



Research report

A comparison of attitudes toward meat and animals among strict and semi-vegetarians



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ABSTRACT

A number of studies have documented a phenomenon whereby individuals self-identify as vegetarians but then simultaneously acknowledge that they eat red meat, chicken, and/or fish. Despite being a consistent and fairly robust effect, there has been little attempt to explain these semi-vegetarians, why they would define themselves in a category whose membership criteria they violate, and ways they might differ from strict vegetarians. The present research highlights possible reasons for the discrepancy and focuses on several dimensions that may demarcate semi- from strict vegetarians: belief in human–animal similarity and liking of and disgust toward meat. Survey results indicated that semi-vegetarians ($n = 57$) were less likely to dislike meat and to find meat disgusting than were strict vegetarians ($n = 157$), even accounting for diet motives. There were no differences between the groups in their beliefs about human–animal similarity although semi-vegetarians who consumed a wider range of animal products perceived marginally less human–animal similarity than those who consumed only fish. The results suggest that semi-vegetarians are distinct from strict vegetarians primarily in their evaluation of and disgust toward meat, likely as a cause or consequence of their occasional consumption of animal flesh.

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Introduction

One initial challenge for investigators pursuing vegetarian studies is in how to define and distinguish between the numerous types of non-meat eaters. As Ruby (2012) noted in his recent review on vegetarianism, a basic problem arises from inconsistency in how people self-identify. Specifically, a number of studies have documented that people will claim they are vegetarian¹ but then simultaneously acknowledge that they eat red meat, chicken, and/or fish. For example, in a large-scale study of teenage vegetarians in the Midwestern U.S., 46% reported eating fish, and 25% reported consuming chicken (Robinson-O'Brien, Perry, Wall, Story, & Neumark-Sztainer, 2009). An earlier study in the same location had uncovered a similar pattern, noting that 42% of teenage vegetarians ate fish, and 53% ate chicken (Perry, McGuire, Neumark-Sztainer, & Story, 2001). Worsley and Skrzypiec (1998) found in a South Australian sample that teenage vegetarians actually consumed *more* chicken than their non-vegetarians peers.

These effects are not simply attributable to youthful miscalculation, as similar discrepancies have been documented in a multitude of studies with adults. In a landmark study on the moralization of meat eating, vegetarians reported that they did not entirely eschew a variety of animal products (i.e., pork, veal,

lamb, beef, chicken, fish, shellfish, eggs, milk); in fact, the average product was described as close or closer to “reluctantly eaten” than “refuse to eat” (Rozin, Markwith, & Stoess, 1997). In a representative American sample, Gossard and York (2003) found that self-identified vegetarians consumed an average of 83.2 total grams of meat per day, nearly 40% of what omnivores reported. Even when the opportunity for inconsistencies is reduced, several studies have revealed a disparity between self-definition and admitted behavior. A survey of 10,000 American adults found that 60% of vegetarians admitted that they had eaten red meat, poultry, or seafood within the last twenty-four hours (Time/CNN/Harris Interactive Poll, 2002). Similarly, a USDA telephone poll of over 20,000 respondents found that nearly two-thirds of vegetarians had eaten meat or fish on the day of the survey (US Department of Agriculture, 2000). A large scale survey of female physicians in the US found that more than half of vegetarians had consumed animal flesh in the month preceding the survey (White, Seymour, & Frank, 1999).

When framed in absolute terms, many vegetarians fail to strictly adhere to meat abstention. A Canadian survey found that 78% of self-identified vegetarians reported sometimes eating seafood, 61% sometimes eating chicken, and 20% sometimes eating red meat, although this last figure more recently increased to 34% (National Institute of Nutrition, 1997, 2001). Paralleling these results, in an expansive survey of American vegetarians, only 36% said they never ate poultry, 30% said they never ate fish, and 64% said they never ate red meat (Krizmanic, 1992). Only 35% of

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¹ For the present purposes, a vegetarian is simply defined as someone who does not consume animal flesh.

Londoners who identified as vegetarian did not eat meat regularly or on occasion (Willetts, 1997). Similar effects to these have been found in a small American sample (Cooper, Wise, & Mann, 1985), among Canadian women (Barr & Chapman, 2002), women in the Southwestern U.S. (Kwan & Roth, 2004), and a highly educated group from the U.K. (Beardsworth & Keil, 1992).

Reported rates of vegetarianism, then, are artificially magnified by these “semi-vegetarians” who consume animal flesh to varying degrees. In a telephone survey of well educated and wealthy respondents in the eastern U.S., 7.2% indicated that they were vegetarian, but only 2.5% said that they never ate poultry, and only 1.5% reported never eating fish or poultry (Dietz, Frisch, Kalof, Stern, & Guagnano, 1995). Maurer (2010) discerned from studies like this and others in the 1990s that estimates of vegetarianism are predicated upon how vegetarianism is defined, with self-identification yielding higher estimates than behavioral reports. Across several representative studies in the U.S., approximately 7% self-identified as vegetarian, yet when asked about their specific eating habits, somewhere between 1% and 2.5% were strict vegetarians (Maurer, 2010). Semi-vegetarians, then, appear to greatly outnumber those strictly committed to a vegetarian diet.

While these cases have been well-documented, not as much attention has been placed on explaining *why* individuals define themselves in one category but behave quite differently from membership criteria. Why would individuals indicate that they are vegetarian when they still consume animal products? In what ways are these semi-vegetarians different from their counterparts who maintain strict dedication to their diet? Without better understanding of these dynamics, there is a danger that research may continue to lump self-identified vegetarians into a single category, which may possibly obfuscate or distort important effects. From a theoretical perspective, understanding the state of semi-vegetarianism may help uncover developmental aspects of vegetarianism, expose what deters more people from adopting vegetarianism, and reveal factors associated with maintaining or abandoning a vegetarian diet (see Ruby, 2012).

The possible explanations for this phenomenon are quite diverse. It may be that social consensus is not as resolute or clear on what actually defines a vegetarian diet, and that these individuals are essentially light meat² eaters operating on an imprecise operational definition. It could be that these individuals are the real-life equivalents of the fictitious imposters used in research by Jetten and colleagues (Hornsey & Jetten, 2003; Jetten, Summerville, Hornsey, & Mewse, 2005). If so, they may be publically communicating that they are vegetarian for the perceived benefits from others, or to reduce the dissonance they experience from consuming meat, i.e., they may be trying to fool others or themselves. There is also the possibility that these individuals do not suffer from the aforementioned cognitive or motivational distortions and fully intend to abandon meat consumption but differ from strict vegetarians in terms of structural variables, such as a lack of environmental resources or social networks (see Ruby, 2012). Alternatively, it may not be their situation that differs, but they may psychologically diverge from strict vegetarians in some way that prevents them from becoming full-fledged vegetarians. Of course there are a number of individual differences that could be relevant, e.g., they may be eager to please others, be unassertive, have weak impulse control, etc., and these differences may lead them to eat meat more frequently than they ideally wish.

There is also the possibility that they hold different cognitions and emotions specifically related to eating animals, which in turn account for variation in meat consumption. The author is unaware

of any research that has sought to identify differences between semi- and strict vegetarians in their perspective on eating animals. One component of this perspective may be determined by an individual's evaluation of living animals before they arrive on the plate. The other may be determined by an individual's view of the dead animal served as food. Accordingly, the author specifically considered two assessments that may distinguish between semi- and strict vegetarians: attitudes toward animals, as revealed in judgments of human–animal emotional similarity; and evaluation of and disgust toward meat itself. Pertinent research on each will now be summarized.

Human–animal similarity

Perceived similarity between animals and humans has been identified as an important mechanism to justify meat consumption. For example, Bilewicz, Imhoff, and Drogosz (2011) found that perceptions of the emotionality shared between humans and animals differed between omnivores and vegetarians. Three studies revealed that relative to vegetarians, omnivores judged animals to share less similar emotional states to humans for a variety of emotions, but especially secondary emotions (e.g., nostalgia, regret, etc.). These differences were larger for animals that are typically eaten relative to animals kept as pets. It appears that one way to justify meat consumption is to distance animals from humans in terms of their perceived emotional experiences, especially those “higher level” emotions that are given greater value and are more difficult to discern. Those unwilling or unable to create this difference would seemingly face increased pressure to justify eating meat as they would be consuming something with greater commonality to humans. In support of this, the more participants denied animal suffering and believed that animals were lower in a hierarchy to humans, the greater their reported meat consumption Rothgerber (2012).

Even more directly, Bastian, Loughnan, and colleagues have found that denying animal mental capacities – emotional and cognitive – reduces moral concern for them and thus, facilitates the consumption of animals. In a series of experiments, eating animals, expecting to eat them, and even being made to think about certain animals as categories of food led to greater perceived human–animal differences (Bastian, Loughnan, Haslam, & Radke, 2012; Bratanova, Loughnan, & Bastian, 2011; Loughnan, Haslam, & Bastian, 2010). Because the greater perceived distance is specifically targeted at those animals we consume (even unfamiliar ones), their work strongly suggests the dissonance reducing powers of perceiving animals as different from humans. The discrepancy between “I eat animals” and “I don't like to hurt animals” seems less important when the capacity of animals is diminished.

It may be that initial perceptions of human–animal dissimilarity cause semi-vegetarians to consume meat at least occasionally. Despite other factors propelling them to be vegetarian, their belief that animals lack emotional states may make it harder to resist pressures to eat meat and cause them to experience less guilt when doing so. Alternatively, given that meat consumption triggers a number of justifications (Rothgerber, 2012), it may be that eating meat itself is the catalyst that causes semi-vegetarians to underestimate human–animal similarity as a way to rationalize the practice.

Meat disgust

Disgust is a negative emotion characterized by a primitive revulsion at the prospect of bodily contamination and a symbolic element rejecting immoral or polluting objects, behaviors, or individuals (Fessler, Arguello, Mekdara, & Macias, 2003). Rozin et al. (1997) identified disgust as a multifaceted emotional state

² For simplicity sake, the term “meat” will be used as a synonym for food comprised of animal flesh, and unless otherwise noted, is meant to include fish and shellfish.

potentially measurable as a mental state, contamination potency, nausea, ideational rejection, and facial expression. These components of disgust were thought to occur in vegetarians as a way of supporting and internalizing meat avoidance. That is, according to the authors, the shift in meat from a liked to a disliked or disgusting food occurred because once philosophically opposed to meat, a dislike for its sensory and inherent qualities motivated further avoidance of it. While failing to replicate several chief findings of Rozin et al. (1997)³, Fessler et al. (2003) empirically confirmed the assertion that disgust reactions to meat are a consequence, not a cause of vegetarianism. This position is also indirectly supported by earlier research showing that only a small percent of vegetarians offered dislike or repulsion to meat as a cause for their vegetarianism (Amato, Partridge, & Amato, 1989).

Because semi-vegetarians have not completely undergone the transformation to vegetarianism, they likely have not fully internalized their preference and experienced what Rozin et al. (1997) term a “hedonic shift.” That is, by interrupting their vegetarianism with episodes of meat consumption, they may be disrupting the motivational process that would culminate in their finding meat disgusting. Thus, it was expected that semi-vegetarians would find meat less disgusting than would strict vegetarians. There is also the possibility that liking of meat (or finding a lack of disgust in it) is what prevents semi-vegetarians from maintaining strict vegetarian practices in the first place. Finding that strong meat disgust does not initiate vegetarianism (Fessler et al., 2003) does not preclude the possibility that low meat disgust may discourage strict vegetarianism.

In short, semi- and strict vegetarians may differ in their perceptions of the living animal before it arrives to plate and/or of the dead animal served as food. But there is another variable that needs to be discussed, for it has already been shown to be related to both these perceptions: diet motivation.

Motives for vegetarianism

The two chief motivations for meat abstention involve concern over personal health and ethical concerns over animal welfare and environmental destruction associated with meat consumption. Ethical vegetarians frame their diet within a philosophical, ideological, or spiritual context (Fox & Ward, 2008) and are more motivated by humanistic values than health vegetarians (Lindeman & Sirelius, 2001). In contrast, the focus within health vegetarians is internal, addressing desires to sustain good health and avoid illness. Emphasis is placed on personal health, fitness and energy rather than outward toward other living creatures (Fox & Ward, 2008). Rather than being driven by ideology, many health vegetarians traced their diet to personal experiences. Lindeman and Sirelius (2001) suggested that the ideology of health vegetarians is more conservative and normative value driven, concerned with personal safety and security.

Rozin et al. (1997) found that ethical vegetarians offered more reasons for their vegetarianism and compared to health vegetarians reported being more disgusted by meat, showed more concern when they saw others eat meat, expressed stronger emotional reactions to meat consumption, and believed that meat causes undesirable changes in personality. In terms of the living animal not yet served as meat, Rothgerber (2013a) found that ethical vegetarians believed that humans and animals share more emotional

Table 1
Characteristics of semi- and strict vegetarians.

Measure	Semi-vegetarians			Strict vegetarians		
	Mean	SD	%	Mean	SD	%
Age	39.17	14.07		39.01	12.19	
Years following diet [*]	9.60	9.18		14.86	11.08	
<i>Gender</i>						
Female			93			85
Male			7			15
<i>Educational level</i>						
<=High school			9			12
Associate's degree			13			10
Bachelor's degree			50			37
Graduate degree			28			41
<i>Diet Motive^{***}</i>						
Health			31			10
Ethical			29			63
Mixed-motive			41			27
<i>Meat Consumption</i>						
Eat pork reluctantly			13			–
Eat veal reluctantly			3			–
Eat lamb reluctantly			10			–
Eat beef reluctantly			13			–
Eat chicken reluctantly			24			–
Eat fish reluctantly			71			–
Eat fish readily			19			–
Eat shellfish reluctantly			58			–
Eat shellfish readily			10			–

*** This difference was significant at $p < .001$.

^{*} This difference was significant at $p < .05$.

experiences than health vegetarians did, beliefs which mediated their guilt over feeding pets an animal-based diet.

Not only does diet motivation explain differences in the evaluation of meat and of perceived human–animal similarity, it may also differentiate between semi- and strict vegetarians. That is, because ethical vegetarians attach an “ought” to avoiding meat, show concern that others eat meat (Rozin et al., 1997), view it more negatively when an ingroup member eats meat than do health vegetarians (Rothgerber, 2013b), and tend to be dietary purists rather than pragmatists like health vegetarians (White et al., 1999), it may be that semi-vegetarians (who seem less committed to the practice) are drawn disproportionately from the ranks of health vegetarians. One explanation for their occasional meat consumption is that they may be less bothered by it – violations of a vegetarian diet may not evoke the same sort of moral condemnation for semi-vegetarians as strict vegetarians. From the individual violator's perspective, the only thing harmed is the self, not the environment or nonhuman animals and therefore, the harm in eating meat is not perceived as seriously. This is all to suggest that diet motive needs to be taken into consideration when trying to explain differences between semi- and strict vegetarians.

The present study, then, included a sample of self-reported vegetarians who varied in how consistently they adhered to vegetarianism. To evaluate how they perceived animals prior to their arrival on the plate, the study assessed participants' beliefs in human–animal emotional similarity. The research followed the approach of Bilewicz et al. (2011) dividing responses into primary and secondary emotions, and assessing perceptions of an animal not consumed in western cultures (i.e., dogs) along with perceptions of an animal regularly consumed (i.e., pigs). To assess participants' reactions to the animal on the plate, the present study reproduced the measures used by Rozin et al. (1997) assessing disgust toward meat along with the sensory qualities (i.e., liking) of meat. Finally, motivation for following a vegetarian diet was measured. Because diet motivation has been found to predict both perceptions of human–animal similarity (Rothgerber, 2013a) and

³ Contrary to Rozin et al. (1997), Fessler et al. (2003) found a positive relationship between meat consumption and disgust sensitivity and found that moral meat avoiders were not more disgust sensitive than those with other motivations for meat avoidance. It should be noted that Fessler et al. (2003) examined meat avoiders (those who avoided at least three of fifteen listed meats during the last week) whereas Rozin et al. (1997) examined those who self-identified as vegetarian.

disgust toward meat (Rozin et al., 1997), motivation was entered as a blocking variable to ensure that effects for vegetarian type would not simply result from differences in diet motivation. The researcher also examined the outcome measures as a function of semi-vegetarian type. The expectation here was that semi-vegetarians who ate a wider variety of meat would manifest greater differences from strict vegetarians than would those semi-vegetarians consuming only fish.

Method

Participants and procedure

Participants were recruited primarily through the Vegetarian Resource Group (www.vrg.org). According to their website, “The Vegetarian Resource Group (VRG) is a non-profit organization dedicated to educating the public on vegetarianism and the interrelated issues of health, nutrition, ecology, ethics, and world hunger.” A brief recruitment notice for a study on vegetarians was posted on the organization’s blog, facebook and twitter accounts, and in national and local newsletters along with a link to the survey monkey website hosting the survey. Participants were offered entry into a \$50 lottery drawing in appreciation for their participation. The survey was accessible for 75 days from 2012 to 2013.

Eighty-one respondents were excluded from data analysis because they indicated that they were vegan⁴ ($n = 68$) or did not abstain from meat for reasons involving ethics, health, or some combination of the two ($n = 13$). In the end, the final dataset included 214 participants. 87% were females. 90% listed the U.S. as country of origin; 4% listed Australia, 3% Canada, 2% Europe and less than 1% another country. The mean age of participants was 39.1 ($SD = 12.69$). The sample was well-educated: 4% reported having less than a high school education, 8% had high school or GED, 10% had an associate’s degree, 41% reported having a college degree, and 38% reported having a graduate degree.

Measures

Diet. Participants’ diet was assessed with a single-item question asking them to choose which diet applied to them: vegetarian, vegan, or none of the above. Only participants who identified as vegetarian were included in the current analysis. Following Rozin et al. (1997), participants were also asked how much they consumed (from “readily eat” to “reluctantly eat” to “refuse to eat”) various animal products including pork, veal, lamb, beef, chicken, fish, and shellfish. Those who self-identified as vegetarian but indicated that they reluctantly or readily consumed at least one of the animal products were considered *semi-vegetarians* ($n = 59$) while those who self-identified as vegetarian and indicated a refusal to eat all animal products were defined as *strict vegetarians* ($n = 155$). Table 1 presents characteristics of the two groups. The only significant background difference between the groups was that strict vegetarians ($M = 14.86$, $SD = 11.08$) reported following their diet longer than semi-vegetarians ($M = 9.60$, $SD = 9.18$), $F(1, 199) = 9.70$, $p < .01$.

Diet motives. To assess motivation for following their current diet, participants chose between one of the following options: “I avoid eating meat⁵ primarily for ethical reasons; I avoid eating meat primarily for health reasons; Ethical and health reasons are about

equal in importance to me; or none of the above.” Participants giving the last response were excluded from the analysis. In total, combining diet and motives, 7% of respondents were strict health vegetarians ($n = 15$), 46% strict ethical vegetarians ($n = 98$), 20% strict mixed motive vegetarians ($n = 42$), 8% semi health vegetarians ($n = 18$), 8% semi ethical vegetarians ($n = 17$), 11% semi mixed motive vegetarians ($n = 24$). As expected, strict vegetarians were significantly more likely to be motivated by ethical concerns than were semi-vegetarians, $\chi^2(2, N = 211) = 23.99$, $p < .001$.

Human–animal similarity

Human uniqueness of primary and secondary emotions. To assess the extent to which participants believed animals possessed emotional states similar to humans, a scale was derived from the work of Bilewicz et al. (2011). Specifically, participants were asked to indicate the human uniqueness of eight emotions on a scale ranging from 1 (animals and humans have this emotion to the same degree) to 7 (only humans have this emotion). The eight emotions were used by Bilewicz et al. (2011): fear; melancholy; panic; guilt; excitement; regret; happiness; and nostalgia. The odd items together displayed solid reliability ($\alpha = .87$) and were combined to form a single measure of primary emotions. The even items ($\alpha = .80$) comprised secondary emotions.

Belief in pig and dog emotion. In addition to judgments about the emotionality of animals in general, participants rated the extent to which pigs and dogs experienced a range of emotions. Using a 5-point Likert scale (1 = *completely unlikely*, 5 = *completely likely*), respondents made judgments on the following emotions derived from Bilewicz et al. (2011): rage, shame, pain, hope, fear, melancholy, pleasure, love, happiness, guilt, surprise, and tenderness. The odd items together displayed solid reliability (α for pigs = .88; α for dogs = .87) and defined primary emotions. The even items (α for pigs = .88; α for dogs = .83) composed secondary emotions.

Evaluation of meat

Liking of meat. Borrowing from Rozin et al. (1997), participants were asked to evaluate four physical dimensions of meat separately: its taste, its smell, its texture, and its appearance on a 7-point Likert scale (1 = *dislike strongly*, 7 = *like strongly*).

Meat disgust. Four items from Rozin et al. (1997) were used to assess disgust associated with meat. The items were: “Eating meat is offensive, repulsive, and disgusting,” “Emotionally, I just cannot chew and swallow meat,” “I dislike meat because of where it comes from,” and “The thought of eating meat makes me nauseous.” They were scored similarly to Rozin et al. (1997) to facilitate comparisons between the studies, with the first two ranging from 1 (*disagree strongly*) to 5 (*agree strongly*), and the last two being true/false questions.

Results

For outcomes assessed continuously, the data were subjected to a two (vegetarian type: strict vs. semi-) \times three (diet motivation: health vs. ethical vs. mixed) ANOVA. Chi square analysis was used for categorical dependent variables, with vegetarian type and diet motivation as independent variables. None of the interactions were statistically significant. Significant main effects for vegetarian type will be presented first followed by significant diet motive effects. Tables 1 and 2 present descriptive statistics, statistical tests, and effect sizes for differences based on vegetarian type and diet motive, respectively.

⁴ Vegans were excluded because they have been shown to differ from vegetarians on some of the dimensions under examination (e.g., Rothgerber, 2013a), and the author wanted to avoid introducing another source of difference between semi- and strict vegetarians.

⁵ Participants were instructed that “meat” was being used as a generic term for animal flesh and included fish and shellfish.

Table 2
Differences between semi- and strict vegetarians in perceived human–animal emotional similarity and evaluation of meat.

Measure	Semi-vegetarian		Strict vegetarian		F value	Cohen's d
	Mean	SD	Mean	SD		
Human uniqueness of primary emotions	1.75	1.25	1.54	0.90	0.01	0.19
Human uniqueness of secondary emotions	4.66	1.32	4.15	1.54	1.13	0.36
Pig primary emotions	4.33	0.71	4.58	0.59	0.79	0.38
Pig secondary emotions	3.25	0.85	3.65	0.89	1.67	0.46
Dog primary emotions	4.55	0.60	4.74	0.51	0.34	0.34
Dog secondary emotions	3.88	0.74	4.13	0.79	0.48	0.33
Evaluation of meat – taste	3.71	1.89	3.33	2.03	2.93 ⁺	0.19
Evaluation of meat – smell	3.55	1.97	2.90	1.82	4.43 ⁺	0.34
Evaluation of meat – texture	3.64	1.81	2.89	1.71	8.02 ^{**}	0.43
Evaluation of meat – appearance	2.93	1.68	2.06	1.25	13.87 ^{***}	0.59
Meat disgust – can't chew/swallow	2.81	1.10	3.43	1.35	4.52 ⁺	0.50
Meat disgust – offensive, repulsive, etc.	3.00	1.18	3.53	1.17	6.47 ⁺	0.45
Meat disgust – dislike origins (Y/N)	90.0%		92.5%		0.35	0.02
Meat disgust – nauseating (Y/N)	42.4%		61.9%		6.68 ^{**}	0.47

Note. For meat disgust: dislike origins and nauseating, chi square rather than *F* value is reported and phi rather than Cohen's *d* is reported. Cohen's *d* of 0.2 represents small effects, 0.5 medium effects, and 0.8 large effects.

⁺ *p* < .10.

^{*} *p* < .05.

^{**} *p* < .01.

^{***} *p* < .001.

Differences between semi- and strict vegetarians

Human–animal emotional similarity

Human uniqueness of emotions. There were no significant differences between semi- and strict vegetarians in their belief in the human uniqueness of primary, $F(1,201) = 0.07$, *n.s.* or secondary emotions, $F(1,197) = 1.13$, *n.s.*

Belief in pig emotions. Differences between semi- and strict vegetarians in their beliefs about the emotional experiences of pigs failed to reach significance for primary $F(1,201) = 0.79$, *n.s.* or secondary emotions, $F(1,199) = 1.67$, *n.s.*

Belief in dog emotions. There were no main effects for beliefs in dogs possessing primary $F(1,201) = 0.34$, *n.s.* or secondary emotions, $F(1,194) = 0.48$, *n.s.*

Evaluation of meat

Liking of meat. Strict vegetarians disliked the taste, smell, texture, and appearance of meat more than did semi-vegetarians,

$F(1,206) = 2.93$, *p* < .09; $F(1,206) = 4.43$, *p* < .05; $F(1,206) = 8.02$, *p* < .01; $F(1,206) = 13.87$, *p* < .001.

Meat disgust. Strict vegetarians agreed significantly more that they emotionally could not chew and swallow meat, $F(1,206) = 4.52$, *p* < .05 than did semi-vegetarians. Strict vegetarians reported finding meat significantly more offensive, repulsive, or disgusting than did semi-vegetarians, $F(1,206) = 6.47$, *p* < .05. There were no significant differences between strict vegetarians and semi-vegetarians in disliking meat because of its origins, $\chi^2(1, N = 212) = 0.35$, *n.s.* Strict vegetarians were more likely than semi-vegetarians to find meat nauseating, $\chi^2(1, N = 212) = 6.68$, *p* < .01.

Differences between ethical, health, and mixed-motive vegetarians

Human–animal emotional similarity

Human uniqueness of emotions. There was a main effect for diet motive, $F(2,201) = 10.67$, *p* < .05, and Tukey tests revealed that health vegetarians believed in the human uniqueness of primary

Table 3
Differences between ethical, mixed, and health vegetarians in perceived human–animal emotional similarity and evaluation of meat.

Measure	Ethical		Mixed-motive		Health		F value	Partial eta sq.
	Mean	SD	Mean	SD	Mean	SD		
Human uniqueness of primary emotions	1.39	0.62	1.36	0.80	2.50	1.75	10.67 [*]	0.14
Human uniqueness of secondary emotions	4.08	1.51	4.46	1.51	4.86	1.28	1.34	0.01
Pig primary emotions	4.50	0.47	4.46	0.54	3.99	0.99	14.06 ^{***}	0.12
Pig secondary emotions	3.46	0.76	3.33	0.85	2.93	0.90	7.54 ^{***}	0.07
Dog primary emotions	4.71	0.38	4.57	0.45	4.40	0.88	8.02 ^{**}	0.07
Dog secondary emotions	4.15	0.73	4.07	0.72	3.74	1.02	1.79	0.02
Evaluation of meat – taste	3.04	1.94	2.94	1.99	4.38	2.03	3.70 [†]	0.03
Evaluation of meat – smell	3.03	1.86	2.97	1.83	3.52	2.03	0.53	0.01
Evaluation of meat – texture	3.08	1.74	2.80	1.65	4.31	2.02	3.58 [†]	0.03
Evaluation of meat – appearance	2.14	1.32	2.30	1.54	2.87	1.50	1.27	0.01
Meat disgust – can't chew/swallow	3.06	1.23	3.00	1.10	2.23	1.20	3.21 [†]	0.05
Meat disgust – offensive, repulsive, etc.	3.36	1.28	3.35	1.20	2.55	1.23	3.95 [†]	0.04
Meat disgust – dislike origins (Y/N)	94.7%		95.5%		77.4%		11.69 ^{**}	1.55
Meat disgust – nauseating (Y/N)	63.5%		53.0%		36.7%		7.40 [†]	0.98

For meat disgust: dislike origins and nauseating, chi square rather than *F* value is reported and phi rather than partial eta squared is reported. Partial eta squared of 0.01 represents small effects, 0.06 medium effects, and 0.14 large effects.

[†] *p* < .05.

^{**} *p* < .01.

^{***} *p* < .001.

Table 4

Differences between meat/fish and fish semi-vegetarians in perceived human–animal emotional similarity and evaluation of meat.

Measure	Meat/fish semi-vegetarian		Fish semi-vegetarian		F value	Cohen's d
	Mean	SD	Mean	SD		
Human uniqueness of primary emotions	1.55	0.46	1.87	1.41	0.66	0.31
Human uniqueness of secondary emotions	4.94	1.19	4.25	1.27	3.01*	0.56
Pig primary emotions	4.45	0.63	4.27	0.74	0.66	0.26
Pig secondary emotions	3.33	0.83	3.16	0.81	0.48	0.21
Dog primary emotions	4.67	0.48	4.52	0.64	0.62	0.27
Dog secondary emotions	3.78	0.61	4.15	0.75	2.91*	0.54
Evaluation of meat – taste	3.63	2.03	3.68	1.90	0.01	0.03
Evaluation of meat – smell	3.50	2.10	3.51	1.96	0.00	0.00
Evaluation of meat – texture	3.38	2.03	3.63	1.80	0.22	0.13
Evaluation of meat – appearance	2.38	1.41	3.15	1.74	2.50	0.49
Meat disgust – can't chew/swallow	2.44	1.15	2.90	1.30	1.56	0.37
Meat disgust – offensive, repulsive, etc.	2.56	1.21	2.93	1.15	1.12	0.31
Meat disgust – dislike origins (Y/N)	87.5%		90.2%		0.09	0.01
Meat disgust – nauseating (Y/N)	73.3%		53.7%		1.76	0.23

Note. * $p < .05$ ** $p < .01$ *** $p < .001$. For meat disgust: dislike origins and nauseating, chi square rather than F value is reported and phi rather than Cohen's d is reported. Cohen's d of 0.2 represents small effects, 0.5 medium effects, and 0.8 large effects.

* $p < .10$.

emotions more than ethical and mixed-motive vegetarians did. Diet motive did not have an effect on participants' judgments of human uniqueness of secondary emotions, $F(2, 197) = 1.34$, *n.s.*

Belief in pig emotions. Diet motive was again a significant predictor, $F(2, 201) = 14.06$, $p < .001$, and Tukey tests indicated that health vegetarians were less likely than ethical and mixed-motive vegetarians to believe that pigs were similar to humans in their capacity for primary emotions. Health vegetarians were also less likely to believe that pigs experienced secondary emotions than ethical and mixed-motive vegetarians, $F(2, 199) = 7.54$, $p < .001$.

Belief in dog emotions. A significant main effect for diet motive, $F(2, 201) = 8.02$, $p < .001$ occurred because health vegetarians were less likely again to perceive dogs as experiencing primary emotions than ethical and mixed-motive vegetarians. There were no effects for belief in dog secondary emotions, $F(2, 194) = 1.79$, *n.s.*

Evaluation of meat

Liking of meat. Ethical vegetarians disliked the taste, $F(2, 206) = 3.70$, $p < .05$ and texture, $F(2, 206) = 3.58$, $p < .05$ of meat more than did health vegetarians.

Meat disgust. Ethical and mixed-motive vegetarians agreed significantly more that they emotionally could not chew and swallow meat than did health vegetarians, $F(2, 206) = 3.21$, $p < .05$. Ethical and mixed-motive vegetarians reported finding meat significantly more offensive, repulsive, or disgusting than did health vegetarians, $F(1, 206) = 3.95$, $p < .05$. Those abstaining from meat for health reasons were less likely to dislike meat because of its origins than those abstaining from meat for ethical reasons and mixed reasons (95.5%), $\chi^2(2, N = 211) = 11.69$, $p < .01$. Health vegetarians found meat less nauseating than ethical or mixed motive vegetarians, $\chi^2(2, N = 211) = 7.40$, $p < .05$.

Semi-vegetarian analysis

To test the hypothesis that those semi-vegetarians who more willingly consumed various types of animal flesh would exhibit different attitudes toward meat and animals than those less willing to do so, the researcher created two categories of semi-vegetarians: those only willing to eat fish ("fish semi-vegetarians," $n = 43$) and those willing to eat other meats in addition to fish ("meat/fish semi-vegetarians," $n = 16$). All of the outcome measures were examined with type of semi-vegetarian serving as the independent variable. Table 3 presents descriptive statistics, statistical tests, and effect sizes for differences between types of semi-vegetarian.

Human–animal emotional similarity. Meat/fish semi-vegetarians were marginally more likely to believe in the human uniqueness of secondary emotions than were fish semi-vegetarians, $F(1, 45) = 3.01$, $p < .09$, and were marginally less likely to believe that dogs experienced secondary emotions than were fish semi-vegetarians, $F(1, 45) = 2.91$, $p < .10$.

Evaluation of meat. There were no significant effects for evaluation of meat, although the lack of power made it more difficult to find such effects (see Table 4).

Discussion

Approximately 28% of our vegetarian sample admitted that they did not always refuse animal flesh. Although this prevalence was much smaller than in other studies (e.g., Krizmanic, 1992; Willetts, 1997; Perry et al., 2001), the continuum of animal products they were least opposed to consuming conformed to that identified in earlier research. Participants were most likely to eat fish and shellfish, followed by chicken, and then beef and pork. Rates of chicken (24%), beef (13%), and pork (13%) consumption were low, and none of the respondents consumed these products readily. In fact, the only animal flesh readily eaten in the present study were fish and shellfish, but this was true for less than one-quarter of semi-vegetarians. Demographically, the typical semi-vegetarian was a well-educated, adult/middle-aged woman, indistinguishable from the average strict vegetarian in the study.

In terms of what inspired their vegetarianism, these occasional meat eaters were fairly evenly divided between motives based on health, ethics, and a combination of the two. In contrast, strict vegetarians were disproportionately motivated by ethical concerns. Because of this anticipated disparity, diet motives were included in the analytic design to examine its unique contribution to the outcome measures. Consistent with Rothgerber (2013a), ethical vegetarians were more likely to perceive humans and animals as similar in their emotional capacity for the majority of measures. That ethically motivated vegetarians were generally more likely to be disgusted by meat corroborated earlier research (Rozin et al., 1997; but see Fessler et al., 2003 for different results with meat abstainers), but the finding that they were also less likely to enjoy certain sensory aspects of meat deviated from it. That is, unlike the present results, Rozin et al. (1997) surprisingly failed to find that moral vegetarians disliked the sensory properties of meat more than did health vegetarians. The reason for this

discrepancy is unclear, but it may result from differences in samples or in how diet motive was measured.

Independent of diet motives, the present results demonstrated that eating meat on occasions is associated with certain attitudes toward it. That is, semi-vegetarians differed from their more loyal counterparts in some, but not all, of the ways they approached animals and meat. Relative to those vegetarians never consuming animal flesh, semi-vegetarians were more likely to express liking meat and less likely to be disgusted by meat, to find it nauseating, and to have emotional resistance toward consuming it.

Although the majority of items assessing evaluation of meat revealed significant differences between semi- and strict vegetarians, there was no evidence that their judgments about human–animal emotional similarity diverged, either for ratings of animals in general or the more specific cases of an animal consumed in the West (i.e., pigs) and one not consumed (i.e., dogs). In the present sample of vegetarians, then, what distinguished semi- from strict vegetarians were not their beliefs about the animal as a living creature before it arrived on the plate, but their perceptions of the dead animal presented as food. Because diminished belief in animal mind has been shown to facilitate meat consumption among omnivores (Bastian et al., 2012; Bilewicz et al., 2011; Bratanova et al., 2011; Loughnan et al., 2010), semi-vegetarians seemingly find themselves in a quandary: They perceive animals as having a similar human-like capacity as strict vegetarians do, yet they still eat meat. Although the present study did not include a direct comparison with omnivores, a comparison of means between the present study and others suggests that it is in the perception of secondary emotions where semi-vegetarians are likely to diverge most from omnivores.⁶ Unlike omnivores, semi-vegetarians do not seem as likely to diminish feelings of guilt arising from meat consumption with thoughts that animals do not experience higher level emotions. In this sense, the semi-vegetarians in this sample do not seem like omnivores masquerading as mere imposters. In the introduction, it was speculated that such phoniness may be a mechanism to relieve dissonance from eating meat. One reading of the present results though, is that semi-vegetarians may experience *more*, not less dissonance; after all, they are contributing to the pain and death of a living creature who they, relative to omnivores it would seem, believe possesses emotional states similar to humans.

Whether semi-vegetarians' perceptions are dissonant with their behavior ultimately depends on the question of causality: Is it their lack of meat disgust and liking of meat that contributes to them consuming meat, or is it their consuming meat that causes a lack of meat disgust and liking for it? One possibility is that semi-vegetarians perceive animals as similar in capacity to humans, but the presence (or absence) of other factors (e.g., personality differences, situational constraints, etc.) lead them to consume meat. The increased guilt they would experience from eating an animal with emotional capacity may then be reduced by perceptions that meat is not disgusting, that it is in fact quite delicious and satisfying. Positive evaluation of meat, then, may follow meat consumption as a means to alleviate dissonance. Alternatively, an initial liking of meat and lack of disgust for it may instigate (or maintain) ingrained habits of meat consumption. For whatever reason, these individuals are unable to bring themselves to distance animals from humans, and as a result, they likely suffer dissonance over

their meat consumption, unless they are able to reduce their dissonance in other ways (e.g., by dissociating the animal from the food on the plate or avoiding thinking about animal suffering, etc.). To better understand the dynamics of semi-vegetarianism, future research should clarify which account is correct, whether semi-vegetarians experience heightened dissonance, and if so, how they alleviate it.

The present results suggest that there is danger in combining all vegetarians together into a single entity based on self-identification. Self-identification as vegetarian when one consumes meat may represent a misunderstanding of what true vegetarianism is, may be an impression management strategy for the benefit of others or the self, may represent wishful thinking, or as the present results suggest, may indicate that the individual has simultaneous congruent and incongruent attitudes with more loyal vegetarians. When comparing vegetarians to less restrictive (i.e., omnivores) and more restrictive (i.e., vegans) groups, and even to each other (i.e., health vs. ethical), research would be strengthened by carefully considering how vegetarianism is operationalized. To categorize all vegetarians together would have the potential to confuse matters, at least for some outcomes. A true assessment of meat disgust in the present study, for example, would not be ascertained from self-identification. At the least, researchers may consider separating semi- and strict vegetarians in their analysis and design to enhance measurement strength and accuracy.

Even here though, two categories of strictness may not suffice. That is, caution should be taken in generalizing the present results to the entire population of semi-vegetarians. The current sample of semi-vegetarians was recruited through a vegetarian website that predominately attracted those with ethical motivations for their meat abstention. Relative to others, those reading the website may very well be more committed to the vegetarian cause, derive more of their social identity from it, organize their free time around abstaining from meat, and be more socially connected to other vegetarians. In this sense, even those that admitted to consuming animal flesh may take their vegetarianism more seriously and have more in common with strict vegetarians than some that claim vegetarian status and still report eating meat. Consistent with this interpretation, semi-vegetarians in the current study reported following their diet for slightly over 9 years on average, hardly a whimsical fad. In addition, as previously noted, reported rates of meat consumption were substantially lower than those typically identified in other studies that have uncovered semi-vegetarians.

As Beardsworth and Keil (1992) have argued that vegetarianism is best conceptualized as a continuum of strictness toward avoiding animal products, it should not be surprising that lumping together all semi-vegetarians into a single category is probably inadequate. Because the present sample seemed to over represent more committed semi-vegetarians, it is plausible that the results may suggest that semi-vegetarians have more in common with strict vegetarians than the entire population of semi-vegetarians really does. That those semi-vegetarians who consumed chicken and beef also perceived marginally less human–animal emotional similarity on secondary emotions suggests that larger differences between strict and semi-vegetarians may potentially be uncovered in other samples. In short, the present results may have understated differences not only within semi-vegetarians but also between semi- and strict vegetarians.

To return to an earlier question about why semi-vegetarians would indicate that they are vegetarian when their behavior suggests otherwise, the present results suggest that at least some semi-vegetarians are not omnivores masquerading in the proverbial sheep's clothing; their claim to vegetarianism is not simply a ruse. Ideological, ethical concerns are as motivating to them as more individualistic concerns over personal health, and they seem

⁶ Although there are obvious hazards to extrapolating across results from different samples, the author examined mean differences in perceived human–animal similarity between participants in the present study and those used by Bilewicz et al. (2011). Differences between strict vegetarians in the present study and vegetarians in Bilewicz et al. (2011) appeared small (and probably nonsignificant) for all the similarity measures. However, semi-vegetarians ($M = 4.66$) appeared to perceive emotions as less uniquely human than did omnivores ($M = 5.58$) for secondary emotions in general and perceived secondary emotions as experienced more by an animal consumed in the West ($M = 3.25$; $M = 2.73$).

to believe in the emotional capacity of animals in a way that omnivores do not (Bilewicz et al., 2011). Although not measured at present, they likely have more positive attitudes toward animals and are more concerned with their welfare than are omnivores. These perceptions would seemingly motivate their vegetarianism, but something prevents them from full commitment. It may be that they enjoy meat more than their more successful vegetarian counterparts, or this lack of disgust may only be the product of their behavior. Identifying which is the case may more fully assist in understanding the developmental aspects of vegetarianism.

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