



# The psychology of vegetarianism: Recent advances and future directions

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## ABSTRACT

Whereas vegetarianism has long garnered attention from nutritional science and philosophy, psychological research exploring this eating behavior has emerged only in the past few decades. Six years ago, Ruby (2012) reviewed the extant literature on the psychology of vegetarianism, showcasing its promise as “a blossoming field of study.” In the time since, this line of research truly has blossomed, as subsequent work has addressed prior knowledge gaps and initiated new lines of inquiry. While evidence on previously studied topics of dietary motivation, moral values, gender, differences between vegetarians and vegans, barriers to dietary change, and disordered eating has continued to expand, new lines of research on identity, social experiences, flexitarianism, culture, and prospective vegetarianism have emerged. Recent psychometric advancements, moreover, have constructed useful measures to assess relevant constructs. The current review synthesizes this amalgam of research, identifying emergent themes and highlighting promising directions for future inquiry.

## 1. Introduction

Whereas vegetarianism has long garnered attention from nutritional science and philosophy, psychological research exploring this eating behavior has emerged only in the past few decades. This line of work has centered on addressing the following question: How do people's attitudes, behaviors, and self-perceptions inform—and become informed by—the decision to follow a vegetarian diet? In the current review, I synthesize recent advances and highlight future directions that can illuminate this intricate matter.

Six years ago, Ruby (2012) reviewed the extant literature on the psychology of vegetarianism, showcasing its promise as “a blossoming field of study” (p. 141). Ruby's review centered on seven main topics: dietary variations of vegetarianism; vegetarians' motivations; attitudes toward meat; vegetarians' and omnivores' values and worldviews; differences between vegetarians' and omnivores' well-beings; perceptions of vegetarians and omnivores; and links between gender, vegetarianism, and meat consumption. This review highlighted that vegetarianism is often construed subjectively, as no universal definition exists for *vegetarian*. Adding to this, research has recurrently found, paradoxically, that many people who label themselves vegetarian actually eat meat on occasion and that vegetarians vary substantially in terms of which animal products they will or will not eat.

Just as definitions of vegetarianism vary, so too do the motivations people have for following a vegetarian diet. Most common among vegetarians' motivations include concerns about animals, health, the environment, and religion (Ruby, 2012). Many vegetarians also report

avoiding meat because it disgusts them. Much research classifying vegetarians as motivated by either ethics or health has revealed significant differences between the two groups, such that ethically motivated vegetarians are more likely to have adopted their diets abruptly, to be disgusted by meat, and to avoid a wider range of animal products, to name a few.

Whereas omnivores exhibit more positive attitudes toward meat than do vegetarians, an increasing number of omnivores across a range of nations are reducing their meat intakes for reasons similar to those cited by vegetarians (Ruby, 2012). Still, differences exist between vegetarians' and omnivores' values and worldviews, with vegetarians being more politically liberal, empathic, and opposed to capital punishment (Ruby, 2012). Further differences exist between vegetarians and vegans, as vegans exhibit stronger beliefs about meat consumption, animal welfare, and the environment.

Lastly, Ruby (2012) reviewed an extensive body of literature on vegetarianism and gender—namely, studies highlighting an association between meat and masculinity. Compared to women, men view meat as a more essential part of a proper diet, eat more meat, and express fewer concerns about the effects of meat consumption on animals and the environment. These findings make it unsurprising that women are more likely to be vegetarian than are men.

In the time since Ruby (2012), a rapidly expanding body of literature has drawn upon this review and related works in order to address prior knowledge gaps, to reconceptualize phenomena, and to construct useful measures for assessing relevant constructs. At the same time, recent research has headed down unforeseen paths, as scholars have

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initiated new lines of inquiry that conceive vegetarianism with greater nuance and pay greater attention to its psychosocial implications. On what topics has the preponderance of this research focused? What notable findings have surfaced? In which areas is research still lacking? In this paper, I review the social scientific literature on vegetarianism in developed Western nations since Ruby (2012) in order to identify emergent themes and to highlight promising directions for future research.

## 2. Methodological overview of the current review

Included in the current review is the literature on vegetarianism published since July 2011 when the initial draft of Ruby (2012) was submitted for publication. As evidence on previously studied topics related to vegetarianism has continued to expand, new lines of research on have also emerged. After reviewing recent advancements in research on moral values, dietary motivation, prospective vegetarianism, social implications, variants of vegetarianism, and mental health, I call attention to understudied topics that warrant further consideration. I note that, unless otherwise specified, the use of *vegetarianism* refers to both vegetarianism and veganism, inclusively.

## 3. Moral values

Adding to a large body of prior work (see Ruby, 2012), a considerable amount of recent research has examined relationships between moral values and vegetarianism. One topic within this domain includes political orientation. Compared to conservatives, liberals tend to view vegetarianism more positively (Črnič, 2013). Moreover, greater endorsement of universalism predicts more positive attitude toward reducing, and less frequent consumption of, meat, whereas ascribing greater value to power predicts less positive attitude toward reducing, and more frequent consumption of, meat (Hayley, Zinkiewicz, & Hardiman, 2015). Links between diet and political orientation may be particularly strong for veganism, compared to other forms of vegetarianism, as Wrenn (2017) found that vegans were approximately 15 times more likely to be politically liberal than conservative. Collectively, these studies support prior findings (e.g., White, Seymour, & Frank, 1999) documenting links between liberal values and vegetarianism.

Right-wing ideology (including right-wing authoritarianism [RWA], social dominance orientation [SDO], and conservatism) may in part explain beliefs about meat consumption. For one, omnivores exhibit not only greater RWA and SDO (Veser, Taylor, & Singer, 2015) but also greater conservatism (Pfeiler & Egloff, 2018) than do vegetarians. Moreover, greater conservatism predicts a greater likelihood of returning to eating meat after having been vegetarian, an effect largely explained by lower feelings of social support and weaker social justice motivations (i.e., concerns about animals, the environment, and world hunger) for initially eschewing meat among more conservative individuals (Hodson & Earle, 2018). In addition to exemplifying more omnivorous eating behavior, people who endorse right-wing ideology also tend to exhibit more negative attitudes toward vegetarians (Judge & Wilson, 2018; MacInnis & Hodson, 2017).

Moral attitudes and behaviors beyond political orientation differ between vegetarians and omnivores as well. Compared to omnivores, vegetarians are more concerned about animal welfare, donate more to animal-oriented charities, and emphasize concerns about the moral foundation harm/care more strongly (De Backer & Hudders, 2015). Additionally, some research suggests that interacting with a pet during childhood may shape one's moral values and eating behaviors later in life. Namely, children who own a variety of pets or become emotionally attached to a pet tend to eat less meat in adulthood, an effect that may be attributed to their greater feelings of empathy toward animals and greater moral opposition to animal exploitation (Heiss & Hormes, 2018; Rothgerber & Mican, 2014). These causal mechanisms, however,

warrant further testing. Likewise, further research is needed to identify the extents to which greater emphases on harm/care, animal welfare, and liberal values are causal of and/or caused by the decision to eschew meat.

### 3.1. Future directions

Vegetarianism exhibits evident links to moral values, which may directly play into the motivations people have for eschewing animal products. While much is known about how these moral values may shape people's eating behaviors, less is known about how people might revise their moral values after altering their dietary habits, as self-perception theory would suggest can occur (Bem, 1972). It could be particularly interesting to examine bidirectional influences between moral values and food choice among prospective, current, and former vegetarians through both cross-sectional and longitudinal designs. Additional research is also needed to test the extents to which veganism may associate with certain values to greater extents than do other forms of vegetarianism. Moreover, as Ruby (2012) suggests, future research should consider how different political-ideology norms across various geographical and cultural regions may inform people's perceptions of vegetarians and attitudes toward meat reduction.

## 4. Motivations

A great amount of recent literature has focused on what motivates people to follow a vegetarian diet. Paralleling Ruby's (2012) review of earlier work, ethical and health motivations emerged as the two most common types of motivations among vegetarians. Specifically, the two most common types of ethical motivation, in order of prevalence, include concern for animals (i.e., animal rights or welfare) and concern for the environment (Dyett, Sabaté, Haddad, Rajaram, & Shavlik, 2013; Hoffman, Stallings, Bessinger, & Brooks, 2013; Janssen, Busch, Rödiger, & Hamm, 2016; Radnitz, Beezhold, & DiMatteo, 2015; Timko, Hormes, & Chubski, 2012; Torti, 2017; Wrenn, 2017). The two most common health motivations are general wellness promotion and weight maintenance (Cramer et al., 2017; Hoffman et al., 2013; Radnitz et al., 2015; Timko et al., 2012; Torti, 2017). Whereas some studies have found health motivation to be the most common motivation among vegetarians (e.g., Dyett et al., 2013; Izmirli & Phillips, 2011; Rosenfeld, 2018c), the majority of studies suggest that a greater proportion of vegetarians report ethical, rather than health, motivations (e.g., Hoffman et al., 2013; Janssen et al., 2016; Kerschke-Risch, 2015; Radnitz et al., 2015; Romo & Donovan-Kicken, 2012; Rothgerber, 2014a; Timko et al., 2012). Overall, recent research converges to suggest that the three most common motivations among vegetarians in developed Western nations are concerns about animals, health, and the environment.

The motivations people have for following a vegetarian diet are powerful predictors of their attitudes and behaviors. Compared to health-motivated vegetarians, ethically motivated vegetarians exhibit stronger convictions about the role of vegetarianism in their lives and exclude a greater number of animal products from their diets (Hoffman et al., 2013). Some evidence also suggests that, relative to health motivation, ethical motivation may predict more successful maintenance of vegetarianism over time (Hoffman et al., 2013; Radnitz et al., 2015). Yet people's reasons for following a vegetarian diet often change over time (Beardsworth & Keil, 1992; Fox & Ward, 2008a; Stiles, 1998). As such, future research is needed to clarify ways in which initial and current motivations may predict dietary duration of adherence divergently.

Whether or not one chooses vegetarianism for ethical reasons may shape how one attributes mind to animals, evaluates meat, and adheres to one's diet. Compared to health-motivated vegetarians, ethically motivated vegetarians believe less strongly in the human uniqueness of primary emotions, ascribe greater primary and secondary emotions to pigs, and ascribe greater primary emotions to dogs (Rothgerber,

2014a). Ethically motivated vegetarians also are more likely to own pets, own a greater number of pets, and feed their pets less meat than do health-motivated vegetarians (Rothgerber, 2013). Of those vegetarians who do feed their pets a predominantly meat-based diet, ethically motivated vegetarians report feeling guiltier about their pet's diet than do health-motivated vegetarians, an effect partially explained by ethically motivated vegetarians' lower belief in the human uniqueness of emotions (Rothgerber, 2013).

Perceptions of animals may relate to vegetarians' likelihood of violating their diets, as, compared to health-motivated vegetarians, ethically motivated vegetarians dislike the taste and texture of meat to a greater extent, report greater disgust toward meat, and are more likely to eschew meat strictly (Arora, Bradford, Arora, & Gavino, 2017; Rothgerber, 2014a). Irrespective of their motivations, vegetarians' elevated feelings of disgust toward meat (e.g., Anderson, Wormwood, Barrett, & Quigley, 2018) likely originate from associating meat with its animal origins (Kunst & Haugstad, 2018; Kunst & Hohle, 2016; Ruby & Heine, 2012; Testoni, Ghellar, Rodelli, De Cataldo, & Zamperini, 2017). Animal-meat association and its disgust response may explain why vegetarians primarily motivated by concerns about animals adhere to their diets more strictly than do vegetarians motivated by either health or environmental reasons (Rosenfeld, 2018c).

Whereas consuming meat, dairy, or egg can pose evident dietary violations for many vegetarians, gray areas do exist (Greenebaum, 2012b). The productions of honey and sugar, for example, require the use of animal products but might not be seen as equivalent to meat, dairy, and egg. Greenebaum (2012b) suggests that these gray areas can shape feelings of authenticity among ethically motivated vegans, who tend to construe veganism as a lifestyle, beyond just a diet. Whereas some ethical vegans eschew these foods and judge ethical vegans who consume them, other ethical vegans are indifferent or set a flexible aim to minimize their intakes of them. Additional research is needed to clarify how vegetarians negotiate gray areas of vegetarianism, as well as the means by which varying social contexts (e.g., whether other vegetarians are nearby) shape these processes.

Recently, as an alternative to thinking about vegetarians' motivations in terms of ethics or health, Rosenfeld and Burrow (2017a, 2017b, 2018a) have considered motivations as oriented toward prosocial, personal, and moral goals. Whereas prosocial aims are those that have implications beyond one's self, personal aims center on benefitting one's own well-being. Moral aims, meanwhile, involve adhering to one's principles of right and wrong. Rosenfeld and Burrow (2017b) also sought to distinguish between the uses of the terms *reason* and *motivation* in describing why people follow their diets. Rosenfeld and Burrow (2017b) argue that not all reasons people report for eschewing meat are truly types of motivations; rather, some reasons can be more accurately deemed as aversions or constraints. Whereas aversions are sensory-affective processes driving food choice (e.g., taste preference, disgust toward foods), constraints are environmental barriers that restrict one's ability to make food choices freely (e.g., financial limitations, living in a food desert). Motivations, on the other hand, can be defined as “goal-oriented ambitions that not only shape one's food choices, when given the control to make food choices freely, but also influence one's self-concept irrespective of food salience” (Rosenfeld & Burrow, 2017b, p. 457). Concerns about animals, health, the environment, or religious beliefs underlying vegetarianism, thus, are types of motivations.

The motivations people have for following a vegetarian diet shape not only their own thoughts and feelings but also how omnivores feel about them. Omnivores exhibit the most negative attitudes toward vegetarians who are motivated by animal rights and the most positive attitudes toward health-motivated vegetarians, with attitudes toward environmentally motivated vegetarians falling in between those two groups (MacInnis & Hodson, 2017). Attitudes toward animal-motivated and environmentally motivated vegetarians may be particularly low because these individuals challenge moral standards, making them a

threat to the dominant omnivorous group (MacInnis & Hodson, 2017). Evidence also exist to suggest that upward moral comparison, whereby considering morally motivated others can threaten one's own self-image, may play a role on these evaluations as well (Minson & Monin, 2012; Monin, 2007). Nevertheless, although omnivores tend to view vegetarians more negatively than they view their dietary in-group, recent evidence supports prior findings (Ruby, 2012) suggesting that omnivores' absolute impressions of vegetarians are generally positive (Hartmann, Ruby, Schmidt, & Siegrist, 2018; Judge & Wilson, 2018).

#### 4.1. Future directions

In sum, dietary motivation shapes vegetarians' attitudes and behaviors across a range of outcomes. Vegetarians motivated by ethical concerns about animals appear to have the strongest attitudes toward animals, meat, and their own food choices, attributing greater mental capacities to animals, avoiding a wider range of animal products, expressing greater disgust toward meat, adhering to their diets more strictly, and viewing their diets as closely linked to their identity and moral self-concept. Vegetarians' motivations may also shape how other people view them, with animal-motivated vegetarians being the target of particularly negative attitudes.

Recent research on vegetarian motivation has highlighted a number of promising directions for future work. For one, it could be informative to examine why the prevalence of common motivations for eschewing meat varies across cultures, or even by geographical region within the same country (e.g., Radnitz et al., 2015). The link between motivation and dietary duration is also of interest, as research is needed to understand whether specific types of motivations for vegetarianism are associated with giving up the practice entirely. Moreover, additional research should distinguish between initial and current motivations, as these may offer unique predictive value and can more insightfully contextualize vegetarianism within the course of one's lifespan. Vegetarian motivation is dynamic, with people often acquiring new motivations and sometimes even dropping old motivations over time (Beardsworth & Keil, 1992; Fox & Ward, 2008a; Stiles, 1998). This phenomenon may explain why many vegetarians are mixed-motive, as Rothgerber (2014a) found that 31% of vegetarians reported that ethical and health motivations were equally important to them. Still, only a few studies (e.g., Rothgerber, 2013, 2014a) have examined mixed-motive vegetarianism. A lingering question for future research is to identify domains in which mixed-motive vegetarians more closely resemble ethically motivated vegetarians and in which they more closely resemble health-motivated vegetarians.

Finer distinctions between types of ethical and health vegetarianism can be informative. For one, distinguishing between animal and environmental motivations appears to be promising and sensible, given findings that many vegetarians report environmental concerns as a motivation for eschewing meat, albeit a motivation less important to them than are concerns about animals or health (Fox & Ward, 2008a). Similarly, in contrast to considering all ethical concerns about animals together in one construct, distinguishing between animal rights and animal welfare may become increasingly valuable.

Health-motivated vegetarianism also has much to gain from incorporating largely unapplied perspectives. To my knowledge, research has yet to examine how vegetarians with varying types of health motivations—e.g., general wellness promotion, weight maintenance, recently having had a life-threatening health event or diagnosis, or following a straight edge lifestyle—may differ from one another. Moreover, rather than focusing on their vegetarian identity, many people consider themselves to be whole-food, plant-based dieters: those who avoid not only animal products but also processed plant foods, such as refined flours, oils, and sugars (Campbell & Campbell, 2006). This mindset might differ from conventional vegetarianism, as some whole-food, plant-based communities intentionally distance themselves from vegan communities, seeking to emphasize the health, rather than

ethical, aspects of their lifestyle (Chuter, 2018). Future research on vegetarianism may benefit from focusing on whole-food, plant-based dieters by considering whether people exclude not only animal products, but also processed plant foods, from their diets.

In progressing research on dietary motivation, investigators may benefit from drawing upon Arbit, Ruby, and Rozin's (2017) Meaning of Food in Life Questionnaire (MFLQ). The MFLQ assesses five domains through which people assign meaning to their eating behaviors, including moral, sacred, health, social, and aesthetic meanings. As people draw upon repertoires in making food choices—enacting and constructing identity in executing these repertoires (Arbit, Ruby, & Rozin, 2017)—understanding ways in which food and eating provide meaning to individuals' lives can be useful in conceptualizing phenomena surrounding shifts toward vegetarian dieting. In assessing dietary motivation with respect to vegetarianism in particular, investigators may find value in implementing the prosocial, personal, and moral motivations subscales of Rosenfeld and Burrow's (2018a) Dietarian Identity Questionnaire (DIQ).

Lastly, in addition to research on how motivations shape vegetarians' own thoughts and behaviors, further research is needed to examine how omnivores think about vegetarians with different motivations. Namely, recent findings highlight value in considering the roles of cognitive dissonance, social comparison, social norms, and power dynamics in attitude formation.

## 5. Prospective vegetarianism

Understanding vegetarian identity, or how people reflect on the idea of being a vegetarian, has relevance not only to people who currently eschew meat but also to those who may be considering changing their diets in the future. Some omnivores, for example, can be thought of as prospective vegetarians, or people who are considering becoming vegetarian down the road. These prospective vegetarians appear to think about food differently from omnivores who lack this prospective aim—namely, in terms of their dietary concerns and motivations. A consistent finding across studies is that people who feel more morally concerned for animals are more open to becoming vegetarian (Gallimore, 2015; Díaz, 2016; Rosenfeld, 2018b). Relative to omnivores who are set on continuing to eat meat, prospective vegetarians also appear to be more concerned about the health and environmental consequences of consuming meat (Gallimore, 2015; Rosenfeld, 2018b). Interestingly, although vegetarians are more open to new experiences than are omnivores (Forestell & Nezelek, 2018; Forestell, Spaeth, & Kane, 2012; Pfeiler & Egloff, 2018), openness to new experiences does not differ between omnivores who are and are not open to becoming vegetarian (Rosenfeld, 2018b). Thus, the prospective aim of becoming vegetarian may be predominantly domain-specific to beliefs about food choice rather than a reflection of personality more generally.

To many people, perceived barriers to adopting a plant-based diet outweigh the perceived benefits, making them resistant to eating less meat (Corrin & Papadopoulos, 2017). Supporting earlier findings (e.g., Lea, Crawford, & Worsley, 2006; Lea & Worsley, 2003), recent work has found that common barriers to adopting a more plant-based diet include habit, enjoyment of eating meat, health concerns about eschewing meat, the belief that preparing vegetarian meals would be difficult, lack of knowledge about plant-based dieting, and the belief that plant-based dieting is incongruent with central facets of one's identity (Corrin & Papadopoulos, 2017; de Boer, Schösler, & Aiking, 2017; Ensaff et al., 2015; Mullee et al., 2017; Pohjolainen, Vinnari, & Jokinen, 2015). Other barriers include concern that a vegetarian diet would lack variety, concern that a vegetarian diet would not be satiating, living with people who eat meat, and concern about inconveniences when eating at restaurants or as a guest at someone else's home (de Boer, Schösler, & Aiking, 2017; Gallimore, 2015; Kildal & Syse, 2017). Perceived barriers to adopting a plant-based diet may be particularly strong among people who are male, live in rural areas, have

low educational attainment, lack any vegetarian family members or friends, eat meat frequently, and exhibit emotional attachments to meat (Graça, Calheiros, & Oliveira, 2015; Kildal & Syse, 2017; Pohjolainen et al., 2015).

Focusing on prospective vegetarianism beyond the individual level, Judge and Wilson (2015) examined how people living in New Zealand would feel about their country becoming a plant-based society in the future. Many participants imagined that a future society in which everyone consumes some type of plant-based diet would experience worsened public health, environmental conditions, and economic functioning. Predictions about individuals living in a future plant-based society were mixed in valence: Whereas participants commonly reported that individuals would be more caring, peaceful, communal, and moral, they also imagined individuals being more judgmental and miserable. Generally, those who saw a shift toward plant-based dieting as a voluntary choice related to changes in values and norms ascribed positive characteristics to such a society, whereas those who saw this change as stemming from necessity or force ascribed negative characteristics.

Conceptions of prospective vegetarianism can benefit from better understanding former vegetarianism. Often, former vegetarians return to eating meat because vegetarianism seemed burdensome, inconvenient, and too expensive (Menzies & Sheeshka, 2012). Moreover, former vegetarians may be particularly likely to give up their vegetarianism during a major life change, such as moving, starting a new job, or getting married (Menzies & Sheeshka, 2012). Factors that may promote successful maintenance of vegetarianism over time include changing one's diet gradually, rather than abruptly, as well as joining a social group centered on vegetarianism (Haverstock & Forgays, 2012; Jabs, Devine, & Sobal, 1998).

### 5.1. Future directions

Given that the vast majority of people around the world are omnivores, it would behoove investigators to conduct additional research on prospective and former vegetarianism. Food choice is embedded within the course of one's lifespan (Devine, Connors, Bisogni, & Sobal, 1998), such that people's current engagements with vegetarianism may shape, and be shaped by, their prior and future attitudes and experiences. Further research should continue to investigate the extents to which dispositional traits (e.g., Forestell & Nezelek, 2018; Keller & Siegrist, 2015; Pfeiler & Egloff, 2018), general moral and health attitudes (e.g., Hayley et al., 2015; Díaz, 2016), and specific dietary attitudes (e.g., Gallimore, 2015; Rosenfeld, 2018b) may make some people particularly likely to reduce their meat intakes. A related avenue of interest may be to examine current vegetarians' prospective thoughts about returning to eating meat.

Further research is needed on the extent to which intersectionality may inhibit shifts toward a more plant-based diet, as recent findings suggest that dietary barriers are intimately embedded within the intersectionality of identities, social relationships, and social contexts. Given that people hold varying attitudes toward vegetarians with different motivations, it could also be interesting to investigate whether omnivores think differently about adopting a plant-based diet depending on what motivation they would adopt it for. An additional avenue for future work could be to examine the extents to which reported barriers to plant-based dieting reflect genuine obstacles among people seeking to change their diets or simply justifications (e.g., Piazza et al., 2015; Rothgerber, 2012) endorsed by people wanting to continue to eat meat.

## 6. Social implications

### 6.1. Identity

Much research has highlighted that following a vegetarian diet



shapes one's identity—how one sees oneself (Cherry, 2015; Fox & Ward, 2008b; LeRette, 2014; Mycek, 2018; Romo & Donovan-Kicken, 2012; Rosenfeld & Burrow, 2017a, 2018a; Rothgerber, 2014c, 2014d; Sneijder & Te Molder, 2009; Stiles, 1998; Yeh, 2014). Conceptualizing vegetarianism as a social identity, Rosenfeld and Burrow (2017a) propose a framework called the Unified Model of Vegetarian Identity (UMVI). The UMVI outlines ten dimensions theorized to comprise a vegetarian identity, or how an individual thinks, feels, and behaves with respect to being a vegetarian. Rosenfeld and Burrow (2017a) organize these dimensions into contextual, internalized, and externalized levels. Contextual dimensions situate vegetarianism within sociocultural and life-span contexts, emphasizing that the significance of vegetarian dieting is both socially constructed and embedded within the course of each individual's life. Internalized dimensions characterize how people reflect on their vegetarian identity, in its relation to their overall sense of self and their dietary motivations. Externalized dimensions characterize how people behave in ways that express their vegetarian identity—which foods they exclude from their diets, how strictly they adhere to that exclusion, and how they communicate their dietary preferences to other people.

Expanding upon the UMVI, Rosenfeld and Burrow (2018a) propose the concept of *dietarian identity* to capture an individual's thoughts, feelings, and behaviors with respect to consuming or eschewing animal products (i.e., red meat, poultry, fish, egg, and dairy). Noting the conceptual and practical limitations of studying vegetarianism empirically as a function of whether people self-identify as vegetarian or not, Rosenfeld and Burrow (2018a) argue that whereas the concept of *vegetarian identity* has direct relevance only to those who consider themselves to be vegetarian, *dietarian identity* constitutes an identity domain with which any individual—regardless of what food choices they make or how they label their diets—engages. Each individual faces a decision of which animal products to include in or exclude from his or her diet. How an individual reconciles that decision forms the basis for his or her *dietarian identity*. As Rosenfeld and Burrow (2018a) write, “*dietarian identity* serves as an umbrella construct that encompasses all self-perceptions in this domain, capturing people's engagements with a realm of food choice (i.e., animal-product consumption) rather than their social identifications with various categories (e.g., vegetarian, vegan)” (p. 183). Vegetarian identity thus can be thought of as a type of *dietarian identity*.

As a means of assessing constructs within their *dietarian identity* framework, Rosenfeld and Burrow (2018a) put forth the *Dietarian Identity Questionnaire* (DIQ). The DIQ measures eight constructs, which include centrality; private, public, and out-group regards; pro-social, personal, and moral motivations; and strictness. This questionnaire begins with a prompt asking participants which animal products they eat and do not eat, the response to which characterizes their “*dietary pattern*.” Centrality and regards assess social identity aspects of *dietarian identity*, related to in-group and out-group perceptions of *dietary pattern*, whereas motivations and strictness assess what goals people have in following their *dietary pattern* and how closely they adhere to their *dietary pattern*, respectively.

For a large proportion of vegetarians, being a vegetarian is a central part of their identity (Romo & Donovan-Kicken, 2012). Becoming vegetarian symbolizes a change in both one's personal identity and one's social identity, as one gives up one's omnivorous social group membership and acquires new membership in a group of meat-avoiders (Rosenfeld & Burrow, 2018a). Yet self-identifying as vegetarian and actually following a vegetarian diet constitute two distinct phenomena (Rosenfeld & Burrow, 2017a). Failing to adhere to one's vegetarian diet, moreover, may open oneself up to identity threats from other dietary in-group members, which makes it unsurprising that vegetarians exhibit more negative affect toward vegetarians who eat meat occasionally than toward strictly adhering vegetarians (Hornsey & Jetten, 2003).

Identity aspects of vegetarianism thus can impart forces on both how one sees oneself and how one views other animal-product

avoiders. While more nuanced dietary patterns can warrant additional labels, three general categories of dieters with respect to animal-product consumption include omnivores, vegetarians, and vegans. Vegetarians can be thought of as an intermediate group, resembling vegans in that they eschew meat but resembling omnivores in that they consume egg and/or dairy. Notably, what vegetarians do not eat appears to have a greater impact on how they self-categorize than does what they do eat, as vegetarians generally view vegans, but not omnivores, as in-group members (Yeh, 2014). Categorical divides between various types of vegetarians may also emerge as a function of dietary motivation. Some ethically motivated vegans express disdain toward health-motivated vegans, questioning their authenticity and viewing them as selfish (Greenebaum, 2012b). Moreover, when primed to think of themselves as a minority social group, ethically motivated vegetarians view health-motivated vegetarians more negatively than they view vegans, despite health-motivated vegetarians constituting more of an in-group to them with regards to dietary pattern (Rothgerber, 2014d).

### 6.1.1. Future directions

Conceiving vegetarianism as an identity may explain why many people eat meat on occasion and still consider themselves vegetarian (Rothgerber, 2017), how biases toward vegetarians form (MacInnis & Hodson, 2017), how vegetarians with different dietary patterns and motivations evaluate one another (Rothgerber, 2014c, 2014d), and how people construe prospects of changing their food choices. Recent research on vegetarianism and identity complements earlier perspectives (e.g., Fox & Ward, 2008b; Hornsey & Jetten, 2003; Jabs, Sobal, & Devine, 2000; Sneijder & Te Molder, 2009; Stiles, 1998), yet much remains unknown. For example, how might the expression of vegetarian identity fluctuate across varying social contexts or intersect with other identity domains, such as race or gender? What does vegetarian identity mean for people who exhibit discrepancies between how they eat and how they label themselves, perhaps by calling themselves vegetarian yet eating some meat or by eschewing all meat yet refraining from calling themselves vegetarian? In progressing research on vegetarianism as identity, investigators can continue to benefit from drawing upon rich bodies of literature from both psychology and sociology.

### 6.2. Social experiences

Food choice is intertwined with social relationships, as personal dietary decisions interact reciprocally with one's social networks and sociocultural environments (Sobal, Bisogni, & Jastran, 2014). As such, it is unsurprising that vegetarians report having a variety of new social experiences—mostly unfavorable—upon changing their eating behaviors (Rosenfeld & Burrow, 2017a).

Some vegetarians report that their diets and beliefs strain their personal and professional relationships (Hirschler, 2011), which may even lead them to reconfigure their social networks (Chuter, 2018). One source of the adverse social consequences vegetarians face may be bias (i.e., vegaphobia; Cole & Morgan, 2011). Biases toward vegetarians manifest themselves throughout several domains of vegetarians' lives, as vegetarians report backlash from family and friends after revealing their dietary change, anxiety about sharing their dietary preferences with others, constant questioning about their lifestyle, teasing and mocking, stereotyping, everyday acts of discrimination, and even discrimination in applying for jobs (Chuter, 2018; LeRette, 2014; MacInnis & Hodson, 2017; Torti, 2017; Twine, 2014). In one study (Hirschler, 2011), all participants reported that an early challenge of going vegan was defending their newfound dietary decision. They realized that their diet was a source of conflict, particularly with family members. In another study (Twine, 2014), similarly, more than 80% of participants reported facing negative reactions from family and friends after deciding to become vegan.

The use of visibility management strategies appears to be common among vegetarians. Even beyond interactions with family and friends,

vegetarians often receive microaggressive remarks about their eating behaviors, as omnivores belittle their character, health, and personal judgment (LeRette, 2014). Several studies have found that, in order to avoid conflict, some vegetarians refrain from mentioning their dietary preferences and motivations when possible (Edwards, 2013; Greenebaum, 2012a; LeRette, 2014; Romo & Donovan-Kicken, 2012; Torti, 2017). This line of research suggests that vegetarians often express concerns about discussing their vegetarianism with omnivores, in part due to fears about being stereotyped or being perceived as judgmental (Edwards, 2013; Romo & Donovan-Kicken, 2012). Ultimately, vegetarians must balance their dietarian identity with societal norms, realizing discords between expressing their true selves, fitting in, and refraining from seeming as if they are disparaging omnivores' choices (Romo & Donovan-Kicken, 2012).

Many vegetarians believe that omnivores are hostile toward vegetarians in order to alleviate the guilt they feel from eating meat (Greenebaum, 2012a). Indeed, merely proclaiming one's vegetarian status may induce in omnivores a feeling of cognitive dissonance about the morality of their own meat consumption (Rothgerber, 2014b). However, hiding the fact that one is vegetarian may not always be a feasible conflict management tactic. In such cases, two communicative strategies vegetarians may employ to ease social interactions include having a plan about how to describe their eating habits and seeking to minimize others' discomfort with this topic (Romo & Donovan-Kicken, 2012). Other strategies for mitigating conflicts with omnivores include avoiding confrontational approaches to animal activism, choosing specific times and places to discuss vegetarianism, emphasizing the health benefits of vegetarianism, and leading a healthy and joyful vegetarian life by example (Greenebaum, 2012a).

Vegetarians receive unfavorable treatment not only due to biases against them but also due to structural reasons (Horta, 2017). For example, vegans may lack sufficient dietary options at their workplace or be penalized for refusing to partake in tasks that require the exploitation of animals in work or educational settings (e.g., dissecting an animal in a science class). Amicable social gatherings may so much as become stressful events due to sociocultural norms. Eating at restaurants or as a guest at someone else's home pose challenges not only for vegetarians (Torti, 2017) but also for omnivores who are considering becoming vegetarian (Gallimore, 2015). Horta (2017) argues that much unfavorable treatment of vegans manifests itself through forms of second-order discrimination, as the adverse consequences vegans face often result from first-order speciesist discrimination against animals (see Caviola, Everett, & Faber, 2018 for a review of speciesism). That is, when using animals for human benefit is a ubiquitous cultural norm, social institutions and environments largely necessitate the use of animal products. Refraining from using animal products, in turn, restricts one's access to social resources.

Upon becoming vegetarian, some people seek to connect with like-minded dieters. One reason may be for social support, which has been found to predict successful maintenance of vegetarianism over time (Jabs et al., 1998). Indeed, many vegans report having joined online support groups centered on plant-based dieting, which may enable them to feel a sense of belonging (Chuter, 2018). Diet-related social preferences may even permeate one's romantic interests. Complementing Potts and Parry's (2010) work on vegansexuality, Twine (2014) found that many vegans strongly prefer to have a vegan romantic partner. Vegans who had not met this preference often employed strategies for living successfully with non-vegans, such as using different sets of cooking implements or assigning different shelves in the refrigerator. Concerns about living with non-vegans and preferences to have a vegan partner typically relate to vegans' perceptions of animal-product consumption as immoral and disgusting (Twine, 2014). Similarly, other research (e.g., DeLessio-Parson, 2017) has also noted preferences among vegetarians to have romantic relationships with fellow vegetarians.

### 6.2.1. Future directions

The social experiences vegetarians face due to their food choices not only influence the expression of their vegetarian identities but also pose impactful threats to their psychological well-being (Torti, 2017). Recent research in this domain has built greatly upon earlier work (e.g., Beardsworth & Keil, 1992; Jabs et al., 2000; Larsson, Rönnlund, Johansson, & Dahlgren, 2003). Future research should examine the extents to which omnivores' uses of dissonance-reducing strategies (e.g., Rothgerber 2014b) and engagements in upward moral comparison (e.g., Minson & Monin, 2012) contribute toward strained social interactions with vegetarians. It may also be informative to test the extent to which anticipated changes to one's social life from eating less meat may inhibit omnivores' intentions to make dietary changes.

The roles of vegetarianism in romantic relationships and child-rearing pose additional avenues of future inquiry. Little is known about how vegetarians navigate romantic relationships, although some recent work (e.g., DeLessio-Parson, 2017; Potts & Parry, 2010; Twine, 2014) has begun to enter this domain. Do most vegetarians prefer a vegetarian romantic partner? Does this tend to be a flexible preference or a strict requirement? Why might some vegetarians prefer a vegetarian partner whereas others might be indifferent? Of particular interest could be to investigate how couples in which one partner is vegetarian and the other is not reconcile conflicting food preferences, moral attitudes, and plans to raise their children as vegetarian or omnivorous. Additional research is also needed on parent-child dietary inconsistencies, such as circumstances in which vegetarian parents have children who decide to eat meat or, conversely, in which omnivorous parents have children who decide to be vegetarian.

### 6.3. Gender

Much recent research on gender and vegetarianism supports prior findings highlighting associations between meat and masculinity (Adams, 1990; Rogers, 2008; Rozin, Hormes, Faith, & Wansink, 2012; Ruby & Heine, 2011; Sobal, 2005). For one, stark gender differences exist when it comes to meat consumption: Compared to women, men eat larger portion sizes of meat and eat meat more frequently (de Boer et al., 2017; Keller & Siegrist, 2015; Love & Sulikowski, 2018; Schöslsler, de Boer, Boersema, & Aiking, 2015), are less likely to be vegetarian (Forestell & Nezelek, 2018; Pfeiler & Egloff, 2018; Ruby, 2012), and are less willing to reduce their meat intakes (Cramer et al., 2017; Hayley et al., 2015; Pohjolainen et al., 2015). Men and women also differ in how they think about meat consumption. Compared to women, men have stronger implicit associations of meat and healthfulness (Love & Sulikowski, 2018) and are less likely to explicitly report that meat consumption is unhealthful or that meat production harms the environment (Mullee et al., 2017). Gendered perceptions of meat may further vary by type of meat, as women exhibit more positive attitudes toward reduced consumptions of red meat and white meat, but not fish/seafood, than do men (Hayley et al., 2015). This may reflect the fact that men and women do not differ in the extent to which they believe that fish consumption is healthful (Mullee et al., 2017).

The act of eating meat—particularly red meat, or beef—may serve to affirm a masculine gender identity (Sobal, 2005). Compared to women, men not only view meat as more delicious (Love & Sulikowski, 2018) but also express greater emotional attachments to meat (Graça et al., 2015). Likewise, men have more positive attitudes toward beef and eat beef more frequently than do women (Ruby et al., 2016). Meat-masculinity associations may be particularly likely to shape men's eating behaviors in social contexts in which gender is salient. In response to certain contexts, men use impression management strategies when eating in order to enhance their feelings of masculinity (Vartanian, 2015). One such context may be the armed forces. Namely, meat-masculinity associations can pose a barrier to soldiers' reducing their meat intakes, as eating meat can provide soldiers with masculine values of power and virility that are prized in the armed forces (Kildal &

Syse, 2017).

Gender also plays a role in the justification of meat consumption (Rothgerber, 2012). For one, men justify eating meat more strongly than do women. Yet, more concretely, men and women justify eating meat in different ways: Whereas men tend to justify eating meat directly, such as by endorsing pro-meat attitudes and denying animal suffering, women are more inclined to justify eating meat indirectly, dissociating meat from its animal origins and refraining from thinking about farm animals' experiences. The use of such direct justification strategies among men may serve to maintain feelings of masculinity (Rothgerber, 2012). Other research (e.g., Kildal & Syse, 2017) suggests that people may even emphasize masculine values as a direct means of justifying meat consumption and opposing vegetarianism.

Gender predicts both how one evaluates others' food choices and how one is evaluated for one's own food choices. In general, omnivores exhibit greater biases against vegetarian men than against vegetarian women (MacInnis & Hodson, 2017). As such, it is unsurprising that men report facing greater hostility from their families, and greater teasing in general, about becoming vegetarian than do women (Sedupane, 2017; Torti, 2017). Evidence also exists to suggest that men have more negative attitudes toward vegetarian men than do women (Judge & Wilson, 2018; MacInnis & Hodson, 2017). Likewise, compared to women, men reported being more bothered by vegetarians and more averse to dating a vegetarian (Ruby et al., 2016).

Whereas the aforementioned studies highlight an evident meat-masculinity connection—namely, such that men value meat consumption more strongly than do women—recent research has raised questions as to whether forgoing meat makes one appear less masculine than does consuming meat. Contradicting prior findings (e.g., Ruby & Heine, 2011), Thomas (2016) found neither a significant difference in the extents to which omnivores viewed vegetarian and omnivorous targets as masculine nor a significant interaction between target gender and target diet. However, Thomas (2016) did find that vegans were seen as less masculine than were omnivores.

Adding a more optimistic twist to the implications of meat-masculinity associations, some scholars have suggested that popularizing vegetarianism can be an effective means of reducing hegemonic masculinity. For example, DeLessio-Parson (2017) proposes that vegetarianism can serve to challenge gender norms and ultimately destabilize the meat-masculinity nexus in patriarchal cultures. Likewise, Greenebaum and Dexter (2017) and Mycek (2018) argue that vegetarian men expand and challenge traditional conceptions of masculinity, embodying hybrid masculinity and combating perceptions of vegetarianism as a feminine behavior.

### 6.3.1. Future directions

In sum, meat is widely seen as masculine food. This perception may lead men to value meat more strongly, to consume more meat, to be less willing to reduce their meat intakes, to deny the negative effects of meat production and consumption, and to view vegetarians in more negative light. Although people might not be perceived as less masculine for following a vegetarian diet, they may be seen as less masculine for eating a vegan diet. Additional research differentiating perceptions of masculinity between vegetarians and vegans can be informative. Future research should also continue to examine ways in which vegetarian, or even flexitarian, men and women may have different social experiences related to following their diets.

## 6.4. Culture

Norms guiding food choice and eating behavior vary tremendously across cultures (Sobal et al., 2014). A few recent studies have applied this tenet to examine cultural differences in vegetarianism, particularly as related to moral and dietary attitudes. For example, Ruby, Heine, Kamble, Cheng, and Waddar (2013) found that whereas Euro-American vegetarians expressed greater concerns about the impacts of their food

choices on animals and the environment, expressed more concern about animal welfare overall, endorsed universalistic values more strongly, and endorsed right-wing authoritarianism less strongly than did Euro-American omnivores, Indian vegetarians did not differ from Indian omnivores on any of these outcomes. Cultural differences also exist with respect to people's willingness to eat animals as meat. Among Euro-American, Euro-Canadian, Hong Kong Chinese, and Indian omnivores, greater social influence (how often one's friends and family eat animals) and disgust toward eating animals predicted lower willingness to eat animals (Ruby & Heine, 2012). Yet these variables' predictive values varied by culture: Whereas disgust was a stronger predictor among omnivores in individualistic cultures (the United States and Canada) than among omnivores in collectivistic cultures (China and India), social influence was a stronger predictor among omnivores in collectivistic cultures than among omnivores in individualistic cultures.

Some research has investigated vegetarianism in Argentina, Brazil, France, and the United States, focusing on attitudes toward beef and vegetarians. For example, Ruby et al. (2016) found that from highest to lowest beef consumption frequency were Brazil, Argentina, the United States, and France. Attitudes toward beef were most positive in Argentina and Brazil, less positive in France, and least positive in the United States. Brazilian and American women admired vegetarians the most, whereas French men and women admired vegetarians the least. American and French men were the most bothered by vegetarians and the most averse to dating vegetarians. Extending this line of research, Earle and Hodson (2017) found that pro-beef attitudes—defined as associating positive valence words with beef, liking beef, desiring beef strongly, and consuming beef frequently—predicted anti-vegetarian prejudice across all four countries. The strongest link between pro-beef attitudes and anti-vegetarian prejudice emerged in the United States, whereas the weakest link emerged in Argentina.

### 6.4.1. Future directions

Recent research on culture and vegetarianism suggests that whereas some relationships may be cross-culturally stable (e.g., perceptions of animals and willingness to eat meat, pro-beef attitudes predicting anti-vegetarian prejudice), other links may depend on cultural context (e.g., associations between moral attitude and food choice). Given that cultural differences exist in the extent to which associating meat with its animal origins shapes beliefs about animals' minds and food preferences (e.g., Tian, Hilton, & Becker, 2016), additional research exploring relationships between animal agriculture practices and eating behavior across cultures can be informative. Future research should also consider examining cultural differences in media portrayals of meat consumption and vegetarianism. Another area ripe for future investigation is religious vegetarianism. It remains unclear how religiously motivated vegetarians construe their diets and how these construals may differ between individuals across cultural contexts. For example, the dietary motivations and social experiences of religiously motivated vegetarians living in an area in which their religion is prevalent may differ from those of religiously motivated vegetarians who are a religious minority in their area.

## 7. Variants of vegetarianism

### 7.1. Vegetarians versus vegans

Whereas veganism (forgoing all animal products) is typically conceived as a type of vegetarianism (forgoing meat), many studies have been interested in distinguishing the two—that is, comparing vegans to non-vegan vegetarians. Adding to prior work (e.g., Filippi et al., 2010; Ruby, 2008; Ruby, Cheng, & Heine, 2011), an increasingly large body of recent literature has found that vegetarians and vegans differ from one another in terms of their attitudes, behaviors, and self-perceptions. In reviewing this literature in the current section, the term *veg\*n* is used to refer to both vegetarian and vegan, inclusively, as to distinguish



between vegetarians and vegans more clearly.

Supporting earlier findings (e.g., Povey, Wellens, & Conner, 2001), recent studies suggest that omnivores have more negative beliefs about veganism than about vegetarianism. For one, omnivores express more negative attitudes toward vegans than toward vegetarians (Judge & Wilson, 2018; MacInnis & Hodson, 2017). Omnivores are also more open to becoming vegetarian than to becoming vegan (Duchene & Jackson, 2017), viewing veganism as a more extreme behavior (Judge & Wilson, 2015).

Not only do omnivores think about vegetarianism and veganism differently, but vegetarians and vegans themselves also exhibit different traits and attitudes from one another. Compared to vegetarians, vegans have a higher quality of life, draw less upon utilitarian reasoning, and are more universalistic, more empathic, less neurotic, and more open to experience (Kessler et al., 2016; Lund, McKeegan, Cribbin, & Sandøe, 2016). Vegans are also more strongly motivated to follow their diets than are vegetarians, particularly when it comes to ethical concerns (Fiestas-Flores & Pyhälä, 2017; Haverstock & Forgays, 2012; Izmirli & Phillips, 2011; Lund et al., 2016; Rosenfeld, 2018a). Compared to vegetarians, vegans express greater concerns about animal rights, animal welfare, and animal experimentation, in general (Izmirli & Phillips, 2011; Kessler et al., 2016; Lund et al., 2016). Moreover, with respect to their diets, vegans tend to be more strongly motivated by concerns about animal rights, the environment, and the political implications of food choice (Fiestas-Flores & Pyhälä, 2017; Haverstock & Forgays, 2012).

These findings make it unsurprising that vegetarians and vegans perceive animals in different ways. Such perceptions manifest themselves on a neurological level, as vegetarians and vegans exhibit different neural responses to observing mouth actions performed by both human and non-human animals (Filippi et al., 2013). These perceptions also shape how veg\*ns interact with animals—namely, their pets. The prospect of feeding one's pet a meat-based diet poses a greater moral dilemma for vegans than for vegetarians, as vegans report feeling guiltier about feeding their pets a predominantly meat-based diet and tend to feed their pet dogs less meat than do vegetarians (Rothgerber, 2013, 2014e).

Vegetarians and vegans differ not only in their attitudes toward their pets' eating meat but also in their attitudes toward dietary in-group members' eating meat. Overall, vegans rate in-group violations—the act of another veg\*n eating meat—as worse than do vegetarians, an effect explained by vegans' perceiving greater threats to in-group distinctiveness, group existence, group message, and individual temptation from such violations (Rothgerber, 2014c). Thus, vegans may place greater emphasis on their in-group members' maintaining a higher level of dietary adherence than do vegetarians, as doing so may buffer their smaller, more distinct social group against threats from out-groups.

As reviewed earlier, following a veg\*n diet can lead one to face adverse social consequences—such consequences may be stronger for vegans than they are for vegetarians. Compared to vegetarians, vegans view their diets as a more defining feature of their identity and encounter greater difficulties in navigating their social environments, facing more criticism and hostility from others (Fiestas-Flores & Pyhälä, 2017; Rosenfeld, 2018a). As such, it is unsurprising that vegans feel more stigmatized about following their diets than do vegetarians (Rosenfeld, 2018a).

Demographic differences may also exist between vegetarians and vegans. Overall, veg\*ns tend to be more educated than are omnivores (Gilsing et al., 2013; Pfeiler & Egloff, 2018). Moreover, people with higher educational attainment are more likely to try a veg\*n diet for health reasons than are people with lower educational attainment (Cramer et al., 2017). These effects, however, may be driven by vegetarianism, rather than veganism: Compared to omnivores, vegetarians tend to have a higher educational attainment, whereas vegans tend to have a lower educational attainment (Allès et al., 2017). Still,

additional research is needed to clarify links between educational attainment and veg\*nism, giving particular consideration to dietary motivation and restrictiveness (e.g., pescatarian v. vegetarian v. vegan, etc.).

### 7.1.1. Future directions

Comparisons between vegetarians and vegans offer a rich territory for elucidating phenomena related to dietary motivation, morality, and identity. Compared to vegetarians, vegans appear to have stronger concerns about animals, to have stronger dietary motivations, and to internalize their veg\*nism as a more pervasive element of their lives. An interesting avenue for future research may be to examine how vegetarians feel about consuming egg and dairy, as their consumption of these foods may lead vegans to view them as morally inconsistent (Ruby, 2012). Many vegans report a feeling of ease in knowing that they align their values and behaviors through food, eating in a way that minimizes animal suffering (Hirschler, 2011). Deeper understandings of vegetarians' attitudes toward moral and health aspects of egg and dairy consumption and the extent to which they view veganism as ideal—and an ultimate goal they seek to achieve—can be informative.

Temporal aspects of veg\*n identity also relate to vegetarian versus vegan status, as vegans report having followed their diets for a shorter duration than do vegetarians (Kessler, Michalsen, Holler, Murthy, & Cramer, 2018). Still unknown, however, is why vegan duration may be shorter than vegetarian duration. Is this difference a function of veganism being a more recently mainstream movement or of veganism being more difficult to adhere to over time? Conversely, might this simply reflect the fact that the majority of vegans report having been vegetarian for some time prior to becoming vegan (e.g., Kerschke-Risch, 2015), in which case vegans' overall veg\*n duration may actually be equal to or greater than vegetarians' veg\*n duration? In addition to disentangling this matter, future research should examine differences between vegans who had an intermediate vegetarian stage and those who went straight from omnivore to vegan as well as differences between vegetarians who intend on becoming vegan in the future and those who plan on remaining vegetarian.

### 7.2. Flexitarianism

Just as veganism constitutes a *more* restrictive form of vegetarianism, so too exists a *less* restrictive form of vegetarianism, called *flexitarianism*, which has increasingly become the focus of psychological research. A flexitarian is an individual who limits his or her meat intake yet still includes meat in his or her diet (Corrin & Papadopoulou, 2017; Dagevos & Voordouw, 2013; De Backer & Hudders, 2014, 2015; Forestell, 2018; Meister, 1997). A combination of the words *flexible* and *vegetarian*, a flexitarian is essentially one who eats a mostly vegetarian, or a vegetarian-inclined, diet.

People tend to adopt a flexitarian diet for different reasons than they would a vegetarian diet. Namely, vegetarians are more strongly motivated by ethical concerns about animals than are flexitarians, who instead tend to be motivated by health or environmental concerns (Apostolidis & McLeay, 2016; De Backer & Hudders, 2014, 2015; Forestell, 2018). Coupled with findings from studies comparing vegetarians and vegans, this point suggests a clear trend: Stronger ethical concerns about animal rights/welfare associate positively with more restrictive forms of animal-product avoidance, such that flexitarians are the least ethically motivated, vegans the most, and vegetarians in between.

Several studies suggest that flexitarians' attitudes toward meat and animals fall in between those of vegetarians and omnivores. For one, flexitarians associate positive emotions with meatless dishes to a greater extent than do omnivores but to a lesser extent than do vegetarians (Cliceria, Spinellia, Dinnellaa, Prescottta, & Monteleone, 2018). Flexitarians also endorse meat-eating rationalizations and justifications to lesser extents than do omnivores but to greater extents than do



vegetarians (Cliceria et al., 2018; Rosenfeld & Burrow, 2018b). These attitudes may shape dieters' processes of motivated reasoning, as in one study, flexitarians denied the credibility of an argument claiming that meat is healthful to a greater extent than did omnivores but to a lesser extent than did vegetarians (Rosenfeld & Burrow, 2018b). Flexitarians also exhibit unique perceptions of animals. Cliceria et al. (2018) replicate the prior finding that vegetarians attribute greater mind to animals than do omnivores (e.g., Bilewicz, Imhoff, & Drogosz, 2011) and extend this work to show that flexitarians' attributions of animal mind fall in between those of these other two groups. Moreover, flexitarians' attitudes toward animal welfare are stronger than those reported by omnivores but weaker than those of vegetarians (De Backer & Hudders, 2015). Interesting to note is that the difference in animal welfare concern between vegetarians and flexitarians is greater than that between flexitarians and omnivores (De Backer & Hudders, 2015), suggesting that strong animal welfare concerns are associated with eschewing meat entirely, rather than curtailing one's meat intake partially.

Just as vegetarian dietary patterns can take on several variants, investigators may likewise benefit from distinguishing between variants of flexitarianism. For example, De Backer and Hudders (2014) distinguish between people who substantially reduce their meat consumption to forgo meat at least three days per week (*semi-vegetarians*) and those who forgo meat only one or two days per week (*light semi-vegetarians*). Semi-vegetarians and light semi-vegetarians had different reasons for avoiding meat, such that increases in both taste preferences and animal rights concerns corresponded to increased odds of being in the more restrictive semi-vegetarian category.

Nuanced variants aside, flexitarianism may offer an intriguing identity, as its flexible nature can make social situations easier than would vegetarianism (Stoll-Kleemann & Schmidt, 2017). Following a flexitarian diet, moreover, tends to become less intertwined with one's overall identity than does following a vegetarian diet (Rosenfeld & Burrow, 2018b), which makes it unsurprising that people are more receptive to adopting a flexitarian, over a vegetarian, diet (Corrin & Papadopoulos, 2017; Duchene & Jackson, 2017). Essentially, flexitarianism may offer the advantages of vegetarianism without such a drastic change in one's identity, as flexitarians can maintain their omnivorous social identity. Thus, emphasizing flexitarianism may be a promising strategy for encouraging reduced meat consumption among people for whom eating meat strongly intersects with other social identity domains, as it does with gender identity among men, for example.

### 7.2.1. Future directions

Given their position in between vegetarians and omnivores, flexitarians offer an exciting group of dieters ripe for psychological research. Much is known about psychological correlates of meat consumption and exclusion, and these findings can readily inform investigations of flexitarian dieting. At the same time, research is needed to identify what might make flexitarianism not only a unique dietary pattern but also a unique dietary identity. Research on the continuous nature of identity in other domains (e.g., Morgan Thompson & Morgan, 2008) suggests that flexitarianism may not be just blend of vegetarian and omnivorous tendencies but a distinct perception of one's self and one's food choices. Given the potential for flexitarian dieting to improve public health and reduce greenhouse gas emissions substantially (Derbyshire, 2017; Ritchie, Reay, & Higgins, 2018), additional research on the psychology of this eating behavior can provide meaningful insights relevant across a range of disciplines, from broader scales of public policy to individual cases of nutritional counseling.

### 7.2.2. Clarifying terminology

In progressing research on flexitarianism, the use of this term warrants careful consideration. Although scholars often use the terms *flexitarian* and *semi-vegetarian* interchangeably to characterize an

individual who limits his or her meat intake but has not eschewed meat altogether (e.g., Corrin & Papadopoulos, 2017; Dagnelie & Mariotti, 2017; De Backer & Hudders, 2014; Derbyshire, 2017; Meister, 1997; Mullee et al., 2017), discrepancies in defining *semi-vegetarian* are common (Forestell, 2018). Some discrepancies have arisen to due matters of dietary pattern restrictiveness, as *semi-vegetarian* has described diets that exclude some types of meat but not others—most commonly, those that exclude red meat but include poultry and/or fish (i.e., pesco-pollo, pesco, or pollo vegetarian diets) (e.g., Forestell & Nezelek, 2018; Heiss & Hormes, 2018; Jabs et al., 2000; Meister, 1997; Mullee et al., 2017; Timko et al., 2012). *Semi-vegetarian* has also characterized self-identified vegetarians with a low dietary strictness, or people who consider themselves vegetarian yet still eat, or are willing to eat, meat on occasion (e.g., Rothgerber, 2014a, 2017). For future work, I recommend that authors define *flexitarian* as an individual who limits his or her meat intake yet still includes meat in his or her diet; *semi-vegetarian* as an individual who excludes certain, but not all, types of meat from his or her diet; and *low-strictness vegetarian* as an individual who self-identifies as vegetarian yet allows him or herself to eat meat occasionally.

Already, investigators have begun studying semi-vegetarians and low-strictness vegetarians as distinct dietary groups. For example, several studies have documented differences in dietary motivation between vegetarians and semi-vegetarians. Izmirli and Phillips (2011) found that whereas environmental motivation was most common among semi-vegetarians, concern about personal health was the most common motivation among vegetarians. Meanwhile, other research has found that semi-vegetarians to be more strongly motivated by health reasons and weight control and vegetarians to be more strongly motivated by ethical concerns (Forestell et al., 2012; Timko et al., 2012). Moral concerns about animals, thus, appear to be more strongly associated with full vegetarianism than partial forms of meat avoidance. Still, however, future research is needed to clarify what typically motivates people to follow semi-vegetarian diets. Investigators should give particular attention to the nature of semi-vegetarian diets, as people may have different reasons for forgoing some types of meat than they for forgoing other types of meat. One diet that excludes only red meat and another that excludes only poultry, for example, may both be considered semi-vegetarian diets.

Moreover, Rothgerber (2014a) has demonstrated differences between high-strictness and low-strictness vegetarians, such that high-strictness vegetarians are more likely to be motivated by ethics, rather than health; dislike the taste, smell, texture, and appearance of meat more; and are more disgusted by meat. Still, additional research is needed to understand low-strictness vegetarianism more concretely—of particular interest may be how people's self-perceptions, attitudes, and behaviors related to this trend differ from those surrounding flexitarianism.

## 8. Mental health

### 8.1. Disordered eating

Contrary to prior findings (e.g., Klopp, Heiss, & Smith, 2003; Perry, McGuire, Neumark-Sztainer, & Story, 2001; Trautmann, Rau, Wilson, & Walters, 2008), recent studies suggest that vegetarians do not exhibit greater levels of disordered eating than do omnivores (Forestell et al., 2012; Heiss, Coffino, & Hormes, 2017). Level of restrained eating, for example, does not differ between vegetarians and omnivores (Barthels, Meyer, & Pietrowsky, 2018). Vegetarianism may even be associated with healthier attitudes toward food in certain domains. Compared to omnivores, vegetarians are less food neophobic (i.e., more open to trying new foods) (Forestell et al., 2012) and vegans exhibit lower levels of disordered eating (Heiss et al., 2017). Yet disordered eating is multifaceted, and some recent evidence does suggest elevated rates among vegetarians in certain regards. Namely, vegetarians exhibit more

orthorexic eating behavior—the fixation on health-conscious eating—than do omnivores (Barthels et al., 2018). Nevertheless, the mean score of orthorexia among vegetarians does not exceed the pathological diagnosis cutoff (Barthels et al., 2018).

The semi-vegetarian decision to eschew red meat, yet consume other forms of meat, meanwhile, may be associated with a higher level of disordered eating than are decisions to follow either a fully vegetarian or fully omnivorous diet. For example, Timko et al. (2012) found that semi-vegetarians were more likely to exhibit disordered eating than were vegetarians. Likewise, Forestell et al. (2012) found that both semi-vegetarians and flexitarians exhibited more dietary restraint than did omnivores. These findings, however, may reflect inflated levels of disordered eating among semi-vegetarians, as the normative act of eschewing red meat may translate into higher scores on disordered eating items assessing the avoidance of specific foods (Timko et al., 2012).

### 8.1.1. Future directions

Further research is needed to clarify mechanisms through which flexitarianism and semi-vegetarianism, but perhaps not vegetarianism, may associate with greater disordered eating. Issues of directionality are of principal interest—namely, whether eschewing meat may lead people to exhibit disordered eating symptoms or whether people who exhibit disordered eating may be more likely to eschew meat. Examining the roles of dietary motivation, gender, and age (e.g., Worsley & Skrzypiec, 1997) in the relationship between vegetarianism and disordered eating may also be informative. Drawing upon Forestell's (2018) recent review can guide future investigations in this domain.

## 8.2. Depression

Recent studies have provided mixed evidence as to whether vegetarianism is associated with increased levels of depression. Whereas many studies (e.g., Asanova, 2017; Forestell & Nezelek, 2018; Hibbeln, Northstone, Evans, & Golding, 2018; Michalak, Zhang, & Jacobi, 2012) have found higher risk for depression among vegetarians than omnivores, other studies (e.g., Beezhold, Radnitz, Rinne, & DiMatteo, 2015; Timko et al., 2012) have found no difference between the two groups. Some research suggests that following a vegetarian diet may even improve psychological well-being (Agarwal et al., 2015).

### 8.2.1. Future directions

Additional research is needed to explain why studies have reported inconsistent findings concerning the link between vegetarianism and depression. As the majority of existing work in this domain has been correlational, experimental manipulations of dietary pattern can provide valuable insights. Moreover, two questions regarding studies finding higher rates of depression among vegetarians call for further investigation. First, does this effect reflect more depressed individuals' selecting to follow a vegetarian diet, or does following a vegetarian diet actually lead people to report more depressive symptoms? Second, if following a vegetarian diet does indeed one's risk for depression, then by what means does it do so? Mechanisms may be not only physiological, but also psychosocial, in nature. For example, becoming a vegetarian may lead one to adopt a minority identity, which may itself cause one to face psychological adversities (Forestell & Nezelek, 2018).

## 9. Neighboring literature on the psychology of meat consumption

Closely linked to the array of studies covered in this review is a neighboring body literature on the psychology of meat consumption. Whereas the current review is focused on phenomena surrounding meat avoidance, and thus refrains from delving into this neighboring literature in detail, understanding those phenomena related to meat consumption can enable investigators to contextualize vegetarianism with greater insights. For one, an emerging line of research is examining

psychological aspects of carnism—the ideology of eating animals—(Joy, 2009; Monteiro, Pfeifer, Patterson, & Milburn, 2017) and speciesism—“the assignment of different moral worth based on species membership”—(Caviola et al., 2018, p. 1). Moreover, a substantial amount of research within the past decade has investigated the meat paradox: the feeling of cognitive dissonance grounding in caring about animals yet concurrently consuming them as meat (Loughnan, Haslam, & Bastian, 2010). For a review of research on the meat paradox, see Loughnan, Bastian, and Haslam (2014). Drawing upon this body of literature on meat consumption can be particularly informative in exploring morality, culture, and social norms with respect to vegetarianism.

In the past few years, several measures have been introduced into this meat consumption literature and may offer useful tools for assessing constructs within research on vegetarianism. Rothgerber's (2012) Meat-Eating Justification (MEJ) Scale assesses nine strategies used to justify meat consumption, including pro-meat attitude, denial, hierarchical justification, dichotomization, dissociation, religious justification, avoidance, health justification, and human destiny/fate justification. Whereas some of these constitute direct justification strategies that focus on meat consumption unapologetically (i.e., believing that humans are hierarchically superior to animals), others are indirect strategies through which people avoid thinking about the animal origins of meat production. Investigators can either quantify each of the nine subscales discretely or compute an overall composite MEJ score. Similar to the MEJ Scale is Piazza and colleagues' (2015) 4N scale. The 4N scale assess four strategies used to rationalize meat consumption, which include defending meat consumption as normal, natural, necessary, and nice (with *nice* referring to the enjoyment people derive from eating meat). Like with the MEJ, investigators can either quantify each subscale discretely or compute a composite 4N score. The 4N scale correlates strongly with the MEJ direct justifications but does not correlate with the MEJ indirect justifications (Piazza et al., 2015). Piazza et al. (2015) recommend that the 4N scale, as a more parsimonious measure, be used when investigators seek to capture common real-world justifications through which people defend eating meat and that the MEJ be used when investigators are interested in capturing a broader range of both direct and indirect cognitive strategies.

Graça et al.'s (2015) Meat Attachment Questionnaire (MAQ) assesses the positive bond people have with meat consumption. The MAQ measures four constructs, including hedonic attitude toward, affinity for, entitlement toward, and dependence on meat. Investigators can either quantify each of the four subscales discretely or compute a composite MAQ score to capture a general feeling of meat attachment. Another measure by Graça, Calheiros, Oliveira (2016), the Moral Disengagement in Meat Questionnaire (MDMQ), assesses ways in which people selectively deactivate moral self-regulatory processes when considering the effects of meat production. The MDMQ measures five strategies people employ to disengage moral concern for the effects of meat production, including justifying meat consumption as a means to higher ends, desensitizing oneself to animal suffering and death, denying the negative consequences of meat production and consumption, diffusing one's sense of personal responsibility for those consequences, and believing that one has little free choice to refrain from eating meat. Like with the MAQ, investigators can either quantify each subscale discretely or compute a composite MDMQ score.

Based on Joy's (2009) conceptualization of carnism, Monteiro et al. (2017) put forth the Carnism Inventory. The Carnism Inventory encompasses two subscales: a carnistic defense subscale reflecting the extent to which people legitimize the practice of eating animals and a carnistic domination subscale reflecting the extent to which people support the killing of animals for food. Investigators can quantify these subscales discretely or compute a composite carnism score. Caviola et al. (2018) reason that carnism falls within the parameters of the overarching ideology of speciesism. Merging philosophical and psychological perspectives, Caviola et al. (2018) propose a

conceptualization of speciesism and provide a single-factor scale to assess the extent to which people endorse speciesist attitudes.

## 10. Concluding remarks

Recent research has made great progress in advancing the psychology of vegetarianism, extending prior lines of inquiry and generating insights into previously unexplored topics. Still, within and beyond the domains covered in the sections above, knowledge gaps linger and await future investigation.

For one, relative to the large body of literature on vegetarianism in Western cultures, much less—albeit a growing line of—social scientific research (e.g., Liu, Cai, & Zhu, 2015; Ruby & Heine, 2012; Ruby et al., 2013; Schöslers et al., 2015; Tung, Tsay, & Lin, 2015) has focused on vegetarianism in Eastern cultures. As food choice is often embedded within historical and religious factors that shape moral norms pertinent to eating, more research on Eastern vegetarianism can both identify the boundaries of existing research from Western samples and highlight unifying aspects that transcend cultural contexts. Relatedly, additional research is needed to appreciate the intersectionality of vegetarianism with other identity domains of race, gender, religion, socioeconomic status, sexual orientation, and so forth, as the limited evidence on this topic is promising (e.g., Mycek, 2018).

Whereas much research has elucidated the role of dietary motivation in vegetarian dieting, more research on personality factors involved in food choice is needed. A recurrent finding across recent studies is that vegetarians are more open to new experiences than are omnivores (Forestell et al., 2012; Forestell & Nezelek, 2018; Pfeiler & Egloff, 2018). Greater agreeableness and neuroticism may also predict meat avoidance (Forestell & Nezelek, 2018; Keller & Siegrist, 2015). What remains unclear, however, is the directionality of the link between personality and vegetarianism—that is, whether certain personality traits may shape one's eating behaviors and/or whether one's eating behaviors may alter the expression of one's personality. Future research should also pay attention to the restrictiveness of animal-product avoidance, as personality may associate differently with less restrictive diets such as flexitarianism than with more restrictive ones such as veganism.

A largely unexplored area with the potential to bridge gaps between vegetarianism and developmental psychology includes the role of lifespan timing in vegetarianism. As Ruby (2012) has noted previously, little research has either focused on vegetarian children (e.g., Hussar & Harris, 2010) or compared people who have been raised on a vegetarian diet with those who decided to become vegetarian later in life. Several studies (e.g., Beardsworth & Keil, 1991; Hirschler, 2011) have found that the overwhelming majority of vegetarians in Western cultures have not been vegetarian since birth but instead transitioned to vegetarianism at a later point in life. Not only might vegetarian children and adults reason differently about health, morality, and their own food choices, but onlookers might even evaluate vegetarians differently depending on their age. For example, people generally view vegetarianism in a positive light when practiced by adults but in a negative light when practiced by children (Črnič, 2013). In considering vegetarian lifespan timing, moreover, investigators might benefit from studying adolescents as distinct from either children or adults (e.g., Worsley & Skrzypiec, 1997).

In addition to its relevance to prior onset (the times at which current vegetarians adopted their diets), lifespan timing can also apply to prior termination (returning to eating meat after having been vegetarian) and prospective onset (planning to become vegetarian in the future) (Rosenfeld & Burrow, 2017a). Indeed, a few recent studies (e.g., Haverstock & Forgyas, 2012; Hodson & Earle, 2018; Menzies & Sheeshka, 2012) have examined former vegetarians. Interestingly, after returning to an omnivorous diet, many former vegetarians still seek to eat in accordance with their ethical values by moderating their meat intakes or eating only organic or free-range meat (Menzies & Sheeshka,

2012). Thus, many former vegetarians may continue some degree of animal-product avoidance by becoming either flexitarians (eating a diet low in meat) or conscientious omnivores (seeking to eat meat only from humanely raised animals) (Singer & Mason, 2006). It could be interesting to explore ways in which moral and health attitudes toward meat inform, and are informed by, decisions to return to eating meat as well as stages through which former vegetarians welcome meat back into their diets.

Focusing on the prospective onset component of lifespan timing, some studies (e.g., Díaz, 2016; Gallimore, 2015; Rosenfeld, 2018b) have examined people who are open to becoming vegetarian in the future. Still, additional research is needed to understand more concretely which types of people are most likely to become vegetarian and how people actually plan for this transition. Factors including whether prospective vegetarians envision their dietary change as temporary or permanent as well as which type of diet (e.g., pescatarian, lacto-ovo vegetarian, vegan) they plan to adopt may be of particular interest.

As much prior work has done, future research should continue to examine how people construct and maintain various types of meat-reduced diets. In one sense, this may pertain to dietary adherence. A recurrent finding is that many people who self-identify as vegetarian follow their diets flexibly, eating meat from time to time (Rothgerber, 2017). Whereas some research has identified what types of vegetarians are more or less likely to violate their diets (e.g., Rosenfeld, 2018c; Rothgerber, 2014a, 2015a), little is known about the circumstances under which dietary violations are most likely to occur. The consumption of alcohol may play a role, as one survey found that 37% of British vegetarians have eaten meat while intoxicated (Esquire, 2017). Other factors related to self-control and social influence likely shape dietary adherence as well but have yet to have been documented.

In another sense, understanding the construction and maintenance of meat-reduced diets may extend beyond conventional patterns of vegetarianism. Less commonly studied variants, including flexitarianism and conscientious omnivorism, welcome further consideration. As reviewed earlier, paying greater attention to flexitarians offers promising potential not only to elucidate phenomena related to identity and morality but also to support efforts aimed at improving public health and environmental sustainability. Rather than curtailing their overall meat intake, moreover, some people decide to forgo meat they consider to have been produced unethically. Some studies (e.g., Rothgerber, 2015a, 2015b) have begun to understand these conscientious omnivores more concretely, yet much remains unknown about how they fare on a host of outcomes that have been studied more thoroughly among vegetarians.

As research progresses, investigators can benefit from considering the advantages and limitations of various methodological practices. A major factor limiting causal inferences from current research on vegetarianism is reliance on correlational designs. Studies comparing psychological outcomes between people who follow different dietary patterns or studies predicting dietary behavior from attitudinal, behavioral, or demographic variables involve an inherent self-selection bias, such that individuals have chosen to follow their dietary patterns prior to a study's commencement. As such, directionality regarding links between dietary patterns and outcomes can remain ambiguous, or such links may be due to confounding variables. Correlational studies have provided critical insights that have transformed the literature reviewed in this paper and should continue to serve a vital role in progressing this line of work. At the same time, designs that manipulate dietary pattern—through priming, thought experiments, having participants consume a particular meal within a study, or assigning participants to follow particular diets for extended periods of time—can provide valuable accounts of eating behavior and complement correlational findings. An increased output of experimental research on vegetarianism can also overcome causal-inference limitations posed by qualitative studies, which have comprised much of the existing literature.



Two additional methodological considerations include study pre-registration and statistical power. First, with efforts afoot to improve the reproducibility of psychological science, it would behoove investigators to preregister their studies—including their hypotheses, planned sample size, materials, planned analyses, any data exclusion criteria, and so forth—in order to minimize the chance of reporting a false positive result. Second, ensuring that studies are sufficiently powered (80% power is a commonly desired minimum) to detect main hypothesized effects can maximize the chance of detecting a significant effect when such an effect does indeed exist (i.e., avoiding a false negative result). One strategy for recruiting large samples to obtain highly powered studies is to utilize crowdsourcing platforms such as Amazon Mechanical Turk (MTurk). In addition to these considerations, investigators can also enhance the transparency and efficiency of research on vegetarianism by making their data publicly available.

More than a position rooted in philosophical perspectives or nutritional science, the decision to avoid meat is ultimately one intertwined with psychology. Vegetarianism and its variants constitute a continuum of eating behaviors characterized by myriad attitudes, self-perceptions, cultural roots, gendered perceptions, and social implications. As investigators approach novel questions with an eye toward a more holistic understanding of these phenomena and more, the psychology of vegetarianism is well-poised to remain a blossoming field of study.

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