

OF MEAT, MORALS, AND MASCULINITY:
FACTORS UNDERLYING THE CONSUMPTION OF NON-HUMAN ANIMALS
AND INFERENCES ABOUT ANOTHER'S CHARACTER

by

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ABSTRACT

Previous psychological research on vegetarianism has focused primarily on participants' health and weight concerns, and the process by which people adopt a vegetarian diet. The present studies broaden this research by exploring the differences in the way omnivores and vegetarians perceive animals and people whose diets do or do not include meat. In Study 1, participants reported their willingness to eat a series of animal- and vegetable-sourced foods, as well as their perceptions of the animals' qualities. In Study 2, participants reported their impressions of a hypothetical student's character and personality, basing their inferences on a short profile that indicated the student's dietary choices as either omnivorous or vegetarian. Our findings in Study 1 suggest that the decision to eat or not eat animals is chiefly a function of disgust at the thought of eating them and how often one has seen them for sale in a store, but also affected by such diverse factors as perceptions of their intelligence, capacity for pain and suffering, appearance, and similarity to humans. In Study 2, both omnivores and vegetarians rated the vegetarian student targets as more virtuous and ethical than the omnivorous student targets.

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Of Meat, Morals, and Masculinity: Factors Underlying The Consumption of Non-Human Animals, and Inferences About Another's Character

To the majority of the world's people, eating meat is an ordinary part of life, and in many cultures, meat stands as the centerpiece of the meal, around which all else is arranged (Twigg, 1983). A concentrated source of nutrition, high in fat and protein, meat is a highly prized commodity in most of the world's cultures. With so many potential sources of meat, how do humans decide which animals to kill and eat, and which to avoid? Do people consciously consider how similar a given animal is to humans, how intelligent it is, or how likely it is to carry some sort of disease, or does the decision to eat or not to eat an animal operate purely through the sensation or absence of disgust at the thought of eating it? For a substantial minority of the world's population, no meats are considered acceptable to eat. How do vegetarians, who completely abstain from the consumption of meat, perceive animals differently than omnivores, for whom meat is a dietary staple? How do vegetarians and omnivores differently weigh factors of nutrition, animal welfare, and environmental impact when deciding which foods to buy? Finally, if the general population still considers the old maxim “you are what you eat” to be true, how does the act of eating or abstaining from meat affect the way one is perceived by others?

The Omnivore's Dilemma

Tigers hunt other animals for their meat, koala bears naturally seek out eucalyptus, and rare is the panda that spends time deciding whether or not the day's diet will consist of bamboo or insects. In stark contrast to most other animals, who instinctively know what foods are good for them to eat, humans must learn these distinctions. Like chimpanzees, rats, and gulls, most humans are omnivores, benefiting from great nutritional flexibility. However, this blessing also comes with a curse— by experimenting with a wide range of foods, humans also face a higher

risk of consuming toxins and harmful microbes, or of eating an improperly balanced diet, a phenomenon that Rozin (1976) calls “the omnivore's dilemma.” Humans face a constant battle between neophilia, the urge to try potential new food items, and neophobia, the worry of the harm that could be incurred by eating new food items.

Beardsworth (1995) further expounds upon the omnivore's dilemma, delineating it into three paradoxes: pleasure/displeasure, health/disease, and life/death. The pleasure/displeasure paradox refers to the fact that food can produce both greatly pleasurable sensations, such as fullness and satisfaction, and unpleasant sensations, such as bad tastes, indigestion, nausea, and vomiting. As such, a struggle arises to maximize the pleasant sensations, while minimizing the negative sensations. A common method of dealing with this problem is to prefer foods and flavours with which one is already familiar, and by observing the food choices of one's close family (Rozin, Fallon, & Mandell, 1984).

The health/disease paradox addresses the dilemma that while food is the primary source of human energy, vitality, and health, it also carries the potential to bring toxins and disease-causing organisms into the body. In addressing this paradox, people base their decisions on empirical knowledge about the safety of certain foods, or lack thereof, in tandem with magical beliefs about the food's metaphysical properties. Many societies classify foods as either “hot” (chilli peppers, roasted rice, meat) or “cold” (most fruits and vegetables) and ascribe particular health-related traits according to this particular distinction (Beardsworth, 1995).

Finally, the life/death paradox illustrates the fact that although eating is a necessary and unavoidable part of living, the process of eating often involves the death of another organism. While the eating of plants tends to produce little anxiety, the eating of animals often involves moral concerns about the killing of an animal with a nervous system and the ability to experience pain and suffering. Beardsworth holds that animals perceived as very remote from humanity (e.g. arthropods) are likely to elicit little concern, but animals perceived as similar to

humans, such as large mammals, present hunters with a far greater number of worries. In cultures where a significant proportion of food is acquired through hunting, rituals of appeasement to the hunted animals are common, such as the elaborate apologies offered by the Akoa pygmies to the elephants whom they hunt:

Our spear strayed from its course,
O Father Elephant!
We didn't mean to kill you,
We didn't mean to hurt you,
O Father Elephant!
It wasn't the warrior who took your life,
Your hour had come,
Don't come back to trample down our huts,
O Father Elephant!
Don't be angry with us,
From now on your life will be better,
You live in the land of the Spirits,
Our fathers will go with you to renew their bond,
You live in the land of the Spirits. (Coon, 1976, pp. 140-141)

Other cultures employ different means of diffusing their guilt about the killing of the animals they eat. The Chipewyan, a Dene Aboriginal people living in Canada, believe that hunted animals can only be killed with their own consent. That is, animals choose to die because they like or pity the hunter, and thus, great care must be given not to offend the animals, lest they refuse to give their bodies to future hunters (Sharp, 1988). Those people who raise domesticated animals for slaughter may justify their behaviour in terms of a divine license to control and exploit the animals, as in the Judeo-Christian traditions, albeit with restrictions placed on the manner of slaughter. For example, Noah and his descendents were given permission by God to eat animal flesh, but only through the observation of several rites and rituals, such as the draining of the slaughtered animal's blood so its spirit could return to the earth (Farb & Armelagos, 1980, pp. 131-141). Even many Buddhists, whose texts expressly prohibit the slaughter of animals, or even witnessing their slaughter, simply have other groups do the work of killing the animals they eat, passing on the “blame” for the killing to these pariah

groups (Simoons, 1961). Even some Hindu farmers, who for religious reasons are prohibited from killing cows, will sometimes sell unwanted cattle to Muslim traders, who then sell the processed meat to other Muslims, Christians, and lower class Hindus, labelling the meat “mutton” so as not to upset their Hindu clients (Harris, 1986).

Despite the omnivore's dilemma, there is considerable evidence in fossil records that over the past 2 million years, humanity as a whole has been consuming increasing quantities of meat, and that vegetarianism had been relatively rare (Mann, 2000). How, then, have people decided which animals to eat, and which to avoid? In a comparison of food taboos across 78 cultures, Fessler and Navarette (2003) demonstrate that meat, although consistently a prized food, is also a consistent target of dietary proscription. Analyzing this pattern through an evolutionary lens, they submit that although meat, compared to vegetables, is a more valued source of concentrated protein and fat, it also is more likely to contain life-threatening pathogens. As such, it has been adaptive for humans to be more averse to and disgusted at the thought of eating meats, relative to plants. Experimental evidence shows that humans are especially likely to reject unfamiliar foods of animal origin than those of plant origin (Pliner & Pelchat, 1991). Across species, domestic cats have been shown to display neophobia toward raw meat (Bradshaw et al., 2000), and laboratory rats more readily develop conditioned aversion to high-protein than to high-carbohydrate foods (Bernstein, Goehler, & Fenner, 1984).

Many animals are unconsciously tabooed, in that they aren't expressly prohibited, but rather, are simply not thought of as food. Animals associated with dirt or filth, such as mice or insects, are prime examples (Angyal, 1941). Animals that are poor exemplars of their categories, such as penguins, or that are closely associated with house and home, such as dogs and cats in much of Western society, are also frequent targets of food taboos (Fessler and Navarette, 2003). However, plants which are poor examples of their categories, or cross the house and home boundary, are not targets of such proscriptions— people don't pay much mind to

whether a tomato is a vegetable or fruit, if a peanut is a legume or a nut, or if herbs have been grown inside the home or in the garden. Additionally, there is evidence that people are more likely to mimic the eating habits of high-status individuals, such that if a high-status figure subscribes to a particular food proscription, it is more likely to spread through and persist in his/her surrounding community (Aunger, 2000; Whitehead, 2000).

Despite the above factors, the most common explanation given as to why people do not eat a certain animal is that it's forbidden or that "it's disgusting!" Acting as a gatekeeper to the stomach, the emotion of disgust has primarily served to prevent the ingestion of harmful substances, its elicitors typically those things that remind humans of their inherently animal nature— excreta, blood and gore, and the sexual— or that signal the possibility of disease (Haidt, Rozin, McCauley, & Imada, 1997). Angyal (1941) proposes that humans in are reluctant to eat animals such as amphibians, whose cold skin feels similar to that of a dead body, or snakes, whose mode of movement is so different from that of most animals, because of the feeling of unease and uncanniness brought about by contact with these animals. This particular claim, however, does not hold across cultures, given the popularity of frogs in French cuisine, or snakes in Chinese cuisine. In deciding what to eat, humans are also not indifferent to the diet of the animals in question, as evidenced by a general reluctance to eat scavengers or carnivorous animals. Furthermore, there is evidence that the more an animal resembles or is linked to humans, the less willing people are to eat it (Angyal; Rozin & Fallon, 1987). Angyal further argues that much "acceptable" meat, having come from a dead animal and bearing great resemblance to human flesh, ought to elicit disgust, if not for several intervening factors that serve to translate meat from "part of a dead animal" to "food." Through cutting, roasting, smoking, and seasoning, people disguise many of the original properties of meat. In modern western society, most people are unaccustomed to eating raw meat, and are reluctant to consume it, as it has not undergone the culturally familiar changes that would make it into acceptable

food. Other cultural mechanisms, such the language surrounding meat (e.g. calling cow meat “beef,”) the neatly cut, cellophane wrapped pieces of meat sold in the supermarket, and the physical remoteness of animal farms, feedlots, and slaughterhouses also serve to distance people from the ultimate origin of the meat on their plate.

Vegetarians and vegans (who abstain from all animal-derived products, such as eggs and dairy) effectively dodge Beardsworth's health/disease and life/death paradoxes without having to obscure the origins of the foods they eat, as their diet is based on fruits and vegetables, foods they commonly perceive to be pure and life-giving, while at the same time the avoidance of flesh, a substance seen as steeped in death and decay, is regarded as actively health promoting. Whereas some plant cuttings, such as spinach, can either be eaten or used to grow new plants, as they are still alive, a slab of meat is already dead, incapable of sprouting forth into new life. Beardsworth and Keil (1992) support this construction of a vegetarian worldview, and argue that a vegetarian or vegan diet also provides many people with a way of reducing or eliminating the ethical worries associated with the life/death paradox.

History of Vegetarianism

In its earliest recorded beginnings, biblically and in ancient Greece, Western vegetarianism was grounded in reasons of morals and ethics– that the slaughter of animals was wrong, and that the flesh of animals contaminated and coarsened the human soul. Rather than jointly appealing to morality and empirical evidence, however, proponents of vegetarianism focused solely on feeling and sentiment, and scientific arguments about the health benefits of a vegetarian diet didn't join the rhetoric until the nineteenth century (Whorton, 1994).

Despite its beginnings in the realm of ethics and morality, attitudes toward vegetarianism have waxed and waned. In Plato's *The Republic*, the ideal state is described as one where people live solely from vegetable matter, and ancient luminaries such as Plutarch, Seneca, and Pythagoras wrote in favour of fleshless diets. On the flip side of the coin, during the inquisition,

vegetarians were declared heretics and persecuted by the Catholic church, with similar persecutions occurring in China in the twelfth century (Kellman, 2000). The general sentiment toward vegetarianism remained negative, and in the early psychological literature, vegetarians were treated with distrust, as not eating meat was considered deviant. In his article, “The Cruel Vegetarian,” Major Hyman Barahal (1946), then chief of Psychiatry in Mason General Hospital in Brentwood, claimed that vegetarians frequently harbour “underlying tendencies for cruelty and sadism,” “display little regard for the suffering of their fellow human beings,” and fringe on lunacy. This sentiment mirrors the general distrust shown to vegetarians by Western society at the time, which perceived vegetarians to be generally weak, strange, and overly sentimental. During the same era, it was also suggested that lack of meat was a primary cause of stuttering, and that one of the most beneficial treatments for those suffering this speech impediment was a steady diet of beefsteak (Dunlap, 1944). Although untested, it is possible that hostility toward vegetarians has stemmed from the perception that their diet is unnatural, unconventional, or the perception that vegetarians proselytize and judge others negatively for eating meat.

Meat and Masculinity

If attitudes toward vegetarianism were often so negative, it stands to reason that meat and meat eating would mostly be cast in a positive light. Throughout much of European history, meat has been closely associated with power and privilege- a staple for the gentry and a rare treat for the peasants. In more modern times, such as during World War I, meat was routinely diverted from civilian women to male combatants (Kellman, 2000). Adams (1991) argues that meat is a symbol of patriarchy, due to its long-standing associations with manhood, power, and virility. Analyzing vegetarianism through the lens of feminist theory, she posits that the violence directed against non-human animals inherent in meat eating and the violence and discrimination directed against women are interlinking. She cites not only records from Western Europe, where women are historically more likely to have eaten what have been considered “second class

foods,” such as vegetables, fruits, and grains, but also addresses trends in African and Asian cultures. In Ethiopia, it is common practice for women and girls to prepare two meals: ”one for the males and a second one containing no meat or other substantial protein, for the females” (Leghorn & Roodkowsky, 1977, p. 21, cited in Adams, 1991). In equatorial Africa, women are commonly prohibited from eating chicken, and the Kufa of Ethiopia punished women caught eating chicken by making them slaves (O’Laughlin, 1974). Similarly, in Indonesia, “flesh food is viewed as the property of the men” (Simoons, 1961, p. 73). Not only is meat considered a man’s food in many cultures, but non-meat foods, such as eggs and vegetables, are deemed inappropriate foods for men. Among the Nuer of East Africa, eating eggs is considered effeminate and men “will sometimes refuse to eat sauces made of greens and other vegetables, which are said to be women’s food” (O’Laughlin, 1974, p. 303). Fessler and Navarette (2003) also note that arbiters of cultural traditions, usually male, are especially likely to selectively maintain traditions that benefit themselves. This is readily apparent in the disproportionate number of meat taboos that only apply to women, monopolizing many meats so that only they and the other men are allowed to eat them. In contemporary North American society, the link between meat and masculinity also remains strong, with a language of “man-sized portions,” “hero” sandwiches, and the concept of the strong and hearty “meat and potatoes man” (Adams, 1991).

General Research on Vegetarianism

In recent national polls, 6% of Americans self-identify as vegetarians (Corliss, 2002), and there is evidence that these percentages are climbing in the United States (Fetto, 2000). Recent polls indicate that approximately 4% of Canadians are vegetarians, and in both the United States and Canada, vegetarian diets have official endorsement from national dietetic associations as being healthful, nutritionally adequate, and beneficial in treating and preventing various diseases (American Dietetic Association, 2003). Despite this, much modern empirical

research on vegetarian has focused on the possible link between vegetarianism and various forms of disordered eating. In a sample of young British women, Gilbody, Kirk, and Hill (1999) found that vegetarians, compared to omnivores, displayed significantly higher levels of dietary restraint. Researchers have also suggested that some people adopt a vegetarian diet in order to hide their restrained eating behaviours from others (Martins & Pliner, 1999; Sullivan & Damani, 2000). In a sample of Turkish undergraduates, Bas, Karabudak, & Kiziltan (2005) found evidence for abnormal eating attitudes, low self esteem, high social physique anxiety, and high trait anxiety in 45.20% (14 participants of a pool of 1205 participants) of their vegetarian sample. Offering a different view, Fisak, Peterson, Tantleff-Dunn, & Molnar (2006) submit that much previous research on vegetarianism and eating disorders has relied on few measures of low reliability, and argue instead that many vegetarians differ only from omnivores in terms of motivations for food choices, rather than eating pathology and body image. The remaining bulk of the literature focuses on attitudinal and demographic variables associated with vegetarianism. For example, research on vegetarian attitudes has found that they are more likely than omnivores to place importance on emotional states, and less likely than omnivores to endorse social hierarchies, especially those involving humans and animals, parents and children, and husbands and wives (Allen, Wilson, Ng, & Dunne, 2000). There is also evidence that vegetarians and omnivores perceive meat differently at the implicit level, such that vegetarians, relative to omnivores, have more negative attitudes toward meat and more positive attitudes toward vegetables (De Houwer & De Bruycker, 2007). Worsley and Skrzypiec (1995) found that relative to omnivores, vegetarians reported greater concern for environmental issues and were more personally active in environmental conservation initiatives.

Unsurprisingly, then, many researchers report one or more of the following four motivations for people in North America and Western Europe to be vegetarians: concern for animal welfare, concern for the environment, concern for health, and disgust at the sensory

qualities of meat (e.g. Booth & Santos, 1996; Fox & Ward, 2008; Kenyon & Barker, 1998; Worsley & Skrzypiec, 1998). Although a small subset of individuals are vegetarians primarily because of disgust at the sensory qualities of meat, research by Rozin, Markwith, and Stoess (1997) supports the view that most converts to vegetarianism make the initial transition because of reasons of animal welfare or personal health, and that concerns for the environment and disgust at the sensory qualities of meat develop later. That is, for many vegetarians, disgust seems to be caused by, rather than causal of, concern about the impact of meat consumption on the animals in question, the environment, and one's own body. Furthermore, those who report being vegetarian primarily for moral reasons are significantly more disgusted at the thought of eating meat than those vegetarians who avoid eating meat for reasons of health. Similarly, Fessler, Arguello, Mekdara, and Macias (2003) have presented evidence that although vegetarians who report avoiding meat for moral reasons are no more sensitive to general domain measures of disgust than those not avoiding meat, moral vegetarians' disgust reactions to meat appear to be fuelled largely by their moral misgiving about the consumption of meat. Regarding current attitudes toward vegetarians, Walker (1995) found that females were more accepting of vegetarians than males, and in a sample of undergraduate students in the south-eastern United States, Chin, Fisak, and Sims (2002) found that attitudes toward vegetarians were predominantly positive, especially among those scoring low in authoritarianism. However, the authors present their findings with the caveat that 81% of their sample was female, and that most of their participants were psychology majors, in their early 20s, and self-described liberals.

You Are What You Eat

In many pre-industrial cultures, people believe that by eating particular animals, one absorbs their essential traits and characteristics—truly, you are what you eat (Meigs, 1984). This belief, at least implicitly, has also been found in American college students, as demonstrated by Nemeroff and Rozin (1989). Participants perceived a tribe that hunted boars for food and sea

turtles for trade purposes to be more loud and aggressive, and a tribe that hunted sea turtles for food and boars for trade to be better swimmers and more emotionally restrained. Absorbing too much power from one's food, however, is dangerous, making certain meats taboo. Commonly, raw meat, as well as that of uncastrated or carnivorous animals, is considered too powerful, and potentially too polluting, to be eaten (Twigg, 1979).

Despite the small body of research into people's motivations for being vegetarian, little work has been done investigating people's perceptions of vegetarians and omnivores as a function of their diet. Although research has been conducted on character and personality judgment of those who eat high- and low-fat diets, research on judgments of others according to the presence or absence of meat in their diet has largely been limited to personality and political leanings. Sadallah and Burroughs (1981) examined ratings of hypothetical target persons who were said to have specific food preferences, such as vegetarian, gourmet, health food, or fast food. Participants most consistently described vegetarians as pacifist, weight-conscious, liberal, hypochondriacal, and drug using, whereas they described fast food lovers as patriotic, pro-nuclear, conservative, and anti-drug. Interestingly, the authors separated vegetarians and health food eaters into separate groups, even though the food lists for both groups were vegetarian and foods generally considered healthy (e.g. wheat germ, granola, brown rice with snow peas).

Much later research has delineated food into categories of "good" and "bad," which, in North American society, has become almost synonymous with "low-fat" and "high-fat." Research by Fries and Croyle (1993) compared participant ratings of targets described as avoiding meat and high-fat foods, or eating a lot of fast food and avoiding salads and vegetables. On free-response measures, participants rated the vegetarian/low-fat target as more fitness-oriented, slender, intelligent, health-conscious, and outdoorsy, and rated the omnivore/high-fat target as more likely to party, less studious, more likely to drink alcohol, and more overweight. On fixed response measures, participants rated the vegetarian/low-fat target as more picky and

self-centred, yet more attractive, practical, politically active, and desirable to have as a friend. Barker, Tandy, and Stookey (1999) found that participants rated consumers of low-fat diets as more attractive, intelligent, and middle-class than consumers of high-fat diets, but also more serious, high-strung, unhappy, and antisocial. Both diets, however, contained meats: grilled chicken and tuna fish in the low-fat diet, and fried bacon, fish and chips, and shepherd's pie in the high-fat diet. A more recent study by Oakes and Slotterback (2004-2005) found that people who routinely eat oatmeal for breakfast were rated as more physically attractive, intelligent, and more moral than people whose regular breakfast is pie. To date, the most comprehensive investigation of people's perceptions of others' morality based on their diets was conducted by Stein and Nemeroff (1995), which found that consumers of a 'healthy' diet (fruit, salad, whole-wheat bread, chicken and potatoes) were rated as more moral, attractive, and fit, but less masculine and less likeable, than consumers of an 'unhealthy' diet (steak, hamburgers, french fries, doughnuts, and double-fudge ice cream sundaes). They also found significant mediation for ratings of cleanliness/ purity ("you are what you eat"), discipline/work ethic, general halo effect (attractiveness, likeability), and health halo effect. However, once again, both the 'healthy' and 'unhealthy' diets contained meat.

Further research has demonstrated that those who eat "masculine foods," such as pancakes and syrup are perceived as more masculine than those who eat "feminine foods," such as a bagel with cream cheese (Mooney & Lorenz, 1997). Barker et al. (1999) found evidence that high-fat diets were more associated with males, whereas low-fat diets were more associated with females, and Oakes and Slotterback (2004-2005) found that female targets described as following the low-fat diet were rated as more feminine and less masculine than their high-fat counterparts, although ratings of male targets' masculinity and femininity were not different between low- and high-fat targets.

Although informative, the above research on personality and character judgments of

others as a function of their diet primarily focuses on the distinction between those with high-fat and low-fat diets. The few studies that investigate differential personality judgments of vegetarians and omnivores are confounded by the pairing of low-fat foods with the vegetarian diet and high-fat foods with the omnivorous diet, and those that investigate moral judgments of others as a function of their diet are similarly confounded.

Research Questions

Past research on meat aversions suggests that a number of factors, such as disgust, familiarity, similarity to humans, and capacity for pain and suffering, can affect people's willingness to eat different animals. What is not clear, however, is to what extent each of these factors, independently of one another, predicts a person's willingness to eat one given animal and not another. The literature has also not yet examined the ways in which these perceptions of animals' qualities may differ between those who routinely consume meat, and those who avoid it altogether. Although past research (e.g. Worsley & Skrzypiec, 1995) has demonstrated different levels of concern for the environment between vegetarians and omnivores, it is unknown to what extent omnivores, vegetarians, and vegans (who avoid all animal products) differently weigh the importance of nutrition, animal welfare, and environmental impact associated with the foods they buy and consume. Finally, although several researchers have investigated how having a healthy or unhealthy diet shapes perceptions of personality and morality, and how a vegetarian or omnivorous diet shapes perceptions of personality, nobody has investigated perceptions of people's personality and character as a function of eating or abstaining meat, holding constant the healthiness of the diets in question.

STUDY 1

In this study, we investigated the impact of people's perceptions of different animals' qualities on their reported willingness to eat them. Specifically, we hypothesized that people would be more willing to eat vegetable-derived foods than animal meats, and that perceptions of animal intelligence, capacity for pain and suffering, likelihood of experiencing an afterlife, similarity to humans, likelihood of disease transmission, and disgust at the thought of eating a given animal would negatively predict people's willingness to eat said animal. We also hypothesized that people would be most willing to eat animals they perceive as neither ugly nor cute, and that ugliness or cuteness of an animal (departing from a neutral value of neither cute nor ugly) would negatively predict willingness to eat it. Furthermore, we predicted that the frequency with which people had seen a given animal, or its meat, for sale in a grocery store would positively predict willingness to eat it. Finally, we predicted that the proposed negative predictors of willingness to eat animals would be more pronounced in vegetarians than in omnivores, such that they would be more disgusted at the thought of eating animals, and that they would perceive animals to be more intelligent, more capable of pain and suffering, more likely to experience an afterlife, more similar to humans, cuter, and more likely to be carriers of disease.

Method

Participants

A total of 219 people participated in the study. 102 completed a pen and paper version of the survey at the UBC Vancouver campus (median age 21, 71% female), and an additional 117 completed the survey online on the Yourviews website of the W. Maurice Young Centre for Applied Ethics (median age 20-25, 75% female). As compensation for their time, the on-campus participants were reimbursed with a human subject pool credit or candy bar, and the online participants were entered into a drawing for \$100 CAD. Participants were recruited via

advertisement posted on the UBC Psychology Department Human Subjects Pool bulletin board, by word of mouth, and by broad email advertisements about the Yourviews website.

Materials and Procedure

All participants first read an informed consent form, and then completed the study packet. In the packet (and in the online survey), participants were given a list of 23 animal meat items, 2 animal derived non-meat items, and 3 plant-derived items, which they rated in terms of their willingness to eat on a nine point likert-type scale (1- not at all willing, 5- neutral, 9- extremely willing). The items consisted of the following birds, mammals, amphibians, fish, reptiles, invertebrates, and non-meats: chicken, chimpanzee, cockroach, cow, dog, dolphin, frog, horse, hyena, koala, octopus, oyster, penguin, pig, platypus, prawn, rat, salmon, shark, snake, turtle, vulture, worm, cabbage, cow's milk, peas, and tofu. For every item, people rated how likely they thought it was a carrier of disease, how disgusted they were at the thought of eating it, and how often they had seen it for sale in a grocery store, on nine-point likert-type scales. For each animal meat item, participants rated their perceptions of the intelligence, capacity for pain and suffering, similarity to humans, ugliness/cuteness, and likelihood of experiencing an afterlife of the animal in question, also on nine-point likert-type scales. Finally, participants completed a small demographics sheet, in which they reported age, gender, and cultural background.

Results

The mean willingness to eat for each item was calculated across all participants. The non-animal origin items (peas, cabbage, and tofu) had the highest mean ratings, followed by cow's milk and meats. Similarly, the mean disgust at the thought of eating each item was calculated across all participants. The non-animal origin items (peas, cabbage, and tofu) had the lowest mean ratings, followed by cow's milk and meats (see Table 1).

Table 1
Disgust and willingness to eat meat and non-meat items

Target	Disgust	Willingness to Eat
Peas	1.40 (1.36)	8.18 (1.61)
Cabbage	1.48 (1.42)	8.00 (1.75)
Tofu	1.54 (1.52)	7.95 (1.97)
Cow's Milk	2.23 (2.15)	7.16 (2.61)
Salmon	2.78 (2.64)	6.62 (3.16)
Prawn	2.95 (2.83)	6.16 (3.33)
Chicken	3.11 (2.82)	6.21 (3.43)
Cow	3.51 (3.09)	5.87 (3.53)
Pig	3.78 (3.19)	5.78 (3.48)
Oyster	3.79 (2.90)	5.24 (3.15)
Octopus	4.22 (2.98)	5.02 (3.14)
Shark	4.83 (2.90)	4.21 (3.01)
Frog	5.86 (2.55)	2.89 (2.37)
Snake	6.21 (2.58)	2.95 (2.54)
Turtle	6.63 (2.36)	2.32 (2.12)
Horse	6.77 (2.46)	2.55 (2.22)
Platypus	6.82 (2.26)	1.90 (1.72)
Hyena	6.95 (2.31)	2.05 (1.89)
Dolphin	7.16 (2.35)	1.80 (1.80)
Penguin	7.18 (2.22)	1.85 (1.64)
Vulture	7.31 (2.05)	1.84 (1.67)
Koala	7.39 (2.11)	1.67 (1.44)
Dog	7.49 (2.16)	1.81 (1.67)
Chimpanzee	7.68 (2.04)	1.66 (1.44)
Worm	7.83 (1.89)	1.53 (1.32)
Rat	7.89 (1.85)	1.56 (1.32)
Cockroach	8.31 (1.50)	1.46 (1.23)

Note. Standard deviations given in parentheses. Beta weights are unstandardized.

39 participants who rated all animals as 1, “not all willing to eat,” were classified as vegetarians, and the remaining 184 were classified as omnivores. Among the omnivores, we separately investigated the predictive power of willingness to eat an animal meat item of each of the factors. For the entire set of animal meat items, we plotted each predictor against willingness to eat the item. All variables exhibited a linear relationship, except for ugliness/cuteness, which was quadratic (such that the more an animal departed from the midpoint of ugliness or cuteness in either direction, the less willing people were to eat it). As such, for purposes of data analysis, this variable was recentred on a scale from -4 to 4, and the absolute value of each term became the new value. That is, an animal rated 1, very ugly, would have a score of 4, as it is 4 points from the midpoint of the scale, and an animal rated 9, very

cute, would also have a score of 4, as it is also 4 points from the midpoint of the scale. We investigated the assumption of homoscedasticity via non-constant variable plots and the assumption of normality of errors via QQ plots, and found both assumptions to be violated. Because the assumptions of homoscedasticity and normality of errors were both violated, we corrected for the subsequent bias in the standard errors of each predictor by using bootstrapping procedures, 1000 repetitions per regression. Additionally, all standard errors for all regression coefficients were calculated via STATA's vca cluster operation. This only assumes independence of responses between participants, and not within participant responses, correcting for the fact that each participant has 25 data points per variable (one per animal meat item). Finally, due to the high percentage of females in the study (72%), we also included participant sex in the regression models (coded female=0, male=1). As a majority of participants declined to report their ethnic descent, possible cultural differences are not examined in this paper.

Likelihood of carrying disease was a significant negative predictor of willingness to eat, as were disgust, intelligence, capacity for pain and suffering, similarity to humans, and likelihood of afterlife. Holding each other constant, cuteness and the quadratic term of ugliness/cuteness were also significant negative predictors of willingness to eat. Store familiarity was the sole significant positive predictor of willingness to eat. Although we predicted the direction of these eight separate regressions, and as such, these were not post-hoc analyses, note that the Šidak-Bonferroni cut off for significance of eight comparisons is 0.006, which was met by all factors but disease and likelihood of afterlife.

Table 2
 Predictors of willingness to eat animals, regressed separately

Factor	b	z	p
Disease	-.10	-2.46	<.02
Sex	.38	-1.64	>.10
Disgust	-.84	-57.92	<.001
Sex	-.10	.68	>.40
Store Familiarity	.65	34.35	<.001
Sex	.34	-1.50	>.10
Intelligence	-.15	-5.72	<.001
Sex	.36	-1.54	>.10
Suffering	-.16	-5.45	<.001
Sex	.21	-.91	>.30
Similarity	-.17	-6.01	<.001
Sex	.42	-1.70	<.10
Appearance	-.30	-8.43	<.001
Sex	.35	-1.45	>.10
Afterlife	-.09	-2.41	<.02
Sex	.32	-1.33	>.10
Sex	.42	-1.81	<.10

Note. Beta weights are unstandardized.

We then investigated correlations among our predictors, and found the variables of perceived animal intelligence, similarity to humans, and capacity for pain and suffering to be highly intercorrelated (*r*s of -.80, -.77, and -.64, respectively). We ran 3 multiple regressions, each using one of these three, as well as all of the other above predictors, to predict willingness to eat. The regression with the best fit included similarity to humans, accounting for 72.04% of the variance in willingness to eat, $F(7,171) = 740.69, p < .001$. Holding all other entered variables constant, disgust was a significant negative predictor of willingness to eat, and store familiarity was a significant positive predictor of willingness to eat. Holding all else constant, likelihood of being a carrier of disease was a significant positive predictor, albeit much smaller, of willingness to eat. Appearance, likelihood of life after death, and similarity to humans did not significantly predict willingness to eat above and beyond the other entered variables, nor did participant sex (see Table 3). The largest factor, disgust, was significantly positively predicted by perceived risk of disease and appearance, and negatively positively predicted by store familiarity (see Table 4).

Table 3
Multivariate predictors of willingness to eat animals

Factor	b	z	p
Disgust	-.66	-21.19	<.001
Store Familiarity	.25	8.58	<.001
Disease	.03	2.22	<.03
Appearance	-.03	-1.36	>.10
Afterlife	-.02	-1.17	>.20
Similarity	.00	.50	>.60
Sex	-.03	-.24	>.80

Note. Beta weights are unstandardized.

Table 4
Multivariate predictors of willingness of disgust at eating animals

Factor	b	z	p
Store Familiarity	-.59	-30.03	<.001
Disease	.17	6.31	<.001
Appearance	.15	5.25	<.001
Afterlife	.03	.68	>.45
Similarity	.03	1.09	>.25
Sex	-.39	-1.89	<.10

Note. Beta weights are unstandardized.

Next, we investigated omnivores' and vegetarians' perceptions of the animals mentioned throughout the survey. We conducted a series of one-way ANOVAs, examining the difference between omnivore and vegetarian self-reports of disgust at the thought of eating the animals, as well as their average ratings of the animals' intelligence, capacity for pain and suffering, likelihood of experiencing an afterlife, similarity to humans, cuteness, likelihood of carrying disease, and frequency of being seen for sale in a store. On average, vegetarians reported significantly more disgust at eating the animals than did the omnivores. Vegetarians also rated the animals as more intelligent, more capable of pain and suffering, more likely to experience an afterlife, more similar to humans, cuter, and more likely to be carriers of disease. The vegetarians did not significantly differ from the omnivores in how often they reported seeing the animals' meat for sale in a store. To ensure that the results were not being skewed by the more

exotic animals, such as chimpanzee, koala, hyena, and dolphin, we performed the same exact analyses on a smaller subset of the seven animals for which participants' mean willingness to eat ratings were above the midpoint of the scale- salmon, chicken, prawn, cow, pig, oyster, and octopus. The results for this subset were all significant, and a number of them of greater magnitude than in the overall set of animals (see Table 5 for a summary).

Table 5
Vegetarian and omnivore differences in perception of animal qualities

Factor	Vegetarian	Omnivore	F	d
Disease	5.43	4.94	3.95	.31 *
Subset	5.61	4.80	10.12	.50 ***
Disgust	7.95	5.49	97.07	1.65 ***
Subset	7.48	2.78	236.55	.96 ***
Store Familiarity	3.34	3.54	2.68	.25
Subset	6.88	7.44	12.68	.63 ***
Intelligence	5.61	4.85	12.54	.59 ***
Subset	5.02	4.18	12.64	.58 ***
Suffering	8.25	6.43	39.91	1.22 ***
Subset	8.15	5.97	50.55	1.43 ***
Similarity	4.19	3.42	10.98	.57 **
Subset	3.56	2.79	8.54	.52 **
Cuteness	5.20	4.71	9.30	.50 **
Subset	4.51	4.05	5.41	.39 *
Afterlife	4.82	4.71	16.28	.65 ***
Subset	4.80	2.74	19.48	.70 ***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

In order to examine the continuous relationship between willingness to eat meat and perceptions of animals, we examined the correlation between participants average willingness to eat the animal meats and their average ratings of disgust at the thought of eating the animals, as well as their average ratings of the animals' intelligence, capacity for pain and suffering, likelihood of afterlife, similarity to humans, cuteness, likelihood of carrying disease, and frequency of having seen meat for sale in a store. There was a significant negative correlation between average willingness to eat meat and average rating of disgust at the thought of eating meat. Average willingness to eat meat was also significantly negatively correlated with perceptions of average animal capacity for suffering and average likelihood of afterlife, and was

significantly correlated with frequency of having seen meat for sale in a store. Willingness to eat meat was not, however, correlated with perceptions of average animal intelligence, likelihood of afterlife, similarity to humans, cuteness, or likelihood of carrying disease. Within the seven animal subset (salmon, chicken, prawn, cow, pig, oyster, and octopus), a more pronounced pattern occurred, such that willingness to eat meat was negatively correlated with disgust and perceptions of animal intelligence, likelihood of afterlife, capacity for suffering, and similarity to humans, and was significantly positively correlated with frequency of having seen meat for sale in a store (see Table 6 for a summary).

Table 6
Correlations between animal trait perceptions and willingness to eat meats

Factor	Willingness to Eat (Overall)	Willingness to Eat (Subset)
Disease	-.04	-.11
Disgust	-.81***	-.86***
Store Familiarity	.20**	.39***
Intelligence	-.09	-.17*
Suffering	-.40***	-.45***
Similarity	-.10	-.15*
Appearance	-.09	-.08
Afterlife	-.23**	-.27***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

Consistent with Fessler and Navarette (2003), participants reported a lower average level of disgust and a higher average willingness to eat the plant-based foods than the animal-based meats. This pattern also held among only omnivorous participants, but for the purpose of brevity, the figures are not included in this paper. Also consistent with Fessler and Navarette, participants reported the least amount of disgust at the thought of eating the plant-based foods. People were most disgusted at the thought of eating, and least likely to eat, those animals closely associated with dirt and disease (rats, cockroaches, worms), as well as scavengers (vultures, hyenas), those similar to humans (dolphins, chimpanzees), poor exemplars (penguins,

platypuses, koalas), and those considered close to the home (dogs). Taken on their own, all of the factors- disgust, disease risk, store familiarity, intelligence, capacity for pain and suffering, likelihood of afterlife, ugliness/cuteness, and similarity to humans- significantly predicted willingness to eat in the to eat the animals in the hypothesized direction. Taken all together, the only factors that significantly predicted willingness to eat above and beyond all the other factors were disgust (-), store familiarity, (+) and risk of disease (+). Disgust and store familiarity emerged as predicted, but risk of disease emerged in the exact opposite direction as predicted, albeit at a very small magnitude. This could be a function of the particular animals presented in the survey- for example, people reported a high willingness to eat cows, but also reported them as being reasonably intelligent and having a rather high risk of carrying disease. Mad cow disease is a relatively new danger, which would have only recently begun to affect people's willingness to eat cows.

Categorically comparing average vegetarian and omnivore responses, vegetarians reported significantly more disgust at eating the thought of eating the animals than did omnivores, and rated the animals as more intelligent, more capable of pain and suffering, more likely to experience an afterlife, more similar to humans, cuter, and more likely to carry disease, than did omnivores. Thus, the vegetarians not only differed in their willingness to eat animals, and the amount of disgust they feel at the thought, but also differed in the way that they perceive several essential characteristics of the animals in question.

Examining the linear relationship between average willingness to eat meat and perceptions of animal qualities, the more willing people were to eat the animals, the less disgust they felt at the thought of eating them. Additionally, the more willing people were to eat the animals, the less they thought that the animals were capable of pain and suffering or experienced an afterlife, and the more they reported having seen meat for sale in a store. Looking only within the subset of animals most commonly sold in western supermarkets, the pattern was more

pronounced, with average willingness to eat meat negatively correlated with disgust and perceptions of animal intelligence, likelihood of afterlife, capacity for suffering, and similarity to humans, and significantly positively correlated with frequency of having seen meat for sale in a store.

Having both examined the factors associated with people's willingness to eat non-human animals and explored the ways vegetarians and omnivores view non-human animals, we wished to examine the ways in which vegetarians and omnivores perceive each other, and to more directly measure the factors underlying their dietary choices.

STUDY 2

In this study, we investigated how vegetarians, vegans, and omnivores perceive each other, and examined differences in considerations underlying food choices. We hypothesized that, controlling for the perceived healthiness of hypothetical targets' food choices, vegetarians, vegans, and omnivores would all rate a vegetarian target as more feminine and less masculine, as well as more virtuous, health conscious, fit, likeable, disciplined, idealistic, and pure, than an omnivorous target. We hypothesized that this pattern would be more pronounced among vegetarians and vegans than omnivores. Furthermore, we hypothesized that, compared to omnivores, vegetarians would be more conscious about the nutritional content of the food they choose to eat, the environmental impact of its production, and the welfare of any animals involved in its production, and that vegans would be more concerned about all three factors than vegetarians or omnivores.

Method

Participants

A total of 275 people participated in the study. 80 completed a pen and paper version of the study at the UBC Vancouver campus (median age 20, 60% female), and an additional 195

completed the study online at SurveyMonkey.com (median age 25, 84% female). As compensation for their time, the on-campus participants were reimbursed \$2 CAD, and the online participants were entered into a drawing for \$200 CAD. Participants were recruited from the outside areas near UBC's Koerner Library and Student Union Building, by word of mouth, by and postings on Earthsave.ca, Veggieforums.com, Tribe.net, Facebook.com, and Livejournal.com.

Materials and Procedure

All participants first read an informed consent form, and then completed the study packet. Participants were told that we were interested in how accurately people can form impressions of others' personality based on small amounts of information, and asked to rate the personality of a person whose brief profile then followed. The study packets were constructed in a 2 (target gender) X 2 (target dietary choices) design, such that each participant randomly received one of four descriptions of a hypothetical UBC student. The student in question was either male or female, and had favourite foods that either did or did not include meat. A sample profile (female vegetarian) is as follows:

“Cindy is a 20-year-old female student at the University of British Columbia. She describes herself as active and physically fit, and says she regularly enjoys tennis and running. Cindy also enjoys movies, board games, and hanging out with her friends. She is 163 cm (5'4”) tall, and weighs 57 kg (125 lbs). The foods she eats most regularly are tofu, vegetable tempura, salad, whole wheat bread, and lentils.” The omnivore target's most regularly eaten foods were lamb, lean beef, salad, whole wheat bread, and chicken burgers. The male targets were named Mark, and described as 178 cm (5'10”) and 72 kg (158 lbs). Age, activities, and hobbies were kept constant across all four profiles, and male and female heights and weights were the same for omnivore and vegetarian targets. The profiles are a modified and expanded version of those utilized by Stein and Nemeroff (1995), the differences being the names of the targets, the

university at which the target studies, the addition of target hobbies, and a change in the targets' most commonly eaten foods.

Following the target profile, participants rated the target on a scale from zero to seven on a subset of adjective pairs utilized by Stein and Nemeroff (1995), such that a lower score is more in the direction of the former adjective, and a higher score is more in the direction of the latter adjective. The adjective pairs were grouped into the following categories: non-moral control items (practical/ idealistic, methodical/spontaneous, quiet/talkative, morning person/night person, and analytical/ intuitive), virtue items (tolerant of others/intolerant of others, ethical/unethical, kind-hearted/cruel, considerate/inconsiderate, concerned/unconcerned, virtuous/immoral), global impression/likeability items (attractive/unattractive, likeable/unlikeable, good-looking/non good-looking), femininity and masculinity (orthogonal constructs), and fitness and weight items (fit/out of shape, active/inactive, not fat/fat, thin/not thin). Additionally, participants rated the subject on a number of items that Stein and Nemeroff found to differ in ratings of people eating “healthy” and “unhealthy” foods: “you are what you eat” (clean/tainted, pure/polluted), puritan ethic (disciplined/undisciplined, hard-working/lazy), and healthiness halo (health-conscious/not health conscious, healthy/unhealthy, well-balanced/one-sided). Participants also rated the target's food choices on adjective pairs of healthy/unhealthy, wholesome/ unwholesome, and not fattening/fattening.

Following the aforementioned ratings, participants indicated (via free response) how many meals they had eaten in the last week that contained various foods, such as beef, fish, rice, vegetables, pork, and bread, and also indicated self-identified dietary category (omnivore, vegetarian, vegan, or other). This allowed analysis of virtue judgments via ANOVA using the categorical variable of participant dietary status, and provided a way to check people's categorical self-identification against their reported diet (e.g. if a participant labelled him/herself as vegetarian, but ate beef five times in the past week, their data would be excluded from the

vegetarian, vegan, or omnivore group-level analyses).

In the next section of the questionnaire, participants indicated the extent to which various motives shape their choices of foods, using the following subscales adapted from Janda and Trocchia (2001) and Lindeman and Väänänen (2000): concern for nutrition, concern for environment, and concern for animals (Cronbach's $\alpha = .81, .87, .86$, respectively). Also, they indicated their level of concern for personal fitness, not directly tied to their food choices. Finally, participants filled out basic demographic information: age, gender, occupation, religion, cultural background, and socio-economic status (SES).

Results

78 participants self-identified as omnivore, 75 as vegetarian, and 93 as vegan. 26 participants self-identified as other or did not self identify their dietary status at all, and are included in overall, but not in group-level analyses. The omnivores were 63% female, median age 21, vegetarians were 87% female, median age 24, and the vegans were 88% female, median age 25. According to Scheffé's test, the vegan sample was significantly older than the omnivore sample, $p < .001$, and the vegetarian and vegan samples had a significantly higher percentage of females than did the omnivore sample, both $p < .001$. Omnivore, vegetarian, and vegan participants did not differ significantly in terms of level of own education, $F(2,240) = .38, p > .60$, paternal education, $F(2,233) = .87, p > .60$, or maternal education, $F(2,245) = .14, p > .80$. However, there was a significant difference in reported level of SES, $F(2,245) = 10.87, p < .001$. According to Scheffé's test, vegetarians reported their SES to be significantly lower than did omnivores, $p < .02, d = .46$ and vegans also reported their SES to be significantly lower than did omnivores, $p < .001, d = .75$ (for a summary of means and standard deviations, see Table 7).

Table 7
Levels of education, parental education, and perceived SES

Factor	Participant Diet		
	Omnivore	Vegetarian	Vegan
Education	4.60 (.97)	4.68 (1.10)	4.74 (.96)
Father's Education	4.64 (1.10)	4.50 (1.15)	4.40 (1.21)
Mother's Education	4.47 (1.08)	4.54 (1.20)	4.57 (1.16)
Perceived SES	.25 (1.29)	4.62 (1.48)	4.24 (1.41)

Note. Standard deviations given in parentheses. Higher numbers denote more education. 1- No formal education, 2- Primary School, 3- Secondary School, 4- Two Year Degree, 5- University, 6- Graduate or Professional Degree. Higher numbers indicate higher perceived SES, with a maximum of 9 and a minimum of 1.

We then analyzed the effect of the target student's diet on judgements of his/her personality via a series of one-way ANOVAs, controlling for the perceived healthiness of the diet (average ratings of healthy/unhealthy, wholesome/unwholesome, not fattening/fattening). Utilizing all participant responses, there were several significant effects of target diet on participant judgment of her/his personality, such that the vegetarian targets were rated as more virtuous, idealistic, health conscious, likeable, disciplined, and pure, but not more physically fit. We also conducted the exact analyses only among those participants who self-identified as omnivores, who also rated the vegetarian target as more virtuous than the omnivore target (for a summary of means, significance tests, and effect sizes, see Table 8).

Table 8
Judgments of omnivore and vegetarian target character and personality

Factor	Omnivore Target	Vegetarian Target	F	d
Virtuous (all)	3.71	4.97	44.83	.80 ***
Omnivores Only	4.10	4.85	5.40	.53 *
Health Conscious (all)	4.28	5.48	31.92	.67 ***
Omnivores Only	4.45	5.33	1.87	.31
Global Impression (all)	4.14	4.90	17.05	.50 ***
Omnivores Only	4.17	4.69	.75	.20
Disciplined (all)	4.73	5.32	24.20	.37 ***
Omnivores Only	4.55	5.18	11.43	.27
Pure (all)	3.90	5.09	32.72	.83 ***
Omnivores Only	4.26	4.65	0.00	0.00
Active/Fit (all)	5.24	5.63	1.79	.16
Omnivores Only	4.93	5.64	1.22	.25
Idealistic (all)	2.94	3.73	16.98	.50 ***
Omnivores Only	3.13	3.58	2.18	.33

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Next, we analyzed perceptions of target masculinity and femininity as a function of target diet, holding perceived healthiness of the diet constant. Utilizing all participant responses, male vegetarians were rated as more feminine ($M = 2.91$, $SD = 1.47$) than male omnivores ($M = 2.02$, $SD = 1.50$), $F(1,126) = 10.47$, $p < .003$, $d = .60$, and less masculine ($M = 3.96$, $SD = 1.62$) than male omnivores ($M = 4.77$, $SD = 1.70$), $F(1,127) = 6.95$, $p < .01$, $d = -.49$. Female vegetarians, however, were neither rated significantly more feminine ($M = 4.59$, $SD = 1.31$) than female omnivores ($M = 4.35$, $SD = 1.38$), $F(1,137) = 1.01$, $p > .30$, $d = .18$, nor significantly less masculine ($M = 2.36$, $SD = 1.34$) than female omnivores ($M = 2.57$, $SD = 1.42$), $F(1,136) = .73$, $p > .70$, $d = -.15$. Utilizing only omnivore responses, male vegetarians were rated as marginally more feminine ($M = 3.08$, $SD = 2.06$) than male omnivores ($M = 2.03$, $SD = 1.25$), $F(1,35) = 3.16$, $p < .09$, $d = .62$, but not significantly less masculine ($M = 4.40$, $SD = 2.19$) than male omnivores ($M = 4.80$, $SD = 1.51$), $F(1,36) = .39$, $p > .50$, $d = .21$. Using only omnivore responses, female vegetarians were neither rated significantly more feminine ($M = 4.13$, $SD = 1.11$) than female omnivores ($M = 4.13$, $SD = 1.47$), $F(1,35) = 0.00$, $p > .99$, $d = 0.00$, nor significantly less masculine ($M = 2.41$, $SD = 1.31$) than female omnivores ($M = 2.60$, $SD =$

1.38), $F(1,35) = .21$, $p > .60$, $d = -.16$.

Finally, we analyzed differences between omnivore, vegetarian, and vegan participants in level of concern for fitness, concern for nutrition, concern for animal welfare, and concern for environmental impact when making one's food choices via planned contrast (-1, 0, 1). The planned contrast for concern for fitness was not significant, $F(2,250) = .35$, $p > .70$. The planned contrast for nutrition was significant, $F(2,250) = 5.82$, $p < .003$, such that vegans reported caring significantly more about the nutritional content of their food than did omnivores, $d = .51$, but vegetarians significantly differed neither from vegans, $d = -.25$, nor from omnivores, $d = .28$. The planned contrast for animal welfare was also significant, $F(2,250) = 56.63$, $p < .001$, such that vegetarians reported caring significantly more about the animal welfare associated with their food choices than did omnivores, $d = 1.00$ and vegans even more so than vegetarians, $d = .64$. Additionally, the planned contrast for environmental impact was also significant, $F(2,250) = 37.52$, $p < .001$, such that vegetarians reported caring significantly more about the environmental impact associated with their food choices than did omnivores, $d = .82$ and vegans even more so than vegetarians, $d = .42$ (for a summary of means, see Table 9).

Table 9
Levels of food choice and fitness concerns

Factor	Participant Diet		
	Omnivore	Vegetarian	Vegan
Nutrition	4.42 (1.93)	4.91 (1.58)	5.28 (1.39)
Animal Welfare	4.96 (1.62)	6.26 (1.18)	6.83 (1.38)
Environment	5.15 (1.61)	6.25 (1.05)	6.61 (1.27)
Fitness	4.92 (1.19)	4.77 (1.27)	4.78 (1.26)

Note. Standard deviations given in parentheses.

Discussion

As predicted, across all subjects, people perceived the vegetarian targets, controlling for perceived healthiness of diet, to be significantly more virtuous, idealistic, health conscious, likeable, disciplined, and pure than the omnivore targets. One might argue that the vegetarians

and vegans preferred the vegetarian target because his/her diet was more similar to their own, but even within the third of the sample that self-identified as omnivore, controlling for perceived healthiness of diet, participants rated the vegetarian targets as significantly more virtuous than their omnivorous counterparts. The similarity-attraction effect could explain why the vegetarian participants rated the vegetarian targets more favourably than the omnivore targets, but that the omnivores themselves also rated the vegetarian target more favourably suggests that something else is driving the inferences about virtue and ethics. It is possible that participants, both vegetarians and omnivores, assume that the vegetarian student abstains from meat for ethical reasons, and that participants infer a stricter sense of ethics in general in the vegetarian targets, but without asking participants exactly why they rated their given target as they did, one cannot say for certain. Not only did participants rate the vegetarian targets as more virtuous, but also as more feminine, although this distinction held only for male targets. While these results support Adams' (1991) assertions of the link between meat and masculinity, it is peculiar that only males' perceived levels of femininity were affected by the presence or absence of meat in their diet. This is perhaps due to the very high percentage of female participants in the sample, or perhaps target diet interacted differently with the rest of the profile for males and females. That is, compared to female targets, perhaps a vegetarian man whose favourite sports are running and tennis is perceived much more differently than a meat-eating man whose favourite sports are running and tennis. It is interesting to note that Stein and Nemeroff's (1995) participants rated female targets with unhealthy diets as more masculine and less feminine than their healthy counterparts, while ratings of male targets' masculinity and femininity were unaffected by the healthiness of their diet. Perhaps, as suggested by Stein and Nemeroff, people consider males to be less affected by the overall healthiness of their diet, but consider the consumption of meat to be an underlying element of males' masculinity and femininity, whereas for females, it is the overall perceived healthiness of one's diet that affects judgements of their femininity.

It is also notable that the vegetarian participants were more likely to be female than the omnivore participants, and that the vegan participants were also more likely to be female, and to be older, than the omnivore participants. Why these age differences exist is unclear. It is possible that the average person who transitions to veganism does so somewhat later in life, or that the vegan and vegetarian websites on which we advertised draw an older sample than one would find on an average university campus. Interestingly, although vegan participants did not differ from omnivore participants in own or parental education, and were significantly older, they self-reported a significantly lower level of SES. Without additional measures, it is not possible to say if this difference is reflected in actual income, or if the omnivore participants rated themselves as higher in society than did the vegans due to a fundamentally different way of seeing the world. Past research (e.g. Allen et al., 2000) suggests that those who abstain from meat place less value on hierarchy, and that those who do eat meat often justify it by a feeling of privilege or superiority (Fessler & Navarette, 2003), so this possibility remains open for further research. Finally, as predicted, vegans and vegetarians reported greater concern for their food choices as they pertained to animal welfare, environmental impact, and their own nutrition. They did not significantly differ in level of concern for fitness, however, suggesting that differences between vegan, vegetarian, and omnivore concern for fitness may be chiefly restricted to the domain of diet.

GENERAL DISCUSSION

In the first study, we present evidence that, in the samples surveyed at UBC and online through the Yourviews website, perceptions of animal intelligence, capacity for pain and suffering, likelihood of afterlife, similarity to humans, cuteness, and likelihood of carrying disease are all significant predictors of a person's willingness to eat them. Additionally, feelings of disgust at the thought of its consumption, and how often one has seen a given animal for sale, greatly influence one's willingness to eat it—indeed, these arise as the strongest predictors, subsuming all of the others. The next step in researching the interplay of these variables is to examine whether this relationship plays out differently across several cultures, such as Canadians of European descent, Asian-Canadians, East Asians, and Latin Americans. Originally, we had intended to conduct these analyses in study one, but a majority of participants declined to answer the questions about ethnic descent, which were on the last page of the survey. A number of participants who took the paper version of the test said that they found the survey long and tedious, and thought that many people might have simply stopped filling out the online survey when they reached the last page. As such, the new project will be more streamlined, removing several of the animals which people were, on average, very unwilling to eat (e.g. worm, cockroach).

Although it cannot be proved that the perceptions of the animals led to the level of willingness to eat them, or vice versa, the previous research by Rozin et al. (1997) and Fessler et al. (2003) would suggest that participants' perceptions of the animals led to their relative willingness to eat them. A way to better investigate this possibility is by the direct manipulation of the variables in question, by presenting participants with descriptions of fictitious animals “from another culture” in which such variables as level of intelligence, nervous system sophistication, similarity to humans, and cuteness/ugliness are systematically varied, and measuring participant willingness to eat them.

In the second study, we present evidence that the consumption of meat, or the abstention from meat, can affect perceptions of one's virtue and morality, even among participants who themselves eat meat. Presumably, omnivore participants perceived the omnivore targets as more similar to themselves, as all other factors (age, sports, hobbies, height/weight) were held constant across targets, but without measuring perceived similarity/dissimilarity to the self, we cannot say for sure. Also, it is possible that the particular meats favoured by the omnivore targets were driving the differences in perceived virtue, such that people were especially bothered by the frequent consumption of lamb, a baby animal. To increase the generalizability of our findings, the next step is to test personality and morality ratings of targets who are considerably older, are not particularly physically active, and who routinely order either a meat or vegetarian entrée when dining out. In this way, the implication of meat eating or abstention is less glaring than a list of one's favourite foods, and if the same pattern of results emerges, the weight of the evidence will increase accordingly.

It is also not to be forgotten where the bulk of the data were collected. UBC is known to be a rather liberal university, and is located in Vancouver, a city widely known to be a haven for vegetarians and vegans. Although most of the student participants were omnivores themselves, it is conceivable that they would have much more positive attitudes toward vegetarians than would, for example, students in Calgary, Alberta or in Austin, Texas. Furthermore, it is possible that students in general think especially well of vegetarians, and that non-student populations would have very different attitudes toward vegetarianism. As such, it is important to continue our future studies in both student and non-student samples, in different cultural settings, and with varied methods. Moving beyond simple self-report measures, we could collect behavioural data by having participants take part in economic decision making games with an opponent who, all else held constant, is either a vegetarian or omnivore, to see if perceptions of vegetarian virtue also lead to greater levels of trust.

CONCLUSION

We have presented evidence that vegetarians and omnivores not only differently weigh concerns about the foods they choose to seek out and eat, but also perceive non-human animals in distinctly different ways, such that vegetarians perceive them to be more similar to humans in many dimensions than do omnivores. These perceptions, along with concern for environment, animal welfare, and personal nutrition, appear to be strongly associated with the choice to eat or abstain from meat. Additionally, we have presented preliminary evidence that vegans, those who completely abstain from the use of animal products, perceive their position in society differently from those who consume animal products. Furthermore, we have demonstrated that simply knowing whether or not a person eats or abstains from meat can significantly impact one's judgement of that person's character, even when all other information about said person is held constant between participants. We conclude that the topic of vegetarianism is fertile ground for future research in self and other perception, interpersonal relations, and human-animal interactions.

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