whether or not someone was cruel
_____Whether or not someone was denied his or her rights
_____Whether or not someone showed a lack of loyalty
_____Whether or not an action caused chaos or disorder
_____Whether or not someone acted in a way that God would approve of

Part 2. Please read the following sentences and indicate your agreement or disagreement:
[0] = Strongly disagree
[1] = Moderately disagree
[2] = Slightly disagree
[3] = Slightly agree
[4] = Moderately agree
[5] = Strongly agree

_____Compassion for those who are suffering is the most crucial virtue.
_____When the government makes laws, the number one principle should be ensuring that everyone is treated fairly.

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_____I am proud of my country's history.

_____Respect for authority is something all children need to learn.

_____People should not do things that are disgusting, even if no one is harmed.

_____It is better to do good than to do bad.

_____One of the worst things a person could do is hurt a defenseless animal.

_____Justice is the most important requirement for a society.

_____People should be loyal to their family members, even when they have done something wrong.

_____Men and women each have different roles to play in society.

_____I would call some acts wrong on the grounds that they are unnatural.

_____It can never be right to kill a human being.

_____ I think it's morally wrong that rich children inherit a lot of money while poor children inherit nothing.

_____ It is more important to be a team player than to express oneself.

_____ If I were a soldier and disagreed with my commanding officer's orders, I would obey anyway because that is my duty.

_____ Chastity is an important and valuable virtue.

Healthy Eater Self Identity

Below are some questions regarding the way you view yourself. Please answer each
question honestly. Indicate your answer by circling the appropriate number on the scale
below each question.

1. To what extent does the term HEALTHY EATER describe you?

1   2   3   4   5   6   7   8   9   10   11
Does   Describes
not   me
describe
me

2. How important is BEING SOMEONE WHO IS A HEALTHY EATER to
the image you have of yourself, regardless of whether or not you are someone
who is a healthy eater?

1   2   3   4   5   6   7   8   9   10   11
Not at all   Very
important   important

3. To what extent does the term SOMEONE WHO EATS IN A NUTRITIOUS
MANNER describe you?

1   2   3   4   5   6   7   8   9   10   11
Does   Describes
not   me
describe
me

4. How important is BEING SOMEONE WHO EATS IN A NUTRITIOUS
MANNER to the image you have of yourself, regardless of whether or not you are
someone who eats in a nutritious manner?

1   2   3   4   5   6   7   8   9   10   11
Not at all   Very
important   important

5. To what extent does the term SOMEONE WHO IS CAREFUL ABOUT WHAT I EAT describe you?

1	2	3	4	5	6	7	8	9	10	11
Does not describe me										Describes me

6. How important is BEING SOMEONE WHO IS CAREFUL ABOUT WHAT YOU EAT to the image you have of yourself, regardless of whether or not you are someone who is careful about what you eat?

1	2	3	4	5	6	7	8	9	10	11
Not at all important										Very important