2-5-2015

Comparing Vegan And Vegetarian Attitudes, Beliefs, And Perceptions With Risk For Disordered Eating Behaviors

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ABSTRACT

Objective: Evaluate the following for effect on disordered eating behaviors and body image: An individual's motivation for consuming a vegan/vegetarian diet; Accuracy in self-reporting of vegan/vegetarian status and; Level of acculturation in vegan/vegetarian American immigrants.

Design: A descriptive, cross-sectional study evaluating vegan/vegetarian beliefs and current practices, using the theoretical framework of the Theory of Planned Behavior.

Subjects/Setting: Participants recruited via e-mail list-servs for the Vegetarian Resource Group and the Academy of Nutrition and Dietetics Vegetarian Nutrition Dietetic Practice Group. Data were collected in 2010, using SurveyMonkey©. This research utilized a survey tool developed for this study, with the Eating Attitudes Test-26 and the Body Image States Scale embedded.

Analysis: A 9-item food-frequency questionnaire was used to validate accuracy of self-reported vegan/vegetarians. A four-point Likert type scale assessed dietary motivations. Disordered eating risk was determined using a scoring system from EAT-26. Cross-tabs and T-tests compared disordered eating risk and body image states between the study and comparison groups.

Results: Study sample of 204 participants, including 128 self-reported vegans/vegetarians. When food-frequency data were compared to those self-reporting as vegetarian/vegan, an only 47% accuracy rate in dietary classification was found. Of the confirmed vegans/vegetarians, 53% cited animal rights/cruelty as their primary dietary motivator. Those in the study who inaccurately self-reported, those following their current diet for <1 year, and those with weight motivation for dietary choices, were found

to be at a heightened risk for disordered eating. Second-generation American immigrant vegan/vegetarians were also found to be at an elevated risk.

Conclusions and Applications: Findings indicate a tendency towards higher disordered eating behavior in vegetarians (esp. lacto-ovo vegetarians) than vegans. Health/weight motivated vegetarians appeared to be at higher risk for disordered eating than the rest of the group, so evaluation of dietary motivation is crucial in establishing potential risk for disordered eating. Length of time following the diet seemed to improve accuracy of self-reporting and inversely decrease the likelihood of disordered eating behaviors. Those who have followed the diet for shorter periods of time and do not truly follow a vegetarian or vegan diet (when compared to operationalized definitions) have a higher risk of disordered eating behaviors than true vegans/vegetarians. The highest risk for disordered eating and poor body image was found to be in second generation confirmed vegetarian/vegans. The small sample size of this sub-group prevents sound generalization of these results, however the trends suggest further research be conducted with this group to help better assess potential risks and necessary intervention by family and/or health practitioners.

COMPARING VEGAN AND VEGETARIAN ATTITUDES, BELIEFS AND PERCEPTIONS WITH RISK FOR DISORDERED EATING BEHAVIORS

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MASTER THESIS

Submitted in partial fulfillment of the requirements for the Master of Science degree in Nutrition Science through the David B. Falk College of Sport and Human Dynamics, Department of Public Health, Food Studies and Nutrition at Syracuse University

December 2014

ACKNOWLEDGEMENTS

The author wishes to acknowledge several people who made this research possible. I would like to thank my thesis committee members for their assistance in helping me complete this journey, especially Dr. Lynn Brann who provided guidance during the study development phase. I also would like to acknowledge Dr. Reed Mangels for her assistance in obtaining my survey sample. I appreciate all the love and support of my family, especially my husband over the past four years. And last but not least, I would like to thank my thesis advisor, Dr. Sudha Raj for all her patience, guidance and understanding during this long process. This study would not have been possible without her support.

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INTRODUCTION

Many studies have evaluated vegetarians over the past few decades and more recent research has been conducted on those following vegan diets. Research has assessed types of vegetarian diets followed for classification, and found that the variations within these meal plans may be one of the sources of unclear relationships between vegetarian diets and other practices (1). True vegetarians eliminate meat, poultry, seafood, and any products containing these foods from the diet (1). Animal products, such as dairy products and eggs are consumed by some and make up subcategories of vegetarianism including lacto-vegetarian, ovo-vegetarian, and lacto-ovo-vegetarian. Vegans eat a plant-based diet, consuming nothing derived from live animals, including milk, eggs, or honey (2).

Studies have found that accuracy of self-reporting vegetarian and vegan status may have an effect on the frequency with which we see other traits (such as eating attitudes and behaviors) displayed. However, these studies have relied on self-reporting as the only indicator of participant's vegetarian status. This study looked to assess accuracy of self-reporting vegetarian and vegan status through confirmation of data provided in a food-frequency questionnaire (FFQ) prior to analysis against other variables. Those included in the sample group of vegetarians and vegans for this study provided data on the FFQ that confirmed the accuracy of their classification. This allowed for more specific data to be provided on the different subgroups of vegetarians and vegans.

Considerable recent research documents current motivations for adopting vegetarian and vegan diets, including animal rights and ethical reasons, the desire to improve health, environmental concerns, religious beliefs, and concerns about the safety of the food supply, among others (3). This study evaluated vegetarian and vegan motivations using a Likert-type scale based on the Theory of Planned Behavior to assess importance of various factors in choosing to consume these diets. Although the survey had participants choose their most important motivator, they were also asked to rank the importance of other motivators to help assess in more detail the full thought processes involved in their decision to practice this eating pattern.

Because of the potential influence on dietary habits, level of acculturation of American immigrants may also play a role in their motivation for following a vegan or vegetarian diet. Whether parental influence or societal influence affects the decision to alter one's dietary habits, the choice to consume a vegan or vegetarian diet is one that potentially includes many facets. This study examined these possible motivations, and explored the potential for changes in eating attitudes and body image resulting from, or leading to, these beliefs and practices in first and second-generation immigrants.

Motivation for following a vegetarian or vegan diet has also been evaluated in relation to disordered eating risk and studies have shown that health and weight motivated vegetarians and vegans tend to display a higher incidence of disordered eating behavior (4, 5). As food avoidance is a recognized characteristic of these diets, vegetarianism/ veganism may be adopted by those with eating disorders. These dietary patterns become

a convenient and socially acceptable way for an individual to justify the elimination of entire food groups from their diet (6). This study assessed disordered eating risk using the validated Eating Attitudes Test-26.

Klopp, et al., found that self-reported vegetarians were at a higher risk for disordered eating than non-vegetarians (5). When research has evaluated more restrictive vegetarians to those considering themselves to be "semi-vegetarian", disordered eating risk is higher in the less restrictive participants (7). This study compared disordered eating risk for confirmed strict vegans, lacto-, and lacto-ovo vegetarians to all other self-reported vegetarians and omnivores to further evaluate this tendency.

Since body image and disordered eating risk are interrelated, this study also evaluated the participant's body image state using the Body Image States Scale. Studies have shown that body fatness, body dissatisfaction and need for social approval can predict one's level of eating disturbance (8). This study evaluated this association in relation to vegetarian and vegan status to help better target specific groups that may be at heightened risk.

Most studies have researched adolescent tendencies towards disordered eating, with mostly female subjects. Peat, et al, however, examined body image and eating disorder tendencies in older adults and found that this age group as well experiences the same social pressures to be thin and frequently experiences body dissatisfaction (9). Western culture's societal push to retain youthful looks and project the thin ideal may contribute

to a propensity toward body dissatisfaction and disordered eating among these women who are undergoing natural physical changes with age. In older adults however, maturity, life experiences, and a reduction in the exposure to unrealistic models of beauty may serve to reduce some vulnerability to negative body image and the development of eating disorders (9). This study assessed age in relation to these variables for analysis.

In general, males have also been underrepresented in eating attitude and body image research. Overall evidence from the existing studies suggests that men from a wide range of cultural groups may feel pressure to have increased muscle size and seek out methods to achieve this. Factors affecting these attitudes and practices include natural body build, level of acculturation, socio-economic status, media exposure and internalization of the muscular and lean body ideal (10). Male eating attitudes and body image were assessed in this study and compared to female responses for comparison.

Overall, the relationship between vegetarian diets and disordered eating has been one of great research interest in the past few decades related to the similarities in dietary restriction. However, for one to make a generic statement regarding this correlation is inaccurate and unfounded. There are far too many variations among individuals consuming these diets to generalize results appropriately. For this reason, the main research questions for this study were as follows:

- Does an individual's motivation for consuming a vegan or vegetarian diet have an association with the assessed risk for disordered eating behaviors and body image?
- Do eating attitudes and body image results of self-reported vegans or vegetarians differ from operationalized groups of confirmed vegans and vegetarians?
- Does ethnic background and level of acculturation for immigrants have an association with disordered eating risk and body image of vegans or vegetarians?

LITERATURE REVIEW

Historically there is much difference in the dietary patterns of humans throughout the world based on food availability as a result of geography, climate, trade and economic status (11). Generally, industrialized countries have tended to consume omnivorous, meat-based diets, whereas developing countries have plant-based meal patterns. Over the last century, we have seen many countries go through nutrition transition as their economic, demographic and epidemiological status changes. During this transition, developing countries are experiencing a double burden of disease, with increasing rates of chronic diseases (such as cardiovascular disease), while infectious diseases (such as malaria and AIDS) continue to prevail concurrently (12). In general, the trend which has shown to hold true is of industrialized/developing nations experiencing increase in chronic disease states from excess nutrient intake, whereas impoverished nations continue to have high levels of nutrient deficiencies related to inadequate intake. Although the nutritional outcomes of these two groups are polarized, this is largely related to the quantity of food consumed in these areas, versus a direct implication of the type of diet. Much research has been conducted to support the consumption of quantity appropriate, largely plant-based diets in the prevention of chronic disease (11).

A plant-based diet may be defined as an eating pattern in which there is high consumption of minimally processed plant foods, a variety of grains, fruits, legumes, nuts and seeds and decreased intake of meat, eggs and dairy products (13). Included in these diets are vegetarian and vegan diets, which form a spectrum of plant-based intake that

ranges from selective meat consumption to absolute elimination of all animal products from the diet.

The History of Vegetarian Diets

The beginnings of vegetarian practices were for reasons not of science or health, but mostly for moral arguments. Ancient writers deplored the killing of innocent creatures for food and argued that the "flesh of beasts contaminated and brutalized the human soul" (14). Dating back to the 8th through 4th centuries B.C., the earliest prophets of Greece, such as Pythagoras and Plato, followed meat-free diets because they felt it was conducive to peace as "those who are accustomed to abominate the slaughter of other animals, as iniquitous and unnatural, will think it is still more unjust and unlawful to kill a man and engage in war" (15). They deplored the sacrifice of animals to the Gods, which was commonplace at the time, as they believed it was not man's place to take the lives of a living creature that only Gods could give.

As the world transitioned through the next millennium, religions arose and promoted restraint and self-denial as part of a righteous life. Abstaining from meat was part of this practice by many religions, including Buddhists, Hindus, Jews and the emerging Christian religion. Exclusion from meat was a papal statute through the Middle Ages until the mid-14th century when the Pope determined prohibition of meat was unenforceable but still recommended abstaining, as meat was seen as a luxury rather than a necessity (16).

During the course of the 15th through 18th centuries A.D., many philosophers and scientists spoke out against the eating of flesh foods and promoted the practice of vegetarianism, including Leonardo da Vinci and Sir Isaac Newton. In the late 18th century, the popularity of meat-free diets further grew during the Romantic era with such works as *"The Cry of Nature, or, An Appeal to Mercy and to Justice, on Behalf of the Persecuted Animals"*, by John Oswald (17). This ideological view was then preceded by the more scientific belief that consuming a meat-free diet had health benefits. John Harvey Kellogg went on to promote the digestive health benefits of the "high roughage, low protein vegetable diet" and Alexander Haig promoted the uric acid and purine-free diets for athletic success in the late 19th and early 20th centuries (14). The term "vegetarian" to describe a meatless diet was first used in 1847 by members of the Bible Christian Church in their inaugural meeting of The Vegetarian Society of Great Britain (18).

The early health claims of vegetarian diets, often scoffed at the time, were somewhat vindicated when in the 1920's and 1930's nutritionists established that the vitamins and minerals, discovered in ever greater numbers by chemists, were essential for human health, not least the vitamin C in fresh fruit (19). This "vitamin revolution" helped to enhance the credibility of previous vegetarian diet promoters.

In more recent years the issue of morality has once again come to play an important facet in the motivation to follow a vegetarian diet. Animal rights issues as well as "green living" have become popular ideals that have pushed some towards a vegetarian or vegan

lifestyle. The endangerment of whole species in the modern world has intensified disgust with human exploitation of animals. Environmental pollution and destruction of ecosystems by agricultural development have rekindled a desire to return to pre-industrial simplicity. The environmental and economic costs of sustaining an ever-growing population on animal foods have made vegetarianism seem essential in efforts to save the planet (14). These issues and beliefs have brought inspiration for vegetarian and vegan living full circle. Despite the expanding scientific research promoting health benefits of plant-based diets, the moral, ethical and social issues have in some instances become more important motivators for some individuals to adjust their meal patterns.

Defining Vegetarianism

Current research on vegetarianism has come to some conflicting conclusions related to the difficulty in defining true vegetarianism. The multiple subcategories of vegetarians make a concise definition of vegetarianism difficult. Where vegan dietary guidelines are very strict and easily classified, vegetarian diets differ in a number of ways and form a continuum (1). By current accepted definition, vegetarians eliminate meat, poultry, seafood, and any products containing these foods from the diet (1).

Lacto-vegetarians eat no meat or eggs but they do consume dairy products, where lacto-ovo vegetarians consume dairy products and eggs, and the less common ovo-vegetarians consume eggs but no dairy products (18). Additional subcategories such as pollo-, pesco- or pollo-pesco-vegetarians exist (in which individuals consume poultry and/or fish); however these diets do not fall into the truly accepted definition of vegetarianism. Newer

developed categories of “semi-vegetarians” (those who usually avoid meat but may consume even red meat on occasion) and “flexitarians” (those who generally follow an omnivorous diet but have days where they avoid meat) have also been recently coined, but arguably are not true vegetarians.

Another aspect preventing clear distinction is the disparity between self-reported vegetarians and true vegetarians. A 2009 study revealed a large discrepancy in the number of vegetarians in society depending on whether the distinction is based on self-definition or operationalized definition of vegetarianism (20). Some self-defined vegetarians follow a healthier diet than self-defined omnivores however; they do consume poultry, fish or even red meat at times. In the same sample, self-identification indicated more than double the incidence of vegetarianism than the operationalized definition. Therefore, self-identification may not be a good method for observing the prevalence of vegetarianism (20).

The History of Vegan Diets

Veganism is a more recent practice than standard vegetarianism, and may be more strictly aligned with ethical motivations and beliefs in animal rights than many current vegetarian followers (21). The term “Vegan” was coined in 1944 by Donald Watson when he founded the British Vegan Society (now called The Vegan Society). He stated, “We can see quite plainly that our present civilization is built on the exploitation of animals, just as past civilizations were built on the exploitation of slaves, and we believe the spiritual destiny of man is such that in time he will view with abhorrence the idea that men once

fed on the products of animals' bodies" (22). He encouraged those that had been practicing a lacto-vegetarian diet to go the "full journey" and completely eliminate all animal products from their diets.

Defining Veganism

The current definition of a vegan, according to The Vegan Society is; A person who tries to live without exploiting animals, for the benefit of animals, people and the planet. While a vegetarian avoids foods which come from dead animals, such as meat, rennet and gelatin, vegans eat a plant-based diet, with nothing from live animals, including milk, eggs, or honey. A vegan lifestyle also propagates the avoidance of leather, wool, silk and other animal products for clothing, cosmetics or any other purpose (2). Many vegans also choose to purchase meat-free foods to feed their household pets (23).

Due to the strong stance on avoidance of all animal products, there is often conflicting ideas on who actually qualifies as being "vegan". Westernized society is very much dependent on resources which have agricultural components which a vegan may oppose. Companies have emerged in recent years that produce and sell goods in line with vegan beliefs, such a leather-free footwear and cosmetic products not tested on animals. However, these companies are few in number and the mere act of living in a Westernized society likely indicates utilization of some product or service that conflicts with vegan beliefs. The use of animals as means of agricultural labor and transportation are an example of this. Another possible example is if one invests in a mutual fund; how can they be positive that a company who profits from a farming or pharmaceutical industry in

which animal products or animal testing may be involved, is not included in that investment group? The extent to which moral responsibility can be justified is difficult to define.

Vegans hold the idea that as much effort as possible should be made to avoid participation in the harm of and cruelty to animals, however this can be extremely difficult in today's society. The Vegetarian Society has addressed the possibly difficult aspects regarding the ability to live a purely vegan life. Their policy addressing these potentially conflicting lifestyle issues is as follows: "…these problems do not negate the efforts of vegans to avoid animal exploitation in other areas, such as choice of diet, clothing, toiletries or cosmetics. The goal of living a life that does not cause *an*y suffering to others is very probably impossible to achieve. But that does not give us the right to carelessly act cruelly or exploitatively to others when we *do* have a choice. In most cases, we most definitely do have that choice to act compassionately" (24). Since measuring the consumption or utilization of products and services containing or derived from animals by an individual in everyday life is virtually impossible, research studies on vegans tend to focus solely on the dietary restrictions for this lifestyle.

Other Plant-Based Diets

Newer subgroups of vegetarians and vegans have more recently emerged and the practice of consuming "raw foods" or "macrobiotic" diets has become trendy. Although raw foods diets have been around since the mid-19th century when Sylvester Graham promoted the idea that people would never become ill if they only consumed uncooked

foods, it has become fashionable in recent years as celebrities have adopted and promoted the raw-food movement (25). There is no actual definition of a raw-foods diet, however by and large people consider this to be a vegan diet in which foods are uncooked (except via a food dehydrator). This diet typically includes fruits, nuts and beans in their raw state with actual raw food consumption ranging between 50% and 100% of intake (25). The proposed theory behind the benefit of uncooked foods is that raw foods have better digestibility, related to the food enzymes not being destroyed via cooking. However, a 2009 study indicated that vegetarians consuming a raw-food diet have compromised physiological performance, including lower body mass index and decreased reproductive performance compared to vegetarians consuming a cooked diet (26).

Macrobiotic diets are typically very strict versions of vegetarian diets. In this diet, usually all meat and dairy products are excluded and replaced with soy-based products. White meat, fish, seasonal fruits, nuts and seeds may be included a few times per week, while some fruits (specifically citrus fruits) and vegetables are eliminated, and vitamin and mineral supplementation is discouraged. The only liquids allowed for consumption are special teas and these are only to be consumed when thirsty (27). Obvious concerns related to adoption of this diet are macro and micronutrient deficiencies, especially in children (28). Successful weight loss is probable in those adopting this type of diet given the decreased caloric content of the permitted foods. Cancer prevention and/or treatment has also been hypothesized with consumption of this diet, however scientific studies to date have not confirmed a direct correlation without other combined therapies (27). Since standard definitions do not yet exist for these specialized sectors of vegan

and vegetarian diets, scientific research is lacking on the overall physiological effects of following these extremely restrictive eating patterns.

Nutritional Adequacy of Vegetarian and Vegan Diets

Many scientific studies have assessed the nutrient content of generally defined vegetarian meal plans in the United States and obtained conflicting results due to the wide variations of foods consumed by those who follow these diets. Since the traditional fruit and vegetable based diets of vegetarians are not necessarily mirrored in the meal patterns followed by many individuals today, much current research is on evaluating the nutritional adequacy of strict vegetarian and vegan meal plans. A 2005 study evaluated the nutritional adequacy of very low-fat vegan diets and found that a well-planned, very low-fat vegan diet, supplemented with a fortified soy protein powdered beverage, and comprehensive nutrition education provided by a Registered Dietitian, is not only nutritionally adequate, but abundant in many nutrients (29).

Concern regarding the nutritional adequacy of the more restrictive raw foods and macrobiotic diets has arisen as these diets carry a high possibility of nutrient deficiencies, specifically in protein, vitamin B12 and calcium, as well as an increased risk for dehydration in the macrobiotic diet (27, 28). Some studies have suggested that a raw foods diet can cause a decrease in bacterial enzymes and certain toxic products that have been implicated in colon cancer (30). This diet may lower plasma total cholesterol and triglyceride concentrations; however it may also lower serum HDL cholesterol levels

simultaneously (31). Long-term practice of a raw foods diet has also been shown to result in decreased bone mass (32).

Haddad and Tanzman found that diets of self-defined vegetarians tended to be lower in total fat, saturated fat and cholesterol and higher in fiber than the diets of non-vegetarians who ate meat (33). Most vegetarians today avoid meat (although some self-reported vegetarians do admit to occasionally consuming meats) and sometimes milk and eggs, where vegans continue to avoid all animal derived foods. This definition however does allow for "junk food" vegetarians to still be included in this category (34). For example, one could consume chocolate, potato chips and macaroni & cheese everyday while still technically following a lacto-vegetarian diet. Intake of large amounts of highly processed foods has also been a concern in evaluating healthfulness of vegetarian diets. Since these foods are generally low in fiber, phytochemicals, vitamins, and trace minerals and often contain unhealthy hydrogenated fat, sugar and salt as a result of processing, consuming large amounts of these foods does not promote an overall healthy diet (34). Evaluation of the specific foods consumed by an individual following a vegetarian or vegan diet by medical and nutrition professionals is essential to help prevent nutrient deficiencies from occurring and, as with all diets, it is important to emphasize healthful choices (29).

Motivations for Consuming Vegetarian and Vegan Diets

Recent research indicates that the primary motivators for following vegetarian and vegan diets may be shifting slightly. In 1996, Santos and Booth found that British University students reported "ethical reasons" (animal rights) as the primary motivator, followed by

"dislike" or "disgust" of meat (35). A more recent study in 2007 found that the most commonly cited primary motivators of vegetarians from the US, Canada and the UK still included animal rights, but was surpassed by the belief in potential health benefits from this dietary choice (36). This study also found environmentalism to be part of the lifestyle choices of many of the respondents.

These recent data indicate that although the same basic principles of belief in non-violence towards animals and improved morality through vegetarianism still apply, the thought process behind following the diet has changed. Many vegetarians are choosing meat-free diets as part of an overall lifestyle commitment.

Religion

Religion has historically played an integral role in the choice and motivation to consume a meat-free diet. Vegetarianism has been practiced or required by many religions over the course of time. Lord Buddha declared that the practice of non-killing (and abstaining from intake of flesh) was the only way to achieve true enlightenment (14) and many Buddhist followers uphold this belief even today. Orthodox Jews believe that something that is slaughtered cannot be blessed as one cannot destroy the works of Creation and at the same time bless God for having made them (36). The Jewish faith's beliefs were carried into Christianity through the Ten Commandments, which include the Sixth Commandment "Thou shalt not kill". This commandment has been interpreted by many to mean that one should not commit murder, however taken at its face value, the killing

and eating of animals can be interpreted as a direct sin against God. Holy periods, such as Lent in the Catholic religion, include periods of time in which meat is to be avoided.

Hinduism practices have been found as far back as prehistoric times, making its origins impossible to be traced to one individual, however the roots are based on ancient Vedic texts. This is a religion that not only emphasizes vegetarianism and deems the cow sacred but also teaches the spiritual equality of all living beings, making the killing of animals incomprehensible (38). In Jainism, being vegetarian is essential to uphold the commitment to non-violence and it is the most religiously-motivated diet regulation in India (39). And finally, although the Islamic religion does not fully promote vegetarianism, one is to abstain from flesh foods during times of spiritual renewal (40).

Animal Rights

Although non-violence towards animals is often linked with religious traditions, animal rights beliefs as a motivation behind vegetarian and vegan practices today do not always stem from religious practices. Groups such as People for the Ethical Treatment of Animals (PETA), promote vegan living related to moral principles. They state that one should consume a vegan diet to decrease animal cruelty, promote good health, champion environmental benefits, help with world hunger, advocate for workers' rights (in slaughterhouses and on farms), prevent factory farms from polluting communities, and protest government negligence in addressing the effects of factory farms by continuing to subsidize the industry (41). The deep-seated belief in animal rights is the primary motivator behind this group's actions. Studies have shown that vegetarians are

displaying increased ethical attitude scores over the last few decades (42) and that ethical vegetarians are motivated by moral considerations to align dietary behaviors with beliefs and values about animal welfare (43).

Environmental and Food Safety Concerns

As environmental concerns become more crucial in today's society, people are making the choice to "go green". These changes include not only vegetarian or vegan diets but also purchasing organic foods, decreasing energy consumption by building "green" homes and driving fuel-efficient cars. There seems to be a shift occurring, especially in the US, that society views natural, planet-friendly living (which may include meat-free diets) as a requirement to be "healthy".

This modern vegetarian diet motivation has been reinforced in scientific studies. Research has shown that vegetarian diets are well suited to protect the environment, reduce pollution, and minimize global changes. This is optimally true when a vegetarian seeks out foods that are regionally produced, seasonally consumed, and organically grown (44). A 2009 study found that vegetarian diets required 2.9 times less water, 2.5 times less primary energy, 13 times less fertilizer and 1.4 times less pesticides than non-vegetarian diets (45). Since concerns are steadily rising on pesticide use, genetically-modified foods, and the safety of our overall food supply, it is possible that motivation to transition to a vegetarian or vegan diet to combat these issues may intensify in years to come. Note that this (environmental) factor may contribute further to the wide variations seen today in vegetarian and vegan diets. As people adopt these diets as part of a greater lifestyle change, they may not be aware of or deem important, the specific requirements to truly be classified as a vegetarian or vegan.

Health Beliefs

Some studies have found health beliefs to be the most commonly cited motivation for consuming a vegetarian diet. Kim, et al., found this to be the case in a 25-year, ongoing, longitudinal study, in which respondent's motivations were examined in 1974 and 1997. At both times, respondents cited health outcomes as their most important motivation for adopting vegetarian eating styles with 46% citing this in 1997 (42). It also has been shown that health motivated vegetarians have a perceived threat of disease and the belief that practicing a vegetarian diet will help decrease this threat (43). The rationale behind this includes concerns regarding the damaging effects of consuming animal fat and cholesterol in the diet (46). Recent research has found health beliefs to be the most important motivator in a growing percentage of the vegetarian population. A 2006 study confirmed that vegetarian respondents believe consumption of a plant-based diet is considered to have important health-related benefits, including decreased saturated fat intake and increased fiber intake (47).

These beliefs have been reinforced by research indicating that those consuming vegetarian diets have a decreased risk of death from ischemic heart disease, an overall lower cancer rate, are at lower risk for developing dementia, and are less likely to have diverticulitis or gallstones (1). Studies also indicate the potential for decreased blood pressure, lower risk of insulin resistance and type-2 diabetes (especially in those following vegan diets) and the possibility of improved bone metabolism in those with high fruit, vegetable and soy intakes (1).

In relation to health beliefs, the potential for weight control has been found to be a motivator for consuming a vegetarian diet. One study found that as many as one-fourth of participants identified weight loss as an underlying factor in vegetarian diet choice (48) and research has confirmed that vegetarians and vegans do tend to have a lower BMI (1). Although studies have shown improved weight outcomes in vegetarians, it has also been presumed that weight motivation is the cause of a potential link between vegetarian diets and disordered eating (49).

Dietary Motivation and Disordered Eating

The link between motivation for vegetarianism and disordered eating tendencies has been researched. Curtis and Comer found that weight-motivated semi-vegetarians reported higher levels of dietary restraint than those vegetarians not motivated by weight (4). The clustering of four food choice motives (health, weight concern, pleasure and ideological reasons) and the relationship between personality and the food choice motives have been analyzed among young and middle-aged women in two studies (50). In these studies, strict food choices (especially those motivated for health and or weight concern) were strongly linked to vegetarianism. Semi-vegetarians and vegetarians were also shown to endorse more magical beliefs about food and eating than omnivores. Lindeman defines the magical contamination idea as the belief that offensive impurities which have once been in contact with an individual are assumed to continue even afterwards to act on the individual (50). Also, the distinction between natural and artificial, where natural is assumed to be good and anything artificial to be poisonous, reflects categorical good-or-bad thinking and confusion between physical/health and moral/symbolic accounts (50).

Lindeman goes on to stress the importance of future studies verifying that a lifestyle that is focused on health and dieting predisposes women to psychological distress and disordered eating when the ideological food choice motives are strong and the pleasure motive is lacking. Thus, future research should show whether turning food into a joyless article of faith could be equally dangerous for one's health as complete indifference to one's eating habits (50). If an individual practices vegetarianism solely for weight control or health beliefs, one could assume that this same trend would apply, and they may indeed be predisposed towards disordered eating behaviors and not necessarily practice mindful, healthy eating habits.

Potential Link Between Vegetarianism and Eating Disorders

The position of the Academy of Nutrition and Dietetics is that being vegetarian does not cause disordered eating as some have suggested, although a vegetarian diet may be selected to camouflage an existing eating disorder (1). Studies have shown that adolescents who have symptoms of eating disorders may adopt a vegetarian diet as a weight-loss method because it is a socially acceptable way to avoid eating certain food groups (6). Lobera and Rios found that patients with anorexia nervosa followed a characteristic pattern in that their diet was guided by the basic distinction between "good" (permitted) and "bad" (prohibited) foods. They consumed lower amounts of many food groups including bread and cereals, meat, cured meats, fat, and sweet and fried foods. In contrast, their consumption of vegetables was higher (51). This typical pattern of disordered eating is certainly conducive to self-reporting vegetarianism as a way to publicly explain some of the restrictive eating.

A 2002 study on vegetarian perceptions reported that over half of participants who were vegetarians and vegans had increasingly restricted their food choices over time. As vegetarians learned more about vegetarian nutrition and "factory farming" they gradually reduced their intake of dairy products and eggs, and in some cases foods with animal-derived ingredients like rennet and gelatin (3). Although this transition from a vegetarian diet to a more traditional vegan diet is not necessarily disordered eating behavior, the continuous restriction of more and more foods is also a behavioral characteristic of some eating disorders and may make the tendency greater for disordered eating in this population.

A 2008 study by Trautmann, et al., on first-year college students reflected this idea when they found that vegetarian participants had a significantly higher restrictive eating score (52) with almost half of them citing weight control as the reason they became vegetarian. This finding could be argued for relevance, as vegetarians inherently restrict foods based on the diet itself, not necessarily because of underlying disordered eating. However, this study also found a significantly higher average Eating Attitudes Test-26 (EAT-26) score in the vegetarian group when compared to non-vegetarians, indicating increased risk for disordered eating based on the responses of the vegetarians.

Abstaining from red meat is often the first step taken by those beginning a vegetarian lifestyle, and this diet change may be an indicator of the start of food group elimination to yield a sense of power and control over food, as is a common characteristic of those with eating disorders (5). When comparing perceptions of vegetarians, former

vegetarians and non-vegetarians with regards to red meat consumption, 85% of non-vegetarians and 66% of former vegetarians felt that red meat could be included as part of a healthful diet, whereas only 41% of current self-defined vegetarians felt this to be true (3). Barr also found that current vegetarians were more likely to display negative perceptions with regards to dairy products and often have a plan to further restrict these foods from their diets in the future (3). A review of 116 patients with diagnosed anorexia nervosa found that only 6% of these patients avoided meat prior to the onset of their eating disorder and those following a semi-vegetarian diet (of which approximately half continued to avoid red meat even after treatment) were associated with a longer duration of anorexia nervosa and a lower body weight during the course of their treatment (53).

Although many studies have found a positive association between vegetarianism and eating disorders, others have found no significant correlation between the two. This has been especially true when enforcing more strict vegetarian classification criteria. A 2003 study conducted by Klopp, Heiss and Smith concluded that self-reported vegetarians may be more likely to display disordered eating behaviours than non-vegetarians, as the vegetarians mean EAT-40 (40 item disordered eating risk assessment tool) score was significantly higher than that of the non-vegetarians. In this study, a majority of the self-reported vegetarians classified themselves as “semi-vegetarians” (willing to consume chicken and/or fish but not red meat- therefore not truly vegetarians by the generally accepted definition) and the most common reason given for choosing vegetarianism was health/nutrition, followed by weight control (5). However, the researchers admitted that

the self-reported format of the questionnaire and vegetarianism classification might have revealed some response biases. When semi-vegetarians are compared to more restrictive vegetarians (vegans, lacto-vegetarians), the semi-vegetarians are more likely to engage in weight control practices (7).

Diagnosing Eating Disorders

Eating disorders are a group of medical illnesses that display specific psychological, behavioural, and physiologic characteristics, which must be present for diagnosis (54). A disturbance in perception of body shape and weight is an essential feature of both anorexia nervosa and bulimia nervosa. Eating disorder patients demonstrate the same characteristic attitude about body image, such as fear of fatness or pursuit of thinness (55).

In May of 2013, the American Psychiatric Association released the revised 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) with significant updates to the criteria for diagnosing eating disorders. Major changes to this section include a new separate diagnosis for Binge Eating Disorder (BED) and removal of the previous "Eating Disorder Not Otherwise Specified" (EDNOS), as it was found in many studies that a significant number of those previously categorized under EDNOS may in fact have BED (56). Also revised in the manual is the addition of two new categories: Other Specified Feeding or Eating Disorder (OSFED) and Unspecified Feeding or Eating Disorder (UFED). The two new categories are intended to help categorize those who do not accurately fit into the Anorexia Nervosa, Bulimia Nervosa, or Binge Eating Disorder

(BED) diagnoses. In addition, some types of "Feeding Disorders" that were previously listed in other sections of the DSM are now grouped together with eating disorders. Diagnostic criteria as outlined in DSM-5 are as follows:

For diagnosis of Anorexia Nervosa an individual must display: Persistent restriction of energy intake leading to significantly low body weight (in context of what is minimally expected for age, sex, developmental trajectory, and physical health); and An intense fear of gaining weight or of becoming fat, or persistent behaviour that interferes with weight gain (even though significantly low weight); and Disturbance in the way one's body weight or shape is experienced, undue influence of body shape and weight on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight (57). Sub-types can include the restricting type or the binge-eating/purging type (57). Changes to these diagnostic criteria from the DSM-IV include elimination of the word "refusal" in terms of weight maintenance as that term implies intention by the patient. The DSM-IV also required amenorrhea, or at least three missed menstrual cycles, for diagnosis. The DSM-5 deletes this requirement as it cannot be applied to males, pre-menarchal and post-menopausal females, or females taking oral contraceptives. Also, it has been proven that in many cases patients may exhibit all other symptoms of anorexia but still maintain some menstrual activity (56).

Criterion for Bulimia Nervosa diagnosis include recurrent episodes of binge eating characterized by both of the following: Eating, in a discrete period of time (ex: within a 2-hour period) an amount of food that is definitely larger than most people would eat

during a similar period of time under similar circumstances; and A sense of lack of control over eating during the episode (ex: a feeling that one cannot stop eating or control what or how much one is eating). One must also display recurrent inappropriate compensatory behavior in order to prevent weight gain (such as self-induced vomiting, misuse of laxatives, diuretics, enemas or other medications, fasting, or excessive exercise). The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for three months; and Self-evaluation is unduly influenced by body shape and weight. This disturbance does not occur exclusively during episodes of Anorexia Nervosa (57). Revision to the diagnostic criteria from the DSM-IV included a decrease in frequency of binge eating and compensatory behaviors to once a week from twice weekly (56). The formal separation of Bulimia Nervosa into purging and non-purging sub-types has also been eliminated, although reference to both behaviors is continued in the diagnostic criteria.

The DSM-5 new category of Binge Eating Disorder (BED) lists the following criteria for diagnosis: Recurrent episodes of binge eating, characterized by both of the following: Eating, in a discrete period of time (ex: within any 2 hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances; and A sense of lack of control over eating during the episode (feeling that one cannot stop eating or control what or how much one in eating). In addition, the binge eating episodes are associated with three or more of the following: Eating much more than normal; Eating until feeling uncomfortably full, Eating large amounts of food when not physically hungry, Eating alone because of feeling

embarrassed by how much one is eating; and Feeling disgusted with oneself, depressed or very guilty afterward. Criteria for diagnosis also includes: Marked distress regarding binge eating is present; Binge eating occurs on average, at least once a week for three months; and Binge eating not associated with the recurrent use of inappropriate compensatory behaviors as in Bulimia Nervosa and does not occur exclusively during the course of Bulimia Nervosa, or Anorexia Nervosa methods to compensate for overeating, such as self-induced vomiting (57). This disorder is much more severe than typical overeating and is commonly linked with obesity as the extreme excess caloric intake results in increased body mass.

In order to be diagnosed with one of the two new categories, Other Specified Feeding or Eating Disorder (OSFED) and Unspecified Feeding or Eating Disorder (UFED), an individual must present with feeding or eating behaviors that cause clinically significant distress and impairment in areas of functioning, but do not meet the full criteria for any of the other feeding and eating disorders (57). OSFED examples include: Atypical Anorexia Nervosa (in which all criteria are met except the person's weight is within or above the normal range despite significant weight loss); BED of low frequency and/or limited duration (of less than three months); Bulimia Nervosa of low frequency and/or limited duration (for less than three months); Purging Disorder (recurrent purging behavior to influence weight or shape in the absence of binge eating); or Night Eating Syndrome (recurrent episodes of night eating after awakening from sleep or excessive food consumption after the evening meal) (57). The UFED diagnosis may be used by a

clinician when they choose not to explain why an individual does not meet diagnostic criteria for another eating disorder.

Feeding disorders now grouped in the DSM-5 with eating disorders include: PICA (an individual persistently consumes non-nutritive substances for extended periods of time), Rumination Disorder (an individual regurgitates food in the absence of a medical or GI condition etiology), and Avoidant/Restrictive Food Intake Disorder (ARFID), (persistent failure to meet appropriate nutritional needs associated with significant weight loss, nutritional deficiency, dependence on enteral feeding/nutritional supplements and marked indifference with psychosocial functioning). ARFID is not explained by unavailability of food or a cultural practice, is not attributed to a medical condition or other mental health disorder, and there is not a disturbance in the experience of the individual's body weight or shape (57).

As these Feeding disorders are newly grouped in with Eating Disorders in the DSM-5, this study does not presume any tendency towards risk of these specific behaviors in the assumptions/relationships found by those participants scoring at high risk for disordered eating behaviors.

Disordered Eating versus Eating Disorder

Disordered Eating has been defined as "a wide range of irregular eating behaviours that do not warrant a diagnosis of a specific eating disorder" (58). As the new DSM-5

includes OSFED and UFED as diagnostic options, inclusion of many people with true eating disorders should improve. However, it is possible for one to experience periods of disordered eating unrelated to an actual tendency towards a diagnosable eating disorder. Disordered eating is a descriptive term, not a diagnosis. In addition to desire for weight loss/control, disordered eating may also be the result of stress (physical or emotional) or a change in living environment leading to abnormal eating patterns. Signs/symptoms of disordered eating such as weight fluctuations, preoccupation with food, compulsive or emotionally-driven eating, and extremely rigid food regimes may be present in most with disordered eating patterns, however it is important for health practitioners to further investigate the reasoning behind the behaviour for proper treatment (59). This study aimed to evaluate the reasoning behind participant's food practices via questions regarding dietary motivators, eating attitudes, and dietary acculturation questions for first and second generation immigrants.

Cultural Background and Eating Attitudes

Dietary practices go through a period of transition when one relocates to a new country, and a period of disordered eating may result during this time. As one is immersed in the new culture's dietary habits and potentially struggles to locate their usually consumed foods, immigrant's meal plans may undergo a period of limited variety and even decreased overall food intake. This phenomenon must not be mistaken for those who are legitimately suffering from or developing an eating disorder.

Much research has shown that differential attitudes towards weight and body image may underlie differential prevalence in eating disturbances in various ethnic and cultural groups (8). Mukai et al. found that body fatness and body dissatisfaction were predictors for level of eating disturbance in American college students, whereas Japanese college students risk for eating disturbance was not determined by actual body fatness but instead body dissatisfaction and social approval (8). Mautner however, found no cultural difference in body image disturbance between multiple cultures. However, the participants from this study were females from the United States, England and Italy, which potentially lacks a comparison of true cultural differences due to general Western ideals and similarities among these three cultures (60).

Some studies have looked at acculturation of immigrant families into a more Westernized culture as a potential contributing factor in the development of eating disorders for some adolescent girls. Dinicola, proposed that anorexia may be viewed as a "cultural change syndrome" which illustrates the stresses related to immigration and acculturation as leading to the emergence of eating disorders in populations not previously considered to be at risk (61). A 1991 study of Indian children living in Britain found that those whose family maintained a more "traditional" lifestyle had a greater possibility of socio-cultural conflict (including eating attitudes and body-image beliefs) than those from a family that exchanged their culture for a more typical Western lifestyle (62). Based on the research, it is feasible to hypothesize that immigrant participants who follow a vegetarian lifestyle due to religious or cultural reasons will likely come from families who practice vegetarianism. Given that norms and social rules regarding such issues are largely

culturally determined, it is not difficult to envision that young people growing up in a situation involving conflict of two very different cultures may experience confusion, making them more susceptible to the development of eating disorders (a process which has often been linked to confusion regarding the individual's sense of self) (62).

Studies have found a significant correlation between abnormal eating attitudes and acculturation (63) with second-generation women endorsing the most disordered eating patterns and tendency towards acculturation of Western culture (64). Mujtaba and Furnham found that second generation British Asians had the highest EAT-26 scores and reported the most internal conflict between their families' cultural, religious and social practices in relation to their surrounding pressures outside the home (65). Parental influences via verbal messages and active encouragement have been shown to have more impact on children's body concerns and eating behaviors than modeling effects (66). This unclear and conflicting sense of self amongst second generation immigrants is conducive to the development of disordered eating in an effort for one to gain some control over their decisions, especially with perceived overprotective parents.

Recent immigrants are also at risk for eating disorders as the clash in cultures, separation from family and traditions, and adjusting to new social patterns may precipitate disordered eating behaviors (63). Mussap found that mainstream identification of a westernized culture was positively correlated with body dissatisfaction, dietary control, and binge eating, where heritage identification with a traditional culture was unrelated to these measures of disordered eating and was negatively correlated with purging behavior.

In this study, Muslim women were predisposed to negative body image and disordered eating and more likely to internalize the thin ideal once mainstream acculturation had taken place (67).

Placing little to no enjoyment value on eating, and instead meal planning with solely a weight control goal, may eventually lead to chronic dieting by an individual. Researchers have linked chronic dieting with increased risk for eating disorders and found females with a high level of acculturation to Anglo-American society, report lower self-esteem, higher depression and more disordered eating attitudes. Restrictive eating and other unhealthy behaviors have also been linked highly to body dissatisfaction. However, the psychological characteristics related to eating and weight appear similar for all individuals who diet, regardless of ethnicity (68).

Overall, the research on vegetarianism is extensive and the diet has proven to be a healthy option with obvious benefits to animals, and potentially the environment. Studies on veganism are less prevalent; however research in this area has been on the rise in the past decade. This shift towards vegan research is likely related to ease in ability to identify true vegans versus vegetarians. Although lifestyle choices among vegans may vary, the strict dietary guidelines are clear and more uniformly followed than vegetarian guidelines. Variations in vegetarian diets likely contribute to inaccuracies in self-reporting, which in turn may affect accuracy of some research findings. Some studies suggest that there may be a potential link between vegetarianism and eating disorders, however this "which came first…" scenario requires more in depth analysis of other

potential factors involved in the relationship. Those with eating disorders often hide the practices that would prove the presence of their eating disorder. Vegetarianism/veganism may be a convenient explanation for elimination of foods in those with eating disorders. Disordered eating (without the presence of a diagnosable eating disorder) may also be prevalent in vegans and vegetarians for multiple reasons. One factor contributing to this link may be a lack of knowledge on healthy meal planning while following the diet. Another potential factor is immigration status. As one struggles to adapt their customary dietary practices in a new environment, disordered eating is a possible result.

METHODS

Study Design and Sample

This is a descriptive, cross-sectional study evaluating vegan/vegetarian beliefs and current practices, using the theoretical framework of the Theory of Planned Behavior (69). Participants were recruited via the parent e-mail list-servs for the Vegetarian Resource Group (VRG) and the Academy of Nutrition and Dietetics' (formerly the American Dietetic Association) Vegetarian Nutrition Dietetic Practice Group (VNDPG). Approval was obtained by both groups prior to survey distribution and the proposal for this research was reviewed by the VNDPG Practice Manager and the VRG Nutrition Advisor.

This research utilized a survey tool developed for this study (see Appendix 1.1), which included two validated tools [the Eating Attitudes Test-26 (see Appendix 2.1) and the Body Image States Scale (see Appendix 3.1) - with permission from the developer] within the survey. Data was collected using an electronic format, created and disseminated using SurveyMonkey©. For participant protection, consent forms were embedded in the survey that had to be electronically signed prior to continuing on with the survey questions. The electronic survey was pilot-tested through the Syracuse University Nutrition Science and Dietetics Graduate list-serv prior to official study initiation. Approval from the Institutional Review Board of Syracuse University was obtained with assignment to exempt category 2.

Measures

Demographic Information

To analyze independent variables, the survey tool included a demographic section to obtain participant's age, height, weight, weight history. Participants' self-reported height and weight were used to calculate body mass index (BMI) (calculated as kg/m^2). Participants were then categorized into the following standardized categories: BMI <18.5 underweight, BMI 18.5-24.9 normal weight, BMI 25-29.9 overweight, BMI >30 obese (with further breakdown into grade 1 obesity BMI 30-34.9, grade 2 obesity BMI 35-39.9, and grade 3 (extreme) obesity BMI >40) (70). Participant reports of recent weight trends (gain, loss or stable) were also evaluated.

Race/Ethnicity/Cultural Information

Other independent variables included in the survey tool were race and country of origin for the participants and their parents. This study looked to evaluate cultural influence on previous and current dietary practices of participants. Acculturation of foreign-born participants was evaluated through a series of questions regarding length of time living in the United States and dietary practice changes since moving to this country. Also assessed was the potential parental influence on participant's dietary practices through evaluation of parental country of origin and current or former vegan/vegetarian practices.

Dietary Information

Information was obtained on current dietary intake using a 9-item food-frequency questionnaire that was specific to foods that may or may not be omitted if someone were

consuming a vegan or vegetarian diet. This was included in order for the researcher to validate self-reported vegan or vegetarian status.

Current vegetarian/vegan status and self-classification on type of vegetarian practice was obtained. The two most common ways of defining vegetarian diets in the research are vegan diets: Diets devoid of all flesh foods; and vegetarian diets: Diets devoid of all flesh foods, but also include egg and or dairy products (1). The survey tool included strict vegan, lacto-vegetarian, lacto-ovo-vegetarian, pesco-vegetarian, pollo-pesco-vegetarian, semi-vegetarian, or "other" as options for self-classification. Those who classified themselves as vegan or vegetarian were questioned on length of time following the diet and motivation for their dietary practices.

Motivation for Dietary Practices

Considerable research documents motivations for adopting a vegan or vegetarian diet. Participants in this study were asked to rate the importance of animal rights, religion, family practice, environmental concerns, weight control/health benefits, or food safety concerns as potential reasons influencing their choice to follow a vegan/vegetarian diet using a tool developed for this study based on the constructs of the Theory of Planned Behavior.

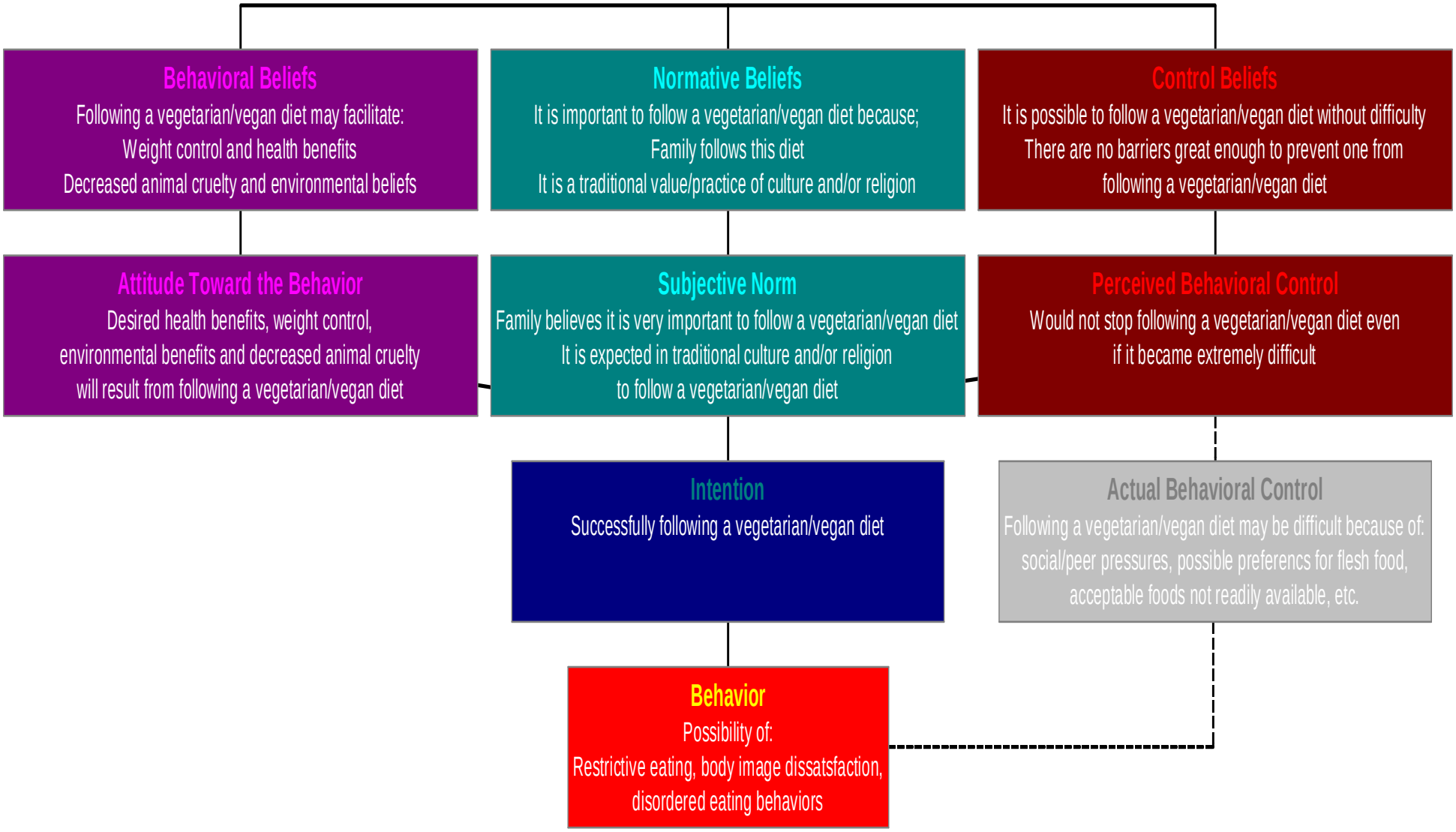
According to the Theory of Planned Behavior, human action is guided by three kinds of considerations: beliefs about the likely outcomes of the behavior and the evaluation of these outcomes (behavioral beliefs), beliefs about the normative expectations of others

and motivation to comply with these expectations (normative beliefs), and beliefs about the presence of factors that may facilitate or impede performance of the behavior and the perceived power of these factors (control beliefs) (69).

The motivational section of the survey utilized the Theory of Planned Behavior in the following constructs (see Figure 1.1). This study's survey tool used a four-point Likert scale (a mid-point option of "*neither agree nor disagree"* was not included) for participants to either strongly disagree, disagree, agree, or strongly agree with the listed potential motivations for their eating patterns. A four-point scale was chosen over the traditional five-point scale to help prevent central tendency bias of responses. This forced-choice method was deemed necessary for this study, as belief responses for this section of the survey were critical for overall analysis and correlation of data.

Proposed Application of the Theory of Planned Behavior

Figure 1.1



Body Image States

To assess the dependent variable of body image, the survey incorporated a section using the Body Image States Scale (BISS) (see Appendix 2.1). This validated tool is a six item questionnaire that measures the following domains of current body experience: dissatisfaction- satisfaction with one's body size, body shape, overall physical appearance, and weight, current feelings about one's looks relative to how one usually feels, feelings of physical attractiveness- unattractiveness, and evaluation of one's appearance relative to how the average person looks (71). The BISS has been found to be a reliable tool that unlike many other body image assessments has proven valid for both sexes. Responses are based on a 9-point Likert-type scale. The six item measures are scored on a 1-9 point value scale, with reverse scoring for measures 2, 4 and 6 prior to taking the mean of the six items' scores. Low total scores for the tool (<30) reflect more negative body image states and high scores (>30) reflect more positive states.

Eating Attitudes

To assess the dependent variable of disordered eating risk, scores were calculated from the Eating Attitudes Test included as part of the questionnaire. The Eating Attitudes Test is a screening test that assesses attitudes and concerns common in people with eating disorders (see Appendix 3.1). The EAT-26 has been found to be a reliable, valid and economical instrument, which may be useful as an objective measure of the symptoms of anorexia nervosa (72). Results of the EAT-26 have been found to be highly correlated with results of the original 40-item EAT ($r = 0.98$) and is now the more commonly used version. Studies have also looked at use of a 10-item EAT and found a highly internal

consistent measure of the principal EAT construct, indicating promise of being a valid eating disorder screening test (73). This version, however, has not been thoroughly validated or widely used.

A score of 20 or greater on the EAT-26 indicates concerns regarding body weight, body shape and eating, which may indicate the presence of an eating disorder. Scores below 20 do not suggest disordered eating (assuming that responses provided were true and accurate) (72). Based on these scores, participants for this study were grouped into low, moderate or high disordered eating risk based on analysis of the surveys. The high-risk group includes participants who score 20 or greater on the EAT-26. Moderate risk indicates a score of 10-19 on the EAT-26. The low risk group consists of participants who scored less than 10 on the EAT-26.

Study Criteria

Inclusion Criteria

For inclusion in the vegan/vegetarian group, participants were self-reported and confirmed vegan, lacto-, or lacto-ovo-vegetarian. The variations within vegetarian diets make absolute categorization of vegetarian practices difficult. For example, some who consume a macrobiotic diet, a raw food diet, a fruitarian diet or even those who occasionally consume fish, poultry or even red meat, may consider themselves vegetarians (1). In some research studies, these self-defined vegetarians are identified as semi-vegetarians. Because of this level of potential variability among vegetarians, actual vegan and lacto/lacto-ovo-vegetarian status was confirmed using data collected from the

food-frequency questionnaire portion of the survey. Participants consuming any type of flesh food were considered an omnivore and were placed in the "comparison" group for analysis.

The participants must also have been consuming a vegan or lacto/lacto-ovo-vegetarian diet for at least 1 year prior to completion of the survey in order to be included in the vegan/vegetarian group. This timeframe was chosen to help avoid any skewed data, as those who have recently adopted a vegetarian diet may have a higher incidence of disordered eating than those who have followed this type of eating pattern over a longer period of time.

Exclusion Criteria

Excluded from data analysis were any participants with diagnosed chronic disease that restricts ability to eat certain foods or carries specific diet recommendations for eating patterns (i.e.: Diabetes Mellitus, Crohn's disease, Ulcerative Colitis and Diverticular disease). Note this did not include conditions such as Celiac disease, food allergies or lactose intolerance as there are comparable food products available for purchase with ingredient specific substitutions. In addition, participants with a previous or current diagnosed (per DSM-5) eating disorder (57) were excluded from the analysis.

Data Analysis

This study was unique in that it evaluated multiple variables simultaneously in relation to vegetarian/veganism and disordered eating risk. Researcher validation of self-reported vegetarian/veganism and strict criteria for inclusion in the study groups allowed the potential for more specific analyses and correlations to be made in regards to dietary perceptions and practices than previous studies.

Data were analyzed using The Statistical Package for Social Sciences (SPSS), Predictive Analysis Software (PASW) Statistics, version 18.0, 2009, Chicago, IL. Frequencies were determined to assess demographic trends for the sample. Cross-tabs and T-tests were used to evaluate basic relationships of disordered eating risk and body image states between the vegan/vegetarian and omnivore groups. Also analyzed was the potential link between accurate self-reporting of vegetarian status and body image/disordered eating risk. The vegan/vegetarian group's motivation for following their current diet was also compared to risk for disordered eating and negative body image using regression analysis. Disordered eating risk and body image were also evaluated specifically for first and second generation immigrants; however the small sample size for these groups prevented detailed analysis in this area.

RESULTS

Study Sample

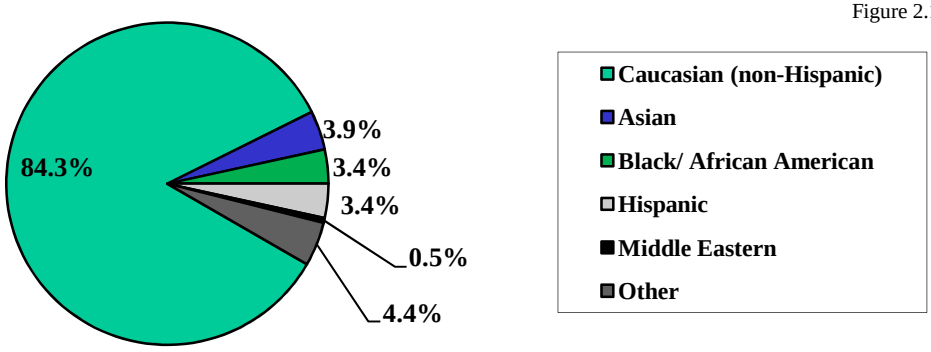
In this study of 253 respondents, 232 participants completed the full electronic survey. Of the 232 respondents who completed the full survey, 28 were excluded based on exclusion criteria, resulting in a full study sample size of 204 participants. Participants excluded for medical reasons were as follows: 2 with Crohn's Disease, 1 with Ulcerative Colitis, 8 with Diabetes Mellitus, 4 with Diverticulosis, and 14 with previous or current diagnosed eating disorders.

Demographic information was obtained for the entire study sample. The sample included 189 females and 15 males ranging from 18 to 76 years old (with a mean age of 39 years). This study did not have a large enough group of vegetarian/vegan males to accurately assess any trends.

Participants were asked to provide their race/ethnicity and results were as follows: 172 Caucasian (non-Hispanic), 8 Asian, 7 Black/African American, 7 Hispanic, 1 Middle Eastern, and 9 respondents who were bi/multi-racial or chose not to answer this question. Figure 2.1 illustrates the race percentage breakdown.

Study Sample Race/ Ethnicity Breakdown

Figure 2.1



Sixteen respondents were born outside the United States with countries of origin including: Australia, Brazil, Canada, England/the United Kingdom, France, Malaysia, Norway, Puerto Rico, and Zambia.

Weight status and recent weight change was assessed for all study participants. The full sample had a mean Body Mass Index of 24 with 5% underweight, 65% at normal weight, 20% overweight, 7% with Grade 1 obesity, 2% with Grade 2 obesity, and 1% with Grade 3 obesity (per standardized categories). Thirty-nine percent of participants had experienced a weight change in the past year. This number was evenly split with half (50%) having lost weight and half gained weight.

All participants were asked to report if they considered themselves to be a vegan or vegetarian at this time. If they responded "yes", more detailed information on their dietary practices was asked. The following analyses reflect responses to these questions. (Note- participants who did not classify themselves as vegan or vegetarian, did not answer these questions).

Confirmation of Vegan/Vegetarian Status

The present study included 128 (51%) self-reported current vegans or vegetarians. Breakdown of self-reporting classification was as follows: 59 Strict vegans, 8 Lacto-vegetarians, 35 Lacto-ovo-vegetarians, 6 Pesco-vegetarians, 0 Pollo-pesco-vegetarians, 2 Semi-vegetarians, 17 participants who classified themselves as "Other" (indicating they eat a combination of foods preventing a true classification), and one participant who chose not to classify herself.

A comparison of subject self-classification with participants reported information from the food-frequency questionnaire, uncovered significant discrepancy. Applying the true definitions of each of these classifications revealed that in actuality there were: 35 strict vegans, 8 Lacto-vegetarians, 37 Lacto-ovo vegetarians, 9 Pesco-vegetarians, and 2 Pollo-pesco vegetarians. Figure 3.1 indicates accuracy of participant self-reporting.

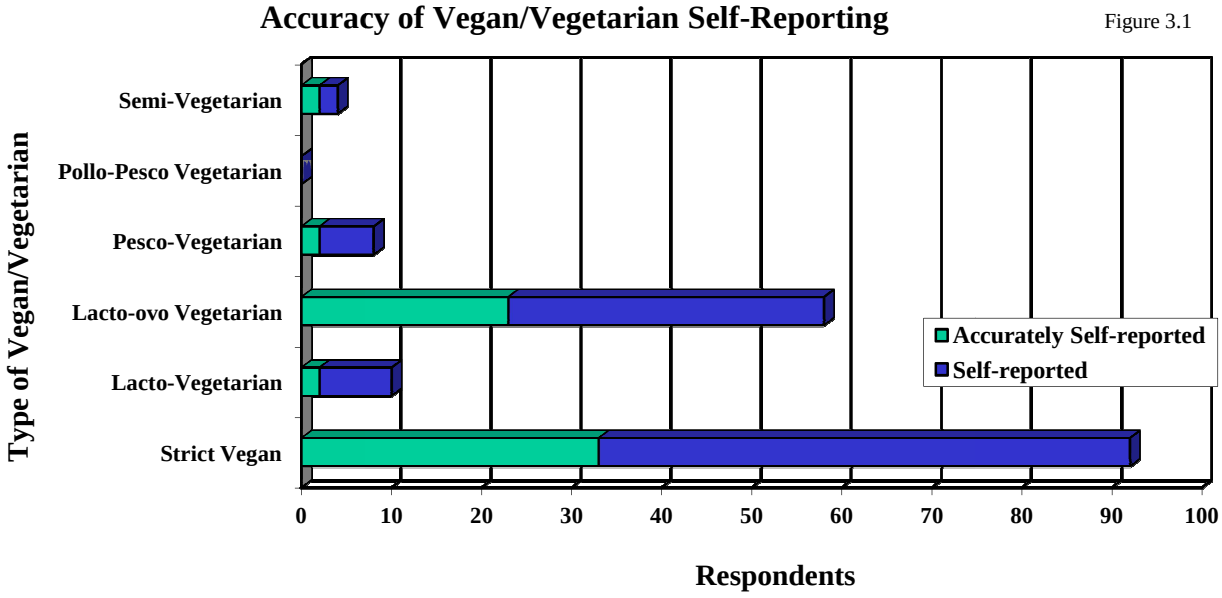


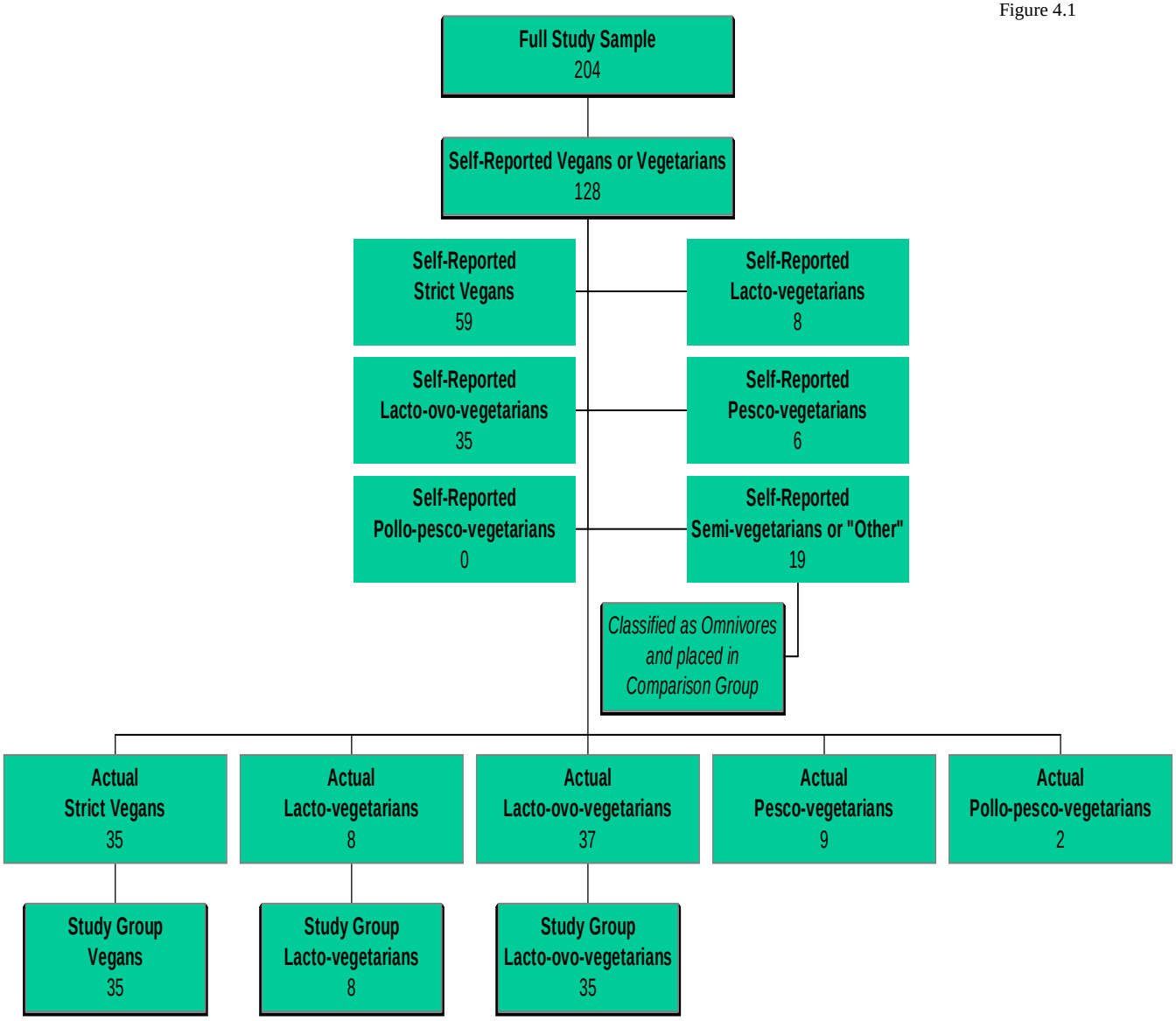
Figure 3.1

Sixty of this group accurately reported their status, indicating an only 47% accuracy rate in self-reported classification of vegan/ vegetarian status. Note that upon closer examination, the 2 self-reported "Semi-vegetarians" actually consume all animal products (including red meat) at least on occasion. This study classified them, as well as all other inaccurate self-reporters not fitting into a defined group, as non-vegan/ non-vegetarian at this point in time. There were 4 participants who eat a combination of foods making a distinct categorization difficult (these included 2 participants who are vegan but eat honey, and 2 participants who eat eggs and products containing animal-derived ingredients but no meat or dairy products), and therefore they were also excluded from the vegan/vegetarian study group.

To meet the criteria for inclusion in the vegan/vegetarian group, participants must have been a confirmed strict vegan or lacto-vegetarian, and have been following this meal pattern for >1 year prior to completing the survey. After this filter was applied, the vegan/vegetarian group consisted of 78 participants' (31%) who qualified under the defined criteria: 35 vegans, 8 lacto-vegetarians and 35 lacto-ovo vegetarians. All other participants were placed into the "comparison group" for analysis. Of note, 57 of the 78 in the vegan/vegetarian group accurately self-reported their vegan/vegetarian status, showing an improved accuracy rate of 74%, versus 47% of the total 128 self-reporters. Figure 4.1 illustrates the utilized filtering process to obtain the vegan/vegetarian group.

Filtering of Full Sample to Vegan/Vegetarian Group

Figure 4.1



For detailed analysis within the vegan/vegetarian group, lacto- and lacto-ovo-vegetarians were grouped into one “vegetarian” sub-group.

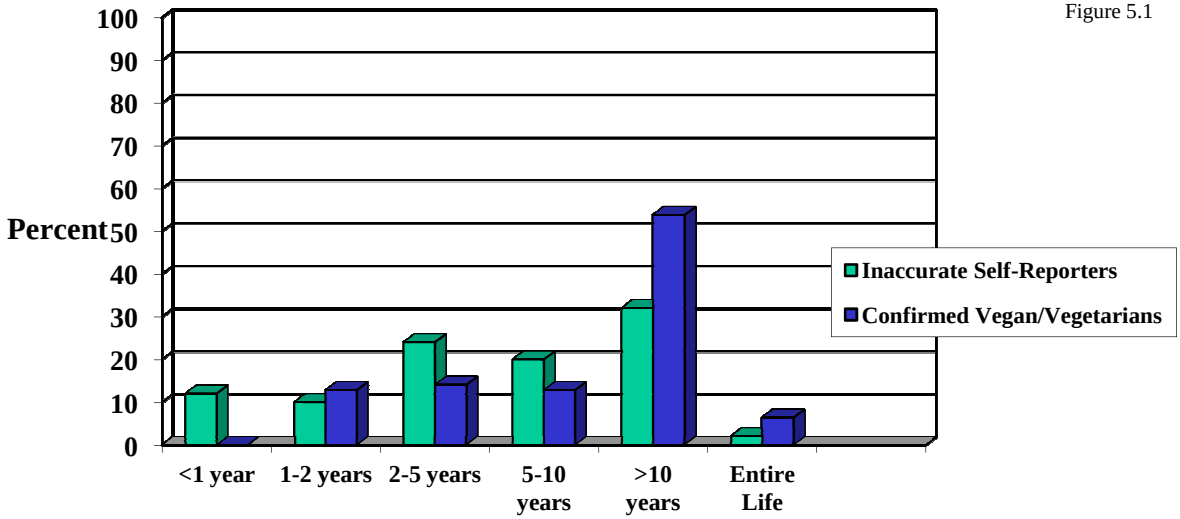
Duration of Following Current Meal Plan

Of the self-reported vegans and vegetarians who did not meet FFQ confirmation criteria for inclusion in the vegan/vegetarian group, the majority of respondents (56%) had been

following their current diet for less than 10 years with 20% having followed this diet for less than 2 years. This is in contrast to the confirmed vegan/vegetarian group in which the majority (60%) has been following the diet for more than 10 years, with 6% having followed this diet their entire lives. (Note for the vegan/vegetarian group all participants had been following the diet for >1 year, per the inclusion criteria). See Figure 5.1

Length of Time Consuming Vegetarian or Vegan Diet Comparison

Figure 5.1



Motivation for Dietary Practices

For all self-reported vegans and vegetarians, the most commonly cited motivation for following their specific dietary pattern was related to animal rights/cruelty (47%). This belief was mirrored in the confirmed group only at a stronger degree, as 53% of the study group listed animal rights/cruelty as the most important reason they follow their diet. Of the vegan/vegetarian group 88% agreed or strongly agreed that eating animal products is unethical and/or cruel.

"Potential health benefits" was the second most cited motivator (32%) for all self-reported vegans and vegetarians. Ninety-seven percent of the vegan/vegetarian group felt that eating a the diet is healthier than diets containing meat, and 28% of this group deemed health benefits as the most important motivator in following their current diet. Only one participant (not included in the vegan/vegetarian group) cited weight control as the most important reason for following their current diet although 68% of the confirmed vegan/vegetarian group agreed (or strongly agreed) that eating the diet would help them lose weight.

Fifteen percent of the vegan/vegetarian group agreed (or strongly agreed) that following their current diet was an essential part of their religious beliefs. However, only one participant in this group cited religion as their primary motivation for consuming their current diet.

No participants listed food safety concerns as their most important reason for following their current diet although 90% of vegan/vegetarians agreed (or strongly agreed) that there are less food safety concerns when eating their diet.

Eight percent of all self-reported vegans and vegetarians reported environmental concerns as their primary dietary motivator, with 4% of the confirmed group mirroring this value.

Other primary dietary motivators provided by vegan/vegetarian participants (written in as "other") included overall commitments to non-violence, and potential environmental

benefits (to plants, animals and humans). In relation to these comments, 80% of vegan/vegetarian participants strongly agreed that eating the diet is better for the environment.

Further breakdown of motivations for vegans and vegetarians within the confirmed group indicated a statistically significant difference in motivation for consumption of their chosen diet. The primary vegan motivator was animal rights, with 71% of vegans reporting this. The vegetarian sub-group however most commonly cited health benefits as the primary motivator (42%). Detailed data provided by the confirmed group for motivations is illustrated in Table 1.1.

Confirmed Vegan and Vegetarian Dietary Motivations

Table 1.1

n = 78	Vegans		Vegetarians	
	Frequency	Percent	Frequency	Percent
Animal Rights/ Cruelty	25	71.4	16	37.2
Religion/ Traditional Culture	0	0	1	2.3
Health Benefits	4	11.4	18	41.9
Weight Control	0	0	0	0
Environmental Concerns	2	5.7	1	2.3
Food Safety Concerns	0	0	0	0
"Other" Motivations	4	11.4	7	16.3

In relation to dietary motivation, control beliefs were assessed through a series of questions in which the participants were asked to rank the importance of their dietary habits, their perceived difficulty in following the diet and the likelihood they would stop

consuming a vegan or vegetarian diet if it became too difficult. All (100%) of vegans/vegetarians agreed or strongly agreed that following a vegan or vegetarian diet was very important to them. Only one participant felt that following their current diet was extremely difficult and 92% of participants disagreed or strongly disagreed that they would stop consuming their current diet if it became too difficult.

Acculturation

First-Generation Americans

Nine percent (16) of confirmed vegan/vegetarians were not born in the United States. Time living in this country ranged from less than 1 year to more than 10 years. Of these participants, 4 were currently strict vegans and 3 were vegetarians. One of the vegans and 3 of the vegetarians had practiced their current diet prior to coming to the United States. Eighty-six percent (6) reported that their dietary practices have significantly (if not completely) changed since coming to the U.S., although 43% (3) stated that they still consume foods/dishes native to their home country on at least a weekly basis [with 29% (2) still consuming native dishes daily]. There was no relationship observed between length of time living in the United States and change in dietary habits for these vegetarians or vegans, although this result cannot be generalized due to the small sample size.

Six out of these seven first generation Americans agreed that it is important to their family that they consume a vegan or vegetarian diet; however none of their parents are reported as ever following a vegan or vegetarian diet themselves.

Second-Generation Americans

The full study sample contained 23% (47) Americans with at least one parent who was born outside the United States (from England, Italy, Germany, Japan or the Dominican Republic). Of these second-generation Americans, 10 reported themselves as strict vegans and 8 as vegetarian.

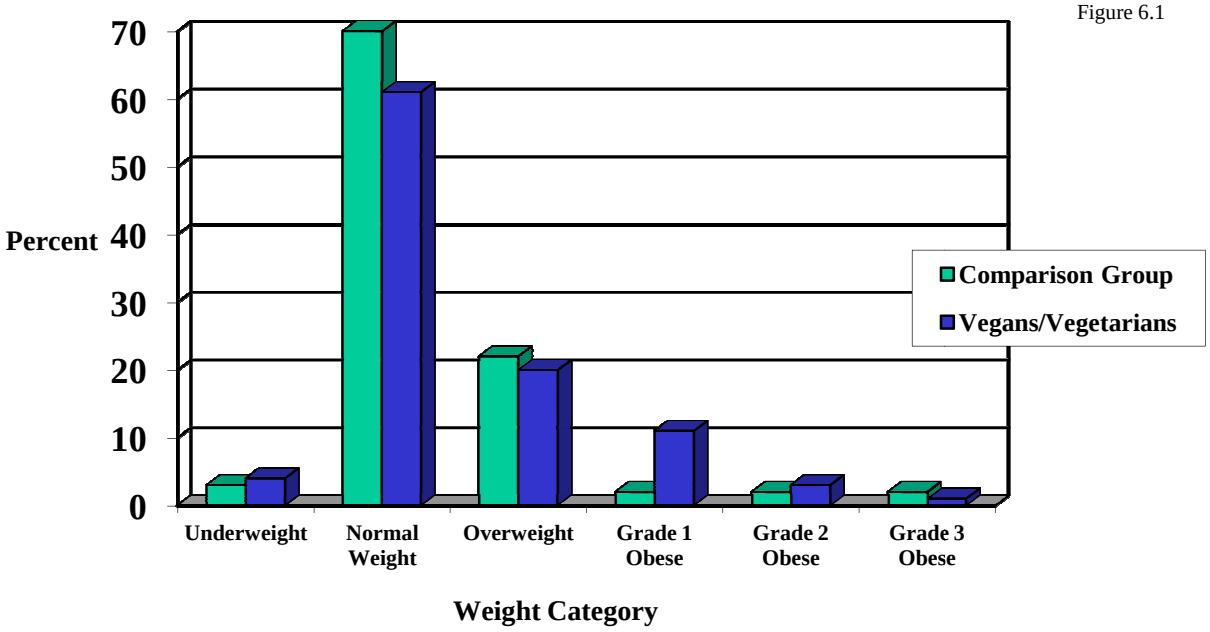
Of this group, 78% (14) agreed or strongly agreed it is important to their families that they consume a vegan diet, however only two participants had a parent who currently practices a vegan or vegetarian diet. Only one of the participants' parents had practiced a vegan or vegetarian diet prior to coming to the United States.

Weight Status

The comparison group was 4% underweight, 61% normal weight and 35% overweight or obese versus the vegan/vegetarian group with 3% underweight, 70% normal weight, and 27% overweight or obese. Figure 6.1 illustrates weight category comparisons.

Participant Weight Categorizations

Figure 6.1



Participants were asked to state if they had a weight change in the past year and to specify the amount lost or gained. In the comparison group, 47% of participants had experienced a weight change in the past year, with 19% having lost weight. In the vegan/vegetarian group, 35% had experienced a weight change with 22% having lost weight. Of the vegans/vegetarians with weight loss, 65% were vegetarian and 35% were vegan.

Of the self-reported vegans or vegetarians who had been following the diet for <1 year, 50% reported recent weight loss, with 63% of them citing health benefits or weight control as the most important reasons they follow their current dietary pattern.

Of those who inaccurately self-reported themselves as vegan or vegetarian, 15% had experienced weight loss versus 18% of those who accurately reported their vegan or vegetarian status.

Body Image States

The overall full sample of this study displayed a more positive body image state with a mean Body Image States Scale (BISS) score of 34. The vegan/vegetarian group displayed slightly more positive body image than did the comparison group with mean scores of 36 and 33 respectively. Breakdown of the sample showed that vegans have the most positive body image state with a mean score of 39, versus vegetarians with a mean score of 34.

In the vegan/vegetarian group, the BISS question reflecting the most positive body image was regarding physical appearance, in which 63% of vegans and 49% of vegetarians stated they were "mostly" or "extremely satisfied with their physical appearance". No question revealed an overall negative body image for the vegetarian group; however a question regarding the individual's looks revealed a neutral body image state. In this question 61% stated that they currently feel "about the same about my looks as I usually feel". For the vegans, this same question revealed a slightly positive body image state with a mean score of 5.3 (out of 9). Figure 7.1 provides further illustration of answers regarding body image states for the vegan/vegetarian group.

Vegan and Vegetarian Mean Scores for BISS Specific Responses

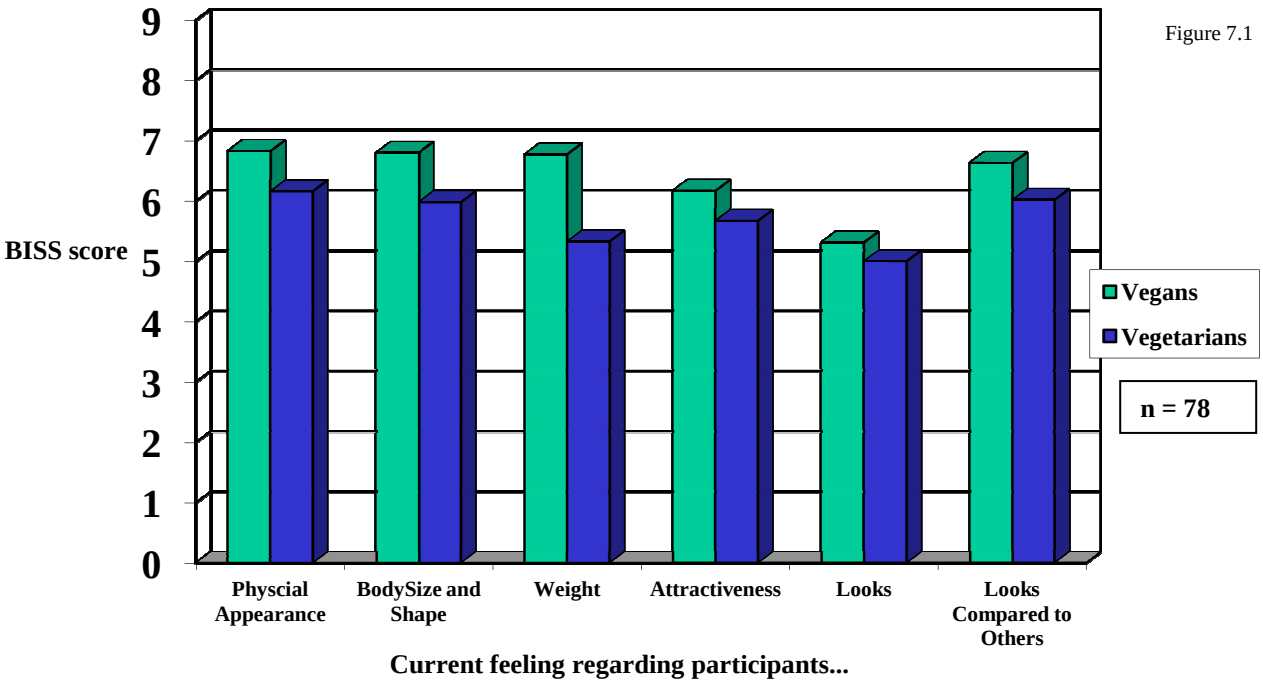


Figure 7.1

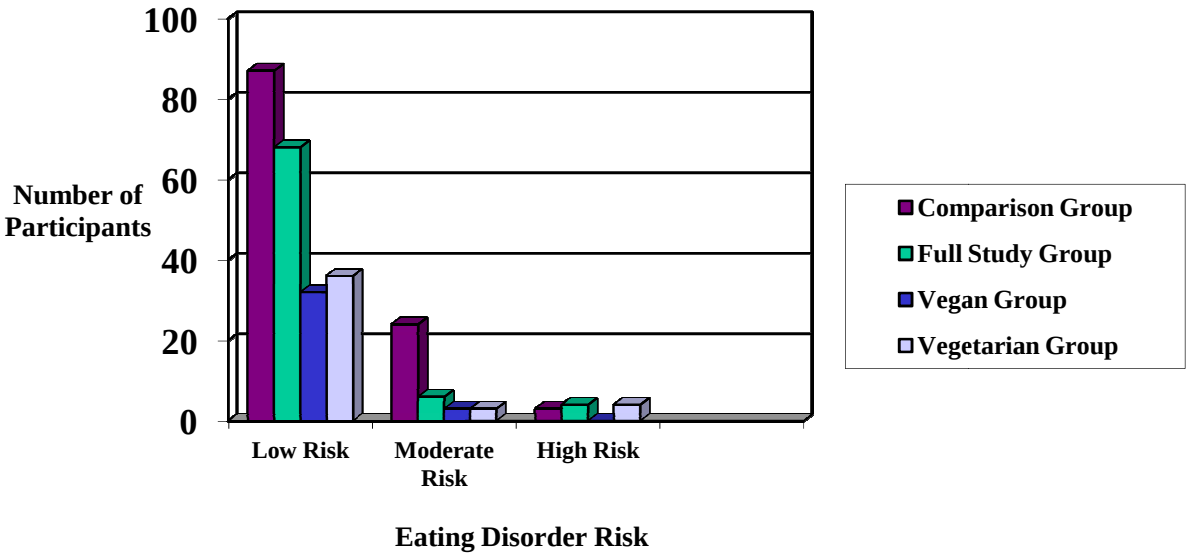
Eating Attitudes

The average EAT-26 score for all study participants was 6.1, indicating low disordered eating risk. Both the comparison group and the vegan/vegetarian group had an average score indicating low disordered eating risk, however the average score of the comparison group was higher at 6.8 than that of the vegan/vegetarian group at 5.1. Interestingly, of those in the study who scored at moderate or high risk for disordered eating, 27% (10) were confirmed vegetarians/ vegans, whereas 51% (19) were inaccurate self-reporters of vegetarian and vegan status (placing them in the comparison group). There was a statistically significant relationship between being vegan/ vegetarian and the average EAT-26 score.

Within the vegan/vegetarian group a statistically significant (.01) relationship was found between the vegan group and their EAT-26 score. The average vegan (n = 35) EAT-26 score was 3.9, which was significantly lower (.028) than the vegetarians (n = 43), whose average score was 6.1. Ninety-one percent of vegans had EAT-26 scores which indicated low disordered eating risk and 9% had moderate disordered eating risk scores. Of the vegetarians, 84% scored low-risk, 7% scored moderate-risk, and 9% scored high-risk. Figure 8.1 further illustrates the EAT-26 scores for the vegan and vegetarian groups.

Breakdown of Eating Disorder Risk

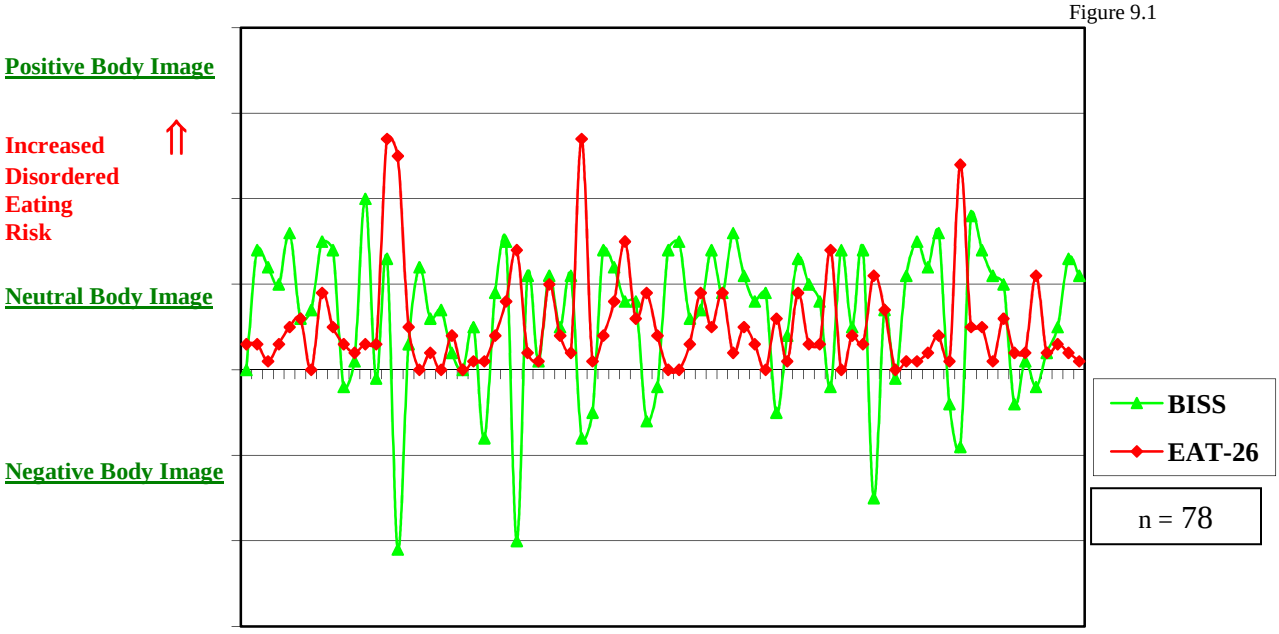
Figure 8.1



There was a statistically significant relationship (.03) found in the vegan/vegetarian group between disordered eating risk and body image. Figure 9.1 reflects this relationship.

Correlation Between EAT-26 and BISS scores

Figure 9.1



Vegan/Vegetarian Group Scores

Moderate Disordered Eating Risk

Of all study participants, 30 people (27 females and 3 males) scored at "moderate risk" for disordered eating, per the guidelines established by this study. Twenty-nine were Caucasian (non-Hispanic) and one was Asian. Seventeen were self-reported vegetarians or vegans, and 6 had accurately classified themselves and were included in the vegan/vegetarian group (3 confirmed vegans and 3 confirmed vegetarians). The mean BISS score of these 30 participants was 28, reflecting an overall negative body image for this group.

Of all moderate-risk self-reported vegans and vegetarians, listed motivations for following their current diet were as follows: 47% animal rights/cruelty, 29% health benefits, 12% environmental concerns, and 12% reported "other" motivations. Of the 6

included in the vegan/vegetarian group, four listed animal rights/cruelty, one listed health benefits, and one listed environmental concerns as their most important dietary motivator.

High Disordered Eating Risk

Of all study participants, only seven people scored at "high risk" for disordered eating. The seven high-risk people consisted of four vegetarian participants, two inaccurate self-reported vegetarians, and one non-vegan/vegetarian.

Of the high-risk participants, the average EAT-26 score was 26.1 and they displayed an overall negative body image state with a mean BISS score of 26. All these participants were female, 4 were Caucasian (non-Hispanic) and 3 were Hispanic, 2 had weight changes in the past year (with one gaining weight and one losing weight), and 6 were self-reported vegetarians (5 lacto-ovo-vegetarians and 1 pesco-vegetarian). Reported motivations for consuming a vegetarian diet in all self-reported vegetarians, are illustrated in Table 2.1.

Dietary Motivations of High Disordered Eating Risk, Self-reported Vegetarians

Table 2.1

	Self-reported vegetarians (n = 6)	
	Frequency	Percent
Animal Rights/ Cruelty	2	33.3
Religion/ Traditional Culture	0	0
Health Benefits	2	33.3
Weight Control	1	16.7
Environmental Concerns	1	16.7
Food Safety Concerns	0	0

Four high-risk participants were included in the vegan/vegetarian group, and were all confirmed lacto-ovo vegetarians. They listed animal rights and health benefits evenly (2 each) as the common motivators for consuming their vegetarian diet. Specific notable responses to questions on the EAT-26 test for these four participants are illustrated in Table 3.1.

Notable Responses to EAT-26 Questions
Among Vegan/Vegetarian, High Disordered Eating Risk Participants

Table 3.1

n = 4	**Number of Respondents Answering…**		
EAT-26 Question	**"Always"**	**"Usually"**	**"Often"**
Am terrified about being overweight	2	2	
Find myself pre-occupied with food		1	2
Aware of the calorie content of the foods I eat		4	
Particularly avoid food with a high carbohydrate content	1		2
Feel extremely guilty after eating	1	1	
Am preoccupied with a desire to be thinner	1	2	
Think about burning up calories when I exercise	2	1	
Am preoccupied with the thought of having fat on my body	2		1
Feel that food controls my life		1	2
Give too much time and thought to food	1	2	
Feel uncomfortable after eating sweets		3	
Engage in dieting behavior		3	
Like my stomach to be empty	1	1	1

Three of these four participants also had BISS scores reflecting negative body image, with a mean score for the group of 24. The lowest scoring BISS question for this group was a question regarding satisfaction with their current weight, in which three of the four stated they were "mostly" or "extremely dissatisfied with their weight".

Acculturation and Disordered Eating Risk

First Generation Americans

Of first-generation American immigrants, 9 had an EAT-26 score that placed them in the low disordered eating risk category, 3 were "moderate risk" and none were "high risk". They displayed an overall positive body image state with a mean BISS score of 39. The three moderate disordered eating risk participants all self-reported that they currently followed a vegan or vegetarian diet, and that they had followed this diet prior to coming to the United States. Included in this group were one vegan and one vegetarian, both of whom listed their primary dietary motivator as animal rights/cruelty.

Second Generation Americans

Of second-generation American immigrants, 18 had an EAT-26 score that placed them at low disordered eating risk, 3 were "moderate risk", and 3 were "high risk". This group also displayed an overall positive body image state with a mean BISS score of 32. Eleven of these participants were confirmed vegans or vegetarians (6 vegan and 5 vegetarian) and 9 of them had accurately classified themselves as vegan or vegetarian.

Of the 11 second-generation American vegan/vegetarians, 8 were Caucasian (non-Hispanic), 1 was Hispanic and 2 were bi/multi-racial. The mean EAT-26 for these 11 participants was 7.5, which was the highest average of any group analyzed in this study. Their mean BISS score of 31 showed a slightly positive body image state, however it was lower than the second-generation American group as whole, and lower than the first-generation Americans. Eight of this group agreed or strongly agreed that following their

current diet could help them lose weight and three had in fact lost weight over the past year. The average BMI of this group at the time of the study was in the "normal weight" category at 22.9.

Eight of this group strongly agreed that their practicing a vegan or vegetarian diet was very important to their family; however, only two had parents who currently practice a vegan or vegetarian diet. All reported "never" or "rarely" to the following questions on the EAT-26: "Feel that others would prefer if I ate more", "Other people think that I am too thin", "Feel that others pressure me to eat".

DISCUSSION

Participants of this study were largely female, Caucasian, of normal weight, and less than 40 years of age. Overall the sample displayed a positive body image with low risk for disordered eating behaviors, and over half of all participants considered themselves to be vegetarian or vegan. Once vegan/vegetarian inclusion criteria were applied and the study group was paired down to smaller subgroups, some interesting trends were discovered in relation to the research questions.

Accurate Self-Reporting of Vegetarian/Vegan Status

This study found a poor accuracy rate of self-reporting vegetarian/vegan status when compared to an operationalized definition (1), which mirrors results in the literature on this topic (20). Less than half of participants in this study who declared themselves as vegetarian or vegan were confirmed as actual vegetarians or vegans.

When inaccurate self-reporters' risk for disordered eating behavior was compared to the risk with confirmed vegetarians and vegans, a large discrepancy emerged. Almost double the number of inaccurate self-reported vegetarians/vegans scored at moderate/high disordered eating risk than did confirmed vegetarian/vegans. This result further supports the theory that those with disordered eating may use the vegetarian/vegan labels as socially acceptable ways to explain elimination of foods instead of actual interest in conforming to the definition of the diets. This was further confirmed by the BISS scores for the inaccurate self-reporters, which reflected an overall negative body image, and 15% of them had in fact lost weight in the past year.

Interestingly, of those who met inclusion criteria to be in the study group (had been confirmed and practicing the diet for >1 year), accurate classification of type of vegetarian/vegan increased greatly to 74%. No self-reported vegans following the diet for less than 1 year were confirmed vegan per food-frequency questionnaire data provided. This indicates that accuracy in classification may be improved as an individual follows the diet for a longer period of time. This was further displayed with the majority of inaccurate self-reporters following the diet for less than 10 years (and many less than 2 years), while over half of the study group had been following the diet for over a decade (some their entire lives).

When examining data for those who were self-reported vegans or vegetarians for less than one year, it was found that this group's dietary habits were strongly weight-motivated and half had successfully lost weight. All participants in this group stated that following this diet was very important to them and all agreed (if not strongly agreed) that their current diet is healthier than diets containing meat and provides them the potential to lose weight. Many also stated they are: "Always terrified of being overweight", "Always aware of the caloric content of what they eat", and are "Often preoccupied with a desire to be thinner". This group contained double the number of individuals showing these tendencies when compared to individuals who had been following the diet for greater than one year. These results allude to a higher tendency towards disordered eating behavior in individuals who have followed vegetarian/vegan diets for shorter periods of time.

Overall, the results suggest an inverse relationship between length of time following a vegan/vegetarian diet and disordered eating risk. This may be related to improved accuracy in self-reporting, or increased comfort with healthy vegetarian/vegan meal planning as time practicing the diet increases. Follow up research with the inaccurate self-reporting group could be done to assess if their diet becomes more compliant with vegetarian/vegan diet classifications over time, or if some truly are "following" this diet as a means of disordered eating practice.

Dietary Motivation in Relation to Eating Attitude and Body Image

This study found animal rights concerns as the primary motivator for all those who reported following a vegetarian/vegan diet. It has been hypothesized by many that those following a vegetarian or vegan diet with the primary goal of weight control are at a higher risk of disordered eating and some research has supported this theory (4). This study however found that animal rights motivation remained true even in the majority of participants who were found to be at moderate or high risk for displaying disordered eating behaviors. "Health benefits" was the second most commonly cited dietary motivator, however primary dietary motivation for weight control was only cited by one participant who scored at high risk for disordered eating behaviors (and this participant was excluded from study group due to inaccurate self-reporting of vegetarian status).

These results would indicate that regardless of tendency towards disordered eating practices, self-reported vegetarians/vegans overall are viewing and choosing their dietary

practices from a more socially responsible stance than a primary belief in providing physical or weight benefits. This trend has been reflected in the research as well (42, 43).

A closer look at dietary motivation within the vegan/vegetarian groups indicates a similar trend. However statistically significant differences come to light when comparing the vegan members of the study group with the vegetarians. Of those in the study group at moderate or high risk for disordered eating behaviors, all of the vegan participants cited animal rights/cruelty as the primary dietary motivator where almost half (43%) of the vegetarians cited health benefits. This tendency towards vegetarian dietary motivation is consistent with some research studies (47), and results corroborate research that indicates vegetarians with less restrictive dietary habits actually have a higher risk for disordered eating behavior (7). All study participants who scored at high risk for disordered eating behavior were vegetarians (specifically lacto-vegetarians), and none vegan.

Once pared down to such a small subset of the total study sample, these tendencies would be hard to generalize. The results indicate a potential difference between the vegan and vegetarian populations. Although one may hypothesize that vegans who practice a higher level of restraint with their diet would likely display a higher risk for disordered eating, this study sheds light on the possibility that the primary motivation for those following a vegan diet (animal rights) is not conducive to perpetuating disordered eating behavior and that in fact, the less restrictive vegetarian population who is health or weight motivated is at a much higher risk.

This finding is supported by the Body Image States Scores as well. Vegan participants in the study group had a higher score, indicating more positive body image state than the vegetarians in the study group.

Acculturation and Disordered Eating Risk

Almost one quarter of the study group had at least one foreign-born parent, and sixteen participants had themselves immigrated to the United States. Although the majority of first-generation Americans reported that their diet had changed dramatically since coming to the U.S., over half had continued practicing their vegetarian/vegan diet as they had in their home country. As only two members of this group scored at moderate disordered eating risk (none scored at high risk), relationships between dietary acculturation and disordered eating risk could not be truly explored.

As the sample size of second-generation Americans was larger (47 participants), some trends could be assessed. This second-generation group was largely Caucasian with parents of European descent. Researchers have found that females with a high level of acculturation to Anglo-American society and western mainstream identification report lower self-esteem, higher depression and body dissatisfaction, and more disordered eating attitudes/symptomology (67, 68). The second-generation subset of this study group had the highest EAT-26 scores and lowest average BISS score of any other group analyzed in the study. The majority of this group believed following their diet could help them lose weight, and over one quarter of them had in fact lost weight in the past year.

Studies of second-generation Americans have shown that parental influences via verbal messages and active encouragement have more impact on children's body concerns and eating behaviors than modeling effects (66). This was indicated in this study was well. Most second-generation Americans in the study group believed it was important to their parents that they continue to follow a vegan/vegetarian diet, however less than one quarter of the parents follow a similar diet themselves. Although qualitative assessment of parental dietary influence was inconclusive, this group seemed to indicate pressure to continue with their current dietary practices. Whether this "pressure" is internally or externally driven would require further study.

Although numbers in this group are far from large enough to generalize results, a possible link between dietary habits/pressures and disordered eating risk of second-generation Americans was observed. These outcomes do mirror results obtained in previous studies in which second-generation women had high EAT-26 scores and endorsed the most disordered eating patterns and tendency towards acculturation of Western culture (64, 65). Overall, this study discovered the possibility of relationships between acculturation and disordered eating which warrant further research.

Research Implications for Nutrition Professionals

This study can function as a tool to help guide Registered Dietitians and other health practitioners in identifying individuals with potentially disordered eating practices. It also provides guidance on probing questions to help further assess etiology and motivation behind dietary practices of individuals deemed to be "at risk".

As a nutrition professional, one must not take for granted client's self-reporting of vegetarian/vegan practice, but instead request dietary recall data to confirm this report. Determining the accuracy of self-reporting may help dietitians in multiple ways. It can minimally lead to more accurate meal planning recommendations, but also may lead to revelations regarding dietary knowledge and motivation (which can both in turn contribute to disordered eating). Length of time following the diet should also be assessed as this study showed this to be a strong indicator of disordered eating risk.

Assessing historical eating patterns is also a key factor when counseling these self-reported vegetarian/vegans, especially with those who are foreign-born or have foreign-born parents. This study found a strong trend towards high disordered eating risk in second-generation immigrants and this finding should be further studied. It is possible that this group struggles with parental dietary pressure, lack of knowledge of meal planning once out of the home, or even conflict between their traditional cultural dietary practices and newly adopted meal patterns. Regardless of the reason, dietitians must assess this factor in an effort to help decrease the risk of disordered eating and counsel clients towards healthful dietary practices.

Study Limitations and Strengths

Although a strength of this study was the fairly large total study sample (greater than 200 participants), some of the detailed findings were limited by the smaller number of participants in the subgroups. For example, males were highly underrepresented (as is

the case with most research studies in this area) and therefore were not included in any of the analysis as to not potentially skew the data. Research on disordered eating risk in men is largely lacking, especially in relation to vegetarian/vegan status, and this is a topic that is suitable for further investigation. As incidence of males with disordered eating is on the rise, researchers must aim to improve data collection on this group to help in prevention and treatment efforts.

The number of first and second generation American immigrants was also too low for large scale acculturation analysis. This study however did reveal some very interesting trends towards disordered eating risk in this group (especially with second-generation immigrants) which warrant further focused research.

The number of confirmed vegetarians and vegans scoring at moderate or high disordered eating risk was also relatively small. Although this result could indicate an overall low prevalence of disordered eating risk in this group, it is difficult to generalize any detailed data for comparison to those who are at risk.

A potential bias in this study was in the targeted groups with whom the survey was disseminated. In order to optimize survey responses (and vegetarian/vegan participants), the researcher chose to electronically distribute the surveys to vegetarian interest groups. This has the potential to skew the results as those who choose to be in such a group, may inherently have increased interest and knowledge on vegetarian/vegan practices. Although the accuracy of vegan/vegetarian self-reporting was fairly low in this study, one

cannot say that the knowledge level of the survey group was not overall higher than the general public. This is especially true within the Academy of Nutrition and Dietetics Vegetarian Nutrition Dietetic Practice Group, as all members of this group either are currently, or are in school to become a Registered Dietitian.

This study did have multiple strengths however, which set it apart from other studies on the topic. The greater age range (18-76 years old) of participants in the study provides a wider view of the vegetarian and vegan populations as a whole, where much prior research has focused on adolescent females.

This study also improves upon previous research by using the standardized definitions of vegetarian/vegan status to truly analyze tendencies in this group. As most other studies have solely used self-reporting as the identifier of vegetarian or vegan status, it is difficult to say that results have not been skewed by inaccurate self-reporters in those study groups, especially since the inaccurate self-reporters in this study were found to be at a much higher risk of disordered eating than those who were confirmed accurate self-reporters.

CONCLUSION

This study sought to assess disordered eating risk and body image satisfaction in confirmed vegetarians and vegans. Due to the substantial sample size, some results were generalizable to a larger population. The main findings of the study indicate a tendency towards higher disordered eating behavior in vegetarians (specifically lacto-ovo vegetarians) than vegans. Although animal rights/cruelty motivations reigned supreme as primary dietary motivators in the study group as a whole, a small subset of health/weight motivated vegetarians did appear to be at higher risk for disordered eating than the rest of the group.

Length of time following the diet seemed to improve accuracy of self-reporting and inversely decrease the likelihood of disordered eating behaviors. Those who have followed the diet for shorter periods of time and do not truly follow a vegetarian or vegan diet (when compared to operationalized definitions) have a higher risk of disordered eating behaviors than true vegans and vegetarians.

The highest risk for disordered eating and poor body image was found to be in second generation confirmed vegetarian/vegans. The small sample size of this sub-group prevents sound generalization of these results, however the trends indicated in this study suggest further research be conducted with this group to help better assess potential risks and necessary intervention by family and/or health practitioners.

Appendix 1.1

Dietary Practices, Perceptions and Beliefs Survey

CONSENT FORM

Syracuse University
College of Human Ecology
Department of Nutrition Science and Dietetics

Dear Participant

My name is Chaya Lee Charles, and I am a Graduate student at Syracuse University. I am inviting you to participate in a research study titled "Comparing Vegan and Vegetarian Attitudes, Beliefs and Perceptions with Risk for Disordered Eating Behaviors". This research is being conducted under the advisement of Dr. Sudha Raj who may be reached at 315-443-2556. The goal of this study is to identify possible increased risks for disordered eating behaviors, specifically for those who follow a vegan or vegetarian diet.

Involvement in the study is voluntary, so you may choose to participate or not. If you agree to participate, you will be asked to complete a survey to identify your specific eating patterns and beliefs about your current diet and perceptions you have on your body image and eating attitudes. This will take approximately 10-20 minutes of your time. All information you provide will be kept anonymous via numbered coding. This means that your name will not appear anywhere and your specific answers will not be linked to your name in any way. You have the right to withdraw from this study at any time, without penalty.

The benefit of your participation in this research is that you will be helping us to understand specifics on eating attitudes and behaviors of individuals consuming certain types of diets. This information should help us gain a better understanding of specific populations that may be at a heightened risk for disordered eating behaviors.

The possible risks to you for participating in this study are minimal and could include at most some psychological distress if answering some of these questions triggers an emotional response. These risks will be minimized by the knowledge that your responses will be kept confidential and the survey will skip questions that are deemed unnecessary based on your previous responses.

If you have any questions, concerns, or complaints about the research, I may be contacted via e-mail at clmono@syr.edu. If you wish to contact someone other than myself, you may contact the Syracuse University Institutional Review Board at 315-443-3013.

Please acknowledge your consent to continue with the survey by clicking on the check box below.

Thank you,

Chaya Lee Charles, RD, CDN
Graduate Student
Dept. of Nutrition Science and Dietetics
clmono@syr.edu

Sudha Raj, PhD, RD
Assistant Professor
Dept. of Nutrition Science and Dietetics
sraj@syr.edu

All of my questions have been answered, I am over the age of 18 and:

O I agree to continue on and complete the survey (I may print a copy of this consent form)
O I do not agree to continue on and complete the survey

SURVEY

Demographic Information

Age _____ years
Gender ____Male ____ Female
Height ____ ft ____ in
Weight _____ pounds

#1. Have you had a weight change in the past year? O Yes O No
If **NO** skip to question #2
If **YES**, have you? O lost weight O gained weight
How much? _____ pounds

#2. Have you been diagnosed with any of the following?

Crohn's Disease	O Yes	O No
Ulcerative Colitis	O Yes	O No
Diabetes	O Yes	O No
Diverticulosis	O Yes	O No
Eating Disorder	O Yes	O No

If **YES** to any of the above, skip to #11a
Do you have any food allergies or intolerances? O Yes O No
If YES please explain? _____

#3. What is your race/ethnicity?
O Caucasian (non-Hispanic) O Hispanic O Asian O American Indian
O Middle Eastern O Pacific Islander O Black or African American
O Other (please specify) _____

#4. Were you born in United States? O Yes O No
If **YES** skip to question #5
If **NO**, where were you born? _____

How long have you lived in the United States?
O < 1 year O 1-5 years O 6-10 years O >10 years

Did you practice a vegetarian or vegan diet prior to coming to the United States?
O Yes O No

How have your dietary practices changes since moving to America?
O completely O significantly O somewhat O not at all

How often do you consume foods/ dishes native to your home country?
O daily O weekly O occasionally O never

#5. Were **one or both** of your parents born outside the United States? O Yes O No
If **YES**, where were they born? _____
If **NO**, skip to **Dietary Information** section

Did your parent/parents practice a vegetarian or vegan diet prior to coming to the United States? O Yes O No
Does your parent/parents practice a vegetarian or vegan diet currently? O Yes O No

Dietary Information
#6. Do you consider yourself a vegetarian or vegan at this time? O Yes O No

- If **NO**, please skip to question #8
- If **YES**, how long have you been a vegetarian or vegan?
  O <1 year O 1-2 years O 2-5 years O 5-10 years
  O >10 years O Your entire life

- What type of vegan or vegetarian do you classify yourself as?
  O Strict vegan (avoids meat, fish poultry, dairy products, eggs, and any foods containing animal products)
  O Lacto-vegetarian (consume milk/dairy products)
  O Lacto-ovo-vegetarian (consume milk/dairy and eggs)
  O Pesco-vegetarian (consume fish)
  O Pollo-pesco-vegetarian (consume fish and poultry)
  O Semi-vegetarian (consume meat, perhaps even red meat, on occasion)
  O Other (please specify) _____

#7. Please rank your agreement with the following statements:

I practice veganism/ vegetarianism because…
I believe eating animal products is unethical and/or cruel
O Strongly disagree O Disagree O Agree O Strongly agree
Eating a vegan /vegetarian diet is an essential part of my religious beliefs
O Strongly disagree O Disagree O Agree O Strongly agree
Vegan/ Vegetarian diets are healthier than diets containing meat
O Strongly disagree O Disagree O Agree O Strongly agree
Eating a vegan/ vegetarian diet could help me lose weight
O Strongly disagree O Disagree O Agree O Strongly agree
Eating a vegan/ vegetarian diet is better for the environment
O Strongly disagree O Disagree O Agree O Strongly agree
There are less food safety concerns when eating a vegan/vegetarian diet
O Strongly disagree O Disagree O Agree O Strongly agree
Consuming a vegan/ vegetarian diet is very important to me
O Strongly disagree O Disagree O Agree O Strongly agree
Consuming a vegan/ vegetarian diet is important to my family
O Strongly disagree O Disagree O Agree O Strongly agree
Following a vegan/ vegetarian diet is extremely difficult
O Strongly disagree O Disagree O Agree O Strongly agree
I would stop consuming a vegan/ vegetarian diet if following the diet became too difficult
O Strongly disagree O Disagree O Agree O Strongly agree

What is the **MOST IMPORTANT** reason you consume a vegetarian or vegan diet? (**only choose one**)
O Animal rights/ cruelty O Religion/ Traditional Culture O Health benefits
O Weight control O Environmental concerns
O Food safety concerns O Other (please specify) _____

#8. How often did you consume these foods in the past year:
Cow's Milk (including Lactaid® milk)
O Daily O Weekly O Monthly O Rarely O Never
Yogurt (made from dairy product)
O Daily O Weekly O Monthly O Rarely O Never
Cheese (made from dairy product)
O Daily O Weekly O Monthly O Rarely O Never

Red Meat	O Daily	O Weekly	O Monthly	O Rarely	O Never
Poultry	O Daily	O Weekly	O Monthly	O Rarely	O Never
Fish/Seafood	O Daily	O Weekly	O Monthly	O Rarely	O Never
Eggs	O Daily	O Weekly	O Monthly	O Rarely	O Never

Do you AVOID products containing rennet or gelatin? O Yes O No

How often do you AVOID foods with other animal derived ingredients in them (ex: honey, casein, etc.)?

O Always O Usually O Occasionally O Never

#9. **Body Image States Scale** (BISS) Questionnaire - Thomas F. Cash, Ph.D., 2001

For each of the items below, check the box beside the one statement that best describes how you feel RIGHT NOW, AT THIS VERY MOMENT:

1. Right now I feel…
   - O ***Extremely dissatisfied*** with my physical appearance
   - O ***Mostly dissatisfied*** with my physical appearance
   - O ***Moderately dissatisfied*** with my physical appearance
   - O ***Slightly dissatisfied*** with my physical appearance
   - O ***Neither dissatisfied nor satisfied*** with my physical appearance
   - O ***Slightly satisfied*** with my physical appearance
   - O ***Moderately satisfied*** with my physical appearance
   - O ***Mostly satisfied*** with my physical appearance
   - O ***Extremely satisfied*** with my physical appearance

2. Right now I feel…
   - O ***Extremely dissatisfied*** with my body size and shape
   - O ***Mostly dissatisfied*** with my body size and shape
   - O ***Moderately dissatisfied*** with my body size and shape
   - O ***Slightly dissatisfied*** with my body size and shape
   - O ***Neither dissatisfied nor satisfied*** with my body size and shape
   - O ***Slightly satisfied*** with my body size and shape
   - O ***Moderately satisfied*** with my body size and shape
   - O ***Mostly satisfied*** with my body size and shape
   - O ***Extremely satisfied*** with my body size and shape

3. Right now I feel…
   - O ***Extremely dissatisfied*** with my weight
   - O ***Mostly dissatisfied*** with my weight
   - O ***Moderately dissatisfied*** with my weight
   - O ***Slightly dissatisfied*** with my weight
   - O ***Neither dissatisfied nor satisfied*** with my weight
   - O ***Slightly satisfied*** with my weight
   - O ***Moderately satisfied*** with my weight
   - O ***Mostly satisfied*** with my weight
   - O ***Extremely satisfied*** with my weight

4. Right now I feel…
    - O ***Extremely*** physically ***attractive***
    - O ***Moderately*** physically ***attractive***
    - O ***Slightly*** physically ***attractive***
    - O ***Neither attractive nor unattractive***
    - O ***Slightly*** physically ***unattractive***
    - O ***Moderately*** physically ***unattractive***
    - O ***Very*** physically ***unattractive***
    - O ***Extremely*** physically ***unattractive***

5. Right now I feel…
    - O ***A great deal worse*** about my looks than I usually feel
    - O ***Much worse*** about my looks than I usually feel
    - O ***Somewhat worse*** about my looks than I usually feel
    - O ***Just slightly worse*** about my looks than I usually feel
    - O ***About the same*** about my looks as usual
    - O ***Just slightly better*** about my looks than I usually feel
    - O ***Somewhat better*** about my looks than I usually feel
    - O ***Much better*** about my looks than I usually feel
    - O ***A great deal better*** about my looks than I usually feel

6. Right now I feel that I look…
    - O ***A great deal better*** than the average person looks
    - O ***Much better*** than the average person looks
    - O ***Somewhat better*** than the average person looks
    - O ***Just slightly better*** than the average person looks
    - O ***About the same*** as the average person looks
    - O ***Just slightly worse*** than the average person looks
    - O ***Somewhat worse*** than the average person looks
    - O ***Much worse*** than the average person looks
    - O ***A great deal worse*** than the average person looks

#10. Eating Attitudes Test (EAT-26)

-David M. Garner & Paul Garfinkel (1979), Paul M. Garner, et al. (1982)

Please check a response for each of the following statements:

	Always	**Usually**	**Often**	**Sometimes**	**Rarely**	**Never**
1. Am terrified about being overweight	O	O	O	O	O	O
2. Avoid eating when I am hungry	O	O	O	O	O	O
3. Find myself preoccupied with food	O	O	O	O	O	O

	Always	Usually	Often	Sometimes	Rarely	Never
4. Have gone on eating binges where I feel that I may not be able to stop	O	O	O	O	O	O
5. Cut my food into small pieces	O	O	O	O	O	O
6. Aware of the calorie content of foods that I eat	O	O	O	O	O	O
7. Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)	O	O	O	O	O	O
8. Feel that others would prefer if I ate more	O	O	O	O	O	O
9. Vomit after I have eaten	O	O	O	O	O	O
10. Feel extremely guilty after eating	O	O	O	O	O	O
11. Am preoccupied with a desire to be thinner	O	O	O	O	O	O
12. Think about burning up calories when I exercise	O	O	O	O	O	O
13. Other people think that I am too thin	O	O	O	O	O	O
14. Am preoccupied with the thought of having fat on my body	O	O	O	O	O	O
15. Take longer than others to eat my meals	O	O	O	O	O	O
16. Avoid foods with sugar in them	O	O	O	O	O	O
17. Eat diet foods	O	O	O	O	O	O
18. Feel that food controls my life	O	O	O	O	O	O
19. Display self-control around food	O	O	O	O	O	O
20. Feel that others pressure me to eat	O	O	O	O	O	O
21. Give too much time and thought to food	O	O	O	O	O	O
22. Feel uncomfortable after eating sweets	O	O	O	O	O	O
23. Engage in dieting behavior	O	O	O	O	O	O
24. Like my stomach to be empty	O	O	O	O	O	O
25. Enjoy trying new rich foods	O	O	O	O	O	O
26. Have the impulse to vomit after meals	O	O	O	O	O	O

#11. Disqualification Notice (from #2- **YES**)

a. We're sorry, you do not qualify for this study

OR

Survey Completion

b. Thank you for participating in our survey.

Appendix 2.1

Body Image States Scale (BISS)

For each of the items below, check the box beside the one statement that best describes how you feel **RIGHT NOW, AT THIS VERY MOMENT**. Read the items carefully to be sure the statement you choose accurately and honestly describes how you feel right now.

1. Right now I feel…
   - ***Extremely dissatisfied*** with my physical appearance
   - ***Mostly dissatisfied*** with my physical appearance
   - ***Moderately dissatisfied*** with my physical appearance
   - ***Slightly dissatisfied*** with my physical appearance
   - ***Neither dissatisfied nor satisfied*** with my physical appearance
   - ***Slightly satisfied*** with my physical appearance
   - ***Moderately satisfied*** with my physical appearance
   - ***Mostly satisfied*** with my physical appearance
   - ***Extremely satisfied*** with my physical appearance

2. Right now I feel…
   - ***Extremely satisfied*** with my body size and shape
   - ***Mostly satisfied*** with my body size and shape
   - ***Moderately satisfied*** with my body size and shape
   - ***Slightly satisfied*** with my body size and shape
   - ***Neither dissatisfied nor satisfied*** with my body size and shape
   - ***Slightly dissatisfied*** with my body size and shape
   - ***Moderately dissatisfied*** with my body size and shape
   - ***Mostly dissatisfied*** with my body size and shape
   - ***Extremely dissatisfied*** with my body size and shape

3. Right now I feel…
   - ***Extremely dissatisfied*** with my weight
   - ***Mostly dissatisfied*** with my weight
   - ***Moderately dissatisfied*** with my weight
   - ***Slightly dissatisfied*** with my weight
   - ***Neither dissatisfied nor satisfied*** with my weight
   - ***Slightly satisfied*** with my weight
   - ***Moderately satisfied*** with my weight
   - ***Mostly satisfied*** with my weight
   - ***Extremely satisfied*** with my weight

4. Right now I feel…

Extremely physically ***attractive***
Very physically ***attractive***
Moderately physically ***attractive***
Slightly physically ***attractive***
Neither attractive nor unattractive
Slightly physically ***unattractive***
Moderately physically ***unattractive***
Very physically ***unattractive***
Extremely physically ***unattractive***

5. Right now I feel…

A great deal worse about my looks than I usually feel
Much worse about my looks than I usually feel
Somewhat worse about my looks than I usually feel
Just slightly worse about my looks than I usually feel
About the same about my looks as usual
Just slightly better about my looks than I usually feel
Somewhat better about my looks than I usually feel
Much better about my looks than I usually feel
A great deal better about my looks than I usually feel

6. Right now I feel that I look…

A great deal better than the average person looks
Much better than the average person looks
Somewhat better than the average person looks
Just slightly better than the average person looks
About the same as the average person looks
Just slightly worse than the average person looks
Somewhat worse than the average person looks
Much worse than the average person looks
A great deal worse than the average person looks

Scoring of the BISS: The measure is the composite mean of the six 9-point items. The measure should be scored so that low scores reflect more negative body image states and high scores reflect more positive states. Prior to taking the mean of the six items, reverse score items 2, 4 and 6. Reverse scoring requires recording values on these three items as follows: 1=9, 2=8, 3=7, 4=6, 6=4, 7=3, 8=2, 9=1.

For statistical **details on the BISS**, please refer to the following publication:
Cash TF, Fleming EC, Alindogan J, Steadman L, & Whitehead A. Beyond body image as a trait: The development and validation of the Body Image States Scale. *Eat Disord.*. 2002;10:103-13.

BISS Questionnaire Thomas F. Cash, Ph.D., 2001

Appendix 3.1

Eating Attitudes Test (EAT-26)

Please check a response for each of the following statements:

	Always	Usually	Often	Sometimes	Rarely	Never	Score
1. Am terrified about being overweight	O	O	O	O	O	O	___
2. Avoid eating when I am hungry	O	O	O	O	O	O	___
3. Find myself preoccupied with food	O	O	O	O	O	O	___
4. Have gone on eating binges where I feel that I may not be able to stop	O	O	O	O	O	O	___
5. Cut my food into small pieces	O	O	O	O	O	O	___
6. Aware of the calorie content of foods that I eat	O	O	O	O	O	O	___
7. Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)	O	O	O	O	O	O	___
8. Feel that others would prefer if I ate more	O	O	O	O	O	O	___
9. Vomit after I have eaten	O	O	O	O	O	O	___
10. Feel extremely guilty after eating	O	O	O	O	O	O	___
11. Am preoccupied with a desire to be thinner	O	O	O	O	O	O	___
12. Think about burning up calories when I exercise	O	O	O	O	O	O	___
13. Other people think that I am too thin	O	O	O	O	O	O	___
14. Am preoccupied with the thought of having fat on my body	O	O	O	O	O	O	___
15. Take longer than others to eat my meals	O	O	O	O	O	O	___
16. Avoid foods with sugar in them	O	O	O	O	O	O	___

	Always	Usually	Often	Sometimes	Rarely	Never	Score
17. Eat diet foods	O	O	O	O	O	O	___
18. Feel that food controls my life	O	O	O	O	O	O	___
19. Display self-control around food	O	O	O	O	O	O	___
20. Feel that others pressure me to eat	O	O	O	O	O	O	___
21. Give too much time and thought to food	O	O	O	O	O	O	___
22. Feel uncomfortable after eating sweets	O	O	O	O	O	O	___
23. Engage in dieting behavior	O	O	O	O	O	O	___
24. Like my stomach to be empty	O	O	O	O	O	O	___
25. Enjoy trying new rich foods	O	O	O	O	O	O	___
26. Have the impulse to vomit after meals	O	O	O	O	O	O	___
Total Score (see below for scoring instructions)							___

For all items **except #25**, each of the responses receives the following value:
Always = 3, Usually = 2, Often = 1, Sometimes = 0, Rarely = 0, Never = 0

For **item #25**, the responses receive these values:
Always = 0, Usually = 0, Often = 0, Sometimes = 1, Rarely = 2, Never = 3

EAT-26 David M. Garner & Paul E. Garfinkel (1979), David M. Garner et al., (1982)

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CURRICULUM VITAE

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Education

Bachelor of Science Degree in Nutrition, Syracuse University
Master of Science Degree in Nutrition (pending), Syracuse University

Professional Experience

Outpatient Dietitian (Sodexo at The Centers at St. Camillus)
April 2014- present

Created the outpatient nutrition program at St. Camillus from business proposal development through recent program implementation. Now provide Medical Nutrition Therapy and nutrition counseling in the outpatient setting, as well as continue to grow the program through marketing events. Develop policies in accordance with Medicare and NYSDOH Diagnostic &Treatment center regulations. Conduct weekly wellness classes for the community and employees of St. Camillus.

Adjunct Professor (Syracuse University)
August 2014- present

Teach a course entitled "Food Service Systems" for the Department of Public Health, Food Studies and Nutrition in the David B. Falk College of Sport and Human Dynamics. Developed syllabus, lectures and exams for the course. Focus curriculum materials on foodservice from a nutrition professional's perspective.

Senior Nutrition Consultant (Oswego County Opportunities)
August 2014- present

Ensure the nutritional adequacy of meals served at eight senior congregate meal sites, and meals provided through the "Meals on Wheels" home delivered program to seniors throughout Oswego County, NY. Conduct quarterly sanitation inspections at congregate meal site kitchens and monthly inspections of the main OCO foodservice kitchen. Provide nutrition education sessions quarterly at the congregate sites and individual nutrition counseling sessions as needed for senior participants. Develop monthly nutrition education bulletins sent to all home-delivered meal recipients.

Home Care Nutrition Consultant (St. Camillus Home Care Agency)
October 2008- present

Provide nutrition counseling and education for the diverse population of Syracuse and its surrounding areas. Common sessions in people's homes include diabetic education, weight management counseling and heart healthy meal planning. Am also involved in the quality assurance process for the Home Care Agency.

Clinical Dietitian (Elderwood Healthcare at Birchwood)
October 2010- May 2011

Provided nutritional assessment, intervention and education for Patients on the short term rehab unit. Was involved in department implementation of revised documentation per MDS 3.0 Medicare guidelines.

Nutrition Services Manager (Carthage Area Hospital)
June 2006- January 2007

Was responsible for quality assurance in accordance with policy and procedure as the department head for nutrition services. Other responsibilities included the nutritional plan of care for high risk patients on the Medical/Surgical and Pediatric units, and for all residents in the long term care unit. Performed nutrition counseling at seven outreach and school-based health clinics affiliated with the hospital. Provided outpatient diet education for high-risk pregnant women as part of the PCAP program. Also participated in multiple community health and wellness fairs to promote nutrition.

Research/Publications

- "Comparing Vegan and Vegetarian Attitudes, Beliefs and Perceptions With Risk For Disordered Eating Behavior"- Master's Thesis 2014; Syracuse University.
- "Leadership, Mentoring and Retirement Intentions among Dietitians in Central New York". *Journal of the American Dietetic Association.* 2010;110S:A18.

Awards/Certificates

Sodexo Clinical Innovation Award Winner 2014
Board Certified in Gerontological Nutrition
Sodexo Northeast Regional Dietitian of the Year 2011
National Sodexo Nutrition Outcomes Study Winner 2010
ServSafe Certified
Certified in Food and Beverage Cost Control
Magna Cum Laude Graduate of Syracuse University

References

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